श्री कालिका केन्द्रशाला

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PÂNINI: HIS WORK AND ITS TRADITIONS

VOLUME ONE

Background and Introduction
HIS WORK AND ITS TRADITIONS

Volume One

Background and Introduction
INTRODUCTION

This book is the first part of a large study in which I treat the work of Pāṇini and Pāṇinīyas. As a preliminary to this work, I covered a considerable amount of the secondary literature on the topic in a bibliographic survey published in 1976: Pāṇini, a survey of research (The Hague: Mouton; reprinted 1980, Delhi: Motilal Banarsidass).

In my study, I shall consider not only Pāṇini’s Aṣṭādhyāyī with its ancillary texts but also a great part of the commentatorial literature that surrounds this treatise, starting with Kātyāyana’s vārttikas as found in the Mahābhāṣya of Patañjali, in order to give a relatively full picture of the extensive and insightful thinking about language, centered upon Indo-Aryan languages but of more general interest to linguists and indologists alike, found in these and related works.

The projected complete study of which the present volume is the first part is divided as follows:

I. Background and introduction.

II. Kinds of rules in the Aṣṭādhyāyī and how they are related.


INTRODUCTION

VII. Pāṇinian sūtras concerning dialects: VII.1. Vedic rules
VII.2. Others.

VIII. Syntax and stylistics of the Aṣṭādhyāyī: VIII.1.

In addition, there will be a complete index of Pāṇinian
sūtras and of passages dealt with from works other than the
Aṣṭādhyāyī. As can be seen from this outline, I shall consider
not only works directly in the Pāṇinian traditions but also
works of non-Pāṇinian traditions. Moreover, I plan to devote at
least one separate volume to questions of semantics and
"philosophy of grammar" in general, dealing with issues that
have been considered in treatises such as Bhartrihari's
Vākyapadīya, Kaṇḍabhaṭṭa's Vaiyākaraṇabhūṣaṇa and its
abridged version, the Vaiyākaraṇabhūṣaṇasāra, Nāgeśa's
Vaiyākaraṇasiddhāntamaṇḍūṣā with the Vaiyākaraṇasiddhānta-
laghumaṇḍūṣā and Vaiyākaraṇasiddhāntaparamalaghumaṇḍūṣā,
as well as in treatises whose principal concerns are not
strictly grammar.

The bibliography connected with this field is already quite
extensive, as one can readily see even from the sample given in
my Pāṇini, a survey of research, and contributions continue to
be made year by year. Were I to spend time dealing with this
secondary literature, even if I did so in a cursory manner and
selected for discussion only such works as I considered
worthwhile, I would be unable to present, in the manner I wish
to, my own thoughts about Pāṇini's work and how it has been
interpreted both by Pāṇinīyas and in various other schools of
Indian thought. Moreover, experience has shown me the wisdom
of Hari's

अज्ञ: सुखमाराध्य: सुखतरमाराध्यतेविशेषज्ञः।
ञ्जानलब्धविर्भिदम्यं ब्रजापि नरं न रञ्जयति॥

Hence, in my own study I concentrate on the original texts of
Pāṇini and other Indian thinkers. Done with the appropriate
care and attention to nuances, this is quite enough to occupy a
scholar for a lifetime. I trust, therefore, that readers will
not be disappointed by or take offense at the absence of references to works by other modern scholars. I trust also that those who are expert in Pāṇinian grammar will accept the need for beginning a study like mine with a fairly rudimentary volume such as this one, in which I deal with a representative part of Pāṇini’s grammar and its ancillaries in order to show the general structure of his work and how Pāṇini’s system operates. A general background has to be set forth to allow discussing in detail procedures, principles, and problems as dealt with by Pāṇini and his successors. The very nature of this first volume also has made it inadvisable, in my opinion, to include in it an index locorum. The extensive cross references make it possible for the reader always to get back to where a particular sūtra is first introduced and explained, and the table of contents is sufficiently detailed to allow me to dispense with a full index. Of course, the explanations given here are brief: Full discussions of various interpretations, with arguments presented by various Pāṇinīyās, will appear in subsequent volumes.

Some portions of the complete work outlined above have been in typescript and draft form for several years, and I distributed copies to several scholars in 1970, 1976, 1977, and 1979. I hope that I shall now be able to complete subsequent parts more quickly, so that the entire work will be completed in a reasonable time.

I am happy to acknowledge the generous help I have received in working on this volume and others. Over the years, from 1969 on, I have received financial aid from the American Council of Learned Societies, the National Science Foundation, the National Endowment for the Humanities, and the American Institute of Indian Studies, and in 1971-1972 I was able to spend a delightful and fruitful year at the Center for Advanced Study in the Behavioral Sciences in Palo Alto. To all of these I express my sincere gratitude.

My former students Madhav M. Deshpande, Jayashree A. Gune, Peter E. Hook, Kusum Jain, Dayashankar M. Joshi, Ivan A.
INTRODUCTION

Sag, Frederick M. Smith, Elliot M. Stern, and Kapil Muni Tiwary have helped me during many discussions from which I gained insights. My colleague Hans Henrich Hock has read parts of my work. In addition, during the summer of 1978, while I was at the University of Illinois, I profited from direct discussions with him. To Ramanath Sharma and his father Raghunath Sharma (Raghunāṭha Śarmā) I owe more than can be put into words. Over a stretch of over ten years, Pandit Raghunath Sharma has more than generously shared his enormous erudition with me. His son and my friend Ramanath has always cheerfully read what I have written and given a great deal of time to sharing his thoughts about this with me, to my benefit. My current students Timothy Cahill and Peter Scharf have done me the great favor of reading through the present volume with diligent care, thus helping me to clarify quite a few passages and to avoid several errors. I also cannot fail to mention my indebtedness to Ashok N. Aklujkar. Not only have I gained enormously from discussions over the years with this most erudite valyākaraṇa, I also received his technical assistance. The text of this volume was set up on an Apple Macintosh computer with software that includes a Devanāgarī font elaborated by Ashok and his colleagues at the University of British Columbia. Ashok cooperatively came to my aid when I needed it most. Finally, I am happy to thank Dhanesh K. Jain, who invited me to contribute this volume for publication by Motilal Banarsidass, then waited patiently for nine years while I reworked it several times, and Narendra Prakash Jain, who graciously cooperated in seeing to the publication of this work. All these students, colleagues, and friends have my deep and lasting gratitude.

My greatest intellectual and spiritual debt, of course, is to my teachers in this area of study. One of these I have already mentioned. To the memory of another, my very first Indian teacher, Jagannāṭha S. Pade Śāstrī, who introduced me to the traditional study of Paninian grammar and other śāstras, I gratefully dedicate this volume, knowing well that a
truly learned yet modest scholar such as he would appreciate the effort that has gone into this work, select from it what is worthwhile, and forgive its faults:

विद्वानेंव विज्ञानाति विद्वज्ञपरिश्रमम्

नाहि बन्ध्या विज्ञानाति गुर्वी प्रसववेदनाम्।

प्राज्ञो हि जन्तुं पुंसां श्रुत्वा वाचः शुभाच्छुभाः।

गुणवद्वप्यमादसे हंसः श्रीरिवामभसः॥

Philadelphia
March 15, 1987

George Cardona
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REFERENCES AND ABBREVIATIONS

[Note: For bibliographic details concerning works listed below by editor and date of publication only, see Pāṇini, a survey of research.]

A: Pāṇini's Aṣṭādhyāyī. [adhyaśa, pāḍa, sūtra; see 12]
AIBr.: Altareyabrāhmaṇa.
AlU: Altareyopaniṣad.
ĀpSS: Āpastambaśrautasūtra.
Bāl.: Vāsudeva Dīkṣita's Bālamanoramā. Giridhara Sarmā
       (Reprinted 1967-1975) [volume, page]
BĀU: Brhadāraṇyakopaniṣad.
       [volume, page, line]
BhvSS: Bhāradvājaśrautasūtra, edited by C. G. Kashikar. Poona:
       [page, column]
Darpana: Harivallabha's Darpana on the Vaiyākaraṇabhubhūṣana-
       sāra. Tārakeśvara Śāstri Caturvedi 1947. [page]
DhPr.: Maitreya Rakṣita's Dhātupradipa. Shrīsh Chandra
       Chakravarti 1919. [page]
Dīpikā: Bhartṛhari's Mahābāṣyāṭīkā. K. V. Abhyankar-V. P.
       Limaye 1967-1969. [page, line]
GDhS: Gautamadhamasūtra.
Hem.: Hemacandra's Siddhahemaśabdānuśāsana.
JNMV: Jaliniyanyāyamālāvistara. [verses and commentary
       according to adhyāya, pāḍa, adhikaraṇa]
JS: Jalinisūtra.
Kāś.: Kāśikāvṛtti. Aryendra Sharma-Khanderao Deshapande-D. G
REFERENCES AND ABBREVIATIONS

Kät.: Kātantravyākaraṇa.
KDhV.: Cannāvīrakavi’s Kāśakṛtsnadhātuvyākhyāna. Yudhīṣṭhira Mīmāṁsaka 1965/6a.
KŚŚ.: Kātyāyanaśrautasūtra.
KŚT.: Kṣirasvāmin’s Kṣirataraṅgini. Yudhīṣṭhira Mīmāṁsaka 1957/8 [verbs, sūtras]
LM.: Nāgēsa’s Vaiyākaraṇasiddhāntalaghumāṇjūśa. Mādhava Śāstri Bhāṇḍārī- Madan Mohan Pāṭhak-Nityānand Panta Parvatiya 1926. [page]
Manu: Manusmr̥ti.
MBh.: Mahābhārata.
MDhV.: Sāyana’s MādhHAVyādhātuvṛtti. Darzikadas Shastri 1964. [verbs, sūtras]
MU.: Muṇḍakopaniṣad.
Nir.: Yāska’s Nirukta. Sarup 1927.
NV.: Nyāyavārtttika; see NS.
Nyāyasudhā: Nyāyasudhā, A commentary on Tantravārttika by
REFERENCES AND ABBREVIATIONS


Paddhati: Vṛṣabhadeva’s Paddhati. K. A. Subramanya Iyer 1966a. [page, line]


PIŚ: Nāgeśa’s Paribhāṣenduśekhara. K.V. Abhyankar 1962. [paribhāṣā number; page of commentary]

PLM: Paramalaghumāñjūśā. Kapila Deva Śāstri, नागेशभट्ट-कृत वैयाकरणसिद्धान्तपरमलघुमल्लूशा (मूलग्रन्थ, अनुवाद एवं समीक्षात्मक व्याख्या). Kurukshetra:
Kurukshetra University, 1975. [Where appropriate, I silently correct according to the manuscript evidence used for my critical edition, now in preliminary script.]

PM: Haradatta’s Padamañjari. Dwarkadas Shastri-Kalika Prasad Shukla 1965-1967. [volume, page] [I have also consulted the more recent edition by P. Sri Ramachandrudu and V. Sundara Sarma: Padamañjari by Sri Haradatta Miśra, A commentary on Kāśikā of Vāmana and Jayāditya. (Sanskrit Academy Series 25, 26). 2 volumes. Hyderabad: Sanskrit Academy, Osmania University, 1981.]


Puruṣākāra: Commentary on the Daiva; see Daiva.

PV: Puruṣottamadeva’s Laghuparibhāṣāvṛtti. PS pp. 112-160.

RA: Dharmakīrti’s Rūpāvatāra: M. Rangacharya-M. B.
Varadrajengar 1916-1927. [volume, page]

RaPr.: Śīvarāmendra Sarasvati’s Ratnaprakāśa on the Mahābhāṣya, In Mahābhāṣya Pradīpa Vyākhyānāṇī, edited by M. S. Narasimhacharya. 10 volumes. (Publications de l’Institut Français d'Indologie No. 51,1-51,10). Pondichéry:

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REFERENCES AND ABBREVIATIONS

RV: Rgveda.
ŚBr.: Śatapathabrāhmaṇa.
ŚiŚ: Nāgēśa’s Laghusabdendushekha, edited with Bhairava’s Candrakalā by Gopāla Śāstṛī Nene: महामहोपाध्यायभद्र-नागेशकृतोलघुबदेन्दुशेखरः श्रीमद्रवविमिश्रितपृच्छ ‘चन्द्रकल’रूपसे सहित। (KSS 5). 2 volumes. Varanasi: Chowkhamba, 1911, 1922. [volume, page]
TBr.: Tāttvīrīyabrāhmaṇa.
TS: Tāttvīrīyasamhitā.
TU: Tāttvīrīyopanīṣad.
Udd.: Annambhaṭṭa’s Uddyotana on Kalyāṭa’s Pradīpa, In Mahābhāṣya Pradīpa Vyākhyāṇā; see under RaPr. [volume, page]
Uṇāḍikoṣa: Mahādeva Vedāntin’s Uṇāḍikośa. K. Kunjunni

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REFERENCES AND ABBREVIATIONS

Raja 1956a.
US: Uṇādisūtra. Aufrecht 1859,
VBh: Kaṇḍabhaṭṭa’s Vaiyākaraṇabhidhāna. K. P. Trivedi 1915
VBhs: Kaṇḍabhaṭṭa’s Vaiyākaraṇabhidhānasaṅgāra; see Darpaṇa.
VP: Bhartṛhari’s Vākyapadiya. Wilhelm Rau, Bhartṛhari’s Vākyapadiya. Die Mūlakārikās nach den Handschriften herausgegeben und mit einem Pāda-index versehen. (Abhandlungen für die Kunde des Morgenlandes XLII,4.) Wiesbaden: Steiner, 1977. [References to kārikās are according to this edition, even where this conflicts with the numbering in editions with the Vṛtti and other commentaries.]
VPP: Vyāsaparibhāṣāpātha, in PS.
Vṛtti: Bhartṛhari’s autocommentary. K. A. Subramanya Iyer 1966a [page, line], Raghunātha Ārka 1963 [page]
VS: Vājasaneyasiṁhitā.
vt.: vārttika.
YS: The Yogasūtras of Patañjali with the scholium of Vṛṣa and the commentary of Vācaspatimiśra, edited by Rajaram Shastri Bodas; revised and enlarged by the addition of the commentary of Nāgoji Bhāṭṭa by Vasudev Shastri Abhyankar. (Bombay Sanskrit and Prakrit Series no. XLVI.) Bombay: The Department of Public Instruction, 1917.
YSbh.: Yogasūtrabhāṣya. See YS. [page]
YSm.: Yājñavalkyaśmrī.
ON NOTATION AND CROSS REFERENCES

I have generally followed the most widely accepted system for transliterating Devanāgarī. I have also distinguished between \( \text{m} \) and \( \text{ṁ} \), using the former for the nasal offglide called anusvāra and the latter to indicate nasalization; for example, varāṅśa, saymyoga, bhavāṁs correspond to Devanāgarī वाङ्, सृण्योग्, भवांस्. In some instances, it is necessary to distinguish in transliteration between the diphthongs \( \text{ai} \), \( \text{au} \) and sequences of vowels that are not separated by any grammatical boundary; I have used the diaeresis to designate second segments of such complexes: \( \text{ai} \), \( \text{au} \). Except in sections where the topics under discussion call for marking accents and in Vedic citations, I have left Sanskrit items unmarked for accentuation. Moreover, even in Vedic citations, I have followed general practice and marked only udātta vowels, except where the discussion calls also for marking svarīta vowels. For transliterating passages from the Śatapathabrāhmaṇa, on the other hand, I have departed from the general western practice. In accordance with the bhāṣika accent system as set forth in the Bhāṣikasūtras and reflected in Indian editions, I have only marked anudātta vowels, by means of underlined vowel symbols, reflecting the use of a substroke to indicate an anudātta vowel in the original text; for example, vratam upaiśyanantarenāhavanīyaṁ ca gārhapatyaṁ ca prān tiṣṭhannapa upa spratī (ŚBr. 1.1.1.1) for भ्रतमपैश्यनन्तरेणाहवनीयच गार्हपत्यच प्राण तिष्ठन्नप उपस्पर्शिति.

I have used bold face italics to indicate markers ( \( \text{it} \), \( \text{anubandha} \) ) appended to Sanskrit elements, which appear transliterated in italics; for example, \( \text{gu} \)pācaś and \( \text{gu} \)krṇ are the verbal bases \( \text{pac} \) and \( \text{kr} \) with the appended markers \( \text{gu} \), \( \text{a} \), \( \text{s} \), \( \text{ni} \); \( \text{pu} \)vul and \( \text{tr} \)c are the affixes \( \text{vu} \) and \( \text{tr} \) with the markers \( \text{p} \), \( \text{i} \), \( \text{c} \); \( \text{ac} \) and \( \text{ti} \)n are abbreviatory terms consisting of the vowel \( \text{a} \) with the marker \( \text{c} \) and the verbal ending \( \text{ti} \)

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with the marker $\hat{a}$

Let me note also that, because at the time I first composed this book with computer software the program available did not have the symbols $\rightarrow$ and $\leftrightarrow$, I used $>$ and $<$, usually reserved for historical derivations, to show stages of Pānini's derivations. In future parts of my work, $\rightarrow$ and $\leftrightarrow$ will be used.

For purposes of cross reference, I have divided the text of this book into subsections marked by boldface numerals in the left hand margin. I refer to these in the body of the text by means of boldface numerals in parentheses.
1. PĀṆINI'S WORK

1.0. Introduction.

Pāṇini is the author of a grammar describing a language current in his time and place: approximately 500 B.C. in the northwest of the Indian subcontinent. The language he describes is a form of early Indo-Aryan: Sanskrit (saṁskṛta). Pāṇini composed his work in Sanskrit, and he could assume of his audience — all members of which must have been native speakers of this language — a knowledge of conventions of use known to him and to all other native speakers from their own usage. The core of Pāṇini's grammar is a set of statements called sūtra: the sūtra text (sūtrapātha) known as the Aṣṭādhyāyī. This text is accompanied by three ancillary texts: Pāṇini's akṣarasamāmnāya, dhātupāṭha, and gaṇapāṭha. The first of these is an ordered set of sounds (akṣara). The second is a catalog of verbs (dhātu). The last ancillary consists of sets (gaṇa) of other items pertinent to provisions made in particular sūtras; these groups of elements originally were given along with such sūtras.

In his description, Pāṇini takes dialect features into account, noting usages particular to northerners (udācām 'of northerners') and easterners (prācām). He also mentions observations of teachers (ācāryaṇām) and refers to ten scholars by name: Āpiṣali, Kāśyapa, Gārgya, Gālava, Cākravarmaṇa, Bhāradvāja, Śākaṭāyana, Śākalya, Senaka, Sphoṭāyana. Further, Pāṇini accounts for features particular to a more archaic form of Indo-Aryan, known to him from Vedic literature, both in general (chandasi 'in sacred literature') and as concerns specific Vedic traditions and works.

According to Pāṇinīyas (students of Pāṇini's work) such as Patañjali, the language Pāṇini describes is the speech of persons referred to as śiṣṭa, an élite of model speakers
characterized as much by their moral qualities as by their language (see 834). It is most plausible to consider that in Panini's time the language he used and described in his grammar was the major vehicle of learned discourse and ritual in use among members of a community, wide spread through the north of the subcontinent, that constituted a linguistic and social elite, and that this language then coexisted --- as Sanskrit did in later times --- with vernaculars used in less formal circumstances and by other speakers.

It is known that Panini had predecessors in the field of grammar (vyākaraṇa). The Aśṭādhyāyī is not the first grammatical treatise on Sanskrit to have been composed in ancient India. Although Panini built on the work of grammarians (vaiyākaraṇa) who preceded him, however, no earlier work comparable in scope to the Aśṭādhyāyī has been preserved in full. Panini's grammar is the earliest complete treatise of its kind to have been preserved.

Remarks.

1. The available evidence does not allow one to determine Panini's dates with absolute precision. Nevertheless, the evidence also precludes placing Panini at a time later than the early fourth century B.C.: 500 B.C. is a reasonable date to accept. According to a tradition which there is no cogent reason to doubt, Panini was native to Śalātura, in the northwest of the subcontinent. Thus, in his Gaṇaratnamahodadhi (GRM 1.2: शालातुरीयशकटाज्ञ-चन्द्रगोपिदिबन्धस्त्रहरि-रामनभोजमुख्याः। मेधाविनः प्रवर- दीपककर्त्तुयुक्ताः: प्राहैनिषेवितपद्वदित्या जयन्ति।) Vardhamana uses śalāturya in speaking of Panini, and in his commentary on the passage in question he explains (शलातुरे
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that this term refers to the respected Panini (tatrabhanan panini), whose ancestral place was the village Salatara. See A 4.3.90, 94 (344, 345).

2. The Sanskrit term for grammar in general is vyakarana. Panini's complete treatise is also known as a sabdanusastana, since it is a means of instruction (anustana) whose object is correct speech forms (sabda). The term astadhyayi ('eight chapters', see 9), first used of Panini's sutra text in Patanjali's Mahabhashya (III.174.10-15, see 834e), refers to this corpus as composed of eight chapters. Statements of Panini's grammar are called not only sutra but also sthala, yoga, and lakshana (see 849-853). In addition, the fourteen subgroups of sounds that make up Panini's aksarasamarnaya are called sutra (see 131).

3. In the Astadhyayi, Panini uses dhashayam ('in spoken language') opposed to chandasi ('in sacred literature'), but he does not refer to the language he describes by terms such as samskrtam or samskrta vak ('adorned, purified speech'). He has no need for such terms in the context of his particular grammatical statements.

4. As I pointed out above (see 1), the dhatupatha and the ganapatha both contain ordered groups of items. Paninayas use the term gana with reference to groups in both these ancillary texts, but ganapatha is conventionally used of the particular text noted.


I.1.0. Introduction.

Panini's Astadhyayi contains nearly four thousand sutras, distributed among eight chapters (adhya), each of which is subdivided into four quarter-chapters (pada). The text begins
with two rules that assign class names to certain sounds:

A 1.1.1: वृद्धिरादेचुः (vrddhir ād aic)

A 1.1.2: अदेहः गुणः। (ad eṅ gunaḥ)

The first of these sūtras provides that ā-, ai-, and au-vowels (āt, aic: A 1.1.71, 69, 70 [83-85]) have the class name (samjña) vrddhi; the second sūtra provides that a-, e-, and o-vowels (at, eṅ) are called guna. According to the organization of Pāṇini’s work, then, these are the first and second sūtras of the first pāda in the first adhyāya of the Aṣṭādhyāyī.

Sūtras serve different purposes and are thereby of different kinds. There is a major distinction between operational rules (vidhisūtra) and other, ancillary rules. The former are directly concerned with operations in respect of elements; ancillary rules, on the other hand, serve to allow the required interpretation and application of other rules. Ancillary sūtras are of three main types: samjñāsūtras, which introduce class names and establish conventions regarding the use of terms, metarules (paribhāṣā); and headings (adhikāra). Further, some sūtras provide that properties and operations which would otherwise not pertain to given elements are extended to these under given conditions; such sūtras are extension rules (atidēsāsūtra). In addition, Pāṇini’s work includes restrictive rules (niyamasūtra), which serve to restrict what would otherwise obtain too broadly, and rules of negation (pratisedhasūtra, niśedhasūtra), whereby something that would otherwise apply is disallowed.

The sūtras of the Aṣṭādhyāyī regularly do not contain verb forms as integral components. For example, A 1.1.1-2 (see 9) contain only the nominative singular forms āt, aic, vrddhiḥ, at, eṅ, gunaḥ; neither sūtra has a verbal form. In accordance with conventions of normal Sanskrit usage, however, one supplies a third singular present form of a verb meaning 'be, occur', which is to be understood and construed with one or more
nominal forms used in a sūtra: \textit{asti/}bhavati (sg.) 'is, occurs', 
\textit{stahi/}bhavatah (du.), \textit{santri/}bhavanti (pl.) 'are, occur'. Thus, 
for example, A I.1-2 are expanded to

(1) \textbf{आदीच्चकृत्त्विद्विषोस्तित (भवति)} \textbf{(ād aic ca vrddhi-} 
\textit{samjño/sti [bhavati]}) 'A vowel ā, ai, au has 
the name \textit{vrddhi}.'

(2) \textbf{अदेरी च गुणसंजोश्चित (भवति)} \textbf{(adevi ca guna-} 
\textit{samjño/sti [bhavati]}) 'A vowel a, e, o has the 
name \textit{guna}.'

\textbf{Remarks.}

1. The text of the Aṣṭādhyāyī known to earliest Pāṇinīyas 
was subject to modification in several ways: Entire sūtras 
were added; single sūtras were split into two; words were 
added to sūtras; and other modifications, such as changing case 
forms, were carried out. In most instances, one can see that a 
change suggested by Kātyāyana in a vārṭtika or by Patañjali in 
the Mahābhaṣya has been accepted, with the result that a 
modified text appears in a work such as the Kāśikāvṛttī. Later 
Pāṇinīyas like Bhāṭṭoji Dīkṣita recognize that some sūtras were 
added to the original sūtrapāṭha, and they restore unmodified 
versions of sūtras that had been modified. Since the 
Kāśikāvṛttī is the most commonly used running commentary on 
the Aṣṭādhyāyī, I have adopted its serial numbering, although 
this represents an inflated text. The Kāśika's text of the 
Aṣṭādhyāyī has 3983 sūtras, distributed among adhyāyas and 
pādas as follows:

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<th>II:</th>
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<td>I.1</td>
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<td>3: 93</td>
<td>4: 110</td>
<td>I:</td>
<td>351</td>
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<tr>
<td>II.1</td>
<td>72</td>
<td>2: 38</td>
<td>3: 73</td>
<td>4: 85</td>
<td>II:</td>
<td>268</td>
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<tr>
<td>III.1</td>
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<td>2: 188</td>
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<td>631</td>
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<tr>
<td>IV.1</td>
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<td>2: 145</td>
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<td>4: 144</td>
<td>IV:</td>
<td>635</td>
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<tr>
<td>V.1</td>
<td>136</td>
<td>2: 140</td>
<td>3: 119</td>
<td>4: 160</td>
<td>V:</td>
<td>555</td>
</tr>
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[5]
13. Pāṇiniyas recognize that verb forms are to be supplied for sūtras in accordance with everyday usage. For example, in his eleventh vārttika on A 2.3.1 (240), Kātyāyana remarks that the verb as ‘be, occur’, though not overtly used (prayujyāmanōpi), is understood to occur (asti ‘occurs’) followed by a third-person (prathamapuruṣaḥ) present ending (bhavantīparaḥ). [ ... आस्तिर्भवत्तीपरः प्रथमपुरुषोऽप्रुयुज्यमानोप्यसिता] Although Kātyāyana says the verb as is understood to occur by suppletion, Pāṇiniyas also supply forms of bhū and recognize that both verbs serve the same purpose. For example, in the Mahābhāṣya on A 1.1.3 vt. 2 (Bh. 1.44.8: अथवैक्योऽगः करिष्यते वृद्धिरादेजदेहगुणः), the suggestion is made that A 1.1.1-2 (see 9) be made one rule (ekayogāḥ). In his commentary on this passage, Bhartṛhari explains that this means one instance of bhū (bhavatir ēkāḥ) is supplied (adhyāhriyate) in uttering (uccārane) what is now a single statement. [Dīpikā 94.5-6: भवतिरेक उच्चारणेष्याहियते। cf. Pr. İ.1.45: एको भवतिरध्याहियते। वृद्धिरादेजदेहगुणो भवतीत्येकवाक्यत्वं सम्पद्यते।] Moreover, Kātyāyana himself recognizes that bhū is thus used (e.g., A 1.2.1 vt. 2: bhavati), so that it is simplest to assume that, although he speaks explicitly only of as when saying how suppletion works for utterances with no overt verb form in places where no other verb is to be understood from the immediate context, this is meant to refer to a group of verbs meaning ‘be, occur’.

1.1.1. Operational rules.
To describe Sanskrit, Pāṇini uses a derivational system (see Chapter 2) in which the following procedures play roles: Affixes are introduced to given items; augments are added to elements; one element replaces another; one of a group of elements is allowed to occur as a single remainder, instead of the whole group; an element is doubled; items are combined to form compounds.

1.1.1.1. Affixation rules.

Affixation rules, whereby affixes are introduced to given items, are included in the third, fourth, and fifth adhyāyas of the Aṣṭādhyāyī. This large section of sūtras begins with the heading

A 3.1.1: प्रत्ययः (pratyayah)

which assigns the class name pratyaya ('affix') to elements introduced by subsequent rules. Most Sanskrit affixes are suffixes, so that in

A 3.1.2: परस्चा (paraś ca)

Pāṇini provides that an item which has the name pratyaya by A 3.1.1 also (ca) occurs after (paraḥ [bhavati]) the unit to which it is introduced. For example, the affix kalpa (kalpap: A 5.3.67 [356]) of paṭukalpa 'almost sharp, sharpish, something like sharp' follows paṭu 'sharp'.

In accordance with the structure of Sanskrit, Pāṇini must also recognize prefixes and infixes, so that A 3.1.2 (15) is only the general rule concerning where affixes occur. Now, the affix -na-of yunakti 'joins, connects, yokes' occurs within the base yuj: yu-na-k-ti (⊂ yu-na-j-ti < yuj-ti). na is one of a group of elements that occupy this particular position with respect to other items. This position is shown by appending the marker (rī: A 1.3.3 [80]) m to such elements. According to

A 1.1.47: मिद्योष्टन्त्यात्यारः (mid aco'ntyāt paraḥ)
an element with the marker m (mit) occurs after (paraḥ) the last vowel (aco'ntyāt) of the unit to which it is introduced. The affix of yunakti is so marked: Śnam (A 3.1.78 [157]).

In other cases, Pāṇini has to specify the position of particular affixes. Thus, in A 5.3.71 (354) he provides that akac, an affix introduced to items of the avyaya class and to pronominals, precedes that part of such an item which begins with its last vowel, and A 5.3.68 (356) stipulates that the affix bahuc of derivates such as bahupaṭu, synonymous with paṭukalpa (see 15), precedes an item that terminates in a nominal ending.

17 1.1.1.2. Augments.

Augments are introduced as parts of other elements. Some augments occur within grammatical units. For example, the nominative-accusative plural chandāmsi 'meters' (< chandāns-i < chandans-i < chandas-i) is derived with the augment n, which is added to the stem chandas- when this is followed by the ending Śi. This augment is marked with m (num: A 7.1.72 [408]), so that, by A 1.1.47 (16), it follows the last vowel of the item to which it is added, in this particular instance the -a- of -as in chandas-. Augments also are added as initial and final segments of items. For example, the third singular imperfect active apacat 'cooked' has an augment a that is added as the initial segment of the stem paca-(pac-a-); sthāp- of the causative sthāpi (sthāp-i) 'cause to be in place, set' (3sg. pres. ind. act. sthāpayati) contains the final augment p, added to the verb sthā 'come to a stand, be in place'. The positions of such augments are shown by two markers: t for initial augments, k for final augments. According to

A 1.1.46: आद्यांतो टकितौ (ādyāntau ṭakitau)

elements that have the markers t and k (ṭakitau) are
respectively the initial and final parts (ādyantau) of the items to which they are introduced. To derive apacat and sthāpi, Pāṇini lets the augments at and puk (A 6.4.71, 7.3.36 [238, 124]), with these markers, be added to stems.

Single sounds may also take augments. Consider the precative middle form kṛṣhīyāstām ‘my wish is that’ they two might make ... for themselves’ and the corresponding second person dual form kṛṣhīyāsthām. As derived in Pāṇini’s system, these forms consist of the verb kṛ ‘make, do’ and the endings ātām (3du. mid.), āthām (2du. mid.) with two augments. One of these augments, siyut (A 3.4.102 [401]), is added as the initial part of each ending, hence marked with t (A 1.1.46 [17]). The other augment, suṭ (A 3.4.107), precedes the t and th of ātām, āthām. This segment cannot be made the initial part of endings. Pāṇini introduces it as an augment to t and th of certain verb endings. He also marks this segment with t in accordance with A 1.1.46. However, since the items to which this augment is added are individual sounds, the augment simply precedes these sounds: by the very nature of the situation, it cannot be the initial segment of the items to which it is added. Similarly, the augment tuk is added to short vowels (A 6.1.71 [394]), which it necessarily follows.

Remark.

Pāṇinīyas from Kātyāyana on call augments āgama, and this term is comparably used also in non-Pāṇinian works. For example, TPr. 1.23: अः कार आगमविकारिलोपिनाम् (āhkāra āgamavikārilopinām) states that a nominative form (āhkāraḥ 'h [of nominative forms]) denotes an augment, an item subject to modification, or one subject to deletion; the sūtra uses āgama, vikārin, and lopin, respectively, with respect to these three. The term āgama is comparably used also in Mīmāṃsā. For example, in his Bhāṣya on Jaiminisūtra 10.5.8.27
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(Ānandāśrama Sanskrit Series volume 97, part 6 [Poona, 1934], p. 1956), Sabara uses āgama with reference to the advent of additional rc brought in to make up a requisite number of rc; this contrasts with the repetition (abhyaśa) of rc that are given. [किं सामिधे्नीष्वागमेन सङ्क्षेपम् पूर्णितं योताभ्यासेन ...

Although Pānini does not use āgama to refer to augments, this does not mean he fails to recognize such elements. On the contrary, A 1.1.46 (17) explicitly provides that elements such as at and puk are the initial and final parts of items to which they are introduced. Pānini simply does not need āgama as a class name to refer to augments as a group.

1.1.1.3. Substitution rules.

A substitution rule provides that one element occurs in place of another. The procedure of letting a replacement (ādea) occur instead of a substituend (sthānin) accounts for the distribution of related complementary elements. For example, there are pairs such as the nominative accusative singulants dadhi, dadhy 'curds' and madhu, madhv 'honey'. The items with -y, -v occur before vowels other than /i, u/ provided that they and the items that follow are pronounced in close junction (ṣamhitāyāṃ: A 6.1.72 [107]). The distribution of such pairs is accounted for by letting y and v substitute for /i/ and /u/ before other vowels (A 6.1.77 [125]).

Pānini also operates with abstract elements, items which he posits in his derivational system but which never are found in actual utterances, so that they necessarily are subject to replacement. Some abstract elements are replaced by items that occur in normal usage. For example, L-affixes are replaced by verb endings and participial suffixes (A 3.4.77-78, 3.2.124-126 [232, 262]); the abstract suffix c/ is replaced by suffixes such as sic (A 3.1.43-44 [236]). On the other hand, in particular instances, abstract affixes are not replaced by
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22 overtly used elements. For example, the agentive suffix *kvip is simply deleted (A 6.1.67 [409]).

In Pāñini's system, a substituend is regularly denoted by a genitive form (A 1.1.49 [90]). The element subject to replacement can be a sound or a larger grammatical unit. As a general rule, the last sound of a grammatical element is replaced (A 1.1.52-53 [95]), but its initial sound is replaced if substitution applies in a left context (A 1.1.54). Further, certain substitutes replace whole grammatical units; these replacements either consist of more than one sound or are marked with ś (A 1.1.55).

1.1.1.4. Rules providing for a single remainder.

23 Consider the derivates gārgya and gārgyāyana, which refer to members of the Garga lineage with different statuses (gotra and yuvan descendants: A 4.1.162-164 [78]). The first term is derived with the taddhita suffix yāḥ (A 4.1.105 [335]) and its first vowel is high-pitched (A 6.1.197 [600]); the second is formed with the taddhita suffix phak (A 4.1.101[335]) and its second ā is high-pitched (A 3.1.3 [592]). There is also a dual formation (e.g., nom.-acc. gārgyau), which refers to a Gārgya and a Gārgyāyana together. Suppose that the base gārgya of this formation were accounted for by letting gārgya substitute for both gārgya and gārgyāyana. In accordance with the usual convention governing replacements (A 1.1.56 [100]), the substitute would have the properties of its substituends. Consequently, although the base in question should have a high-pitched initial vowel only, one would allow not only a substitute gārgya, with high pitch on its first vowel, but also possibly *gārgya, *gārgyā. That this could indeed obtain is clear from something else Pāñini provides for. There are sūtras of the Aṣṭādhyāyī which provide for a single substitute in place of two contiguous elements (A 6.1.84 [106]). Among the substituends subject to such replacement are high-

[ 11 ]
and low-pitched vowels. Pāṇini explicitly states that if a single vowel replaces two vowels, one with high-pitch, the other with another pitch, the result is a high-pitched vowel (A 8.2.5 [610]), not a vowel with the properties of both the substituends. Clearly, in the absence of this stipulation, the grammar could allow such an undesired result. Similarly, it could allow a derivate gārgya with undesired properties, if this were derived by substitution as shown, without any further provision. One way to avoid such undesired consequences in this and other comparable instances is to account for the derivates in question not by means of substitution but in another way. Pāṇini does this. He provides that only one of a group of items taken together be the single remainder (ekaśesa) to be used (A 1.2.64-73 [374-377]). In the particular instance under consideration, of the two items gārgya and gārgyāyana, the first is the single remainder (A 1.2.65 [374]) used with dual endings such as -au in gārgyau. Similarly, particular consonants of elements called abhyāsa are allowed to be single remainders (A 7.4.60-61 [383]).

24 1.1.1.5. Rules for doubling elements.

Certain sūtras of the Aṣṭādhyāyī provide that given elements are doubled, so that one gets two (dve) of them, under particular conditions. There are two major groups of rules that deal with such doubling. Sūtras of the section beginning with

A 6.1.1: एकाचो द्वे प्रथमसय (ekāco dve prathamasya)

A 6.1.2: अजादेविद्विन्तियसय (ajāder dvitiyasya)

A 6.1.3: न न्द्रा: संयोगक्य: (na ndráḥ samyogādayah)
give conditions under which a syllable (ekacah [gen. sg.]) is doubled. This applies to the second (dvitiyasya) syllable of an item that begins with a vowel (ajādeḥ) --- though
cluster-initial \( \textit{samyogādayah} \) \( n, d, \) and \( r \) (\textit{ndrāḥ}) are then not (\textit{na}) iterated --- and to the first \( \textit{prathamasya} \) syllable of other items. For example, the perfect \textit{papaca} (1sg. act.) 'cooked' contains a sequence \( \textit{papac-} (\textit{< pacpac-}) \) gotten by doubling \textit{pac}; the second syllable (i.e., \(-\textit{ti}\-\)) of \textit{atīsa}, with the desiderative suffix \textit{san} (A 3.1.7 [279]), is doubled to derive \textit{atītiṣa} 'wish to wander' (3sg. pres. \textit{atītiṣati}).

Rules of the section that begins with

\[ \text{A 8.1.1: सर्वस्य द्वे (sarvasya dve)} \]

give conditions under which a whole (\textit{sarvasya} [gen. sg.]) word is iterated. A sequence such as (101) \( \textit{pacati pacati} '\ldots cooks constantly' \) (A 8.1.4 [370]) is gotten by such doubling.

1.1.1.6 Composition rules.

Composition rules provide that two or more items, generally ones that terminate in nominal endings, combine to form a compound (\textit{samāsa}). These sūtras are included in the first two pādas of the second adhyāya, headed by

\[ \text{A 2.1.3: प्राक्कषारालस्मासः (prāk kaḍārāt samāsā)} \]

According to this heading, derivates formed by subsequent rules, prior to (\textit{prāk}) the last sūtra of the second pāda in the second adhyāya (A 2.2.38 [321]. \textit{कहारा: कर्मधारयेन}) --- the first term in which is a form of \textit{kaḍāra} (abl. sg. kaḍārāt, nom. pl. kaḍārāḥ) --- have the class name \textit{samāsa}. See Section 2.4.2.3.

1.1.2. Ancillary rules.

Ancillary rules of all three major kinds (see 10) have in common that they serve to interpret other sūtras. Yet ancillary rules of the same major type may differ in the precise purpose they serve. Thus, there are saṃjñāsūtras that serve only to establish general conventions regarding the use
of terms in the grammar. Other samjñāsūtras provide that certain class names apply to given items, so that they are classificatory rules. Some such sūtras concern in particular sounds classed as markers (/t/). There are also samjñāsūtras that deal with terms for zeroes. Metarules also serve various purposes. Some come into play to interpret in a specified manner particular case forms in contexts such that in each instance a Sanskrit speaker could not arrive at a single interpretation without the aid of a metarule. Other paribhāṣās serve to restrict the choice of substitutes or substituends that are involved in particular operations. Still other paribhāṣās are extension rules.

1.1.2.1. Samjñāsūtras.

1.1.2.1.1. Samjñāsūtras that establish general conventions.

Pāṇini uses Sanskrit to describe Sanskrit, which is thus both the object of his description and the metalanguage of his grammar. Of course, there are some differences between Pāṇini’s metalanguage and Sanskrit as it was ordinarily used, so that Pāṇini had to establish certain conventions regarding the use of Sanskrit in his work.

One convention concerns terms and their referents. In ordinary Sanskrit, a term that has a meaning is used to signify that meaning; for example, agni (nom. sg. agniḥ) denotes fire. If one wishes to designate a linguistic element (śabda) itself, not its meaning, one uses the citation particle /iti/; for example, agnir /iti/ refers to the word agni and not to fire. Now, rules that introduce affixes and augments, that provide for replacement or doubling of elements, and rules of composition all concern operations in respect of linguistic elements, so that Pāṇini has constantly to refer to speech units in sūtras of his Aṣṭādhyāyī. Hence, he adopts a
convention opposed to the one observed in ordinary usage: A linguistic element’s own form (svam rūpam) is understood to refer to that element (śabdasya[saṃjñā] [name] of a speech unit’) itself, not to signify the meaning of the item, unless the element in question is a technical term of grammar (aśabdasaṃjñā).

A 1.1.68: svam rūpam  
śabdasyaśabdasaṃjñā  
Thus, an item such as agni, which is not a technical term of grammar, is self-referring, treated as though followed by iti. On the other hand, a term like vrddhi (A 1.1.1 [9]) is not self-referring; it denotes members of a class to which the name has been assigned. Moreover, since A 1.1.68 reverses the usual convention, iti is used when the meaning of an item is intended; for example, na veti (A 1.1.44 [31]) denotes the meaning of na vā (‘or not’) instead of these items themselves.

The abbreviation ac, formed according to A 1.1.71 (83), refers in the first instance to the vowels given in Pāṇini’s akṣarasamāmnāya, and by A 1.1.69 (84) these are made class names referring to sets of vowels. Now, there are various operations that apply to elements ending in vowels. For example, the affix yat follows verbs that end in vowels (A 3.1.97 [122]) to form derivates such as ceya (< ci-ya) ‘something to be gathered, heaped up, plucked’. Instead of repeatedly using terms like ajantāt ‘ending in a vowel’, Pāṇini establishes another convention, in

A 1.1.72: yena vidhis tadantasya  
According to this sūtra, a qualifier x by means of which (yena) a provision (vidhiḥ) is made serves as a term denoting an item y that ends in x (tadantasya [saṃjñā bhavati]). Thus, acaḥ in A 3.1.97, where it is construed with the heading dhātoḥ (A 3.1.91 [66]), refers to a verb which ends in a vowel. In accordance with the convention established by A 1.1.72, one understands acaḥ to be equivalent to ajantāt.
Another convention concerns the use of terms that have to do with options. Several such terms are used in Sanskrit. Consider first ubhayathā 'in both ways'. A Sanskrit speaker could be expected to know that this term is regularly adverbial, so that he would construe it with supplied forms of a verb meaning 'be, occur' (see 11, 13), and to know that the term is used when two possibilities are given. Pāṇini uses ubhayathā in this manner. For example, A 3.4.117 (63) provides that in respect of Vedic usage verb endings and verbal affixes marked with ś are classed in the two ways provided for by preceding sūtras. On the other hand, vā 'or' is not necessarily adverbial; it is also used adnominally. Accordingly, a Sanskrit speaker could not be required immediately to interpret a rule such as A 4.1.82 (11) unambiguously. He could, to be sure, construe vā with a supplied verb form. The rule would then provide that elements to be specified occur, optionally, after the first of semantically and syntactically related items. On the other hand, one could also construe vā with the term prathamāt; the rule would then undesirably provide that the elements to be specified occur after the first of related items or after some other such item. In effect, vā should be understood in the sense of na vā 'or not' and construed with supplied verb forms. Accordingly, Pāṇini provides, by

A 1.1.44: न वेति विभाषा (na vēti vibhāśa)

that an option (vibhāśa) should be understood to be what na vā signifies (see 29). That is, terms having to do with options are regularly construed with verb forms supplied in sūtras, so that optional rules provide that something either obtains or not (na vā). Pāṇini uses ubhayathā, vā, anyatarasyām, vibhāśā, vibhāṣitam in rules that involve options.

1.1.2.1.2. Saṃjñāsūtras that introduce class names.
Most samjñäsūtras of the Aṣṭādhyāyī introduce class names (samjñā). They provide that given entities bear these class names, so that the sūtras in question are classificatory rules. The terms introduced by such rules are used to refer to members of classes in respect of operations, and membership in a class is in effect determined by operations. Some of the classes Pāṇini recognizes are made up of entities other than speech units, but most of the classes consist of linguistic elements. These are both phonological classes and groups of higher units.

1.1.2.1.2a. Phonological classes.

Pāṇini operates with sets of sounds that are homogeneous (savarna) with each other. According to

A 1.1.9: तुल्यास्यप्रयत्नं सवर्णम् (tulyāsyaprayatnam savarnam)

a sound is said to be savarṇa with another if it is produced with the same articulatory effort at the same place of production in the oral cavity (tulyāsyaprayatnam) as that sound. In the phonological system which Pāṇini adopts, stops (sparśa) are characterized by an articulator's making full contact (sparśa) at a place of production, semivowels (antaṁstha) by slight contact (ṁatsparśa) between articulator and place, vowels (svara) by separation (vivāra 'opening') between them, that is, by the absence of contact. There are sets of a-, i- and u- vowels, each with eighteen members: short a i u, long ā ē ū, and trimoric aJ iJ uJ, each oral or nasalized and pronounced with low pitch, high pitch, or a combination of high and low pitches. All these vowels have the same articulatory effort (prayatna), but they differ with respect to places of production (sthāna) in the oral cavity (āṣya): a- vowels are post-palatal (kanthya), i- vowels palatal (tālavya), u- vowels labial (oṣṭhya). By A 1.1.9, vowels
in each of these groups are called savarṇa with respect to each other. Similarly, there are eighteen r- vowels, all homogeneous with each other. On the other hand, there are only twelve s- vowels, since there is no long counterpart to s. The sets of e-, o-, aï-, and au- vowels also have twelve members each, since they do not include short vowels. Stops are divided into five classes (varga) of five each: post-palatal k kh g gh ṅ (voiceless unaspirated and aspirated, voiced unaspirated and aspirated, nasal), palatal c ch j jh ṅ, retroflex (mūrdhanya) ṭ ṭh ḍ ḍh ṅ, dental (dantya) ṭ ṭh ḍ ḍh ṅ, and labial p ph b bh m. By A 1.1.9, the sounds in each of these groups are savarṇa with each other. There are also pairs of homogeneous semivowels, simple and nasalized: palatal y and its nasalized counterpart yṁ, dental l and lṁ, labio-dental ṅ and ṅṁ. The semivowel r and the spirants ś, s, ṣ, ṣḥ do not have nasalized counterparts.

In the phonological system adopted by Pāṇini, both vowels and spirants are characterized by separation between articulator and place of production. In terms of A 1.1.9 (33), then, certain vowels and spirants, such as i- vowels and the palatal spirant s would be homogeneous with each other. This is disallowed by

A 1.1.10: नाज्जङ्लौ (nājjhalau)

an exception to A 1.1.9, which provides that vowels and consonants (ajjhalau) are not (na) termed savarṇa with each other. In this way, sets of homogeneous sounds consist exclusively of vowels or consonants.

Vowels enter into three sets by virtue of length differences. According to

A 1.2.27: उकालोस्ज्ञास्वदीर्घपल्लतः (ūkāloj

jhrasvadīrghaplatā)
a vowel (ac: A1.1.71, 69 [83-84]) is called hrasva (‘short’), dirgha (‘long’), or pluta (‘prolated, extra-long’) according as it has the duration (kāla ‘time’) of short u long ū or the
extra-long vowel \( u\) of more than two morae (\( \text{ūkālā} \)).

Pitch properties of vowels are pertinent to three other classes. A vowel (\( ac \)) pronounced high (\( \text{uccaǐ} \)) is called \( \text{udāṭṭa} \) (‘high-pitched vowel’), one pronounced low (\( \text{nīcai} \)) is called \( \text{anudāṭṭa} \) (‘low-pitched vowel’), and one that has a combination of these properties (\( \text{samāhāraǐ} \)) is called \( \text{svarita} \).

A 1.2.29: \( \text{uccair udāṭṭaǐ} \)

A 1.2.30: \( \text{nīcair anudāṭṭaǐ} \)

A 1.2.31: \( \text{samāhāraǐ svaritaǐ} \)

According to

A 1.2.32: \( \text{tasyādita udāṭṭam ardhaḥrasvam} \)

a svarita vowel has (\( \text{tasya} \) of that) a high-pitched segment (\( \text{udāṭṭam} \)) at its beginning (\( \text{āditaǐ} \)) for the length equivalent to that of half a short vowel (\( \text{ardhaḥrasvam} \)). That is, the first half-mora of a svarita vowel is high-pitched, its remainder low-pitched.

In addition, vowels belong to two other classes, depending on their length and phonological environment. According to

A 1.4.10: \( \text{hrasvam laγhu} \)

A 1.4.11: \( \text{sāmyoge guru} \)

A 1.4.12: \( \text{dirghaṅ ca} \)

a short vowel (\( \text{hrasvam} : \text{A 1.2.27 [35]} \)) has the class name \( \text{laghu} \) (‘light’) unless it is followed by a consonant cluster (\( \text{sāmyoge} : \text{A 1.1.7 [40]} \)), in which case it does not have this name but is called \( \text{guru} \) (‘heavy’) instead, and a long vowel also (\( \text{ca} \)) has the class name \( \text{guru} \).

A 1.1.45: \( \text{īgyaṅ: sāmprasārṇam} \)

\( \text{(īgyaṅ samprasārṇam)} \)
lets samprasāraṇa denote both a set of vowels and an operation: \( i-, u-, r-, \) and \( l- \) vowels (\( \text{§k: A 1.1.71, 69 [83-84]} \)) that replace semivowels \( yv r l \) (\( \text{yanāh: A 1.1.49 [90]} \)) are called samprasāraṇa, and this term denotes also the replacement of those semivowels by those vowels. See A 6.1.15-17, 108, 6.4.2 (388, 533, 421).

A sound pronounced through the mouth and nose at once (\( \text{mukhanāsikāvacanaḥ} \)) has the class name anunāsika by

\[ \text{A 1.1.8: मुखनासिकावचनोनुनासिका:)} \]

\( \text{mukhanāsikāvacano'nunāsikāḥ) } \)

Accordingly, Pāṇini uses anunāsika with reference to nasalized vowels and semivowels as well as nasal stops (see A 8.3.2, 8.4.45 [555, 575]).

According to

\[ \text{A 1.1.7: हलोनान्तराः संयोगः)} \]

\( \text{halo'nantarəh samyogəh) } \)

any group of contiguous (\( \text{anantarəh) consonants (halə: A 1.1.71 [83])}, that is, a consonant cluster, is called samyogə.

Two samjñaśūtras concern terms used of sounds or groups of sounds that occupy particular positions in larger units. By

\[ \text{A 1.1.64: अचोष्ट्यादि टिः) (acontyaḍi ti)} \]

that part of an item which begins with its last vowel (\( \text{acontyaḍi) is called ti, and according to \( \text{A 1.1.65: अलोंत्यात्पूर्व उपधा) (aolotyāt pūrva upadhə)} \)

a sound that precedes (\( \text{pūrvaḥ) the final sound (aolotyāt) of an element, its penultimate sound, has the class name upadhə.

Two other samjñaśūtras pertinent to phonology do not concern phonological elements themselves. By

\[ \text{A 1.4.109: पर: सांनिकर्षसंहिता) (paraḥ sannikarṣah samhītə)} \]
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samhitā denotes the maximum (parah) drawing together (sannikarśah) of sounds in a speech flow, that is, close junction of sounds. According to

A 1.4.110: विरामोवसानम् (virāmovasānam)
avasāna denotes the cessation of speech (virāmaḥ). Particular phonological operations apply when elements occur in close junction (samhitāyām: A 6.1.72, 3.114 [107]), others when sounds occur in pausa (avasaṁe: A 8.4.56 [578], kharavasānayoh: A 8.3.15 [557]).

Remarks.

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1. As can be seen from A 1.1.9 (33), Pāṇini presupposes a detailed knowledge of phonetics. It is assumed that a student of his grammar has mastered śīkṣā, the science of phonetics, general treatises on which deal with how sounds are produced. Indeed, Sanskrit has a phonetic and phonological terminology that certainly antedates Pāṇini. Vowels are called svara, consonants vyañjana, semivowels antahstha, and spirants ūśman. The phonological terms ghośavat and aghośa refer to voiced and voiceless consonants. Stops are arranged in five classes (varga) of five members each, and these groups are referred to by compounds with -varga: kavarga (also kakāravarga), cavarga (cakāravarga), ŭavarga (takāravarga), tavarga (takāravarga), pavarga (pakāravarga) refer to the groups of stops that begin with k c t p (ka or kakāra, etc.). Within each of these groups, stops are arranged as shown in 33, and ordinal number words are used to refer to members of the sets: prathama 'first', dvitiya 'second', tṛtiya 'third', caturtha 'fourth', and pañcama 'fifth' (or uttama 'last'). In addition, there are terms that denote sounds according to their places of production: kāntyā 'located in the throat', jihvāmūliya 'located at the root of the tongue (i.e., velar)', tālavya 'palatal', mūrdhanya 'located at the mūrdhan (i.e.,
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retroflex), oṣṭhya 'labial'. These and comparable terms are known from prātiṣṭākhya and śikṣā works, with which I shall deal in part III.2 of my work. Pāṇinīyas use this terminology too, in addition to specifically Pāṇinian terms. On the other hand, Pāṇini refers to most of the classes noted by means of abbreviatory terms (see 129): ac ‘vowels’, hai ‘consonants’, yan ‘semivowels’, saḷ ‘spirants’, haś ‘voiced consonants’, khar ‘voiceless consonants’, ku cu tu tu pu for the five stop classes. Abbreviations like ac (a with the marker c), interpreted by A 1.1.71 (83), are based on an ordered set of sounds, Pāṇini’s akṣarasamāmnāya (Section 1.2, figure C). If the order of sounds in this catalog does not allow referring to a group of sounds by means of this kind of abbreviation, of course, Pāṇini uses another term. This may be another abbreviatory term, such as ku(k with the marker u), used to refer to velar stops. It can also be a phonological term such as hrasva (A 1.2.27 [35]). Further, Pāṇini also uses phonetic terminology; e.g., mūrdhanya (A 8.3.55 [105]) refers to retroflex stops and s.

2. In general, hrasva, dirgha, pluta (A 1.2.27 [35]) as used in the Aṣṭādhyāyī are masculine. This accords with the gender of svara ‘vowel’ (see 43). On the other hand, hrasva, dirgha in A 1.4.10-11 (37) are neuter, as are laghu, guru. This accords with the gender of akṣara ‘syllable’.

1.1.2.1.2b. Classes of grammatical elements.

Pāṇini of course recognizes classes of grammatical elements connected with particular operations. Some such items can be given in ordered sets, as in the dhatupāṭha and gaṇapāṭha (Sections 1.3-1.4), to members of which Pāṇini refers in various ways. He does so most commonly by means of compounds in which the first member is the first item of a set or subgroup, the second member a term meaning ‘first’ or ‘beginning with’; for example, bhūvādayaḥ (A 1.3.1 [47]) refers
to verbs of the dhātupāṭha, the initial (ādi) element of which is bhū "be, become"; adiprabhṛtibhyah (A 2.4.72 [15a]) refers to a subgroup in the dhātupāṭha that begins with (-prabhṛti) ad 'eat'. In addition, a plural form of the first item in a set can refer to the whole group of elements; thus, kādārāḥ (A 2.2.38 [321]) refers to the group of items that begins with kādāra 'tawny'.

Items that cannot be included in ordered sets may bear common markers to show that they constitute a group in respect of certain operations. For example, some affixes are marked with \(\tilde{n}\) or \(\rho\) to show that they condition substitution by vrddhi vowels in stems that precede them (A 7.2.115 [417]). In still other cases, Pāṇini must use particular class names to refer to sets of elements.

In Pāṇini's derivational system (Chapter 2), affixes (pratyaya: A 3.1.1 [15]) are introduced after given items to form complexes of the types B-A, B-A₂-A₁. In the first type, a single affix A follows B, but the second type contains two affixes introduced after the same base element in a particular order: A₁ follows B, then A₂ is introduced after B on condition that this already occurs with A₁. Let us call B and B-A₂ of such complexes presuffixal bases or stems. Pāṇini's class name is anāga. By

A 1.4.13: यस्मात्प्रत्ययविधिस्तदादिप्रत्ययेऽन्म (yasmāt
pratyayavidhis tadādi pratyaye ngaṁ)
a unit that begins with an item B (tadādi) after which (yasmāt) an affix A is introduced (pratyayavidhiḥ) and is followed by A (pratyaye) is called anāga in respect of this affix. B-A has a single anāga, B, relative to A. B-A₂-A₁, with two affixes introduced in the order noted, contains two anāgas: B-A₂ in respect of A₁ and B relative to A₂. The item B to which an affix is introduced can be a verbal base (dhātu: A 1.3.1, 3.1.32 [47]), a nominal base (prātipadika: A 1.2.45-46

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[48]), an item with a feminine affix ī, ā, or an element with a nominal or a verbal ending (pada: A 1.4.14 [49]). For example, as-'be, occur' in as-ti (3sg. pres. indic.) is an āṅga relative to the ending tip; vrkṣa-'tree', kumārī-'girl', and ajā-'she goat' in vrkṣa-ya (vrkṣāya [dat. sg.]), kumārī-e (kumāryai [dat. sg.]), ajā-e (ajāyai [dat. sg.]) are āṅgas in respect of the nominal ending ē and its replacement ya; kṣi-a-tī (kṣiyati 'dwell') and sū-a-tī (suvati 'impel') contain two āṅgas each: kṣi-a-, sū-a- are āṅgas in respect of tip, and kṣi-, sū- are āṅgas relative to the suffix śa.

Stems and affixes condition particular operations on each other. Thus, after a stem in -a the ending ē is replaced by ya (A 7.1.13 [492]): vrkṣa-e > vrkṣa-ya. Stem-final short -a is replaced by -ā before nominal endings that begin with y; bh(A 7.3.102 [482]): vrkṣa-ya > vrkṣā-ya. After nādi elements (A 1.4.3-6 [56]), the initial augment āt is added to nominal endings marked with ē (A 7.3.112 [499]), and these endings are augmented with initial yāt when they follow stems with feminine affixes āp (A 7.3.113): kumārī-e > kumārī-āe > kumārī-ai (A 6.1.90 [529]) > kumāryai (A 6.1.77 [125]), ajā-e > ajā-yāe > ajāyai (A 6.1.88). Final i- and u- vowels of verbal stems are replaced respectively by -iy and -uv before vowel-initial affixes (A 6.4.77 [452]): kṣi-a-tī > kṣiyati, sū-a-tī > suvati.

Verbs are of two general types, primitive and derived. By

A 1.3.1: भूवादयो धातवः। (bhuvādayo dhātavaḥ)

items of the ordered set that begins with bhū 'be, become' (bhuvādayaḥ) have the class name dhātu. These are primitive verbs listed in Pāṇini's dhātupātha (Section 1.3). Derived verbs are assigned the same class name by

A 3.1.32: सनाद्यन्ता धातवः। (sanādyantā dhātavaḥ)

according to which derivates that end in the affixes san etc. (sanādyantāḥ), introduced by preceding rules, are called dhātu. For example, the desiderative cikirṣa 'wish to do, make',

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formed with the suffix *san* (A 3.1.7 [279]), is a derived verb.

Nominal bases also are either primitive or derived. A meaningful element (*arthavat*) other than a verb (*adhātuh*), an affix, or an item that ends in an affix (*apratyayah*) is called *prātipadika* by

A 1.2.45: अर्थवद्धातुरप्रत्ययः प्रातिपधिकम् (*arthavat adhātura.pratyayah prātipadikam*)

Such an item is a primitive nominal base. For example, *go* 'cow, bull' has the class name *prātipadika* by A 1.2.45. In addition,

A 1.2.46: कृत्तद्धितसमासास्यः (*kṛttaddhitasamāsās ca*)

provides that certain derivates also (*ca*) have the class name *prātipadika*: those that end in affixes of the kṛt and taddhita classes (A 3.1.93, 4.1.76 [66, 70]) and compounds (*samāsa*: A 2.1.3 [26]). For example, *karto* (*kṛt-ṛto*), *kāraka* (*kṛ-vu*) 'one who does, makes', with the kṛt suffixes *tṛc* and *gṛjul* (A 3.1.133 [248]), *aupagava* (*upa-qa-as-ā*), with the taddhita affix *āṇ* (A 4.1.83 [335]), and the compound *rajapuruṣa* (*rājan-as-puruṣa-s*: A 2.2.8 [301]) 'king's servant' are derived nominal bases.

The large class of affixes includes verb endings (basic endings: figure A) and nominal endings (figure B), both of which enter into units called *pada*. According to

A 1.4.14: सुपर्तितङ्गन्तम्यकम् (*suptiṇantam padam*)

an item that terminates in a nominal or verbal ending (*suptiṇantam*) has the class name *pada*. For example, *vṛkṣāya, kumāryai, ajāyai, asti, kṣiyati, suvati* (see 46) are padas. Items that belong to the *pada* class by A 1.4.14 are syntactic units. The use of particular endings in such padas is determined by relations that obtain among the significands of bases as used in particular utterances (see Section 2.1). These are also accentual units in that a *pada* regularly has only one high-pitched vowel (A 6.1.158 [588]); for example, each of the
padas cited above can have only one such vowel: vrksāya, kumāryai, ajāyai, āsti, kṣiyāti, suvāti.

As I pointed out earlier (see 25), rules of the section beginning with A 8.1.1 provide for iterating entire words, padas (A 1.4.14 [49]). The second (param 'subsequent') pada of the pair that is gotten by doubling (tasya 'of that') is called āmreṣita:

A 8.1.2. तस्य परमात्रेणदितम् (tasya param āmreṣitam)
An āmreṣita has no high-pitched vowel (A 8.1.3 [619]).

Almost all subgroups of verbs to which Pāṇini must refer are members of ordered subsets in his dhātupāṭha. Pāṇini can refer to these by means of terms of the types bhūvādi, adiprabhṛti (see 45), so that he does not need class names for this purpose. However, there is a group of verbs that make up a set with respect to certain operations but cannot be included in an ordered subset of the dhātupāṭha, so that a special name is needed for them. According to

A 1.1.20: दाध्या ध्वदाप (dādā ghv adāp)
a verb with the form dā or dhā except for one of the shape dā with the marker p (adāp), is called ghu. Some of the verbs in question have original -ā; in others, -ā is a substitute for -ē, -o, -ai (A 6.1.45 [392]). The verbs to which A 1.1.20 assigns the class name ghu are: dāp 'give' (3sg. pres. Indic. yacchāti; A 7.3.78 [437]), ġudānī 'give' (dādāti), deṅ 'protect, nurture' (dayate), do 'cut' (dyati), dheṭ 'suck' (dhayati), ġudhānī 'put, make' (dadhāti). The verbs daip 'clean' (dāyati) and dāp 'cut' (dāti) are excluded from the ghu class.

Some of the operations associated with verbs of the ghu set are as follows. The affix sīc is deleted after them if parasmalinda endings follow (A 2.4.77 [406]), e.g., adāt (3sg. aor.) 'gave', adhāt 'put, made'. The -ā of such verbs is replaced by -i before consonant-initial affixes marked with k or ā by -ē before the y- of preceptive-optative endings (A 6.4.66-67 [451]): dīyate, dhīyate (3sg. pres. pass.), deyāt, dheyāt (3sg.
prec. act.). Before an affix that begins with \( t \)- and is marked with \( k \); the verb \( dā \) of the ghu class is replaced by \( dath \) unless it follows a vowel-final preverb, in which case the \( -ā \) of the verb is replaced by \( t (A 7.4.46-47 [438]) \): \( datta \) 'given' (\( dath-ta \) affix \( kta \)), \( pratta \) 'presented' (\( pra-\text{\text{-}}dt-ta \ < pra-\text{\text{-}}dā-ta \)), but \( avadāta \) 'cleaned', \( dāta \) 'cut'.

Under specified conditions, the first or second syllable of a verb is doubled (\( A 6.1.1-2 [24] \)). The first (\( pūrva \) 'prior') of the two syllables thus gotten is called \( abhyāsa \), and both the syllables (\( ubhe \) together are called \( abhyasta \):

\[ A 6.1.4: \text{पूर्वोंश्यासः:} (pūrvo'nyāsah) \]

\[ A 6.1.5: \text{उभे अभ्यस्तम्} (ubhe abhyastam) \]

In addition, by

\[ A 6.1.6: \text{जक्षित्यादयः षट्} (jakṣityādayah ṣat) \]

\( jakṣ \) 'eat, laugh' and the six verbs that follow it in the dhatupātha (see 161) also are called \( abhyasta \).

A series of operations is connected with \( abhyāsa \) and \( abhyasta \) segments. For example, only the first consonant of an \( abhyāsa \) is generally allowed to remain (\( A 7.4.60 [383] \)): velar stops and \( h \) are replaced by palatal stops in an \( abhyāsa \) (\( A 7.4.62 \)); after an \( abhyasta \), one has \( -ati \) instead of \( -anti \) (\( A 7.1.4 [509] \)), and the ending \( jhi \) is replaced by \( jus \) (\( A 3.4.109 [402] \)). Thus, at one stage of deriving the desiderative verb \( cikīrṣa \), one has \( kir-kir-sa \), with a sequence \( kir-kir- \) gotten by doubling. The first segment \( kir- \) is an \( abhyāsa \), so that only its first consonant is allowed to remain, and this is replaced by the palatal stop \( c \). Similarly, the \( h \) of \( hu \) 'offer oblations' is replaced by \( jh \) (which is then replaced by \( j \)) in an \( abhyāsa \), so that one derives \( juhvati \) (3pl. pres. indic.), this form has the ending \( -ati \), and the corresponding imperfect \( ajuhavuh \) has the ending \( -us \).

There are several subgroups of nominal bases that require \( Pāṇini \) to introduce particular class names. One of these is the
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pronominal set (sarvanāman). According to

A 1.1.27: सर्वादिनि सर्वनामानि (sarvādini sarvanāmāni)

members of the ordered group that begins with sarva whole, all (sarvādini) have the class name sarvanāman. However, members of this group are not assigned to the pronominal class under all circumstances. By

A 1.1.28: विभाषा विकसमासे बहुव्रीहो (vibhāṣā dikṣamāse bahuvrihau)

these items are only optionally (vibhāṣā: A 1.1.44 [31]) called sarvanāman if they occur in a bahuvrhi compound (bahuvrihau) consisting of direction words (dikṣamāse: A 2.2.26 [317]). This sūtra is related to a more general negation rule;

A 1.1.29: न बहुव्रीहो (na bahuvrihau)

whereby the items in question are not (na) called sarvanāman if they occur in a bahuvrhi compound. In addition, members of the set that begins with sarva are denied the class name sarvanāman when they occur in a compound the first member of which is originally an instrumental form of certain specified items (tṛtyāsamāse):

A 1.1.30: तृतीयासमासे (tṛtyāsamāse)

This exclusion also (ca) applies for these items if they occur in a dvandva compound (dvandve), but only optionally (vibhāṣā) in respect of what applies to jas (jasi):

A 1.1.31: द्वन्दे चा (dvandve ca)

A 1.1.32: विभाषा जसि (vibhāṣā jasi)

Optional classification as sarvanāman in respect of what applies to jas also (ca) is provided for: a. prathama 'first', carama 'last', derivates with the suffix tayap, alpa 'little, few', ardha 'half', katipaya 'some', nema 'one, some, half'; b. pūrva 'prior, eastern', pāra 'subsequent, western, other', avara 'lower, later', dakṣīna 'right, southern', uttara 'upper,
northern', *apara* 'later, western, other', *adhara* 'lower', provided these terms are used with reference to things in a temporal or spatial arrangement (*vyavasthāyām*) --- so that, for example, *dakṣīṇa* 'clever' is not classed as a *sarvanāman* --- and provided also that the terms are not appellations of particular individuals (*asamjñāyām*); *c. sva* 'own, possession, wealth', provided this does not of itself denote a relative or wealth (*ajñātīdhanākhyāyām*); and *d. antara* used of something that is exterior to another or with reference to a garment one wraps around oneself but that is not an outer garment (*bahiryogopasonāvyānayōḥ*). These provisions are made in:

A 1.1.33: प्रथमचरमत्यान्त्यार्धकलिपननेभास्या

(*prathamacaramatyanāṁ-pārdhakatipayanemāḥ ca*)

A 1.1.34: पूर्वपरावर्तकशिरोनोत्तरपराधराणी

(*pūrva-parāvarakṣirōnottarādharāṇī vyavasthāyām asamjñāyām*)

A 1.1.35: स्वमज्ञातिधनाक्ष्यायाम्

(*svam ajñāti-dhanākhyāyām*)

A 1.1.36: अन्तरमुखियोऽगपसन्यायः

(*antaram bahiryogopasonāvyānayōḥ*)

Providing that an item has the class name *sarvanāman* or that it does not bear this name under given conditions allows operations associated with pronominal elements to apply as required. For example, after a pronominal base in *-a* the ending *āḥ* (dat. sg.) is replaced by *smai* (*A 7.1.14 [492]*)*, the ending *ṣi* substitutes for *jas* (nom. pl.: *A 7.1.17*), and the initial augment *sūt* is added to the ending *ām* (gen. pl.: *A 7.1.52 [496]*)). This last operation applies also after pronominals in *-ā*, of the type *sarvā* (fem.). In addition, if an ending marked with *n* follows a pronominal in *-ā*, it receives the initial
augment syāt, and the final vowel of the pronominal stem is replaced by short -a (A 7.3.114 [499]). These operations account for forms such as sarvasmai, sarve (sarva-i), sarveśām (sarve-sām sarva-sām), sarvāsām, sarvasayai (sarva-syāe sarvā-e), as opposed to vrksāya (see 46), vrksāh (vrksa-as), vrksāhām (vrksa-nām vrksa-ām), ajānām (ajā-ām), ajāyai (ajā-āe ajā-e). By A 1.1.28, uttarapūrvā 'north-east' is optionally pronominal. Pāṇini thereby accounts for alternants such as uttarapūrvasyai and uttarapūrvarvai. On the other hand, -anya in dvyanya 'one in addition to whom there are two others' is denied membership in the sarvāman class by A 1.1.29, since one has, e.g., dvyanyāya, not *dvyanyasm. Similarly, A 1.1.30 excludes -pūra of māsapūrva 'earlier by a month' from the sarvāman class. māsapūrvāya. In accordance with A 1.1.31-32, the grammar allows deriving only pūrvaparāpām 'earlier and later ones', not also *pūvapareśām, but both pūrvāpare and pūrvaparāh. A 1.1.33-36 account for pairs such as prathame prathamāh, pūrve pūrvāh, dasine dakṣināh (but only dasināh 'clever'), svel svāh 'of one's own', antare antarāh grhāh 'houses that are outside (the city walls)'.

There is a large group of nominals, called avyaya, that includes several subgroups. By

A 1.1.37: स्वराविनिपातमन्यम् (svarādinipātam avayam)

A 1.1.38: तद्धितस्वद्विबधिकितः (taddhitaś ca sarvavibhaktih)

A 1.1.39: कृन्मेजलत: (kṛn mejantaḥ)

A 1.1.40: क्तवातोसुन्कसुन: (ktvātosunkasunaḥ)

A 1.1.41: अन्ययेवभावनस्त्रा (avyayibhāvas ca)

the following have the class name avyaya:

A 1.1.37: members of the order set that begins with svar 'sun,
heaven' and items called *nipāta* (*svarādinipātam*); some other items in the ordered set beginning with *svar* are *antar* 'within', *prātar* 'in the morning', *punar* 'again', *sanutar* 'off, aside', *uccais* 'high, loud', *nicais* 'low, softly'; on the *nipāta* subgroup see 55.

A 1.1.38: a derivate that ends in a taddhita affix (*taddhitāḥ*; A 4.1.76 [70]) such that it cannot take all triplets of nominal endings (*asarvavibhaktiḥ*); for example, *tatās* 'thence, from that' and *tatra* 'there, in that, on that' contain the taddhita suffixes *tasīl, tral* (A 5.3.7,10 [349]) and, in Pāṇini's system, can be followed only by an ending of the first triplet, a nominative ending.

A 1.1.39: a derivate in a kṛt affix (A 3.1.93 [66]) that ends in *m, e, o, ai,* or *au* (*mejantāḥ*); e.g., *svāduṁkāram* 'after sweetening', *ḍṛṣe* 'to see'.

A 1.1.40: a derivate with any of the suffixes *ktvā tosun, kasun;* e.g., *kṛtvā* 'after doing, making', *uḍetos* '(before) the rising (of the sun)', *visṛpas* '(before) crawling away'.

A 1.1.41: an avyayībhāva compound (A 2.1.5 [304]); e.g., *upāgni* 'near the fire'.

In general, a feminine affix *āp* or a nominal ending is dropped after an avyaya (A 2.4.82 [307]). For example, *tasyām* (< *tā-ām* < *tad-ī*) of *tasyām śālāyām* 'in that house' has a feminine affix *tāp* (A 4.1.4 [271]) and a locative ending, but *tatra* of the equivalent phrase *tatra śālāyām* has neither the feminine suffix nor an ending. In effect, most avyayas are indeclinable. But this is not true of all such items. Thus, after an avyayībhāva in *-a* an ending other than an ablative is replaced by *am*, but an ablative ending remains (A 2.4.83 [307]); e.g., *upakumbham* 'near the pot', *upakumbhāt* 'from near the pot'.

A 1.1.37 (54) provides that items called *nipāta* ('particle') belong to the avyaya class. The elements in question are given in rules of the section that begins with
According to this sūtra, items referred to in subsequent rules, up to -rśvara- (prāg rśvarāt) of A 1.4.97 (see below), are called nipāta under the conditions given in these sūtras. By

A 1.4.57: चादयोसत्त्वे (cādayo'sattve)

members of the ordered set that begins with ca'and (cādayah) are assigned the name nipāta provided they are not used with reference to a thing (asattve). Members of the set beginning with pra 'forth' (prādayah) have this class name by

A 1.4.58: प्रादयः (prādayah)

In addition, according to

A 1.4.59: उपसर्ग: क्रियायोगे (upasargāḥ kriyāyoge)

A 1.4.60: गतिः (gatiḥ)

pra and the other items of the gana connected with A 1.4.58 belong to two subclasses if they are connected with actions (kriyāyoge), that is, if they are linked directly to verbs: They are then called both upasarga ('preverb') and (ca) gati.

There are also members of the gati class that are not assigned to the upasarga class. For example,

A 1.4.61: ऊर्ध्विद्विद्वाचाच्या (ūrddvādvidvācaḥ ca)

provides that members of the set beginning with ूर्द्ध (as in ूर्द्ध kr 'accept') and derivatives with cvi (A 5.4.50 [347]) or gāc also are assigned the class name gati. According to

A 1.4.67: पुरोश्क्ययाम् (purośkhyayam)

A 1.4.68: अस्तन्त्च (astaṇ ca)

A 1.4.71: तिरोंतरधान् (tiroṇtardhau)

the following terms are classed as gati when linked with verbs: puras, if it is an avyaya --- that is, puras 'at the fore' and not puras 'city' (nom.-acc. pl., gen. sg.); the avyaya astam (see 207); tiras, provided it is used with reference to disappearance (antardhau), as in tirobhūya 'having dis-
appeared, after disappearing, which contrasts with tiro bhūtvā 'after coming to the side'. By

A 1.4.72: विभाषा कृती (vibhāsa kṛti)

A 1.4.74: साक्षात्प्रभृतीनि च (sākṣatprabhṛtini ca)

tiras is optionally a gati when construed with kṛti (e.g., tiraskṛtya, tīras kṛtvā 'after setting aside'), as are members of the group beginning with sākṣat 'directly, face-to-face'. The section of sūtras headed by A 1.4.56 includes also a subsection that begins with the heading

A 1.4.83: कर्मप्रवर्तनीयाः (karmaprávacanīyaḥ)

Items given in these rules have the name karmaprávacanīya under the conditions specified. For example, according to

A 1.4.84: अनुलंकणो (anur lakṣane)

anu is called karmaprávacanīya if it is used to indicate that one thing is a cause which is characteristic (lakṣane) of another, and

A 1.4.89: आद्य मर्यादावचने (ān maryaḍāvacane)

assigns this class name to ān used in referring to a boundary (maryāḍāvacane). Again,

A 1.4.97: अधिरूपरूपे (adhīrīṣvare)

provides that adhi used with respect to a master (īṣvare), that is, when a master-possession relation is spoken of, is termed karmaprávacanīya. Finally, by

A 1.4.98: विभाषा कृती (vibhāsa kṛti)

adhi is optionally (vibhāsa) a karmaprávacanīya if it is linked with kṛ (kṛti). Since adhi is part of the set that begins with pra, it is then also optionally a gati.

The nipāta class thus includes subgroups of items called upasarga, gati, and karmaprávacanīya, all of which are also included in the avyaya class. In addition, a nipāta that consists of a single vowel, with the exception of ān, belongs to the
pragṛhya class (A 1.1.14 [76]).

After nipātas, as after most avayās (54), nominal endings are dropped. Some other operations associated with the groups noted are as follows. Items of the set beginning with pra and members of the gati class form compounds with related terms (A 2.2.18 [315]); e.g., prasthitā 'set out, gone', prasthāyā 'after setting out', ēriktā 'accepted', ēriktya 'after accepting'. The s- of certain verbs is replaced by ś- after upasargas that meet particular phonological specifications (A 8.3.65 [564]); e.g., pari śūpoti 'presses juice out'. The n-of verbs taught with original n-is replaced by n- after upasargas that meet certain phonological conditions (A 8.4.14 [572]); e.g., pra niṃati 'bows'. Most of the operations connected with members of the gati class have to do with accentuation. Thus, a gati retains its original accent in a tatpuruṣa compound where it is followed immediately by a derivate in -ktā denoting an object (A 6.2.49 [603]), as in prakṛtā 'begun, set forth'; a derivate with a kṛt affix retains its original accent in a tatpuruṣa compound where it follows a gati (A 6.2.139 [606]), as in prakāraka 'one who accomplishes'. See also A 8.1.70 (515). Most karmapravacanīyaḥ are syntactically linked with nominals, which take particular endings in such constructions. In general, a nominal linked with a karmapravacanīya is followed by a second-triplet (accusative) ending (A 2.3.8 [250]); e.g., sanhītām anu 'consequent on (the recitation of) the sanhīta'. However, some members of the karmapravacanīya class cooccur with other forms. For example, a seventh-triplet (locative) ending follows a nominal linked with a karmapravacanīya if that nominal denotes something in respect of which one speaks of a governing relation, and a nominal construed with ādi takes fifth-triplet (ablative) endings (A 2.3.9-10); e.g., ādi devadatte 'in Devadatta's dominion', ā pātaliputrāt 'up to Pātaliputra'.

The term nadi--- which in ordinary Sanskrit means

[ 34 ]
'river' --- is used as a class name referring to items characterized by their form, a gender feature, and certain grammatical contexts. According to

A 1.4.3: यु रूपार्थ्यः नादिः (yū stryākhyau nadi)
items that end in i or ū (yū) and exclusively denote things qualified by femininity (stryākhyau) bear the name nadi, which is used also with reference to -i, -ū of such items. For example, kumārī 'girl', nadi 'river', brahmabandhū 'a woman who is a Brāhmaṇa in name only', yavāgū 'gruel' belong to the nadi class by A 1.4.3. On the other hand, grāmaṇi 'village head' and khalapū 'one who cleans a threshing floor' do not: Although these terms may be used with reference to females, they do not of themselves signify things qualified by the property feminine. According to

A 1.4.4: नेयुरुवाणि स्थानावस्त्री (neyariuvaṇisthānāv aṣtri)
items that meet the conditions given in A 1.4.3, with the exception of strī 'female, woman' (aṣtri), are not (na) called nadi if their final vowels are subject to replacement by -iy and -uv (iyariuvaṇisthānau). However, items denied membership in the nadi class by A 1.4.4 are only optionally (vā) excluded from this class in a particular grammatical context, before ām (āmi);

A 1.4.5: वामी (vāmi)
Such items also are optionally called nadi when they are followed by endings marked with ौ(निती), that is, before the endings ē(a dat. sg.), ēṣi(abl. sg.), ēsi(gen. sg.), ौ(loc. sg.). Further, in these contexts an item that ends in a short vowel (hṛṣvaḥ: A 1.2.27 [35]) i or u and denotes a feminine also (ca) has the class name nadi:

A 1.4.6: भदित हस्वशः (niti hrasvaś ca)
For example, the -i and -ū of śrī 'wealth, goddess of wealth', strī, and bhrū 'brow' are replaced by -iy and -uv before

[ 35 ]
vowel-initial endings (A 6.4.77, 79, 80 [452, 500]). According to A 1.4.4-5, śri and bhrū are denied membership in the nādi class except when they are followed by ām, in which case they are optionally nādi elements. According to A 1.4.6, not only such items in -i, -ū but also terms like kṛti 'doing, deed, work' and dhenu 'cow' optionally are called nādi when they are followed by endings marked with i. On the other hand, stri is not excluded from the nādi class in any of these contexts.

As I pointed out earlier (see 46), an ending marked with i receives the initial augment āṭ after a nādi stem; e.g., kumārayai, brahmabandhval, kumāryāḥ (< ... kumāri-ās < kumāri-as), brahmabandhvāḥ. The ending āni in particular is replaced by ām after a nādi stem (A 7.3.116 [497]), and this substitute is augmented with āṭ: kumāryām, brahmabandhvaṁ. In addition, members of the nādi class have vocative singular forms with -i, -u instead of the corresponding long vowels (A 7.3.107 [483]): kumārī, brahmabandhu. Further, the ending ām receives the initial augment nuṭ when it follows a nādi stem (A 7.1.54 [498]): kumārinām, brahmabandhunām. stri has forms of this type, so that it is never excluded from the nādi class: stri (voc.sg.), striyai, striyāḥ, striyām, striyām. Other nominals with -i, -ū and -iy, -uv behave differently, however: śriḥ, bhrūḥ (voc.sg.), śriyai / śriye, bhruvai / bhruve, śriyāḥ / śriyāḥ, bhruvāḥ / bhruve, śriyām / śriyām, bhrūnām / bhruvām, śriyām / śriyi, bhruvām / bhrui. Therefore, these are either totally excluded from or only optionally assigned to the nādi class, by A 1.4.4-6. In accordance with A 1.4.6, moreover, kṛti and dhenu optionally have the class name nādi when they occur before endings marked with i: kṛtyai, dhenvai, kṛtyāḥ, dhenvāḥ, kṛtyām, dhenvām. Such forms alternate with kṛtyaye, dhenvaye, and others, on which see 57.

Certain items in -i and -u constitute a remainder (śeṣah) in respect of those that belong to the nādi class by A 1.4.6 (56). First, there are non-feminine nominals that end in these vowels. In addition, terms like kṛti and dhenu are only
optionally nadi bases by A 1.4.6, so that they are alternatively not members of the class. According to

A 1.4.7: शेषो च्यसारिना (śeṣo ghy asakhi)

items in -i, -u that make up this remainder, with the exception of sakhi ‘friend’ (asakhi), have the class name ghi. Thus, for example, agni ‘fire, Agni’ and vāyu ‘wind, Vāyu’ belong obligatorily to the ghi class, kṛti and dhenu only optionally belong to this class, and sakhi is excluded from the ghi set.

The -i and -u of ghi bases are replaced by the guṇa vowels (A 1.1.2 [9]) e, o before endings marked with ni (A 7.3.111 [484]): agnaye (≪ agne-e < agni-e ), vāyave, agneḥ (≪agne-as < agni-as), vāyoh. The ending ni in particular is replaced by au after a ghi base, the final vowel of which is simultaneously replaced by a (A 7.3.119 [497]): agnau (≪ agna-au < agni-i), vāyau. Since kṛti and dhenu optionally belong to the ghi class, rules apply to derive kṛtaye, dhenave, kṛteḥ, dhenoh, kṛtau, dhenau in addition to kṛtyai, dhenvai, and other forms of the nadi type (see 56). On the other hand, sakhi differs from both these types: sakhye, sakhyuh, sakhyau. This base is therefore excluded from the ghi class.

The noun pati ‘master, husband’ meets the conditions for being a member of the ghi class by A 1.4.7 (57). However, it does not always behave in the manner of such an element. One does have, for example, prajāpataye, prajāpateḥ, prajāpatau from prajāpati ‘lord of creatures’, but from pati by itself one has patyey, patyuh, patyau. Hence,

A 1.4.8: पति: समास एवा (patiḥ samāsa eva)

provides that pati has the class name ghi only when it occurs in a compound (samāsa eva: A 2.1.3 [26]).

Nominal bases such as eka ‘one’, dvi ‘two’, tri ‘three’, catur ‘four’, pañcān ‘five’ are number words (saṅkhyaḥ), associated with particular operations. For example, they form derivates, with the suffix dhā that denote a manner of doing
something (A 5.3.42 [347]) in so many ways and other derivatives, with kṛtvāsuc, suc (A 5.4.17–19), used in counting the number of times an act is performed: ekadhā 'in one way', sakti 'once', dvidhā 'in two ways', dvis 'twice', tridhā, tris, catudhā, catus, pañcadhā, pañcakrtvas, and so on. The terms bahu 'much, many', gana 'great number', and derivatives such as tāvat 'that much, that many', kati 'how many?' behave like ordinary number words in that they form derivatives such as those shown: bahudhā, bahukrtvas, ganadha, ganakrtvas, tāvaddhā, tāvatkr̥tvas, katidhā, katikrtvas. Therefore, in

A 1.1.23: बहुगणवतुहति सर्वत्र (bahuganavatudati sārkhya)

Pāṇini provides that bahu, gana, and derivatives with the suffixes vatu, dāti are called sārkhya.

The term sāṣ, which in ordinary Sanskrit means 'six', is used as a class name for certain number words (sārkhya). According to

A 1.1.24: ष्टान्त षट (ṣpāntā sāṭ)

A 1.1.25: हति चा (dāti ca)

a number word that ends in -ṣ or -n (ṣpāntā [sārkhya]) is called sāṣ, and a derivate with dāti also (ca) has this class name. The bases sāṣ 'six', pañcān 'five', saptān 'seven', āṣṭān 'eight', navan 'nine', daśan 'ten' and derivatives such as kati belong to this class. After sāṣ elements, the first- and second-triplet endings jas, sas (nom., acc. pl.) are deleted (A 7.1.22 [494]): sāṭ (< sāṣ < sāṣ-as), pañcā (< pañcān < pañcān-as), kati (< kati-as).

Vṛddha, which means 'grown, strong, aged' in ordinary Sanskrit, is used in the Aṣṭādhyāyī as a technical term for a class of items in part characterized phonologically. By

A 1.1.73: वृद्धिर्यस्याचायामाविस्तरः वृद्धम् (vṛddhir yasyācāṁ ādis tad vṛddham)

an item the first (ādiḥ) of whose (yasya) vowels (acām) is a
vrddhi segment (A 1.1.1 [9]) is called vrddha (tad vrddham), and according to

A 1.1.74: त्यदादीनि चा (tyadādini ca)

items of the ordered subset beginning with tya (tyadādini) --- part of the set that begins with sarva (A 1.1.27 [53]) --- also (ca) have the class name vrddha. These items are associated with particular affixes. For example, the taddhita affix cha follows padas (A 1.4.14 [49]) with vrddha elements, to form derivates such as śālīya 'pertaining to the house', tādīya 'pertaining to that' (A 4.2.114 [343]).

Compounds (samāsa: A 2.1.3 [26]) make up a large group of derived nominal bases (prātipadika: A 1.2.46 [48]). There are four major classes of compounds, to which the class names avyayībhāva, tatpuruṣa, bahuvrihi, and dvandva are assigned by rules. The tatpuruṣa group includes two subgroups of compounds, called dvigu and karmadhāraya. See Section 2.4.2.3.

Verb affixes are divided into two major groups by

A 3.4.113: तिन्सित्सार्वधातुकम् (tīni śit
sārvadhatukam)

A 3.4.114: आर्धधातुकं शेषः (ārdhadhatukam śeṣaḥ)

In general, a verb ending (tīni) or a verbal affix with the marker s (śit) is called sārvadhātuka, and any remaining (śeṣaḥ) verb affix has the class name ārdhadhātuka. According to

A 3.4.115: लिट् चा (līṭ ca)

A 3.4.116: लिन्दाशिषि (līni āśiṣi)

however, certain verb endings are assigned to the ārdhadhātuka class: those that replace the L-suffix līṭ (A 3.2.115 [233]) and those that derive from līni introduced on condition that a wish is expressed (āśiṣi: A 3.3.173), what western grammarians call perfect and predictive endings. Further, in the domain of Vedic literature (chandasi) verb
affixes in general may behave in both ways (ubhayathā, see A 1.1.44 [31]):

A 3.4.117: छन्दस्युभयथा (chandas y ubhayathā)
That is, an operation normally associated with one set of affixes may be linked with another in Vedic usage, so that these affixes are allowed to be both sārvadātuka and ārdhadātuka units so far as this usage is concerned.

The suffix śap follows a verb such as bhū ‘be, become’ if this occurs with a sārvadātuka that signifies an agent (A 3.1.68 [157]), as in bhavati (3sg. pres. ind. < bho-a-ti < bhū-a-ti < bhū-ti), bhavet (3sg. opt.). śap is not introduced to derive forms such as babhūva (3sg. pfct. act.) or bhūyāt (3sg. prec. act.), whose endings are assigned to the ārdhadātuka class. Ārdhadātuka affixes also determine the occurrence of certain suppletive verbs. For example, instead of as bhū occurs with ārdhadātuka affixes (A 2.4.52 [380]), as in bhavitum (inf.), bhūti ‘being’. On the other hand, in Vedic one finds an action noun asti in svasti (dat. sg. svastaye) ‘well being’, derived with the same suffix (ktin: A 3.3.94 [114]) as in bhūti To account for such usage, this affix is allowed to belong not only to the ārdhadātuka class but also to the sārvadātuka group, as far as Vedic usage is concerned, so that it does not necessarily determine suppletion. The affixes śap and yak (A 3.1.67 [156]) are respectively sārvadātuka and ārdhadātuka elements by A 3.4.113-114, in accordance with examples such as vardhayantu (< vardhi-a-antu) ‘may they make ... strong’, vardhyate (< vardhi-ya-te) ‘... is made strong’.

The causative suffix nic is deleted before an ārdhadātuka affix that does not have the initial augment it (A 6.4.51 [450]). To account for Vedic items such as vardhantu, equivalent in meaning to vardhayantu but without the causative suffix of the latter, śap is allowed to be an ārdhadātuka affix so far as Vedic usage is concerned.

Pāṇini operates with ten abstract L-affixes (lakārāh'is'),
replaced by verb endings or participial affixes (see 232-233, 262). These replacements are sārvadhātuka or ārdhadhātuka elements (see 63). They also belong to one of two other classes by

A 1.4.99: लः परस्मैपदम् (laḥ parasmaipadam)

A 1.4.100: तङ्गनावात्मनेपदम् (taṅnāv ātmanepadam)

The endings tā ātām jha thās āthām dhvam iṣ vahi mahiṇ (denoted by the abbreviation taṅ) and the participial affixes śānac, kānac (taṅnāu) are called ātmanepada. Other replacements of any L-affix (laḥ), including the endings tip, tas jhi sip thas tha mip vas mas, are called parasmaipada. The eighteen basic verb endings that replace L-affixes are thus divided into two major groups: nine parasmaipada and nine ātmanepada endings.

Each of these groups is subdivided into three triplets, as shown in Figure A (p. 42). According to

A 1.4.101: तिन्द्रग्रीणि त्रीणि प्रथममध्यमोत्तमाः (tiṇas trīṇi trīṇi prathamamadhyanottamāḥ)

the basic endings tip through mahiṇ (tiṇaḥ), taken three by three (trīṇi trīṇi), are called prathama, madhyama, uttama, so that members of respective triplets have these class names. In addition, these endings (tāṇi) taken singly (ekaśaḥ) within each triplet have the class names ekavacana, dvivacana, and bahuvacana respectively:

A 1.4.102: ताण्येकवचनद्विवचनबहुवचनान्येयकाः (tāṇy ekavacanadvivacanabahuvacanāny ekaśaḥ)

For example, tip tas jhi make up the prathama triplet of the parasmaipada group of basic endings, and these affixes are respectively called ekavacana, dvivacana, bahuvacana. On rules concerning members of the classes noted, see 138-143, 234.

Verb endings (see 64 with Figure A) also (ca) have the class name vibhakti, by

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Pāṇini

FIGURE A: BASIC VERB ENDINGS (64):

<table>
<thead>
<tr>
<th>परस्परपदम् (parasmaipadam)</th>
<th>प्रथमः (prathamah)</th>
<th>मध्यमः (madhyamaḥ)</th>
<th>उत्तमः (uttamaḥ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>तिप् (tip)</td>
<td>तिप् (tip)</td>
<td>तिप् (tip)</td>
<td></td>
</tr>
<tr>
<td>तस् (tas)</td>
<td>थस् (thas)</td>
<td>वस् (vas)</td>
<td></td>
</tr>
<tr>
<td>झि (jhi)</td>
<td>थ (tha)</td>
<td>मस् (mas)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>आतमनेपदम (ātmanepadam)</th>
<th>प्रथमः (prathamah)</th>
<th>मध्यमः (madhyamaḥ)</th>
<th>उत्तमः (uttamaḥ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ता (ta)</td>
<td>थास् (thās)</td>
<td>इत् (it)</td>
<td></td>
</tr>
<tr>
<td>आताम् (ātām)</td>
<td>आथाम् (āthām)</td>
<td>वाहि (vahi)</td>
<td></td>
</tr>
<tr>
<td>झ (jha)</td>
<td>ध्वम् (dhvam)</td>
<td>महिनिः (mahinī)</td>
<td></td>
</tr>
</tbody>
</table>
Consequently, the final consonants of *tas, thas, vas, mas, ātām, dhvam* are not classed as markers (*it*: A 1.3.4 (80)), so that they are not subject to immediate deletion (A 1.3.9 (81)). See also 67, 71.

An affix (*pratyaya*: A 3.1.1 (15)) introduced by a sūtra of the section headed by

A 3.1.91: धातोः (dhātoḥ)
occurs with a verb (dhātoḥ: A 1.3.1, 3.1.32 (47)). According to

A 3.1.93: कृदतिधः (kṛdatīḍha)
any affix provided for in this section of rules, other than a verb ending (atiḥ), is called kṛt. The set of kṛt affixes includes several subgroups. Affixes introduced by sūtras of the section beginning with

A 3.1.95: कृत्याः (kṛtyāḥ)
are called kṛtya. The participial suffixes *satṛ* and *sānac* (A 3.2.124-126 (262)) have the class name *sat* by

A 3.2.127: तौ सतः (tau sat)
In addition, according to

A 1.1.26: क्तक्तवतूनिष्ठाः (ktaktavatū niṣṭhā)
the suffixes *kta* and *ktavatu* are called niṣṭhā.

Kṛt affixes in general serve to form derived nominal bases (*prātipadika*: A 1.2.46 (48)). These derivatives usually denote agents (A 3.4.67 (248)) and involve no specific time reference. For example, *kartṛ* and *kāraka*, with the kṛt suffixes *tṛc* and *pvul* (A 3.1.133), can refer to anyone that does or makes something at any time. Particular kṛt affixes, however, form derivatives of different kinds. Derived bases with kṛtya affixes generally denote objects of acts or abstract acts themselves (A 3.4.70). For example, *kartavya*, with the suffix *tavya* (A 3.1.96 (121)), is used with reference to
something that is to be done or made. In addition, niṣṭhā suffixes are introduced if an act is referred to the past (A 3.2.102 [294]); e.g., kṛta (nom. sg. masc. kṛtaḥ) 'done, made', kṛtavat (nom. sg. masc. kṛtavān) 'one who has done, made something'. Further, suffixes called sat can replace the L-affix ūṛ, which is introduced when an act is referred to the future (A 3.3.14 [262]).

A major group of post-nominal affixes is made up of nominal endings. There are twenty-one basic endings (A 4.1.2 [241]), distributed among seven triplets as shown in Figure 8 (p. 45). Pāṇini uses the terms prathamā 'first', dvitiyā 'second', tṛtiyā 'third', caturthi 'fourth', pañcamī 'fifth', sāṣṭrī 'sixth', saptamī 'seventh' to refer to endings of these triplets (see 240), but he does not introduce these terms by samjñāsūtras of the Aṣṭādhyāyī. It is reasonable to accept that Pāṇini took over these terms from an earlier grammatical tradition and that they were so well known that he could assume students of his grammar would understand them. By

A 1.4.103: सुपः (supah)

the first, second, and third endings in each triplet of nominal endings (supah[nom.pl.]) are called ekavacana, dvivacana, and bahuvacana, respectively, just as are members of triplets of verb endings (A 1.4.102 [64]). Moreover, nominal endings also have the class name vibhakti by A 1.4.104 (65). Hence, the final consonants of endings such as jas, am, sas are not classed as markers, so that they are not immediately deleted (A 1.3.4, 9 [80-81]).

Nominal vibhaktis are also associated with particular operations. For example, before such elements the final sounds of bases in the ordered set that begins with tyad 'that' are replaced by -a (A 7.2.102 [476]): tyad-am > tyaa-am > tya-am > tyaam (acc. sg. masc.).

A nominal ending of the first triplet used in addressing someone (sambodhane: A 2.3.47 [240]) has a special status.
<table>
<thead>
<tr>
<th>प्रथमम्</th>
<th>द्वितीयम्</th>
<th>तृतीयम्</th>
<th>चतुर्थीम्</th>
<th>पञ्चमी</th>
<th>षष्ठी</th>
<th>षष्ठीम्</th>
<th>सप्तमी</th>
</tr>
</thead>
<tbody>
<tr>
<td>सु</td>
<td>आ०</td>
<td>ठा</td>
<td>ठे</td>
<td>डसि</td>
<td>डस्</td>
<td>डि</td>
<td>डि</td>
</tr>
<tr>
<td>prathamā</td>
<td>dvitiyā</td>
<td>trtiyā</td>
<td>caturthi</td>
<td>pañcamī</td>
<td>saṣṭhī</td>
<td>saptami</td>
<td></td>
</tr>
</tbody>
</table>
Such an ending (sā ‘that one’) is called āmantrita, and the ekavacana ending of this triplet so used has the class name sambuddhi:

A 2.3.48: सामन्त्रितम् (sāmanritam)

A 2.3.49: एकवचनं सम्बुद्धिः (ekavacanaṁ sambuddhiḥ)

Items that terminate with an āmantrita are associated with several accentual properties. For example, the first vowel of such an item is high-pitched in utterance-initial position (A 6.1.198 [509]), but this does not result in the lack of a high-pitched vowel in a following verb form (A 8.1.72 [618]). Moreover, if an āmantrita occurs elsewhere than at the beginning of an utterance it has no high-pitched vowel (A 8.1.19 [615]). A sambuddhi ending is connected with other kinds of operations. For example, the nadi elements -ī, -ū (see 56) are replaced by short -ī, -ū before a sambuddhi ending, which is itself deleted after e, o, and short vowels (A 6.1.69 [467]): kumāri, brahmābandhu, deva ‘god, lord’. A sambuddhi ending also conditions the substitution of the guna vowels (A 1.1.2 [9]) -e, -o for -ī, -ū that do not result from shortening (A 7.3.108 [484]); e.g., agne ‘fire, Agni’ (< agne-s < agni-s), vāyo ‘wind, Vāyu’.

Another subgroup of nominal endings is called sarvanāmasthāna. According to

A 1.1.42: शि सर्वनामस्ताथ नम् (śi sarvanāmasthānam)

śi, which replaces jas and šas after neuter stems (A 7.1.20 [493]), has the name sarvanāmasthāna, and by

A 1.1.43: सुहन्तपुण्यकस्याः (suḥ anapumśakasya)

the same class name is given to su au jas am auṭ (suṭ), provided the ending in question is linked with a non-neuter (anapumśakasya) nominal.

Sarvanāmasthāna endings are contexts for several operations. Before such an ending, the augment num is added
after the last vowel of a neuter stem that ends in a vowel, a non-nasal stop, or a spirant (A 7.1.72 [488]); e.g., vana-i > vanan-i, chandas-i > chandans-i. In addition, before a sarvanāmasthāna ending other than one called sambuddhi (A 2.3.49 [68]), the penultimate vowel of a stem in -n is replaced by a long vowel (A 6.4.8 [469]), as is also a vowel preceding the n of a stem-final cluster -ns (A 6.4.10): vanan-i > vanāni (nom.-acc.pl.) 'forests', chandans-i > chandāns-i > chandāmsi (A 8.3.24 [559]) 'meters'. Similarly, the penultimate -a- of rājan 'king' is replaced by -ā- when this base is followed by a sarvanāmasthāna ending other than a sambuddhi: rājā ([nom. sg.] < rājān < rājan < rājan-s ), rājānu ([nom.-acc. du.] < rājan-au), rājānam ([acc. sg.] < rājan-am), rājānah ([nom. pl.] < rājan-as), but vocative singular rājan (< rājan-s).

There is a large section of sūtras that begins with the heading

A 4.1.76: tadbhitāḥ (taddhitāḥ)

and extends to the end of the fifth adhyāya. Affixes (pratyāya: A 3.1.1 [15]) introduced by rules of this section are called taddhita. They occur with both nominal and verbal elements, including padas (A 1.4.14 [49]). See Section 2.4.2.4.

Nominal and verbal endings are called vibhakti (A 1.4.104 [65, 67]), but the vibhakti class does not consist of these alone. It also includes a group of taddhita affixes (A 4.1.76 [70]). According to

A 5.3.1: prāmdisho vibhaktitāḥ (prāg diśo vibhaktitāḥ)
an affix introduced by a subsequent sūtra, prior to (prāk ) A 5.3.27: dibhādhyābhāyāḥ (349), the first term of which contains diś- (abl.sg. diśaḥ), has the class name vibhakti. Operations linked to other vibhaktis are associated with these also. For example, the -d of tad 'that' is replaced by -a not only before an ending such as am (acc.sg.) but also before a taddhita suffix such as tas (A 5.3.7): tam (< ta-am < taa-am < tad-am),
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tatas 'from that, thence' (< taa-tas < tad-tas).

Two groups of taddhita affixes (A 4.1.76 [70]) are called
tadrāja. According to

A 4.1.174: te tadrāja:] (te tadrājāh)
those (te) affixes introduced by preceding sūtras, from A
4.1.168 (335) on, have this class name, and by

A 5.3.119: Ṛyādayastadrāja:] (ṛyādayas tadrājāh)
a group of affixes, beginning with ṛya (ṛyādayah: A 5.3.112
[356]), introduced in previous sūtras are called tadrāja. A
tadrāja affix is deleted in non-feminine plural forms (A 2.4.62
[465]) such as pañcālāḥ 'Pañcālas', lohadhvajāḥ 'members of
the red-flag gang'; the affixes añ and ṛya appear in the
singular forms pañcālāḥ, lauhadhvajāḥ.

Another subset of taddhita affixes consists of the
comparative suffix tarap and the superlative suffix tamap (A
5.3.55-58 [356]). By

A 1.1.22: tarpitapa gha:] (tarpitapau ghaḥ)
these have the class name gha. Several operations are con-
ected with gha affixes. For example, the suffix añu is
obligatorily introduced after certain derivates with these
elements (A 5.4.11 [357]), as in pacatitarām '... cooks quite
well', pacatitamām '... cooks exceedingly well', uccaistārām
'quite high, higher', uccaistāmām 'exceedingly high, highest'.

An affix that consists of a single sound (ekā) is called
aprktā:

A 1.2.41: āprkta ekā pratyayah:] (aprktā ekāl pratyayāh)
For example, the endings su, t (< ti), s (< si) of kumārī-s,
ajā-s, ahan-s, ahan-t are aprktā elements, subject to deletion
(A 6.1.68 [404]): kumārī (nom. sg.) 'girl', ajā 'she goat', ahan
(2,3 sg. Impfct.) 'killed'.

An item called pada by A 1.4.14 (49) terminates in a
nominal or verbal ending. This is a syntactic word, associated
with certain operations. In particular, specified replacements
apply to pada-final sounds; for example, non-nasal stops and spirants are replaced by voiced unaspirated stops (A 8.2.39 [546]), and \(-\) substitutes for \(-s\) (A 8.2.66 [551]). Such operations, however, do not affect only segments of items that terminate in endings. Some apply also to sounds of elements that precede particular affixes. Hence, Pāṇini assigns to the pada class items followed by specified affixes. According to

A 1.4.17: स्वादिष्टस्वार्तनामस्थाने (svādiṣṭ
asarvanāmaṣṭhāne)
an item is called pada if it occurs before su and other (svādiṣṭu) affixes introduced in sūtras of the fourth and fifth adhyāyas, starting with A 4.1.2 (241), provided the suffix in question does not belong to the sarvanāmaṣṭhana set (asarvanāmaṣṭhāne: A 1.1.42-43 [69]). For example, saṣ- in saṣ-bhīṣ (Instr. pl.) is a pada, so that its \(-s\) is replaced by \(-d\): saḍbhīṣ 'six'. Similarly, the \(-s\) of chandas- in chandas-bhīṣ is a pada-final sound, so that it is replaced by \(-R: chandas-bhīṣ > chandar-bhīṣ > chandāũ-bhīṣ (A 6.1.114 [525]) > chandobhīṣ (A 6.1.87 [528]) 'meters'.

Nevertheless, not all suffixes referred to in A 1.4.17 condition operations that regularly apply to pada-final sounds. Moreover, items are subject to different operations when they precede certain affixes of this group. Hence, Pāṇini recognizes another class. According to

A 1.4.18: याचि भम् (yaci bham)
an item followed by \(y\)- or the initial vowel (yaci) of an affix referred to in the preceding sūtra is called bha instead of pada. For example, chandas- in chandas-ā, with the ending ṭā (Instr. sg.), is a bha element, so that its \(-s\) is not subject to replacement by \(-\)r: chandasā. Similarly, the \(-t\) of bhavat- 'you' in bhavataḥ is not replaced by \(-d\) before ṭā.

On the other hand, bhavadīya 'your' does have bhavad-; with \(-d\) before iya (A 4.2.115, 7.1.2 [344, 509]), although this suffix is one of those referred to in A 1.4.17 and does begin
with a vowel. By

A 1.4.16: सिति चा (siti ca)
an item followed by an affix marked with s (siti) also (ca) is
called pada. Contrary to A 1.4.18, then, bhavat- in bhavat-iya
is a pada, so that its -t is replaced by -d. The affix chas is
marked with s. In addition,

A 1.4.15: न: क्ये (nāh kye)
provides that an item which ends in -n (nāh) has the class
name pada if it occurs before an element kya(kye). Since the
affixes in question, such as kya and kyañi (A. 3.1.8,10,11,19 [283]),
are introduced to padas in the first place, A 1.4.15 is, in
effect, a restrictive rule, whereby only items in -n are
classed as padas before kya. Thus, the -n of rājan- in
rājan-ya is deleted (A 8.2.7 [539]): rājan-ya > rāja-ya >
rājl-ya (A 7.4.33 [485]) 'wish a king for oneself'; but the final
consonant of namas- in namas-ya 'do obeisance' is not
replaced by -R (A 8.2.66 [551]).

1.1.2.1.2c. The pragṛghya class.

Pāṇini operates with a class of elements called pragṛghya.
Although operations associated with these items are
phonological, the defining characteristics of members of the
pragṛghya set are not strictly phonological. Thus, according to

A 1.1.11: इवूढेद्विविविन्प्रग्रह्याम (idūded dvivacanan
pragṛhyam)
a dvivacana affix (A 1.4.102-103 [64, 67]) that ends in -i, -ū,
or -e (idūdet) has the class name pragṛhya. For example, the
-i, -ū, -e of the nominative-accusative duals agni (< agni-au)
'fires', vāyu (< vāyu-au) 'winds', māle (< mālā-1 < mālā-au)
'garlands', and the ending āte (3du. mid.) of āsāte 'are seated'
are pragṛhya elements. By

A 1.1.12: अदसो मात् (adaso māt)
a vowel /ū e that follows the m (māt) of a form of adas 'that' (adasah) is called pragrhya. The -ī of ami (nom. pl.) < ame < ade < ada-ī < ada-as < adaas < adas-as) and the -ū of amū (nom.-acc. du.) < adau < ada-au < adaa-au < adas-au are thereby pragrhya elements.

Of the other samjñāsūtras that concern the pragrhya class, it will suffice to consider here the following:

A 1.1.14: निपात एकाजनाद् (nipāta ekājanān)

A 1.1.15: ओत् (ot)

A 1.1.16: सम्बुध्रौ शाकल्यस्योतावर्णै (sambuddhau sākalyasyetāv anārṣe)

A 1.1.19: ईदूतूत च सप्तम्यार्थरै (idūtāu ca saptamyarthe)

A particle (nipātaḥ: ss) consisting of a single vowel (ekāc), with the exception of ā marked with r (anān), is pragrhyā, as is a particle that ends in -ō (ot). ā 'slightly', the preverb ā, and the particle ā 'up to' are excluded from the pragrhyā class, but ā that is used when one remembers something is included in this group, as is a particle such as aho 'oh'. According to Śākalya (sākalyasya [matena]), an -ō (ot) that is conditioned by a following sambuddhi ending (sambuddhau: A 2.3.49 [68]) is pragrhyā when it occurs before the citation particle iti (itau), provided this particle is not included in an original Vedic text (anārṣe); that is, the -ō of an item such as vāyo is treated as a pragrhyā element in Śākalya's analyzed text (padapātha) corresponding to the continuously recited text (samhitāpātha) of the Rigveda, and in Śākalya's padapātha such an item is followed by iti. Finally, elements in -ī, -ū (idūtāu) are pragrhyā if they are used of themselves in the sense of locatives (saptamyarthe); e.g., gaurī (loc.sg.) 'she buffalo' is a pragrhyā item.

As can be seen from the above, Pāṇini's pragrhyā class consists mostly of grammatical elements, but the class is associated with phonological operations: A pragrhyā element
remains in its original form before vowels, exempt from substitutions that would usually apply in such contexts (A 6.1.125 [535]).

1.1.2.1.2d. Classes whose members are not linguistic units.

Pāṇini also operates with classes whose members are not linguistic items. To describe major aspects of Sanskrit syntax, he recognizes six categories to which are assigned direct participants in acts (kāraka), under conditions that are both semantic and syntactic. A given kāraka can thereby have one of the following class names: apādāṇa, sampradāṇa, karaṇa, adhikaraṇa, karman, kartṛ; see 214.

To provide for the derivation of nominal bases meaning 'child, offspring, descendant of', Pāṇini operates with three categories of descendants. According to

A 4.1.162: अपत्यमपौत्रप्रभृति गोत्रम (apatyaṃ pautraprabhṛti gotram)

a descendant (apatyaṃ ‘offspring, descendant’) of a person P, starting with P’s grandson (pautraprabhṛti), is called gotra. However, not every such descendant is a gotra. Thus, for example,

A 4.1.163: जीवति तु बंश्ये युवाः (jīvati tu vamśye yuvā)

A 4.1.164: भ्रातरि च ज्यायसि (bhrātari ca jyāyasī)

provide, contrary to A 4.1.162 (tu ‘but’), that a descendant of a P from his grandson on has the class name yuvan instead of gotra if an elder representing the line (vamśye) is still living (jīvati) or if a descendant’s older brother (bhrātari jyāyasī) is alive to represent the line in the absence of another elder. These sūtras concern descendants from the third generation on. A direct descendant of a P is referred to by apatya, a term
known from ordinary Sanskrit. To illustrate the above, let us consider the line founded by Garga. A son of Garga bears the patronymic ġṛgni (< ġṛga-as-/: A 4.1.95 [332]). Descendants of Garga from his grandsons on have either the gotra patronymic ġṛgṛya (A 4.1.105 [335]) or the yuvan patronymic ġṛgṛyāyana (A 4.1.101), and the male descendants collectively are called ġṛgṛh (A 2.4.64 [465]). The oldest grandson of Garga who remains alive as a representative of the line is called ġṛgṛya; his sons, his brothers, and their sons are called ġṛgṛyāyana. Upon the death of the gotra descendant in question, the next oldest brother is consecrated as representative of the line, so that he takes on the gotra patronymic ġṛgṛya, and so on.

1.1.2.1.2e. Terms for zero.

Panini operates with zero and recognizes particular zero replacements that have different effects. According to

A 1.1.60: adarśanam lopah (adarśanam not being perceived; that is, not occurring) is called lopa, and by

A 1.1.61: pratyayasya lukṣṭulupah (pratyayasya lukṣṭulupah)

the terms luk, slu, and lуп designate in particular zero replacements for whole affixes (pratyayasya: A 3.1.1 [15]). For example, the ending su is deleted after the consonant of the base gomatu 'one who has many cows' in deriving the nominative singular masculine form gomān: gomatu-s > gomat (A 6.1.68 [404]) > gomāt (A 6.4.14 [469]) > gomānt (A 7.1.70 [488]) > gomān (A 8.2.23 [542]). As can be seen, certain operations apply even after su has been dropped (A 1.1.62 [103]). gomat- as a component in the compound gomatpriya 'a person to whom someone with cows is dear' also derives from gomat-su, but operations that allow deriving gomān should not
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apply here. They do not, because the zero that replaces the ending now is denoted by luk (A 2.4.71 [278]), so that any operation which would apply to the stem of the affix su does not apply to it after the ending is deleted (A 1.1.63 [103]). Similarly, the -d of tad 'that' (nom.-acc.nt.sg. < tad-s, tad-am: A 7.1.23 [495]) is not replaced by -a as though the stem were followed by an ending (A 7.2.102 [476]): Pāṇini lets zero denoted by luk substitute for su and am after a neuter stem. An affix is also deleted in deriving mārṣṭi 'wipes, cleans' from mrj-ti: mrj-ti > mrj-a-ti (affix šap: A 3.1.68 [157]) > mrj-ti (A 2.4.72 [158]) > mārj-ti (A 7.2.114 [415])... mārṣṭi. The ending tip conditions vṛddhi substitution in the stem mrj-, but the ending tas does not (A 1.2.4 [513]): mṛṣṭaḥ 'they two are wiping, cleaning'. Now, if the operation that could be conditioned by šap were allowed to apply even after this suffix is dropped, one would derive *mārṣṭaḥ instead of mṛṣṭaḥ. The zero that replaces this affix, however, is denoted by luk, so that the operation that would apply to the stem does not take effect. Once the suffix šap has been replaced by the particular zero denoted by šlu (A 2.4.75 [158]), doubling applies to a verbal base (A 6.1.10 [382]); e.g., juhoti 'offers oblations' (<... hu-ti).

1.1.2.1.2f. Markers and abbreviatory terms.

Pāṇini's grammar was originally transmitted orally, so that Pāṇini could not use certain devices available in writing or printing. In particular, although he recognized the need to use markers for various purposes, he could not use visual devices such as superscript and subscript symbols. Thus, in the present work markers are printed in bold face Italic, and Sanskrit items to which these are appended appear in simple Italic type. It is obviously impossible to distinguish elements in such a manner when a text is transmitted orally. Instead, markers --- which Pāṇini calls it and Pāṇiniyas also call
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Anubandha --- are recited as parts of linguistic units. A group of samjñasūtras specifies what parts of items have the class name \( it \); that is, what segments are markers:

A 1.3.2: उपदेशेःजनुनासिक हि (upadeśe'j anunāsika it)

A 1.3.3: हलन्त्यमा (haḻ antyam)

A 1.3.4: न विभक्तो तुस्मा: (na vibhaktau tusmāḥ)

A 1.3.5: आविर्भितं हव: (ādir niṭudavaḥ)

A 1.3.6: ष: प्रत्ययस्या (ṣaḥ pratyayasya)

A 1.3.7: चुट्ट (cuṭṭ)

A 1.3.8: लशक्रवत्तिते (laśaku ataddhite)

These sūtras concern items at a stage before they have been subjected to contextually conditioned operations ('upadeśe'in teaching'). Six of the sūtras provide that particular segments which are parts of items at this stage are called \( it \), as follows:

A 1.3.2: a nasalized (anunāsikaḥ: A 1.1.8 [39]) vowel (ac);

A 1.3.3: the final (antyam) segment / of haḻ in the aksarasamāmnāya (Section 1.2, figure C); a final consonant (haḻ);

A 1.3.5: initial (ādiḥ) ṇi, ṭu, ṭu (niṭudavaḥ);

A 1.3.6: ṣ that is the initial (ādiḥ) of an affix (pratyayasya: A 3.1.1 [15]);

A 1.3.7: affix-initial palatal and retroflex stops (cuṭṭ);

A 1.3.8: affix-initial /, ṣ, and velar stops (laśaku), except in a taddhita (ataddhite: A 4.1.76 [70]).

By A 1.3.3, any final consonant would be classed as a marker, but this has to be disallowed in particular instances: A 1.3.4 provides that dental stops, an ṣ, and m (tusmāḥ) in a vibhakti (vibhaktau: A 1.4.104, 5.3.1 [65, 67, 71]) are not (na) called \( it \). See 81.

Although sounds classed as markers are indeed recited as parts of items when such linguistic units are first introduced, the elements actually used in the language described lack any
such markers. Accordingly, in

**A 1.3.9: तस्य लोपः। (tasya lopah)**

Panini provides that a segment to which the class name *it* has been given in a preceding sutra (*tasya* 'in place' of that') is unconditionally replaced by zero (*lopaḥ: A 1.1.60 [79]*). Thus, the markers of निद्राशा, तुवेर, दुपासः, शा, जास, ता, लयाः, शास, क्ता, क्तावतु are unconditionally dropped, leaving ध्रश 'dare', वेप 'tremble, shake', पाक 'cook, bake', and the affixes अ, आ, या, अस, ता, तवत. The final consonants of vibhaktis such as अत (abl.sg.), तस, अम (see 65, 67) are not classed as *it*, so that they are not deleted.

Markers are used for several purposes. Some serve to show that items belong to certain classes. For example, affixes such as साप and स्यान are marked with *ś* to show that they belong to the sārvadhātuka class (*A 3.4.113 [63]*). More generally, markers serve to show that items are connected with particular operations, including the assignment of elements to classes. For example, before an affix marked with *ñ* or *n* the final vowel of a stem is replaced by a vṛddhi vowel (*A 7.2.115 [417]*); *-i* and *-u* of ghi bases are replaced by *-e* and *-o* before endings that are marked with *ñ* (*A 7.3.111, cf. 57*); feminine stems in final *-i* and *-u* vowels are optionally assigned to the nādi class if they occur before endings marked with *ñ* (*A 1.4.6 [56]*).

A marker may also be attached to an element in order to allow referring to a series of items by means of what they have in common (सामन्याग्रहनाथरथम). For example, there are three feminine affixes *ि: निन, निप, निः. The marker *ि* is attached to all of these in order to allow referring to them by means of the cover term *नि* (*A 4.1.1 [105]*)]. In some instances, a marker is appended to an item so that such a common term of reference not be eliminated (सामन्याग्रहनाविग्हात्तरथम). Consider again the three feminine affixes given above. The first has the final marker *ि* to show that the first vowel of a
base that takes this affix is high-pitched (A 5.1.197 [600]). The second affix is marked with \( \rho \) to show that it is low-pitched (A 3.1.4 [592]). The marker \( \varsigma \) of \( ni\varsigma \) serves no such purpose. However, if this affix were given simply as \( ni \), the term \( ni \) would be understood to refer to this item alone and not also to \( nin \) and \( nip \). Marking \( ni\varsigma \) with \( \varsigma \) preserves the common term of reference \( ni \), used to designate all three affixes.

In addition, a marker may be appended to an element to distinguish it from a homophonous element (viṣeṣaṇārtham). For example, there are four nominal endings as: \( jas \) (nom. pl.), \( šas \) (acc. pl.), \( šasi \) (abl. sg.), \( šas \) (gen. sg.). The last two are marked with \( i \) for reasons given above. It is also necessary to distinguish ablative and genitive as. After a stem in \(-a\), the ablative ending is replaced by \( āt \) (A 7.1.12 [492]) or, if the stem is pronominal, by \( smāt \) (A 7.1.15), but the genitive ending is replaced by \( sya \) after any presupersfixal base in \(-a\) (A 7.1.12). In order to allow referring to these endings separately, then, \( i \) is attached to \( šasi \) as a distinguishing marker. Similarly, nominative and accusative \( as \) must be distinguished. Only \( jas \) is replaced by \( śi \) (A 7.1.17 [492]), and only \( šas \) has its \(-s\) replaced by \(-n\) (A 6.1.103 [532]). The markers \( j \) and \( ś \) serve to distinguish these endings.

Markers also serve to form abbreviations that refer to members of ordered groups. The first (\( \dot{ā}ḍōḥ \)) component of such an abbreviation is an item \( i \) of a group. This occurs with \( (saha) \) a marker (\( \dot{it}ā \)) that is the final (\( antyena \)) sound of an item or of a subgroup in the aṅkṣarasamāmnāya (Section 1.2, figure C). According to

A 1.1.71: आदिरन्त्येन सहेत्ता \( (ādir antyena sahēta) \)
an abbreviatory term \( iM \) thus formed denotes the item \( i \) and all items that follow, up to the marker \( M \). For example, \( ti(\dot{t}īp) \) together with the marker \( n \) of \( mahiṇ \) (see 64 with figure A) forms the abbreviation \( tīn \), which refers to verb endings (A 1.4.14, 3.4.113, 1.4.101 [49, 63, 64]); \( taṇ \), composed of \( ta \) and the
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n of mahin, refers to a subgroup of verb endings, called ātmanepada (A 1.4.100 [64]); sup, formed with the ending su and the marker p of sup (see 67 with figure B), denotes nominal endings (A 1.4.14, 103 [49, 67]); sut refers to the endings su au jas am au (A 1.1.43 [69]). Similarly, abbreviations called pratyāhāra by Pāṇinīyas are formed with sounds and markers of Pāṇini’s akṣarasamāmnāya. For example, al denotes all the sounds listed, and ac, hal respectively refer to the vowels and consonants given in this catalog. Pāṇini uses forty-one such abbreviations (see 129).

Pāṇini also lets individual sounds serve as class names. According to

A 1.1.69: अणुदित्सवर्णस्य चापत्त्यः (aṇ udit savarnasya cāpratyayāḥ)
a vowel or semivowel listed in the akṣarasamāmnāya (aṇ) or a sound with the marker u (udit) denotes not merely itself (A 1.1.68 [29]) but also (ca) any sound homogeneous with it (savarnasya [smṝṇī]: A 1.1.9 [33]), provided the sound in question is not an affix (apratyayāḥ: A 3.1.1 [15]). Thus, by A 1.1.71 (83), the abbreviation ac denotes in the first instance a /eʊ/ and so on of Pāṇini’s akṣarasamāmnāya, and by A 1.1.69 each of these vowels denotes a set of sounds — eighteen a-vowels and so on — so that ac indirectly refers to all vowels. Pāṇini uses ku cu tu tu pu to refer to sets of stops (see A 1.3.7–8 [80], cf. 33, 43).

According to A 1.1.68 (29), an item that is not a technical term of grammar refers to itself. The vowels listed in Pāṇini’s sound catalog are class names by A 1.1.69 (84), so that they are not self-referencing. On the other hand, ā /ʊ/ are not listed in the akṣarasamāmnāya, so that they are not class names by A 1.1.69. Yet it is necessary to refer to sets of ā-vowels, i-vowels, and so on. For example, A 1.1.1 (9) should provide that any ā-vowel, regardless of its pitch properties, is called vṛddhi, and A 1.1.11 (76) should let the class name
pragṛhya apply to dual endings that terminate in any i- or ū-vowel. It is also necessary to refer to sets of short a-vowels, i-vowels, and so on. For example, ina, at, and sya should replace ī, ē, and ēs only after stems in ā (A 7.1.12 [492]). The general terms hrasva, dirgha (A 1.2.27 [35]) are not sufficient. In order to refer to such sets of short and long vowels, then, Pāṇini uses special terms of the type Vt, in which a given vowel, short or long, is followed by t. According to

A 1.1.70: तपरस्तत्कालस्या (taparas tatkālasya)
a vowel V followed by t (taparat) is a name for any vowel with the duration of V (tatkālasya).

Remarks.

1. Vowel markers were originally nasalized (A 1.3.2 [80]), but this pronunciation was given up, and Pāṇini’s work as handed down is recited without the nasalization characteristic of these elements. The Kāśikā on A 1.3.2 (1.51): प्रतिज्ज्ञानुनासिक्याय: पाणिनीय: ल. cf. VPP 121 [p. 42]) notes that Pāṇinīyas recognize the nasality of vowel markers by convention (pratijñānunāsikyāḥ). That is, one accepts that a given vowel was originally nasalized as a marker according to what authoritative teachers have said earlier. See also 116. It is also worth emphasizing that the use of markers without doubt predates Pāṇini. In this connection, note that, although Pāṇini lists the endings au and ī, with a marker t (A 4.1.2 [241], see also 67 and figure B), among his basic nominal endings, he also knows of and refers to au and ā marked with ni (auṅī, āṅī: A 7.1.18, 7.3.105, 120 [493, 483, 497]). As commentators have noted, this is best understood to reflect earlier traditions.

2. The vowel of a term such as ku (A 1.1.69 [84]) is a
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marker, but the vowel of a term such as *ta in taparah* (A 1.1.70 [85]) is not. A term of the type Ca, in which a follows a consonant, is conventionally used to refer to a consonant (cf. TPr. 1.21: अकारोऽयुंजनानाम्| akāro vyāñjanānām|, so that *ta* refers to *t*. Pāṇini also uses terms of the type Ci to refer to consonants (e.g., *tī*: A 3.4.107 [401]).

3. As I pointed out earlier (see 82), *ni* is a cover term used to refer to several feminine affixes /i/. Similarly, *āp* is a cover term that refers to feminine affixes /ā/ marked with *p*: cāp, tāp, and gāp. Pāṇini also uses another kind of cover term, connected with substitutions. Thus, the segments *yu*, *vu* of affixes such as *lyu*, *lyut*, *nvul*, *vuṅ* are replaced respectively by *ana*, *aka* when they follow stems (A 7.1.1 [509]). Similarly, affix-initial *ph*, *gh*, *kh*, *ch*, *gh* respectively are replaced by *āyan*, *ey*, *in*, *iy*, *iy* (A 7.1.2).

1.1.2.2. Metarules.

The Aṣṭādhyāyī contains metarules (*paribhāṣā*), sūtras that serve to interpret other rules in this text. Some paribhāṣās come into play to interpret case forms in contexts such that a Sanskrit speaker could not be expected to arrive at a single interpretation solely on the basis of his native command of the language. Metarules then specify what one is to understand. There is also a metarule that serves to relate in a particular order items referred to in sūtras. Other paribhāṣās specify that certain elements out of a group of possible replacements substitute for particular items or that certain substitutes are alone subject to particular replacements. Still other metarules provide for extending to certain elements operations and properties which would otherwise not pertain to them.

A genitive can be used in Sanskrit to designate a relation that holds between the meanings of two nominals (A 2.3.50
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What particular relation is involved can be known from context, from the meanings of the nominals used. For example, *yasya* 'of which' in A 1.1.73 (61) obviously refers to an item part of which is a vrddhi vowel, so that the relation involved here is that of part and whole (avayavāvayavībhāvasambandha). On the other hand, the context in A 1.1.45 (38) does not suffice to show what relation holds between the referents of the genitive *yanaḥ* and the nominative *ik*. A metarule serves to interpret such ambiguous genitives. By

A 1.1.49: बष्ठी स्थानेयोग्या (*saṣṭhi sthāneyogā*)

a genitive (*saṣṭhi* 'sixth-triplet ending' [67]) not susceptible of a single interpretation in its context is understood to designate one relation (*yoga*) in particular: *in place of* (*sthāneyogā*). That is, instead of using *sthāne* 'in place' repeatedly with genitive forms in substitution rules, Pāṇini lets this metarule come into play, so that one understands the particular relation in question and can, in effect, supply *sthāne* in construction with a genitive. Thus, the genitive singular *yanaḥ* of A 1.1.45 refers to semivowels *y vr / (yan*: A 1.1.71 [83]) that are replaced by *i ur!*

Similarly,

A 1.1.66: तस्मिन्निति निर्दिष्टे पूर्वस्या (*tasminniti
nirdiṣṭe pūrvasya*)

A 1.1.67: तस्माद इत्य उत्तरस्या (*tasmād ity uttaraśya*)

serve to interpret locative and ablative forms in contexts where a Sanskrit speaker could not otherwise interpret such terms unambiguously. According to A 1.1.66, the referent of a term *X*-loc. (*tasminniti nirdiṣṭe*) is understood to be a right context such that something applies to what precedes (*pūrvasya [kāryam]*). By A 1.1.67, the referent of a term *X*-abl. (*tasmād iti [nirdiṣṭe]*) is understood to be a left context: something applies to what follows (*uttarasya [kāryam]*) That is, instead of repeatedly stating *pūrvasya* and *uttarasya*
in sūtras which provide for something to apply to given elements when something follows or precedes, Pāṇini lets these metarules come into play. What applies (kāryam ‘what is to be done’) can be an operation such as augmenting, replacement, or doubling. It can also be the assignment of a class name to given elements. For example, siti (loc.sg.) and svādiṣu (loc.pl.) in A 1.4.16-17 (75) denote affixes such that elements which precede them have the class name pada.

None of these metarules concerns a usage unknown from ordinary Sanskrit, where relational genitive forms occur, locative forms are used to signify loci (A 2.3.36 [240]), and ablative forms are construed with direction words (A 2.3.29 [250]). The metarules merely specify that one of different possible interpretations is to be adopted.

Another metarule,

A 1.3.10: यथासंख्यमनुदेशः समानाम् (yathāsāṅkhyam anudeśaḥ samānām)

concerns sūtras in which terms are used that refer to groups with the same number of elements (samānām). One understands the subsequently mentioned elements to be related in order (yathāsaṅkhyam anudeśaḥ) to those mentioned before. For example, consider again A 1.1.45 (38, 90). The terms ik and yan denote in the first instance the vowels /ur/ and the semivowels /yvrl/. In accordance with A 1.3.10, these are related in order, so that the class name samprasāraṇa is assigned to /ur/ which substitute for /yvrl/ respectively.

Instead of specifying in each instance that a particular element replaces a given substituend, Pāṇini allows his substitution rules to permit various replacements for a single substituend. A metarule governs what particular substitute is then selected. For example, A 7.4.62: कुहोरुपः (383) provides that palatal stops (cuḥ: A 1.1.69 [84]) substitute for velar stops and h (kuhoḥ [sthāne]: A 1.1.49 [90]) in an abhyāsa syllable (A 6.1.4 [52]). The terms kuhoḥ (gen. du.) and cuḥ
denote different numbers of elements: \( k \), \( h \), \( gh \), \( n \), \( h \), and \( ch \), \( jh \), \( \tilde{n} \). Hence, A 1.3.10 (91) cannot serve to relate in order the substituends and replacements. Nor will it do to reword a sūtra like A 7.4.62 to specify that particular sounds replace given sounds, for example, that \( jh \) replaces \( gh \) and \( h \), since this would fail to focus on the generalization that palatal substitution takes effect. The proper replacements are assured by a metarule:

A 1.1.50: स्थानेन न्तरतमः | (sthāneṇ ntaratamaḥ)

provides that, if there is a choice of replacements to occur in place (sthāne) of a substituend, that one occurs which is most similar (antaratamaḥ) to the substituend. Thereby, voiceless unaspirated \( c \) replaces voiceless unaspirated \( k \), voiceless aspirated \( ch \) replaces voiceless aspirated \( kh \), voiced unaspirated \( j \) substitutes for voiced unaspirated \( g \), voiced aspirated \( jh \) substitutes for voiced aspirated \( gh \), and \( jh \) also replaces \( h \), which is voiced and an aspirate.

By the same token, the guṇa vowel (A 1.1.2 (9)) \( a \) and the vṛddhi vowel \( ā \) are selected to replace short or long \( r \)-vowels if substitutes are not specified. In addition, some sūtras provide that \( i \), \( u \) replace \( r \). In all such cases, a vowel \( a ā i ī \ u ū \) (aṃ: A 1.1.71, 69 [83, 84]) that occurs in place of a \( r \)-vowel (uṃ: A 1.1.49 [90]) is automatically followed by \( r \) (raparāḥ), as provided for in

A 1.1.51: उरण् रपरः | (uraṇ raparāḥ)

There are also rules that let a short vowel (ḥrasva: A 1.2.27 [35]) replace another vowel. If the vowels subject to replacement are then \( e \), \( o \), \( a \), \( i \), \( au \) (ecaḥ: A 1.1.71, 69, 49 [83, 84, 90]) and the substitution rules in question do not specify the vowels that replace these, the metarule

A 1.1.48: एच इम्ब्रस्वादेशे | (eca ig ghrasvādeśe)

comes into play: \( i \) and \( u \) (\( ik \)) alone substitute for \( e \), \( o \), \( a \), \( i \), \( au \) if a short vowel is said to replace one of these sounds (ecaḥ ...)
hrasvādeśe). For example, the -o of go 'cow, bull' in citrago is replaced by a short vowel (A 1.2.48 [322]); according to A 1.1.48, the substitute for o is u: citrago > citragu 'someone who has spotted cows'.

Other metarules serve to specify substituends. As I noted in 22, sounds or larger units are subject to replacement. In general, if a substituend genitive (A 1.1.49 [90]) refers to a grammatical unit, either the last (antyasya) or the first (ādeḥ) sound (alāḥ) of the unit is replaced. If an item is subject to substitution when it follows (parasya) another, then its first sound is replaced; otherwise, the last sound of a unit is replaced:

A 1.1.52: अलोक्त्यस्या (alo'ntyasya)

A 1.1.54: आदेष: परस्या (ādeḥ parasya)

Some elements replace whole units. According to

A 1.1.55: अनेकालित्स्यस्या (anekāl śit sarvasya)

a substitute that consists of more than one sound (anekāl) replaces the whole unit (sarvasya) denoted by a substituend genitive, as does an element that consists of one sound and is marked with ś (śit). On the other hand, there are replacements that consist of more than one sound yet substitute only for the final sounds of particular units. Such replacements are marked with ni:

A 1.1.53: हिच्चा (ći ca)

provides that a substitute with this marker (ći) also (ca) occurs in place of the last sound of a unit denoted by a substituend genitive.

For example, A 7.1.84 (471) states a replacement for the presuffixal base div- 'heaven' when this is followed by the ending su: the stem undergoes substitution by au (au). In accordance with A 1.1.52, au replaces the -v of div-: div-s (nom. sg.) > dīau-s > dyaus (A 6.1.77 [125]). Together with A 1.1.54, the substitution rule A 7.2.83 (440) provides that
replaces the initial sound ā- of āna after ās 'be seated': ās-āna > āsina 'seated'. In accordance with A 1.1.55, āt replaces all of īnasi (A 7.1.12 [492]) and īti replaces all of ījas (A 7.1.20 [493]): vrksa-as > vrksa-āt > vrksāt (abl. sg.) 'tree', vana-as > vana-i ... > vanāni (see 69). However, iyān and uvanī are marked with i, so that, by A 1.1.53, they replace only the final sounds -i -I and -u -U of stems (A 6.4.77 [452]): kṣi-a-tī > kṣiyati (3sg. pres. ind.) 'dwell', āp-nu-anti > āpnuvanti (3pl. pres. ind.) 'reach, obtain'. bhrū-au > bhruvau (nom.-acc. du.) 'brows'.

Vowels generally replace other vowels. Hence, in conjunction with A 1.2.27 (35), Pāṇini provides, by

A 1.2.28: अचाः (acaś ca)

that if the terms hrasva, dirgha, pluta are used to refer to substitutes, the vowels in question replace only other vowels (aca [gen. sg.]: A 1.1.49 [90]). For example, according to A 1.2.47 (459), short-vowel substitution applies to a neuter nominal base. The term hrasvaḥ is used in this rule to refer to replacements, so that the operation applies only to a final (A 1.1.52 [95]) vowel, not also to a final consonant of a neuter base; e.g., upaga > upagu 'near the cow'. If hrasva, dirgha, or pluta is not used to denote a substitute, however, a vowel can indeed replace a consonant; for example, au substitutes for the -v of div- (see 95).

Guna and vrddhi vowels (A 1.1.1-2 [9]) commonly, though not exclusively, substitute for short or long i-, u-, ū-, or ā-vowels. In substitution rules, Pāṇini does not repeatedly give the substituends which guna and vrddhi vowels usually replace. Instead, in

A 1.1.3: इको गुणवृद्धि (iko gunavṛddhi)

he provides that if guna, vrddhi (gunavṛddhi [nom. du.]) are used to denote substitutes in sūtras where substituends are not otherwise specified, replacement applies only to the vowels signified by ik (ikaḥ: A 1.1.71, 69, 49 [83, 84, 90]).
For example, A 7.3.84 (127) states that guna substitution applies to a stem before a sārvadhatuka or an ārdhadhatuka affix (A 3.4.113-117 [63]). By virtue of the restriction established in A 1.1.3, this operation applies to the final sounds (A 1.1.52 [95]) of presuffixal bases that end in (A 1.1.72 [30]) i /u ū r ſ/, e.g., cayana ‘picking, gathering, heaping’ (< ce-ana < ci-ana), nayati ‘leads, guides’ (< ne-a-ti < ni-a-ti), stotṛ ‘one who praises’ (< stu-tṛ), bhavati ‘is, becomes’ (< bho-a-ti < bhū-a-ti), karana ‘doing, making, means of doing or making’ (< kar-ana < kr-ana: A 1.1.51 [93]), taraṇa ‘crossing’ (< tar-ana < tṛ-ana). By virtue of the same restriction, vṛddhi substitution according to A 7.2.1 (412) applies to the same final vowels of stems before the affix sīc followed by parasmaipada endings; e.g., acaṁśit (3sg. aor. act.) ‘has) picked, gathered, heaped’, anaśīt ‘(has) led, guided, alāvīt (has) cut’, akāṃśit ‘did, (has) done, made’, aorist forms of ci, ni, lū, and kr.

Since A 1.1.3 comes into play only if substituends which guna and vṛddhi vowels replace are not explicitly given and only if the terms guna, vṛddhi are used, this metarule does not apply with respect to sūtras such as A 7.1.84 (see 95): the vṛddhi vowel au substitutes for the final consonant of div-.

The following sūtras are related to A 1.1.3 (97):

A 1.1.4: न धातुलोप आर्धधातुके (na dhātulopa ārdhadhatuke)

A 1.1.5: किण्डति च (knīti ca)

If the right context (A 1.1.66 [90]) in which guna and vṛddhi vowels would replace i /u ū r ſ/ in accordance with A 1.1.3 is an ārdhadhatuka affix (A 3.4.114-116 [63]) before which a verb undergoes deletion (dhātulope: A 1.3.1, 3.1.32, 1.1.60 [47, 79]), then replacement by guna and vṛddhi does not (na) apply. This is also (ca) the case if an affix before which the replacement would apply in accordance with A 1.1.3 is marked with g, k, or ri (knīti). For example, the affix yañi included in the derived verb jolōya ‘cut intensely, repeatedly’ (A 3.1.22 [280]) is
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deleted before the agentive affix \text{ac} (A 2.4.74 [286]): \text{lolū-a}. Although an ārdhadhātuka affix generally conditions guṇa substitution for a preceding stem, in the case of \text{lolū-a} this is disallowed, since the suffix conditions deletion in the preceding verb: \text{lolū-a} > \text{lolūva} (A 6.4.77 [452]) 'one who cuts intensely, repeatedly'. The affix \text{kta} is marked with \text{k} to show that it does not condition guṇa replacement: \text{cita, nīta, stuta, bhūta, kṛta}, past participles of \text{ci, ni, stu, bhū, kr} (A 3.4.70, 3.2.102 [248, 294]).

Other paribhāsās are extension rules (\text{atideśasūtra}) that extend to elements operations and properties which would otherwise not pertain to them. Consider the forms \text{aikṣata} (3sg. impfct. mid.) 'looked, saw', \text{ait} (3sg. impfct. act.) 'went', \text{vrksābhyaṁ} (instr.-dat.-abl. du.) 'trees', \text{ābhyaṁ} 'them'. The initial augment \text{āt} (A 1.1.46 [17]) is added to the stem \text{ikṣ-a-} of \text{ikṣ-a-ta} by a rule (A 6.4.72 [238]) which provides that a presuffixal base beginning with a vowel takes this augment if certain endings follow. The final vowel of \text{vrksa-} in \text{vrksa-bhyāṁ} is replaced by \text{ā} according to a sūtra (A 7.3.102 [482]) which provides that a long vowel replaces the final sound of a stem in \text{-a} before certain endings. For an item to be characterized as beginning with a vowel or ending in short \text{a}, it should have at least two sounds: an initial vowel and at least one sound following it, a final \text{a} and at least one sound before this. Thereby, the \text{-i} of \text{i-t} is not properly a vowel-initial stem, and the \text{-a} of \text{a-bhyāṁ} is not a stem ending in \text{a}. Yet operations which apply to derive \text{aikṣata}, \text{vrksābhyaṁ} should apply also in deriving \text{ait} (< \text{āi-t}) and \text{ābhyaṁ} (< \text{a-bhyāṁ}). In order to allow such operations to take effect in these and other comparable instances, Pāñini provides, by

A 1.1.21: \text{आद्यतवेदेकरिमिनि} (\text{ādyantavat ekasmin})

that an operation takes effect with respect to a single sound (\text{ekasmin}) as it would with respect to an initial or final sound (\text{ādyantavat}) of a larger unit. That is, an operation said to
apply to an item that begins or ends with a given sound is allowed to apply to an element consisting of that sound alone. Thereby, the stem of \( i - \text{t} \) receives the initial augment \( a\tilde{r} \), and the \( a - \text{of} \ a-bh\ddot{y}a\ddot{m} \) is replaced by a long vowel.

A series of paribh\ddot{a}\ddot{s}\ddot{a}s concerns the relative status of elements subject to replacement and their replacements. A substituend (\textit{sth\ddot{a}n}\ddot{i}) \( X \) and its replacement (\textit{\ddot{a}de\ddot{s}\ddot{a})} \( Y \) are distinct elements, so that, if one wishes \( Y \) to have the status of \( X \), one must explicitly provide for this to be the case.

According to

\textit{A 1.1.56: स्थानिवादादेशोनन्तरिवधी} (\textit{sth\ddot{a}niv\ddot{a}d āde\ddot{s}\ddot{a}na\ddot{l}vidhau})

a substitute (\textit{\ddot{a}de\ddot{s}\ddot{a}h}) has the status of its substituend (\textit{sth\ddot{a}nivat} ['behaves, is treated'] in the same manner as a substituend') except in respect of an operation that depends on an original sound (\textit{an\ddot{a}\ddot{l}vidhau}). Thereby, if an item belongs to a certain class, its replacement also belongs to that class and is referred to by the appropriate class name or abbreviation. Similarly, if an element has a particular marker, its replacement is also characterized by that marker. Consequently, operations associated with elements pertain also to their replacements. For example, \( \ddot{a}m \) and \( \ddot{a}m \) replace the nominal endings \( \ddot{a}r, \ddot{a} \) (\textit{A 7.1.13, 7.3.116 [492, 497]}). As the replacement of stem-final \( -a \) takes effect before a basic ending like \( bh\ddot{y}a\ddot{m} \) (\textit{vr\ddot{k}a\ddot{b}h\ddot{y}a\ddot{m} < vr\ddot{k}a\ddot{s}\ddot{a}-bh\ddot{y}a\ddot{m} \text{see 99} \}), so does it apply also before an item that substitutes for a basic ending, such as \( y\text{a} \) which occurs in place of \( \ddot{a}r: \textit{vr\ddot{k}a\ddot{s}-ya} > \textit{vr\ddot{k}a\ddot{s}a}\text{ya} \) (see 46).

A nominal ending marked with \( \ddot{a} \) receives the initial augment \( \ddot{a}\ddot{\ddot{a}}t \) if it follows a stem with a feminine suffix \( \ddot{a}p: \textit{a}\ddot{j}\ddot{a}-e > \textit{a}\ddot{j}\ddot{a}-y\ddot{\ddot{a}}e \) (\( \ddot{a}j\ddot{a}\ddot{y}a\ddot{i} \) see 46). The substitute \( \ddot{a}m \) is characterized by the marker \( \ddot{a} \) of the basic ending \( \ddot{a}\ddot{r} \) which it replaces, so that it too receives the augment \( \ddot{a}\ddot{\ddot{a}}t: \textit{a}\ddot{j}\ddot{a}\ddot{y}\ddot{\ddot{a}}m \) (\textit{\ddot{a}\ddot{j}\ddot{a}-y\ddot{a}\ddot{m} < \textit{a}\ddot{j}\ddot{a}-\ddot{a}m < \textit{a}\ddot{j}\ddot{a}-i}).

On the other hand, if the element replaced is merely a
particular sound, its replacement does not have the status of the original with respect to an operation that depends for its application on the occurrence of that sound. For example, the \(-ν\) of *div- is replaced by \(-au\) before *su (see 95). There is also a rule (A 6.1.68 [404]) according to which the nominative ending *s (su) is dropped after a consonant; e.g., *gomān (< ... gomat-s, see 79). If the sound *au which replaces \(-ν\) had the status of its substituend with respect to this operation, the ending su would be dropped after the \(-au\) of *diau-, so that one would derive an unacceptable form *dyau instead of the required dyaus. This is avoided, since A 1.1.56 not only provides that a replacement has the status of the element for which it substitutes but also makes an exception to this general provision.

In particular instances, nevertheless, replacements for single sounds have to be given the status of their substituends.

A 1.1.57: अचः परस्मिनपूर्वविधिः (acaḥ parasmin pūrvavidhau)

provides that if a vowel undergoes substitution in a right context (parasmin 'before a following element': A 1.1.66 [90]), the replacement for that vowel (acaḥ [ādesaḥ]) has the status of the original sound in respect of an operation relative to an element that precedes (pūrvavidhau) this original sound prior to substitution. For example, the \(-a\) of katha 'teli, relate' is deleted before the affix pīc (A 6.4.48 [450]): katha-ī > kath-ī. A penultimate \(a\) of a presuffixal base that occurs before an affix marked with ā or ō is subject to replacement by the vṛddhi vowel ā (A 7.2.116 [417]); e.g., pac-ī > pāc-ī 'cause ... to cook, have ... cook' (3sg. pres. ind. act. pācayati). Were this operation to apply in kath-ī, one would have *kāth-ī (*kāthayati) instead of the required kath-ī (kathayati). By A 1.1.57, the zero replacement for the \(-a\) of katha has the status of its substituend with respect to an operation concerning kath-, which is thereby treated as though it were still katha-
Consequently, the *a* of *kath-* is not treated as penultimate sound, so that it is not subject to replacement by the vṛddhi vowel ā.

In addition, according to

A 1.1.59: द्विवचननेतरः (dvirvacane'ci')

If a vowel undergoes substitution in the right context of another vowel (*acī*), before which doubling applies (*dvirvacane*) --- that is, before a vowel-initial affix that determines doubling --- the replacement in question has the status of the original vowel in respect of one operation in particular, doubling (*dvirvacane*). For example, the -ā of pā- 'drink' is dropped before the endings atus, us, found in third and second person dual active perfect forms: pā-atus > p-atus, pā-us > p-us (A 6.4.64 [451]). Doubling should apply before these endings (A 6.1.8 [382]), but this operation affects a syllable, an item with a vowel (ekācaḥ: A 6.1.1 [24]), and the only vowels in p-atus and p-us belong to the endings, not to the stems. For purposes of doubling, then, A 1.1.59 lets the zero replacement for -ā have the status of this original vowel, so that doubling does take effect and the required forms pāpātaḥ, pāpuḥ are derived.

Consider now the following: kau stah 'Which two are there?', daddhy atra 'There is yogurt here', yāyāvara 'one who constantly goes (from place to place)', cikirśaka 'one who wishes to do, to make', yuniktaś (3du. pres. indic. act.) 'join, connect, yoke' pimśanti (3pl. pres. indic. act.) 'grind', prati-dīvna (instr. sg.) 'day, gambler', sagdhī 'eating together, banquet', jāksatūḥ (3du. pfct. indic. act.) 'ate'.

The *a* of *as* 'be' and of the affix śnam is dropped in a presuffixal base before a sārvadhātuka affix marked with *k* or *r* (A 6.4.111 [456]). The endings *tas* and *jahī (> anti: A 7.1.3 [509]) belong to the sārvadhātuka class (A 3.4.113 [63]) and are marked with *r* (A 1.2.4 [513]), so that the *a* of *as* and of śnam in yuna-j- and pīnas- is deleted when these stems occur.
before these endings. In addition, the -a of a stem is dropped before an ārdhahātuka suffix (A 6.4.48 [450]). Since varac and ālinky (aka: A 7.1.1 [509]) belong to the ārdhahātuka class (A 3.4.114 [63]), -a in the derived verbs yāyāya 'go constantly' and cikirṣa 'wish to do, make' is deleted before them. Further, penultimate vowels in certain verbs, including ghas 'eat', are deleted before vowel-initial affixes marked with k or ṅ, and the vowel of ghas is also dropped if the verb occurs before a consonant-initial suffix so marked (A 6.4.98, 100 [454]). Thus, the vowel of ghas is elided if the ending atus or the affix kτιν follows this verb. Moreover, penultimate a of a bha element (A 1.4.18 [75]) in -an is deleted (A 6.4.134 [502]): prati-device-ā > prati-device-ā > prati-device (A 8.2.77 [552]). And / following by another vowel in close junction is replaced by y (see 20): dadhi atra > dadhy atra (optionally) dadhy atra (A 8.4.47 [576]) > dadhy atra (A 8.4.53 [577]). The substitution of y for / and the deletion of a in the examples given apply in right contexts. According to A 1.1.57 (101), then, the substitutes in question would have the status of their substituends with respect to operations concerning elements that precede the original vowels. If this were always allowed, however, one would not account for the required results.

Thus, if the term kau of kau stas, with stas derived from as-tas, were treated as followed by a vowel, its -au would be subject to replacement by -āv (A 6.1.78 [524]), and if the -y of dadhy had the status of -i the preceding sound dh would not be eligible for doubling, which does not apply before vowels. Were the zero replacement for the -a of yāyāya to have the status of its substituend according to A 1.1.57, the -y of yāyāya-vara (< yāyāya-vara) could not be dropped (A 6.1.66 [522]) to give yāyāvara, since the deletion applies only if y is followed by a consonant. The suffix ālinky is marked with / to show that the first vowel which precedes this element in a derivate is high-pitched (A 6.1.193 [600]): cikirṣaka. If the zero replacement for the -a of cikirṣa had the status of the
original vowel according to A 1.1.57, the \( i \) of cikir\( s \)- could not be treated as the first vowel preceding the affix. Word-interior \( n \) is replaced by the nasal segment \( \hat{m} \), called anusvara, before consonants other than semivowels and nasals (A 8.3.24 [559]). Before consonants other than spirants, \( \hat{m} \) is then replaced by a sound homogeneous with the following segment (A 8.4.58 [580]): yunaj-tas \( \rightarrow \) yunj-tas \( \rightarrow \) yung-tas (A 8.2.30 [544]) \( \rightarrow \) yung-tas \( \rightarrow \) yunktas \( \rightarrow \) pina\( \hat{s} \)- \( \rightarrow \) pisa\( \hat{s} \)-. If the zero that replaces the \( a \) of \( \text{s\text{n}am} \) in yunaj- and pina\( \hat{s} \)- had the status of the original vowel in accordance with A 1.1.57, the operations that should apply to derive yunktas and pima\( \hat{s} \)ant could not take effect, since they require that consonants follow \( n \) or \( \hat{m} \). \( v \) is deleted before consonants other than \( y \) (A 6.1.66), so that the zero substitute for the second \( a \) of pratidiv\( a \)-. In pratidiv\( a \)- should indeed have the status of the original vowel, by A 1.1.57; otherwise, the \( -v \)- of pratidiv\( a \)- would be subject to deletion. On the other hand, in order that the \( i \) of -div\( n \)- be replaced by \( \hat{i} \), the \( v \) of div must be followed by a consonant (A 8.2.77), so that the zero substitute for the penultimate -\( a \)- of pratidiv\( a \)- should not have the status of its substitute with respect to this operation. As shown, the \( a \) of ghas is deleted before atus and kti\( n \). At a stage in the derivation of gdi\( h \), one has ghd\( h \)i (\( \ll \) gh-ti \( \ll \) ghs-ti), and g should replace gh. The substitution of a voiced unaspirated stop for an aspirate applies before consonants (A 8.4.53), so that, if the zero replacement for the vowel of ghas were given the status of its substitute, in accordance with A 1.1.57, the required operation could not apply to ghd\( h \), where gh would now be treated as preceding a vowel. By the same token, gh in jhaghs-atus (\( \ll \) jhaghs-atus \( \ll \) ghas-atus \( \ll \) ghas-atus) would not be subject to replacement by k (jhaghs-atus \( \rightarrow \) jagh\( s \)-atus (A 8.4.54 [577]) \( \rightarrow \) jak\( s \)atus (A 8.4.55 [578])), since this operation requires that gh precede a voiceless consonant.

Obviously, A 1.1.57 cannot be left unrestricted. Therefore,
A 1.1.58: न पदान्तड्विर्वचनवर्त्तकर्त्ताप्रस्तस्वरसर्षिनुस्वरारः
दीर्घवस्त्रविळिठाः (na padāntadvirvacanavaretvakor
tasvarasavarsuvārāndirghajāscarvidhiṣu)

Pāṇini provides that, contrary to A 1.1.57, the replacement for a vowel which undergoes substitution in a right context does not (na) have the status of its substituend with respect to particular provisions (-vidhiṣu) concerning elements that precede the original vowel: The provision of a pada-final element (padānta: A 1.4.14 [49]), as in the case of kau stas (<
kim-au as-tas>; doubling (dvirvacana): dadhy > dadhohy; replacing y with zero (yalopa: A 1.1.60 [79]) before vara (vareyalopa): yāyā-vara > yāyāvara; an operation concerning an accent (svara): ciklṛṣaka; an operation whereby a sound homogeneous with another (savarṇa: A 1.1.9-10 [33-34]) replaces a segment: yunk- > yunk-; an operation that results in m (anusvāra): pim- > pim-; one that results in a long vowel (dirgha: A 1.2.27 [35]): pratidivn-ā > pratidivnā; one whereby a voiced unaspirated non-nasal stop (jaṣ) replaces another sound: gdhī > gdhī; and an operation whereby a voiceless unaspirated stop or a voiceless spirant (caḥ) substitutes for another sound: jagṣ-ātus > jakṣatus.

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Two metarules concern what is allowed when an affix is replaced by zero (pratyayalopā: A 3.1.1, 1.1.60-61 [15, 79]):

A 1.1.62: प्रत्ययलोपे प्रत्ययलक्षणम् (pratyayalopā
pratyayalakṣanam)

A 1.1.63: न लुमताः (na lumatāṁ)

According to A 1.1.62, whatever is conditioned by an affix (pratyayalakṣanam [kāryam]) takes effect even if that affix is deleted (pratyayalopā). According to A 1.1.63, however, if the zero replacement for an affix is one denoted by a term with lu (lumatā: A 1.1.61 [79]), once the affix has been dropped, an operation that would apply to its stem (aṅgasya: A 1.4.13 [46])
in the presence of that affix now does not (na) take effect.

For example, even after the ending su of gomat-s is dropped, the long-vowel substitution and augmenting which this affix conditions for the stem gomat- take effect, so that one gets gomānt (see 79), and gomānt still has the class name pada (A 1.4.14 [49]), so that its -t is deleted (A 8.2.23 [542]). Similarly, even after the ending su is elided after gomat-, this remains a pada, so that its -t is subject to replacement by -d (A 8.2.39 [546]): gomad (nom.-acc. sg. nt.). However, the zero replacement for su after gomat- in the compound gomat-priya is a particular zero, designated by luk (A 2.4.71 [278]), so that the operations which this ending would condition on the stem gomat- do not apply. Similarly, the -d of the neuter stem tad is not replaced by -a after su has been dropped, and the vowel of mrj- in mrj-tas is not subject to vyuddhi substitution once the suffix sap has been deleted (see [79]).

Remark.

I have presented A 1.1.59 (101) in keeping with the interpretation accepted by most Paninīyas, omitting another interpretation, already brought up in the Mahābhāṣya and adopted by Bhāṭṭoji Dīkṣita. In addition, the interpretation I have given for A 1.1.58 (102) differs in a detail from the one Paninīyas adopt. According to them, vareyalopa is split (vare-yalopa) and understood to provide separately that: if a vowel is replaced before varac (vare), its substitute does not have the status of the original vowel with respect to an operation on what preceded this vowel; the substitute for a vowel in a right context does not have the status of the original in respect of substituting zero for a y (yalopa) that precedes the original vowel. Under the interpretation I have given, A 1.1.57 (101) grants the status of the substituend u to the -v- of vāyvos ([gen.-loc. du.] < vāyu-os), so that the y preceding it is not deleted by virtue of occurring before a
consonant (A 6.1.66). Under the usual Pāṇinīya interpretation of A 1.1.58, this sūtra denies the status of the original vowel to the -v- of vāyvos, so that one must provide in another way that the y of this and comparable forms is not deleted. Details concerning this are treated in part III.1 of my work.

1.1.2.3. Headings.

The Aṣṭādhyāya is thematically divided into sections by headings (adhiṅkāra). Some headings give elements with respect to which operations are stated in subsequent sūtras. Thus, A 3.1.91: धातोऽ (66) and

A 4.1.1: डचाय्यातिपदिकाय (niyāppratipadikā) head two groups of affixation rules. The first heading is in force to the end of the third adhyāya. Rules of this section introduce affixes (A 3.1.1 [15]) that occur with verbs (dhātu [abl. sg. dhātoḥ]: A 1.3.1, 3.1.32 [47]). The second heading is in force to the end of the fifth adhyāya. Unless it is otherwise specified, rules of this section introduce affixes that occur with nominal bases (prātipadika: A 1.2.45-46 [48]) and items with feminine suffixes ni, āp (niyāppratipadikā; cf. 82, 88).

Sūtras of the section beginning with

A 6.4.1: अद्वय (āṅgasya)

state operations connected with stems, presuffixal bases (āṅga [gen. sg. āṅgasya]: A 1.4.13 [46]). This section extends to the end of the seventh adhyāya.

Another group of sūtras is headed by

A 8.1.16: पद्य (padasya)

Except as otherwise indicated, these rules concern operations connected with padas (padasya: A 1.4.14-17 [49, 75]). This section extends to

A 8.3.55: अपदान्तस्य मूर्धन्यः (apadāntasya

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a new heading in force to the end of the third pada of the eighth
adhyāya. Rules of the section beginning with A 8.3.55 give
conditions under which a consonant that is not the final sound
of a pada (apadāntasya) is replaced by a retroflex sound
(mūrdhanyah, see 43). A 8.3.55 itself states the operation: A
retroflex sound occurs in place of (A 1.1.49 [90]) a sound that is
not the final of a pada.

Other headings also state operations. As was shown
earlier, A 6.1.1-2 and 8.1.1 (24-25) provide that particular
elements are doubled, under conditions to be given in
subsequent śūtras. According to

A 6.1.84: एकः पूर्वपर्यः। (ekah pūrvaparayoh)
one (ekah) element occurs in place of both a preceding and a
following segment (pūrvaparayoh [sthāne]: A 1.1.49 [90]). Sub-
sequent śūtras give sounds that are to be replaced and specify
additional conditions under which two contiguous sounds are
replaced by one.

A heading may also give conditions under which operations
take effect. Thus,

A 4.1.3: स्त्रियाम् (striyām)
heads a group of rules that introduce feminine affixes. The
affixes (pratyaya: A 3.1.1 [15]) in question follow (A 3.1.2) a
nominal base (A 4.1.1 [105]) on condition that this is used in the
meaning 'feminine' (striyām).

A 6.1.72: सांहितायाम् (samhitāyām)

A 6.3.114: सांहितायाम्
head different groups of rules stating operations that apply to
elements in close junction (samhitāyām: A 1.4.109 [42]) with
others.

A 8.3.57: इण्कोः। (ipkoḥ)
gives left contexts (A 1.1.67 [90]) in which sounds to be
specified in later sūtras are replaced by retroflex sounds (A 8.3.55 [105]): if *i i u ū r ē e o a i a u h y v r l* or velar stops (*inkoh*: A 1.1.71, 69 [83-84]) precede.

Some headings are samjñāsūtras that introduce class names which apply to items given in or derived by subsequent rules. A 3.1.1: प्रत्ययः (15) heads a section of rules that introduce elements called pratyaya; A 1.4.56: प्रामरीखरान् निपातः (55) heads a group of sūtras that provide for certain items to be called nipāta; A 2.1.3: प्राक्करारत्समासः (26) heads a section rules of which serve to derive items called samāsa.

A heading may also be a metarule. Sūtras in the fourth pāda of the first adhyāya and the first two pādas of the second adhyāya are governed by

A 1.4.1: आ क्षरार्देका संज्ञा (ā kādārād ekā samjñā) Only one (ekā) class name (samjñā) of those introduced by rules of this section may apply at once to a given entity, except where otherwise provided for. That is, classes with which these sūtras are concerned are generally disjunct.

According to

A 2.1.1: समर्थ: पदविधिः (samarthah padavidhiḥ) an operation pertaining to padas (padavidhiḥ: A 1.4.14 [49]) applies to padas that are syntactically and semantically related (samarthah). All but one of the rules in question of the section, which extends to the end of the second pāda of the second adhyāya, have to do with compounds (samāsa: A 2.1.3 [26]), which are derived from semantically and syntactically related padas. See Section 2.4.2.3.

The adhikārasūtra

A 8.2.1: पूर्व्यन्त्रसिद्धम् (pūrvatrasiddham) provides that a rule is suspended (asiddham 'not accomplished,
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not established) with respect to what precedes (pūrvatra). This heading is in force throughout the final three pādas of the Aṣṭādhyāyī, the group of sūtras Pāniniyas call the tripādi. Except as otherwise indicated, a sūtra of the tripādi is suspended with respect to a rule of the preceding seven and one-quarter adhyāyas, and within the tripādi itself a sūtra is suspended in relation to an earlier rule. Sūtras of the tripādi are thereby nonexistent with respect to earlier ones. This suspension has two effects. First, once the operation provided for in a rule of the tripādi has taken effect, the element that results from this operation is regularly not subject to an operation stated in an earlier rule. Second, rules of the tripādi regularly apply after rules of the first seven and one-quarter chapters, and an earlier rule of the tripādi takes effect before a later sūtra of this group. See Sections 2.7.2.2 and 3.4.

The metarules considered in 109 pertain to specified parts of the grammar. Some paribhāśas of such limited scope are stated within sections of rules governed by particular headings. Thus,

A 1.4.2: विप्रतिषेधे परान्तकर्यम् (vipratīṣedhe paraṁ kāryam)

is valid in respect of sūtras of the section headed by A 1.4.1 (109): If two rules with independent domains of application come into conflict (vipratīṣedhe) by possibly applying in one and the same instance, whatever is to be done by a later rule (paraṁ kāryam) takes precedence. See Section 3.5.

The group of sūtras that A 3.1.91 (66) heads includes

A 3.1.94: वासरूपोस्त्रित्रयम् (vāsarūpoṣtriyaṁ)

according to which a verbal affix other than one introduced by a rule of the section beginning with A 3.3.94 (114) is allowed to occur optionally (va: A 1.1.44 [31]) with respect to an affix provided by a related rule, on condition that it does not have the same shape (asarūpān) as that affix. See 123.
As I pointed out in 106, A 6.1.84 heads a set of rules that provide for one sound to replace two contiguous segments: \( ab > c \). According to

A 6.1.85: अन्तादिवच्च (antādivac ca)

the single replacement \( c \) is then treated as the final segment of the item that ends with \( a \) and as the initial segment of the item that begins with \( b \) (antādivat). For example, \( agni-au \) consists of a base that ends in \( -i \) and an affix said to begin with \( au \) (see A 1.1.21 [99]). The contiguous vowels \( i \) and \( au \) are both replaced by a single long vowel homogeneous with the first one (A 6.1.102 [532]): \( agni-au > agni \). The replacement \( i \) is treated as the initial sound of an ending. Hence, \( i \) can be treated as a dvivacana element that ends in \( i \) (A 1.1.21 [99]), so that it belongs to the pragṛhya class (A 1.1.11 [76]).

Another metarule that applies for rules of the group headed by A 6.1.84 is

A 6.1.86: शतवटोरसिद्ध: (satvatukor asiddhā)

A rule of this group is suspended (asiddhā) with respect to two kinds of rules: those which provide for \( s \) to replace \( s \) and those that introduce the final augment \( luk(\text{satvatukoh}) \). See 654.

Not only is the Aṣṭādhyāyī divided into major sections of rules, these are further subdivided into subsections. For example, the third, fourth, and fifth adhyāyas, headed by A 3.1.1 (15), contain affixation rules. There are two large subsections in this set of rules: A 3.1.91 (66, 105) heads a group of rules that introduce verbal affixes, and A 4.1.1 (105) heads a group of sūtras that generally introduce nominal affixes. Each of these two sets has subgroups.

A 3.1.95(66) heads a group of sūtras introducing verbal affixes called kṛtya. Rules of the subsection that begins with

A 3.3.18: भावो (bhāve)

A 3.3.19: अकर्तरी च कारके संज्ञायामः (akartari ca
kārake samjñāyām)
introduce particular affixes under the following conditions: An act in the abstract is to be signified (bhāve); in addition (ca), there is to be signified a participant in an act (kārake) other than an agent (akartari), and the derivate formed by affixation is used to denote not just any such participant but a particular thing or individual (samjñāyām). For example, āhāra denotes the act of taking or a particular thing from which one takes something, namely food, from which one extracts flavor.

Within the section that begins with A 4.1.1, a subgroup of rules, headed by A 4.1.3 (107), concerns feminine affixes. Another subgroup, headed by A 4.1.76 (70), deals with taddhita affixes. Some of these follow nominal bases; in fact, the taddhita set includes some feminine affixes. However, taddhita affixes are mostly introduced to padas (A 1.4.14 [49]). According to

A 4.1.82: समर्थानान्सप्रथमाद्वा (samarthānāṁ prathamād vā)
affixes introduced by subsequent sūtras occur optionally (vā: A 1.1.44 [31]), so that derivate formed with these taddhita affixes alternate with other structures, and if related padas are referred to in these rules, the affixes in question follow the first of these related items (samarthānāṁ prathamāt). In addition, A 5.3.1 (71) heads a subgroup of rules that introduce taddhita affixes called vibhakti. Moreover, there is a subset of taddhita elements introduced as the final parts of compounds (samāsāntāḥ), by rules under the heading of

A 5.4.68: समासांताः (samāsāntāḥ)
Other large groups of sūtras are similarly subdivided. For example,

A 6.4.129: भस्या (bhasya)
heads a group of rules within the section headed by A 6.4.1 (105). Sūtras of this subsection, which extends to the end of
the fourth pāda of the sixth adhyāya, concern elements of the bha class (A 1.4.18 [75]). This group of rules is pertinent for another subgroup of rules concerning stems, a section headed by

A 6.4.22: असिद्धवद्वत्राभाति (asiddhavat atrā bhāt)

Whatever results from applying a sūtra of this section is treated as suspended (asiddhavat) with respect to any other operation provided by a rule of the group that extends through the one headed by A 6.4.129 (ā bhāt), provided the operations in question have the same conditioning element. See 659-660.

In addition,

A 6.4.46: आर्धघातुके (ārdhaghātuke)

A 7.3.10: उत्तरपदस्या (uttarapadasya)

respectively head subsections of rules concerning operations that affect stems before ārdhaghātuka affixes (63) and second members of compounds (uttarapadasya).

The subsection of rules headed by

A 8.1.17: पदालि (padāl)

deals with operations that concern a pada (padasya: A 8.1.16 [105]) following another pada (padāt).

Two groups of sūtras can overlap. As I pointed out (see 111), the groups of rules headed by A 4.1.1, 3 and A 4.1.76 overlap in that some taddhita affixes are feminine suffixes. Similarly, the sections headed by A 8.1.16 and A 8.2.1 (105, 109) overlap: Some, but not all, operations relative to padas have to be included among those provided by crucially ordered rules of the tripādī.

Although headings considered thus far are separately formulated sūtras, they nevertheless cannot be considered independent rules. For example, A 3.1.1 (15) consists merely of the nominative singular pratyayah. Even when one supplies the verb form asti or bhavatī (see 11, 13), A 3.1.1 cannot be understood of itself to provide any operation. It does not tell
us what pratyayah refers to; nor does the sutra give any elements with which something else occurs. Moreover, A 3.1.1 is not a samjñasūtra comparable to a rule like A 3.4.113 (63), since it does not itself specify the items to which the class name in question applies. It is clear that A 3.1.2 also does not provide anything independently. Of course, the term paraḥ (nom. sg. masc.) must refer to something that follows something else, but the sutra does not tell one what is supposed to occur or what it follows. Further, since A 3.1.2 has ca 'and, also', it has to be construed with something else. Again, A 3.1.91 (66, 105) and A 4.1.1 (105) consist of single terms that cannot be understood independently to provide for anything. In addition, even if asti or bhavati is supplied, the ablatives dhātoḥ and nyappṛтипādikāt cannot be construed with such a verb form. In accordance with normal Sanskrit syntax, such ablative forms are properly construed with the directional term paraḥ of A 3.1.2. In effect, headings such as these have to combine with rules in the sections they head, only then forming parts of full statements that provide for operations. The different contexts into which such terms are brought may also require modifying endings, just as different verb forms --- asti / bhavati, stah / bhavataḥ, santī / bhavantī --- are supplied according to context. For example, a given context may require one to understand the plural pare instead of the singular paraḥ that actually occurs in A 3.1.2. See 121.

Parts of sūtras are also understood to recur in subsequent rules. For example,

A 3.3.16: पदरुजविशस्पृशो घन (padarujaviśaspaṛśo
ghaṇ)

contains the term ghaṇ: The rule provides that the affix ghaṇ is introduced after the verbs pad, ruj, viṣ, spaṛś, thus accounting for the derivates pāda 'foot', roga 'illness', veśa 'entry, house', sparṣa 'affliction'. ghaṇ is understood in A 3.3.18,19 (111). A derivate such as hāra of āhāra is formed.
with the affix *ghañ.*

Similarly, consider the following

**A 3.3.94: स्त्रियां कितना** (*strijam ktin*)

provides that the affix *ktin* follows a verb under the conditions given in **A 3.3.18-19**, provided that the act or participant in question is qualified as feminine (*strijam*); e.g., the feminine abstract noun derivate *krti* 'doing, deed, work'.

Rules after **A 3.3.94** also introduce affixes to form feminine derivates, but they do not contain the term *strijam*. This is understood to recur in these sūtras from **A 3.3.94**.

That a term used in one part of an extended context may be understood later in the context without being repeated is known from ordinary usage. Consider an example taken from Patañjali’s comments on vārttika 5 to **A 1.3.11** (Bh. 1.272.7-8):

1. देवदत्ताय गौरीयताम् (**devadattaya gaur diyatam**) 'Let a cow be given to Devadatta.'

2. याज्ञवल्लकम्भलः (**yajñadattaya kambalaha**) 'A blanket to Yajñadatta.'

3. विष्णुमित्राय च (**vishnumitraya ca**) 'Also to Viṣṇumitra.'

Only (3a) contains an explicit verb form: *diyatam* (3sg. pres. pass. imper.) 'let ... be given'. This is understood in (3b,c). Similarly, *kambalaha* 'blanket' of (3b) is understood in (3c). But *gauñ* 'cow' of (3a) is not understood to recur in (3c). A new object of giving is referred to in (3b), where *kambalaha* is used.

According to conventions of normal usage, this serves to set aside the old object of giving referred to by *gauñ*. New matter brought up in an extended context supersedes old matter spoken of earlier in the context, and a term designating such new matter is understood later in that context.

However, this convention is not always observable in the Aṣṭādhyāyī. For example, the following sūtras serve to introduce different verb affixes:
A 3.3.44: अभिविद्धौ भाव इनुन् (abhividhau bhāva inun)

A 3.3.45: आक्रोसे वन्योर्भवः (ākroṣe vanyor grahaḥ)

Both rules are part of the section headed by A 3.1.91 (66), within the major section of rules that A 3.1.1 (15) heads, so that they introduce verbal affixes. By A 3.3.44, inun follows a verb if an act in the abstract is to be signified (bhāve), provided that this is qualified as an encompassing act (abhividhau); e.g., sāmrāvīna 'shouting from all sides'. A 3.3.45 should provide that graha used with ava or ni (avanyoḥ) takes the suffix ghān if an abstract act is to be signified, provided also that a curse or abuse is conveyed (ākroṣe): avagrāha 'defeat', nigrāha 'reversal', used in wishing that someone be defeated or taken. The term ghān should be understood to recur in A 3.3.45 from A 3.3.17, although a new affix, inun, is brought up in A 3.3.44.

In addition, consider again A 3.1.94 (110). stri, included in the compound astri (loc. sg. astriyām) should be understood to refer to stri (loc.sg. striyām) used in A 3.3.94 (114). In this way, one can understand astriyām of A 3.1.94 to exclude affixes provided by rules of a particular section, those headed by A 3.3.94.

To show that a particular term is understood to recur contrary to the usual conventions of ordinary language ellipsis and to allow referring to particular headings, some special provision has to be made. This is done in

A 1.3.11: स्वरितेनाधिकारः (svaritenādhikāraḥ)

according to which an adhikāra (adhikāraḥ) --- that is, an element understood to be in force in sūtras after the one in which it first occurs --- is recognized by a special feature of pronunciation, a svarita vowel (svaritena: A 1.2.31 [36]). Thus, ghān in A 3.3.17 is recited with this feature, but inun of A 3.3.44 is not, so that the former is understood to recur in A
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3.3.45. striyām of A 3.3.94 also has the feature that shows it to be an adhikāra, and astriyām of A 3.1.94 is pronounced with the same accentual feature, showing that this refers to the heading in question.

Remarks.

116 1. Pāṇini’s sūtras as handed down no longer have svarita vowels marking adhikāras in accordance with A 1.3.11 (115). The Kāśikā on this sūtra (I.53: प्रतिहास्वरिता:पाणिनिया:) notes that Pāṇiniyas recognize such svarita marking only by convention (pratijñāsvarītāḥ), in accordance with what authoritative teachers have established earlier (cf. 86).

117 2. Pāṇiniyas use the verb vṛt (3sg. pres. Ind. vartate) 'occur' or anu-vṛt (anu vartate) 'recur' with reference to a term which is understood to recur in a particular place but is used explicitly only earlier in a context, and the action noun anuvṛtti to signify the recurrence of such a term. It is also recognized that endings (vibhakti: A 1.4.104 [65, 67]) may have to be modified (vibhaktivipārītāmāḥ ‘modification of endings’) according to the particular context in which a recurring element is understood, in accordance with what is meant (arthavāsāt): अर्थवशाल्वभक्तिविपरिणामः (see PS p. 468, no. 56 for references to this paribhāṣā, whose exact wording has variations). In the course of several arguments in the Mahābhāṣya, it is said that such contextual modification of endings will occur (bhaviṣyat), and the following examples are given to illustrate how this takes place in common usage:

(4) a. उच्चानिनदेवदत्तस्य गृहाणि (uccāni
devadattasya grhaṇi) ‘Devadatta’s houses are high.’

b. आमन्त्रयस्वानम् (āmantrayasvainam) ‘Call him.’
(5) a. देवदत्तस्य गावोऽस्स्वा हिरण्यं चा (devadattasya gāvośvā hiranyam ca) 'Devadatta has cows, horses, and gold.'

b. आद्यो वैधवेयः (ādhyo vaidhaveyaḥ) '... is a rich son of a widow.'

(4a) has the genitive devadattasya 'of Devadatta', and the person spoken of is again referred to in (4b), where the pronoun enam 'him' is used. The accusative enam is construed with a coreferential devadattam, which is gotten by modifying the genitive of (4a). Similarly, the genitive devadattasya of (5a) is modified to the nominative devadattaḥ, understood to be coreferential with the nominatives in (5b). See, for example, Mahābhāṣya 1.264.14-17 (on A 1.3.9). Clearly, the principle in question is known from everyday usage (see, for example, Puruṣottama's comments in his Laghuparibhāṣāvyṛtti on paribhāṣā 88 [PV p. 150]).

1.1.3. Restrictive and negative rules.

Some sūtras of the Aṣṭādhyāyī are restrictive (niyamasūtra). For example, A 1.4.8 (58) provides that pati has the class name ghi only in a compound, thereby restricting what would obtain more generally by A 1.4.7 (57). Many metarules (Section 1.1.2.2) are restrictive. Left to his own devices, a Sanskrit speaker could not decide on a single interpretation for a genitive in a context that does not allow only one interpretation. A 1.1.49 (90) specifies what is to be understood in such instances, excluding other possible interpretations. Similarly, A 1.1.66, 67 specify how one is to interpret locative forms denoting loci and ablative forms in contexts where Sanskrit speakers could not arrive at single interpretations from the contexts. Metarules also serve to specify particular replacements for given substituends (92, 94) and substituends for given replacements (95-97).
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In addition, restrictive rules can account for the distribution of certain elements. There is, for example, a group of niyamasūtras that allow for the proper distribution of parasmaipada and ātmanepada affixes (see 137-143).

The Aṣṭādhyāyi also contains sūtras that state negations (pratisedha, nisēdha). Negative rules provide that, under given conditions, what would otherwise obtain does not (na). For example, A 4.1.10 (271) provides that feminine suffixes do not occur with items of the sāś class and members of the ordered set beginning with svasṛ 'sister'; by A 7.1.78 (489), the augment num is not added to a stem in which satṛ follows an abhyasta element; A 6.1.104 (532) disallows a particular substitution in certain instances of contiguous vowels; A 1.4.4 (56) excludes particular items from the nadi class; A 1.1.4, 5, 58, 63 (98, 102, 103) are negative rules associated with metarules.

1.1.4. Examples showing how sūtras are interpreted.

The sūtras of the Aṣṭādhyāyi cohere. There are networks of rules related to each other, and it is normal that, in order to understand what a given sūtra provides and how this applies, one must take other rules into consideration.

Let us consider first the affixation rule

A 3.1.96: तन्यतन्यानीयारः (tavyattavyāniyāraḥ)

This can be expanded to

(6) धातोः परे तन्यत तन्य अनीयर इत्यते पत्त्या भवानित

(dhātoḥ pare tavyat tavya anīyar ity ete pratvayā bhavanti) 'The affixes tavyat, tavya, anīyar occur after a verb.'

In accordance with A 1.1.68 (29), the nominative plural tavyattavyāniyāraḥ refers to linguistic elements tavyat, tavya, anīyar. By A 1.3.3 (80), the final consonants of tavyat and anīyar are markers (it), so that they are unconditionally
A 3.1.96 thus concerns two elements \textit{tavya} (cf. A 3.1.3, 6.1.185 [592, 599]) and one element \textit{anilya}. A convention of normal usage allows one to supply a verb meaning 'be, occur' for a verbless utterance such as A 3.1.96 (see 11, 13); since \textit{tavyattavyanilyarah} is plural, one supplies \textit{santi} or \textit{bhavanti}. Of course, A 3.1.96 of itself does not say what the elements referred to are or where they occur. But this sūtra is not meant to be understood in isolation. It is stated under two headings: A 3.1.1 and 3.1.91 (15, 66). The items alluded to have the class name \textit{pratyaya} and occur with units called \textit{dhātu}, that is, with verbs (A 1.3.1, 3.1.32 [47]). Moreover, A 3.1.2 (15) provides that, unless otherwise indicated, an element called \textit{pratyaya} follows the unit to which it is introduced. The directional term \textit{para} is regularly construed with ablative forms like \textit{dhātop}. The plural form \textit{pāre} is gotten by contextual modification (see 113, 117), which allows also for the plural \textit{pratyayāḥ} instead of the \textit{pratyayah} given in A 3.1.1. Both \textit{pratyayāḥ} and \textit{pāre} are construed appositionally with \textit{tavyattavyanilyarah}. Finally, according to the heading A 3.1.95 (66), \textit{tavyat}, \textit{tavya}, and \textit{aniyar} belong to the krtya subclass of kṛt affixes (A 3.1.93). A 3.1.96 accounts for derived nominal bases (prātipadika: A 1.2.46 [48]) such as \textit{vaktavya} (v ac-tavya), \textit{vacanlya} 'which is to be said, sayable'.

Another sūtra stated under the headings that govern A 3.1.96 (121) is

A 3.1.97: अचो यत् (aco yat)

This introduces \textit{yat}, also a post-verbal affix belonging to the kṛtya subset of kṛt affixes. Once more a verb form is understood, this time a singular \textit{asti} or \textit{bhavati} construed not only with \textit{yat} but also with \textit{pratyayāḥ} and \textit{pāre}, understood from A 3.1.1-2. In addition, \textit{pāre} is linked to the ablative \textit{dhātop} of the heading A 3.1.91. Another ablative form is given in A 3.1.97 itself: acaḥ (abl. sg.). The term ac is an abbreviation, formed in accordance with A 1.1.71 (83), that
refers in the first instance to the vowels a i u r e o a i au of Pāṇini's aksarasamāmnāya. By 1.1.69 (84), each of these vowels denotes a set of homogeneous sounds, so that ac indirectly denotes all vowels. Now, since 3.1.97 comes under the heading 1.1.91, yat is introduced after a verb (dharma panaḥ), not merely after a vowel. However, a vowel can obviously be part of a verb, which it thereby qualifies. In particular, there are verbs that end in vowels. By 1.1.72 (30), acaḥ of 3.1.97 refers to a verb ending in a vowel (ajantāt). When finally interpreted with the aid of the sūtras noted, 3.1.97 can be paraphrased as follows:

(7) अजन्तादातोऽपरो यत्प्रत्ययो भवति। (ajantād dhātoḥ paro yatpratyayo bhavati).

The affix yat occurs after a verb that ends in a vowel.

This sūtra accounts for derivatives such as ceya (< ci-ya) which is to be gathered, heaped, from the verb ci.

Although 3.1.97 (122) concerns in particular verbs that end in vowels and 3.1.96 (121) has to do with verbs in general, this does not preclude the use of tavyat, tavya, and aniyar with verbs ending in vowels. One also has derivatives like cetavya (< ci-tavya) and cayaniya (< ... ci-aniya), from the verb that forms ceya by 3.1.97. According to 3.1.94 (110), verb affixes introduced by rules in the section beginning with 3.1.91 alternate with each other, provided they are not homophonous and do not belong to a specified subgroup of affixes.

The section of sūtras that begins with 6.4.1 (105) includes

1.7.36: Aritthērikrīriknūyikṣmāyyātāṃ pug nau.

Once more, a verb form asti or bhavati is supplied, now construed with the nominative pug. The sūtra also contains the genitive plural artthērikrīriknūyikṣmāyyātām and the locative singular nau, which refers to an affix i with the initial marker.
According to the metarule A 1.1.66 (90), which must be brought into play to interpret the locative nau, this term denotes a right context, an element before which something applies to a preceding element. The operands in question are denoted by the genitive arttihrvliriknūyikṣmāyyātāṁ, a form of a compound whose members are artti, hri, vīt, rī, knūyī, kṣmāyi, and āt artti is a citation form that refers to rī 'go, reach'. By A 1.1.68 (29), the next five terms of the compound signify the verbs hri 'be ashamed', vīt 'press down', rī 'run, flow', knūyī 'be wet, creak', kṣmāyi 'shake', and by A 1.1.70 (85), āt denotes ā-vowels. Since A 7.3.36 is stated in the section headed by A 6.4.1, one understands a form of the term ānga, namely the genitive plural āṅgānāṁ, construed with the genitive plural in A 7.3.36. Thus, this sūtra states an operation that applies to the stems (ānga: A 1.4.13 [46]) rī-, hri-, vīt-, rī-, knūyī-, kṣmāyi-, and stems that end in ā-vowels (A 1.1.72 [30]), when these stems occur before an affix ni. Now, puk has the marker k, used to show that the element in question is an augmented as the final segment of an item. (A 1.1.46 [17]). Accordingly, the genitives arttihrvliriknūyikṣmāyyātāṁ āṅgānāṁ are partitive; they refer to presuffixal bases which have rī as their final segment if an affix ni follows. When fully interpreted, then, A 7.3.36 can be paraphrased as follows.

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(8) अर्ति हृ वीत री कनूयी क्षमायी इत्येवेषामञ्जानाम्
आकारान्तानान् पुगागमो भवति णी पररि। (artti
hri vīt rī knūyī kṣmāyi ity eteṣām āṅgānāṁ
ākārāntānāṁ ca pugāgamā bhavati na paratāḥ)
The stems rī-, hri-, vīt-, rī-, knūyī-, kṣmāyi- and stems that end in ā have the augment puk when ni follows.
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This rule accounts for augmented stems in derivates such as arpi (< r-p-i < r-i) 'have go, send', hrepi (< hri-p-i < hri-i) 'make ashamed', dāpi (< dā-i) 'cause to give', with the causal affix nic (A 3.1.26 [281]).
Panini's general rule of semivowel replacement is:

A 6.1.77: इको यणच्या (iko yan aci)

Again, asti or bhavati is supplied, to be construed with the nominative singular yan. In addition to yan, this sūtra contains the genitive singular ikāḥ and the locative singular acī. The terms ik, yan, and ac are interpreted with the aid of A 1.1.71 (83): ik refers to i ur i, yan to y vr i, and ac to a l ur i e o at au. In turn, by A 1.1.69 (84), these sounds denote sets of homogeneous sounds. There is nothing in A 6.1.77 to show precisely how the referents of ik, yan, and ac are related, so that the metarules A 1.1.49, 66 (90) come into play. The genitive ikāḥ refers to substituends, the locative acī to right contexts in which substitution applies. As can be seen from the above, the immediate referents of ik and ac are the same in number, so that, by A 1.3.10 (91), the substituends and their replacements are related in order. Thus, A 6.1.77 is understood to provide that the semivowels y vr i, respectively, substitute for i-, u-, f-, and j- vowels before vowels. Moreover, since this sūtra is stated under the heading A 6.1.72 (107), the substitution is allowed only if the vowels and the right contexts in question are in close junction. See 20, 102.

The term pau of A 7.3.36 (124) is understood to recur in later sūtras, including

A 7.3.43: रुहः पोषन्यतरस्याम् (ruhah po'anyakatarasyam)

a rule which also states an operation that applies to a stem (aṅgasya: A 6.4.1 [105]) when an affix pi follows. The sūtra contains the genitive singular ruhah, construed with aṅgasya. Once more, A 1.1.49 is brought into play, to interpret ruhah and aṅgasya: The rule states a substitution. Moreover, as provided for by A 1.1.52 (95), only the final sound of ruh 'arise, mount, sprout' is subject to replacement. The substitute provided for is simply the sound p (nom.sg. pah). Thus, according to A 7.3.43, the -n of the stem ruh- is optionally (anyatarasyam: A 1.1.44 [31]) replaced by -p when an affix pi
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follows, as in ropi / rohi (3sg. pres. ind. act. ropayati / rohayati), with the causative suffix pic.

Two other sūtras of the group headed by A 6.4.1 (105) are

A 7.3.84: सार्वधातुकार्धधातुकयोः (sārvadhātukārdhadhātukayoḥ)

A 7.3.86: पुगान्तलघूपधस्य चा (pugantalaghūpadhasya ca)

The term guna of A 7.3.82: मिवेक्ष्णः (418) is understood to recur in each of these rules. The locative dual sārvadhātukārdhadhātukayoḥ, given in A 7.3.84 and understood in A 7.3.86, is interpreted with the aid of A 1.1.66 (90). Each of these sūtras states an operation that applies when a sārvadhātuka or ārdhadhātuka affix (A 3.4.113-117 [63]) follows. The rules provide that guna vowels (A 1.1.2 [9]) occur. In addition, the term guna is used to refer to these replacements. Therefore, the metarule A 1.1.3 (97) comes into play, specifying the substituends for the guna vowels a e o. In this manner, two genitive forms are understood in A 7.3.84: anigasya of the heading A 6.4.1 and ikah gotten from A 1.1.3. Moreover, the operational rule does not refer to any particular stems, and presuffixal bases in general can end with /I u ū r ō/. Thus, ikah is to be understood as a qualifier of anigasya, so that, by A 1.1.72 (30), it refers to a stem in /I -I -u -ū r ō ō ō/. In sum, A 7.3.84 provides that the final sound (A 1.1.52 [95]) of a stem ending in one of these vowels is replaced by a guna vowel when a sārvadhātuka or an ārdhadhātuka suffix follows. In accordance with A 1.1.50-51 (92-93), e o a substitute for members of the respective pairs /I u ū r ō/; and a which replaces ō or ō is automatically followed by r. A 7.3.86 provides that a guna vowel also (ca) substitutes for /I -I -u -ū r ō ō ō/ and /I- vowels of a stem that ends in the augment pu (puganta) or one that has a light vowel (laghu: A 1.4.10 [37]) as its penultimate sound (upadhā: A 1.1.65 [41]) (pugantalaghūpadhasya). By A 1.1.3, the
light vowels in question are /i u ū/. The guṇa replacement provided for in A 7.3.84, 86 does not apply if the stem in question precedes a sārvadhātuka or ārdhadhātuka suffix marked with ʰg, ʰk, or ʰn or an ārdhadhātuka affix before which part of a verb is deleted (A 1.1.4-5 [98]). Examples of derivates formed with the application of A 7.3.84, 86 are: cetavya < ʰcɪ-tavya, stotavya < ʰstʊ-tavya, kartavya < ʰkṛ-tavya (A 3.1.96 [121]), hrepl < ʰhṛpl-ı, arpl < ʰrpl-ı-(A 7.3.36 [124]).
1.2. Pāṇini's akṣarasamāmnāya.

Pāṇini's akṣarasamāmnāya, the sound catalog that accompanies his corpus of sūtras, consists of fourteen groups of sounds, each closed by a consonantal marker (ś: A 1.3.3 [80]), as shown in figure C (p. 95). The sounds Pāṇini includes in his akṣarasamāmnāya and the order in which he arranges them reflect the purpose for which he set up this ancillary to his grammar: in order to refer, by means of terms interpreted with the aid of A 1.1.71 and 1.1.69 (83-84), to sets of sounds with respect to operations as formulated in sūtras.

Pāṇini uses forty-one pratyāhāras denoting groups of sounds as arranged in his akṣarasamāmnāya:

- ai: all sounds (vṝṇāṇ)
- ac: vowels (śvarāṇ)
- ha: consonants (vyañjanāṇi)

Vowel groups:

- ak: a i u r (śamānakṣarāṇi 'simple vowels')
- an: a i u
- ic: i u r e o a i a u (nāmināḥ 'retroflexing vowels')
- ik: i u r
- uk: u r

- ec: e o a i a u (sandhyākṣarāṇi 'complex vowels')
- en: e o
- ain: a i au

Groups of vowels and consonants:

- aś: vowels and voiced consonants
- am: vowels, h, semivowels, and nasal stops
- ap: vowels, h, and semivowels
- at: vowels, h and semivowels other than /
- in: vowels other than a; h and semivowels

Consonant groups:

- haś: voiced consonants (ghoṣavantaḥ)
- yar: semivowels, stops, and voiceless spirants
- yay: semivowels and stops
अइ उण् (१) आलू क् (२) ए ओड (३)
ऐ औच् (४) हयवर्त् (५) लण् (६)
बमइणनम् (७) हभल् (८) घटघष् (९)
जबगहदश् (१०) खफछठथचतत्व (११)
कपय् (१२) शबसर् (१३) हल् (१४)

(१) aiov (२) r/jk (३) eon (४) alauc
(५) hyvrt (६) lη (७) ηmnηnm
(८) jbhnh (९) ghghdhsh (१०) jbgddsh
(११) knphchthchcttv (१२) kpy
(१३) sssr (१४) h/l
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yañ: semivowels, nasal stops, jh bh
yam: semivowels and nasal stops
yan: semivowels (y v r o antahsthān)
val: consonants other than y
vas: voiced consonants other than y
ral: consonants other than y and v
may: stops other than n
nān: n n n
jhal: consonants other than nasal stops and semivowels
jhar: nonnasal stops, voiceless spirants
jay: nonnasal stops
jhas: voiced nonnasal stops
jah: voiced aspirated stops
bhas: voiced aspirated stops other than jh (i.e., bh gh dh dh)
jas: voiced unaspirated nonnasal stops (i.e., j b g d d)
bas: voiced unaspirated nonnasal stops other than j (i.e., b g d d)
kar: voiceless stops, voiceless spirants
kay: voiceless stops
chav: ch th th c θ t
ca: voiceless unaspirated stops, voiceless spirants
śa: spirants (ūsmānānā)
śar: voiceless spirants

Some of these abbreviations replace traditional terms given in parentheses (see also 43).

Pāṇini’s akṣarasamānnāya does not include the long vowels ā ē ō ū. Recall that semivowel substitution by A 6.1.77 (125) applies to both long and short i, u, ū vowels and that guṇa substitution as provided for in A 7.3.84, 86 (127) applies to both long and short vowels: not only dadhy atra < dadhi atra, cetavya < ci-tavya but also kumāry atra < kumārī atra (kumārī 'girl'), netavya < ni-tavya (ni 'lead, guilde'), and so on. The substitution of a single long vowel for a ā i ī u ū ē ā and a following homogeneous vowel (A 6.1.101 [532]) applies whether the contiguous vowels are long or short, and vrddhi replacement in the right context of affixes marked with n or
\( n \) applies to vowels in general (A 7.2.115 [417]). In all such major cases, the distinction between short and long vowels is not pertinent.

Pāṇini proceeds in a manner which captures this. The elements pertinent to the operations noted are referred to by the abbreviations \( ik, ak, ac \), which denote in the first instance vowels given in the akṣarasamāmnāya. By A 1.1.69 (84), these vowels then denote sets of vowels. Where it is necessary to refer to short or long vowels in particular, then, Pāṇini uses either \( hrasva, dirgha \) (A 1.2.27 [35]) or a term of the type \( vt \) (A 1.1.70 [85]).

On the other hand, Pāṇini lists the voiced spirant \( h \) twice, in the fifth and fourteenth subgroups of his sound catalog. Operations require that this consonant accompany both other voiced consonants (e.g., \( naś: \) A 6.1.114 [525]) and other spirants (e.g., \( śal: \) A 3.1.45 [236]). Pāṇini’s way of formulating his rules also requires a pratyāhāra referring to all voiced segments (\( aś: \) A 8.3.17 [557]), so that he could not follow the order of sounds found in other sound catalogs, namely: vowels, stops, semivowels, and spirants, with voiceless stops preceding voiced ones (see 43). Further, in his derivational system Pāṇini operates with posited basic forms of elements (see Section 4.2). There are basic forms with \( -s \) but none with the pharyngeal spirant \( - \eta \) (\( visarjanīya \), the velar spirant \( -\gamma \) (\( jihvāmūlīya \), or the bilabial spirant \( -\kappa \) (\( upadhmāniya \). None of these, then, is included in Pāṇini’s akṣarasamāmnāya.

In sum, the catalog of sounds that accompanies the Aṣṭādhyāyī is an ancillary to this corpus of rules, arranged in a manner that allows referring to sets of sounds pertinent to operations as Pāṇini formulates them.

**Remark.**

Pāṇiniyas use several terms to refer to Pāṇini’s sound catalog. The oldest of these is \( akṣarasamāmnāya \), used in the Mahābhāṣya (1.16.22, 24: 36.16; 179.8; 111.465.17), where
Patañjali also uses ākṣarasamāmnāyika ‘found in the akṣarasamāmnāya’ (Bh. I.15.22-28, 26.9) with reference to sounds of this catalog. The term akṣarasamāmnāya is equivalent to varṇasamāmnāya, used elsewhere (e.g., TPr. I.1: अथ वर्णसमामन्यः [atha varṇasamāmnāyaḥ] ‘Now the traditional set of sounds’) of a sound catalog: akṣara and varṇa both denote sounds. Abbreviations like ac, hal, formed in accordance with A I.1.71 (83), are called pratyāhāra, and the groups of sounds in the akṣarasamāmnāya, intended to allow such abbreviations, are also known as pratyāhārasūtrāṇi (RA I.1, PrK I.14) or simply pratyāhārāḥ (BhV 1). There is also a later tradition that the great lord Śiva (maheśvara) sounded his dhakkā drum fourteen times and revealed the fourteen groups of sounds to Pāṇini. Nandikeśvara recounts this in the first verse of his Kaśikā, where (NKāś. 148) he uses śivasūtragālam ‘the group of śiva-sūtras’. Some versions of the metrical Pāṇinīya-śikṣā also have a verse (Pañjikā 22, Rāk 57, Yajus 34, Rudraprasāda 57: चेनाक्षरसमामन्यमधिगम्य महेश्वराति कृतं व्याकरणं प्रोक्तं तस्मै पाणिनयें नमः॥) in which it is said that Pāṇini promulgated his grammar after receiving the akṣarasamāmnāya as a teaching from the great lord Śiva (akṣarasamāmnāyaṃ adhigamya maheśvarat). The subgroups of Pāṇini’s sound catalog are accordingly known also as māheśvarasūtrāṇi (SK I.4) ‘sūtras that emanate from the great lord Śiva’
1.3. Pāṇini’s dhātupāṭha.

1.3.0. Introduction.

According to A 1.3.1 (47), items of the set that begins with bhū have the class name dhātu. These are primitive verbal bases listed in Pāṇini’s dhātupāṭha, his catalog of verbs. This text gives verbs in forms associated with operations, accompanied by markers (Section 1.3.1), and is divided into ten major groups with subgroups (Section 1.3.2). The dhātupāṭha also includes certain sūtras (Section 1.3.3).

Remark.

In the dhātupāṭha as transmitted by commentators, verbs are accompanied by glosses. For example, the first entry is भू सत्तायाम् (bhū sattāyām). This includes the locative sattāyām ‘being’, construed with the supplied term vartate ‘occurs’ (MDhV 1.1 [p. 2]: भू सत्तायाम् वर्तत इति शेषः I). ‘bhū (occurs) in (the meaning) ’being’. It is pretty certain, however, that the dhātupāṭha in the form known to earliest Pāṇiniyas such as Kātyāyana and Patañjali did not contain these glosses. Thus, in his first and second vārttikas on A 1.3.1 (47) Kātyāyana argues that certain things have to be done if the class name dhātu is assigned to items by virtue of their being recited in the dhātupāṭha (pāthena dhātusamjñāyām). One has to deny the name to certain items which are homophonic with elements listed in the dhātupāṭha (samānasabdapratisedhaḥ, A1.3.1 vt. I). पाठेन धातुसंज्ञायां समानशब्दप्रतिषेधः I). For example, the particle vā ‘or’ should not be called dhātu; but this name should apply to vā ‘blow’. In addition, it is necessary to specify that such and such a particular stretch constitutes a given unit (parīmāṇagrahanam ca). One must know that bhū and edh (‘thrive’) are distinct units, the first two verbs of the
dhātupāṭha, and that the complex bhvedh is not a single unit given the name dhātu [vt. 2: परिमाणग्रहण चा, Bh. I.254.11-12 : कुतो हयेतद् भूशब्दो धातुसंजो भविष्यति न पुनःवेष्ठशब्द इति] Now, obviously, if glosses were given along with verbs in the dhātupāṭha known to Kātyāyana, the name assigned to an item such as vā accompanied by its gloss would not apply equally to vā meaning 'or', and there would be no question of not discriminating between entries such as ∊o and edh, since the gloss for the first would come between the two items.

Pāṇinīyas are aware of this. Kaliṭa remarks (Pr. II.178: न चार्थपाठ: परिच्छेदक: तत्स्यापाणिनीयत्वाः) that the glosses recited along with verbs in the available dhātupāṭha cannot have served to separate units originally, since these glosses are not Pāṇinian. As Bhaṭṭoji notes (ŚK II.49: पाणिनिष्ठः भवेध इत्यादिपाठिदिति भास्चार्थटिकयोः स्पष्टम्), Kātyāyana's and Patañjali's statements make it clear that in the dhātupāṭha they knew one had simply bhvedha and so on (see below), without intervening glosses. Commentators inform us that these meaning entries were added by post-Pāṇinian grammarians, foremost among them Bhimasena; see, for example, Pr., Ud. II.178, ŚK II.49. In addition, the glosses that do appear in the dhātupāṭha as handed down by commentators such as Kṣīrasvāmin, Maitreya, and Sāyana are considered only illustrative, not exclusive, since verbs have meanings additional to those given; see, for example, Pr. II.178-179, MDoV p. 2 (under 1.2), ŚK II.49.

The lack of glosses in Pāṇini's original dhātupāṭha does not really cause problems in determining what are the units listed, since these items were recited with markers and base pitches that in effect demarcate separate bases. For example, the first two items of the first major group in the dhātupāṭha are पू एध (bhū edha).
1.3.1. **Shapes of verbs and metalinguistic features.**

The forms verbs have as they are listed in the dhātupāṭha are not necessarily those in which they appear when used in actual speech. For example, word-interior sequences -ns-; -nc-, -djh-, and -sj- do not occur in ordinary Sanskrit. Instead, one has -ms-, -nc-, -jih-, and -jj-; as in dhvamsate (3sg. pres. Ind. mld.) 'falls, perishes', lujñati 'tears away', ujjhati 'abandons', and bhṛjjati 'fries'. The primitive forms of the verbs in question as given in the dhātupāṭha, however, are dhvans (dhvānsu), lunc (luncā), udjh (udjhā), and bhrasj (bhrasjā). These are basic forms, which Pāṇini posits on the grounds of well founded principles and operations as formulated in his Āṣṭādhyāyī (see Section 4.2.5).

In order to distinguish among operations connected with s- and n- of verbs, Pāṇini similarly posits some verbs with s- and others with n-; for example, suñ 'press juice out of something', pama 'bend, bow', srjaw 'let loose, create', nṝti 'dance'. According to

A 6.1.64: धात्वादेः वः सः। (dhātvādeḥ saḥ saḥ)

A 6.1.65: गो नः। (go naḥ)

verb-initial (dhātvādeḥ) s-(saḥ [sthāne]; A 1.1.49 [90]) and n-(naḥ [sthāne]) are unconditionally replaced by s-(saḥ [bhavati]) and n-(naḥ [bhavati]). The resulting s- and n- are then subject to replacement by s- and n- under particular conditions (see A 8.3.59, 8.4.14 [563, 572]).

As has already been illustrated (133-135), verbs are recited in the dhātupāṭha with additional features that also serve metalinguistic purposes. They have markers (it: A 1.3.2-8 [80]) and their base vowels are pronounced with distinct pitches. Thus, bhū, édna, dhvānsu, luncā, udjhā, nṝti have high-pitched base vowels, and all but the first have vocals markers attached to them: low-pitched a, u and high-pitched ā, ī. The base vowels of adā 'eat', hanā 'strike, kill', hu 'pour oblations', ḍibhi 'be afraid', bhrasjā, suñ, and
srjā are low-pitched; hu has no appended marker, but niḥbi and suḥ are marked with ni and n, bhrasjā with the svarita vowel ṛ, the others with high-pitched á. All such markers are unconditionally dropped (A 1.3.9 [81]), leaving verbal bases in their posited basic forms.

One reason for which Pāṇini attaches markers to verbs is to state the distribution of parasmaipada and ātmmanepada affixes (A 1.4.99-100 [64]). In the Pāṇinian derivational system, abstract L-affixes are introduced after verbs on condition that an agent or an object is to be signified or, with objectless verbs, on condition that an agent or an act itself is to be signified (A 3.4.69 [232]). L-affixes are replaced by verb endings or participial affixes (A 3.4.77–78, 3.2.124–126 [232, 262]), which are assigned to either the parasmaipada or the ātmmanepada class. A series of restrictive sūtras provides that affixes of one or the other group occur under stated conditions. In this connection, three types of verbs are distinguished: those with low-pitched vowels (anudāṭṭa: A 1.2.30 [36]) or ṛ as markers; those with svarita vowels (A 1.2.31) or ni as markers; others. Distinctively accentuated vowel markers follow bases that end in consonants, and ṛ, ni are attached to vocalic bases. For example: ēdha, śvītā 'be white', nisī 'kiss', yātī 'make an effort', ovijī 'fear, tremble, flee', dhvanśū, syāndū 'flow, run', bādhr 'oppress, check, suspend', bhrasjā, rhudhir 'hold in, oppress, besiege', tānū 'stretch', yācī 'ask for, beg', mučṝ 'release', câtē 'ask for', adā, hanā, mâthis 'stir, churn, grind', nīṭī, āsū 'throw', ovraṣcū 'cut, hew', krīḍr 'play, sport', gāṃjī 'go', śīṅ 'lie, sleep', suṅ.

According to

A 1.3.12: अनुदात्तानित आत्मनेपदम (anudāṭṭānita ātmmanepadam)

ātmmanepada affixes follow a verb that has a low-pitched vowel or ṛ for a marker (anudāṭṭānitaḥ). For example, the third singular present indicative forms edhate, śvetate, nimste, yatate, ud vijate (with the preverb ud), dhvāṃsate, syandate,
bādhate, ṣete contain the ātmanepada ending te; śīṅ has the marker nā, and the other verbs are marked with low-pitched vowels (137). In addition,

A 1.3.13: Bhāvakarmoṇi (bhāvakarmanōḥ)

provides that ātmanepada affixes alone occur for an L-affix introduced on condition that an act (bhāva) or an object (karman) is to be designated (bhāvakarmanōḥ). For example, āsyate and kriyate, with the suffix yak (A 3.1.67 [156]) and the ātmanepada ending te are both used with agentive instrumental forms like devadattena, as in

(9) Āsyaṭe Devadattena (āsyate devadattena) 'Devadatta (devadattena 'by Devadatta') is sitting.'

(10) Devadattena kāṭaḥ kriyate (devadattena kāṭaḥ kriyate) 'A mat (kāṭaḥ) is being made (kriyate) by Devadatta.'

The ending te of āsyate in (9) --- a construction found in later Indo-Aryan also but which has no exact counterpart in English --- derives from the L-affix lat introduced after the verb āsa 'be seated' on condition that the act in question is to be signified, but te of kriyate in (10) derives from lat which is introduced to signify an object, so that it is coreferential with the nominal kāṭa (nom. sg. kāṭaḥ).

Ātmanepada affixes occur with certain verbs if an agent is to be signified (kartaṛi) and the result of the act in question (kriyāphale) is intended for that agent (kartrabhāṣyaye).

A 1.3.72: Svārītāṇīṭiḥ kartrabhāṣyaye kriyāphale

(svārītāṇīṭiḥ kartrabhāṣyaye kriyāphale)

A 1.3.74: Nīcaśa (nicaś ca)

these affixes occur, under the conditions noted, following a verb marked with a svārītā vowel or nā (svārītāṇīṭiḥ) and also (ca) after a derived verb (A 3.1.32 [47]) that ends in (A 1.1.72 (30)) ric (nicaś: A 3.1.23-26 [281]). For example, bhṛjjate 'is
frying (something for himself), runddhe 'is holding in (something for himself), tanute 'is stretching, carrying out (something for himself), sunute 'is pressing juice out of something (for himself) have the ātmanepada ending te: śuň is marked with न, the other verbs with svarita vowels. The verb dukriṇi 'do, make' is followed by ātmanepada endings under the conditions given in A 1.3.72: kurute; similarly, the causative kāri (< kr-1), with the suffix nīc, takes ātmanepada affixes by A 1.3.74: kārayate is used if the agent in question has something done or made for himself.

As A 1.3.74 (139) concerns derived verbs, so does A 1.3.62. पूर्वव्याख्या: (pūrvavat sanāḥ)

which deals with desideratives, derived verbs with the suffix san (A 3.1.7 [279]): ātmanepada affixes follow a verb that ends in this affix (sanāḥ) to signify an agent just as they would occur with the primitive verb that precedes san (pūrvavāt). That is, the conditions that determine the use of ātmanepada affixes with a given primitive verb also determine the occurrence of these affixes with a desiderative from that verb. Thus, as ēdha takes ātmanepada affixes (A 1.3.12 [138]), so does edidhiṣa 'wish to thrive': edidhiṣate. A desiderative of śuň takes ātmanepada affixes under the conditions given in A 1.3.72 (139): susūṣate is used if the agent in question wishes to press juice out of something for himself.

Some verbs take ātmanepada affixes if they are used with certain preverbs or in particular meanings. For example, dukriṇi is regularly followed by agentive ātmanepada suffixes under the conditions stated in A 1.3.72 (139): krīṇi te 'buys (something for himself)'. According to

A 1.3.18. परिवायव्याख्या: (parivāyavēbhyaḥ kriyāḥ)

however, ātmanepada affixes follow krī (kriyāḥ) used with the preverbs pari, vi, ava (parivāyavēbhyaḥ). This holds when an agent is to be signified, even if the result of the act in question is not intended for that agent: pari krīṇi te 'buys, hires, pays back', vi krīṇi te 'sells', ava krīṇi te 'hires'. The
sūtras

A 1.3.19: विपराभ्याल्पे (viparābhyañ jeh)

A 1.3.20: आहो दोनास्यविहरणे (āno do
'nāsyaviharane')

provide that ātmanepada affixes follow ji (jeh), gudān (daḥ) when an agent is to be signified. The first verb takes these suffixes when it is used with vi, parā (viparābhyañ): vi jayate 'is victorious', parā jayate 'is overcome, cannot stand something'. Ātmanepada affixes follow gudān if this verb occurs with the preverb āni (ānāḥ), provided it is not used with reference to opening ones mouth (anāsyaviharane): ā datte 'takes, accepts'. han and yam also take ātmanepada affixes when they are used with the preverb āni, as in ā hante 'strikes', ā yacchate 'stretches, holds, restrains':

A 1.3.28: आहो यमहन: (āno yamahanah)

As provided for in

A 1.3.29: समो गम्यर्चिक्षायम् (samo
gamyṛcchibhyām)

agentive ātmanepada suffixes follow gam and rch used with the preverb sam (samaḥ); e.g., saṅ gacchate 'comes together, fits with', sam rçchate 'comes together with, meets in conflict'. According to

A 1.3.66: भुजोऽनवने (bhujō'navane)

ātmanepada affixes signifying agents follow bhujā, provided this verb is used in a meaning other than 'protect, serve, help' (anavane): bhunkte 'enjoys, eats', bhunakti 'protects, helps'.

A 1.3.78: शेषात्कर्तरि परस्मापदम् (Seṣāt kartari
parasmaipadam)

concerns a remainder with respect to what is covered in earlier rules, such as those considered in 138-141. According to this sūtra, parasmaipada affixes follow a verb that is part of this remainder (Seṣāt), on condition that an agent is to be signified (kartari). That is, these affixes are used to signify
agents if the conditions for the use of agentive ātmānepadā affixes given in earlier rules are not met. Thus, agentive forms of bhū, adā, hanā, hu, ṅibhi, māthi, ṛtī, āsū, ovraścū, krīḍf, gamś have parasmāipada affixes: bhavati 'is, becomes', atti 'eats', hanti 'strikes, kills', juhoti 'offers oblations', bibheti 'is afraid, manthati 'stirs', nṛtyati 'dances', asyati 'throws', ṭṛṣcati 'cuts', krīḍati 'plays', gacchati 'goes'. These verbs are not marked with low-pitched or svarita vowels, with ň or with ŉ. As opposed to bhṛjjate, tanute, sunute, kurute (see 139), the forms bhṛjjati, tanoti, sunoti, karoti are used if the agent spoken of performs the act in question for the benefit of someone other than himself. Members of the pairs kārayate: kārayati 'has do, has make', susūṣate: susūṣati wishes to press', cikīṛṣate: cikīṛṣati 'wishes to do, make' (see 139-140), krīḍate: krīḍati 'buys', datte: dadāti 'gives' contrast in a similar manner. On the other hand, agentive forms of gukṛtī used with pari, vi, or ava have only ātmānepadā affixes (A 1.3.18 [141]), and the contrast between ā datte 'takes, accepts' and ā dadāti 'opens (his mouth)' is different from the contrast between datte and dadāti (A 1.3.20). In addition, bhūṅkte 'enjoys, eats' and bhunakti 'helps, protects' (A 1.3.66) do not contrast merely in that the result of the act in question is or is not intended for the agent. Further, jī preceded by the preverbs vi, parā takes ātmānepadā affixes (A 1.3.19), but parasmāipada suffixes regularly follow the verb without preverbs, so that there is no contrast of the type noted: jayati 'is victorious'.

Under particular conditions, parasmāipada affixes are used to denote agents after verbs that are not part of the residual group covered by A 1.3.78 (142). Thus, according to

A 1.3.79. अनुपराभ्यां कृङ् (anuparābhyaṁ krīṇaṁ) these affixes follow gukṛtī if this verb is used with either of the preverbs anu, parā (anuparābhyaṁ): anu karoti 'imitates', parā karoti 'rejctes'. In some instances, moreover, forms with ātmānepadā and parasmāipada affixes alternate. Consider the
verbs *dyuṭa* 'shine, be bright', *śvītā* 'be white', *ānimidā* 'be moist, melt', *vṛtus* 'occur, be', *vṛdhau* 'grow, become strong, old', *śṛṇhu* 'fart', *syāndū* 'flow, run', *kṛpū* 'be fit, appropriate'. These are taught with low-pitched vowel markers, since they generally take ātmaneṇada affixes in agentive forms (*A* 1.3.12 [138]); e.g., 3sg. pres. Ind. *dyotate, śvetate, medate, vartate, vardhate, sardhate, syandate, kalpate*. On the other hand, agentive aorist forms of these verbs have either parasmaipada or ātmaneṇada endings: 3sg. aor. *adyotatā, aśvītāta, amidatā, avṛtata, avarṭiṣṭa, avṛdhata, aśardhiṣṭa, aṣyandatā, aṣyandatiṣṭa, aklpata* / akalpiṣṭa*. Hence, in

*A* 1.3.91: धुधो लुढ़ (वा कर्तरि परस्मैषपदम्)

(*dyudbhya* luni [vā 90, kartari parasmaipadam 78])

Pāṇini provides that parasmaipada affixes optionally (*vā: A* 1.1.44 [31]) follow verbs of the set beginning with *dyut* (*dyudbhyaḥ*) if an agent is to be signified (*kartari*) and the L-affix replaced by endings is *luni* (*luni: A* 3.2.110 [233]).

Now, these verbs have future forms of the type *dyotiṣyate, śvetiṣyate, mediṣyate, vartiṣyate, vardhiṣyate, sardhiṣyate, syandiṣyate, kalpiṣyate* and conditional forms of the type *adyotiṣyata, aśvetiṣyata, amediṣyata, avartiṣyata, avardhiṣyata, aśardhiṣyata, asyandisyata, akalpiṣyata*. In addition, as provided for by *A* 1.3.62 (140), desideratives derived from these bases take agentive ātmaneṇada affixes: *didiyoṭiṣate, śiśvetiṇate, mimiṇḍiṣate, vivartiṣate, vivardhiṣate, śiśardhiṣate, sīsyandiṣate, cikalpiṣate*. However, *vṛtus, vṛdhau, śṛṇhu, syāndū, kṛpū* are also followed by parasmaipada affixes in agentive future and conditional forms, and desideratives derived from these bases also have agentive forms with parasmaipada affixes: *vartsyati, vartsyati, sartsyati, syantsyati, kalpsyati, avartsyati, aśartsyati, asyantsyati, akalpsyati; vivṛtsati, vivṛtsati, śiśṛtsati, sīṣyantsati, ciklpsati*. Accordingly, Pāṇini provides in

[107]
that parasmaipada affixes optionally occur with verbs of the subgroup beginning with \textit{vrt} (\textit{vrdbyah}) where the suffixes \textit{sy} and \textit{san} (A 3.1.33,7 [236, 279]) are used (\textit{syasano}) that is, in future, conditional, and desiderative forms.

As I pointed out in 136, verbs are also of two types in that they are taught with high-pitched or low-pitched base vowels. This distinction between what are called \textit{udatta} and \textit{anudatta} verbs is linked to the occurrence and absence of the initial augment \textit{it} (A 1.1.46 [17]) with certain affixes, as in the following forms of \textit{dyuṭa} 'shine, be bright' and \textit{labha} 'gain': \textit{adyotiṣṭa} (3sg. aor.), \textit{dyotiṣyate} (3sg. fut.), \textit{adyotiṣyata} (3sg. cond.), \textit{dyotita} (past ptciple., nom. sg. nt. dyotitam), \textit{dyotitum} (inf.); \textit{alabdha} (\textit{alabh-s-ta} [cf. lsg. aor. alapsi]), \textit{lapsyate}, \textit{alapsyata}, \textit{labdha}, \textit{labdhum} The base \textit{labha} is followed by \textit{s} (\textit{slc: A 3.1.44 [236]}, \textit{sy} (A 3.1.33), \textit{kta} (A 3.2.102 [294]), and \textit{tumun} (A 3.3.10 [260]), but \textit{dyuṭa} is followed by \textit{iṣ} (\textit{iṣ}), \textit{iṣya}, \textit{ita}, and \textit{itum}. Similarly, the desiderative \textit{lipsa} (\textit{lipsate}) has the suffix \textit{san} (A 3.1.7), but \textit{dyotiṣa} (\textit{dyotiṣate}) has \textit{iṣa}. Thus, after an \textit{udātta} verb, an affix such as \textit{sic}, \textit{sy}, \textit{kta}, \textit{tumun}, \textit{san} generally appears with the augment \textit{it} (\textit{set}), but after an \textit{anudātta} verb such an affix generally appears without this augment (\textit{aniṣ}). Since verbs condition the presence or absence of the augment, by extension, \textit{udātta} and \textit{anudātta} verbs also are respectively called \textit{set} and \textit{aniṣ}. The above is only the general situation, since certain affixes lack \textit{it} or have it only optionally, even after \textit{udātta} verbs, and particular affixes take \textit{it} even after \textit{anudātta} verbs.

The general rule concerning the augment \textit{it} is

\textbf{A 7.2.35:} \textit{आर्धाधातुकस्येःव्यःत्वलादे:} (\textit{ārdhadhātukasyeḥ valādeḥ}) according to which this augment occurs as part of an \textit{ārdhadhātuka} affix (\textit{ārdhadhātukasya}: A 3.4.114-116 [63]) that begins with a consonant other than \textit{y} (\textit{valādeḥ}). This sūtra comes under the heading of A 6.4.1 (105), so that \textit{it} is added to
an affix when this follows a presuffixal base. As shown in 144, dyotitum contains the augmented ārdhadhatuka suffix itum ; similarly bhavitum, edhitum, dhvamsitum, lūṅcitum, ujjhitum, nartitum, śvetitum nimsitum, yatitum, vijitum, syanditum, bādhitum, tanitum, yācitum, catitum, manhitum, asitum, vraścitum, kriṅgitum, śayitum, from udātta verbs considered earlier (see 133-138).

There are also negative rules that disallow the addition of it. Thus, according to

A 7.2.8: नेघ वशि कृति (neḍ vaśi kṛti)

A 7.2.10: एकाच उपदेशेनुज्जातात् (ekāca upadeśe'nudattāt)

it does not occur (na[ḥavat]) in a kṛt affix (kṛti: A 3.1.93 [66]) which begins with a voiced consonant other than y (vaśi) or in an ārdhadhatuka affix that begins with a consonant other than y if this follows (A 1.1.67 [90]) a verb which, when it is taught (upadeśe), is monosyllabic (ekācaḥ) and has a low-pitched base vowel (anudattāt). For example, ṭasa (3sg. pres. ind. iṣte) 'have power, be able' is taught with a high-pitched base vowel, since affixes such as tumun are augmented with it when they follow this verb: iṣitum. A 7.2.35 (145) allows for the augment in such instances. This rule would also allow the augment for the suffix varac (A 3.2.175 [290]), but this affix lacks it in the derivate iṣvara 'lord'. A 7.2.8 disallows this augment for such an affix after a verb such as iṣa. A 7.2.10 precludes adding it to any affix which would otherwise get this augment by A 7.2.35 if the affix follows a verb of the type specified, as in labdhum(< ... labh-tum); similarly, attum (< ad-tum), hitum, hotum(< hu-tum), bhētum (< bhi-tum), bhraṣṭum (< ... bhras-tum), sotum(< su-tum), nantum (< ... nam-tum), sraṇtum (< ... srj-tum), roddhum (< ... rudh-tum), moktum(< ... muc-tum), gantum(< ... gam-tum), from anudattta verbs considered earlier.

Negative rules connected with A 7.2.35 (145) also have to take into consideration the phonological shapes of verbs and
markers of both verbs and affixes. For example, by

A 7.2.11: स्युक: किता (śryukah kitī)

A 7.2.14: स्विदितो निष्ठायाम् (śvidito niṣṭhāyām)

A 7.2.16: आदितरुच्चा (āditas ca)

particular affixes do not take the augment īt if they follow
certain verbs; an affix marked with ā (kītī), if it occurs with
śrīṁ 'resort to, lean on, depend on' or a verb that ends with u
ū r ō (śryukah) when it is taught; an affix of the niṣṭhā class
(niṣṭhāyām: A 1.1.26 [66]), if it occurs with tuosvī ‘swell’ or a
verb marked with ō (śviditah), as well as (ca) with a verb
that bears the marker ā (ādītah). The verbs śrīṁ, bhū (see
133), pūn ‘purify, filter’, tē ‘cross’, tuosvī, nītī (see 135),
śvītā (see 137) are recited in the dhātupātha with high-pitched
base vowels, showing that ērdhadhātuka affixes which begin
with consonants other than y have the initial augment īt when
they follow these bases (A 7.2.35 [145]): śrayitum, bhavitum,
pavitum, taritum (< tē-itum), śvayitum, nartitum, śvētum;
similarly, in śvayitvā ‘after becoming white’, the affix ktvā
(A 3.4.21 [259]) has the augment īt. However, the suffix kta
does not take this augment after these verbs: śrita, bhūta,
pūta, tirna (< ... tē-ta), śūna(< ... śvi-ta), nṛtta, śvītā; in
addition, śrītva, bhūtvā, pūtvā, tīrtvā (< ... tē-tvā) contain
unaugmented ktvā

Further, the desiderative affix san (A 3.1.7 [279]) lacks
īt after verbs with original -u-ū-r ō. As provided for by

A 7.2.12: सनि ग्रहगुहोर् स्त्र (sani grahaguhoṣ ca)
grāha ‘seize, grasp, take’, gūhā ‘hide’ (grahaguhoḥ) as well as
(ca) verbs with final vowels u ū r ō (uk:ukaḥ understood
from A 7.2.11) are contexts in which īt is not added to san
(sani): pupuṣa (pupuṣate), titirṣa (titirṣatī), derived from
pūṇa, tē, and jīghrkṣa (jīghrksatī), jughukṣa (jughukṣatī)
from grāhā, gūhā.

Rules disallowing the augment īt for given affixes may
have to take into consideration not only particular verbs but
also other affixes, with which unaugmented suffixes are used. Thus,

A 7.2.59: न वृद्धस्थत्वतर्बः (से इट परस्मैपदेषु) (na vṛdbhyaḥ caturbhyaḥ [se 57, iṣ parasmaipadesu 58])

provides that iṣ does not occur (na[ḥavati]) as part of an affix with s- (se) following (A 1.1.67 [90]) the four (caturbhyaḥ) verbs that make up an ordered subgroup starting with vṛtu (vṛdbhyaḥ), if parasmaipada affixes follow (parasmaipadeṣu: A 1.1.66); e.g., vartṣyati, vartṣyati, ṣarṭṣyati, syantṣyati, in which the unaugmented suffix sya precedes the parasmaipada affix tip, as opposed to vartṣyate, vardhiṣyate, śardhiṣyate, syandhiṣyate, where augmented iṣya (< iṣya) precedes the ātmaneṇa suffix te (cf. A 1.3.92 [143]). In addition, according to

A 7.2.60: तासी च क्लूपः (tāsī ca klpaḥ)

not only an affix with s- but also (ca) tās (tās: A 3.1.33 [236]) followed by parasmaipada suffixes lacks iṣ after kṛpū 'be fit': kalpsyati, kalptā

Conversely, some verbs usually followed by unaugmented suffixes condition the addition of iṣ to particular affixes. For example, one has kartum (< kṛ-tum), hartum, hantum, and kṛta, ṣrta, nata (< han-ta) from the verbs dūkrī 'do, make', ṣrē 'take', and hanā 'strike, kill'. Accordingly, these are taught with low-pitched base vowels (see A 7.2.10 [145]). Instead of unaugmented sya, however, one has augmented iṣya in kārṣyati, hārṣyati, hāniṣyati, akārṣyat, ahaṅṣyat, and ahaṅiṣyat. Such future and conditional forms, with augmented iṣya, are the norm for verbs that end with short ī. Hence, in

A 7.2.70: ऋढनो: स्येः (ṛdhanaḥ sye)

Pāṇini provides that iṣ occurs as part of sya (syē) used with verbs in -ṛ (ṛt- : A 1.1.70 [85]) and with han (ṛdhanaḥ).

Similarly, although gamē 'go' is generally followed by unaugmented affixes, as in gantum, gata (< gam-ta), and
gasmyate 'will be understood', an ārdhādātuka with initial s (se) receives the augment it if it is followed by parasmaipada endings (parasmaipadesu), as in gamiṣyatī and agamiṣyat. Augmenting with it under the conditions noted is provided for in

A 7.2.58: गमेरिटपरसैपदेशु (से) (gamer it
parasmaipadesu [se 57])

Pāṇini must also allow for optional augmenting with it. For example, according to

A 7.2.44: स्वरातिसूतिसूयतिधृदूनि दितो वा (svaratisūtisūyatidhūnūdito vā)
it optionally (vā: A 1.1.44 [31]) occurs under the conditions given in A 7.2.35 (145) if the ārdhādātuka affix in question follows svr 'resound', either of two verbs śūn 'give birth to', the base dhūn 'shake', or a verb with the marker ā (ādit), such as syāndū, ovrāscū (see 137): svaritum / svartum, savitum / sotum, dhavitum / dhotum, syanditum / syanttum, vṛāscitum / vṛastum. In addition, by

A 7.2.45: रधादिभ्यास (radhādibhyāsa ca)
it is optionally added to an ārdhādātuka affix beginning with a consonant other than y also (ca) if this follows verbs of the ordered subset that begins with radh (radhādibhyah). These verbs are radhā 'be harmed, subdued, finished', nāsā 'disappear, perish', trpā 'be pleased, satisfied', dṛpā 'be mad, wild', drūhā 'wish III to, try to hurt someone', mūhā 'be confused, out of one's mind', śnuhā 'vomit', śnihā 'be moist, smooth, feel affection': radhitum / raddhum, naśitum / namśtum, tarpitum / traptum, darpitum / draptum, drohitum / drogdhum / drodhum, mohitum / mogdhum / mogdhum, sνohītum / sνogdhum / sνoghum, snehitum / snegdhum / sneghum.

Other optional rules concern specific affixes. Thus, according to

A 7.2.41: इत सनि वा (वृत्त:) (it sani vā [vṛtaḥ 38])
it optionally (vā) occurs with san after vṛn 'cover, choose',
vṛṇa, vṛṇ 'choose', and other verbs with original -ṛ; and by

A 7.2.49: सनीवन्तर्ध्यान्द्रव्यम्भुश्यस्यप्राप्तिपिनाम्

(इत्या) (sanāvantardhabhrasjadambhushri-
svṛṇṇubharajānapisām [īt 47, vā 41])

īt is optionally added to san (sani) if this affix is used with verbs that end in -iv (ivanta), such as divū 'gamble', or with jñā 'prosper', bhrasja 'fry', dāṇbhū 'deceive', śrī 'resort to, lean on, depend on', svṛ 'resound', yu 'join, mix', ūrṇa 'cover', bhrṇa 'bear, fill', jñāpi 'inform, let know', and śānā, śānū 'divide, give: vivariṣati / vuvūṣati, vivariṣate /
vuvūṣate, titariṣati / titirṣati (tya 'cross, swim'), didaviṣati /
dudyāṣati, aridhiṣati / īrtṣati, bibharjaḥiṣati / bibhrajjiṣati /
ibhrkṣati / bibhrkṣati, didambhiṣati / dhpasi / dhpasi, 
śiśrayiṣati / śīśriṣati, sisvariṣati / susvūṣati, yiyaviṣati /
yuyuṣati, ūrṇunaviṣati / ūrṇunūṣati / ūrṇuṃṣati, bibharasiṣati /
bubhūṣati, jijñapayiṣatii jñipsati, sisaniṣati / sīṣāṣati.

According to

A 7.2.56: उदितो वा (कित्त्व) (udito vā [ktvi 55])

īt optionally occurs with ktvā (ktvi) after a verb with the
marker u (udita); e.g., dhvamsitvā / dhvastvā 'after disappearing, perishing', tanitvā / tatvā 'after stretching', asitvā /
astvā 'after throwing', from the verbs dhvānsu, tānū, āsū

Sūtras that provide for the optional occurrence of īt are
connected with a negative rules similar to A 7.2.14 (147):

A 7.2.15: यस्य विभाषा (yasya vibhāṣā)

This provides that the augment īt does not occur in a niṣṭhā
affix following a verb with respect to which an option is
provided (yasya vibhāṣā) in subsequent rules concerning this
augment. In this connection, consider the following par-
ticiples, with kta after verbs which are contexts for the
optional occurrence of īt (see 150-151): svṛta, sūta, dhūta,
syanna (< ... syand-ta), vrkna (< ... vrasc-ta), raddha (<...
radh-ta), naṣṭa (< ... naṣ-ta), ṭṛpta, ṭṛpta, drugdha / drūḍha (<...
.drūḥ-ta), mugdha / mūḍha (< ... muḥ-ta), snugdhal snūḍha.
(< ... snuh-ta), snigdhal snigha (< ... snih-ta), vṛta, vūrṇa (< ... vṛ- tta), tirṇa (< ... tṝ-ta), ēvyūta (< ... div-ta), rddha, bhṛṣṭa (< ... bhrasj-ta), dadbhā, śṛita, ṝṇuta, bṛṭta, sāṭa (< ... san-ta), dhvasta (< ... dhvans-ta), tata (< ... tan-ta), asta. Now, bhrasjā is an anudāṭṭa base, so that, by A 7.2.10 (146), the augment ṭṭ is disallowed for kta after this verb: bhṛṣṭa. In addition, A 7.2.11-12 (147) disallow ṭṭ for affixes marked with ḷ and for san after śṛṇi and verbs with original -u-ō-r-ī, so that svṛta, sūṭa, dhūṣa, vṛta, vūrṇa, tirṇa, śṛita, yuta, ṝṇuta, and bṛṭta are accounted for. On the other hand, although ṭṛpā and ḍṛpā have low-pitched base vowels, A 7.2.45 (150) lets any ārdhāḍhāṭa affix that begins with a consonant other than y optionally receive the augment ṭṭ after these verbs, and the negative rules given in 147 cannot apply to disallow this augment for kta used with the verbs in question. The same negative sūtras cannot disallow ṭṭ for kta after the consonant-final udāṭṭa bases syāndū, ovrāscū, rādhrā, pāsā, druhā, mūhā, sūñhā, sīñhā, divū, ēdhū, śānā, śānū, dhvānsū, tānū, āsū. Clearly, another negative rule is required. This is A 7.2.15: The sūtras considered in 150-151 let affixes optionally take the augment ṭṭ after certain verbs; niṣṭhā affixes do not take this augment after such verbs.

There are also instances such that the suffix san is obligatorily augmented with ṭṭ, but rules considered up to now would allow for this only optionally or not at all. Consider the desideratives sismayiṣa (sismayiṣate), pipaviṣa (pipaviṣate), ariṣa (ariṣati), āṇjiṣa (āṇjiṣati), aśiṣa (aśiṣate), cikarisha (cikarisha), jigarisha (jigarisha), didarisha (ā didarisha, with the preverb ā), didhariṣa (didhariṣate), and pipracchiṣa (pipracchiṣati), derived from smin 'smile', pūn 'purify', r 'go, reach', ānjū 'smear, anoint', aśū 'reach, encompass, pervade', kṛ 'strew', gṛ 'swallow', ḍṛṇ 'consider, respect', ṛṇ 'subsist', and prachā 'ask'. All these derivatives have the augmented suffix iṣa. However, by A 7.2.10 (146), san would remain unaugmented after anudāṭṭa bases such as smin (smetum, smita), ḍṛṇ (ādurtum, āṛta),
and prachā (praṣṭum, praṣṭa); by A 7.2.12 (147), san would not have \( i t \) after a verb such as pūṅ; according to A 7.2.44 (150), \( i t \) would be added only optionally to a suffix after a verb marked with \( ū \), such as āṇjū (aṇjitum, aṅkūṭum), āśū (aṣītum, aṣūṭum); and according to A 7.2.41 (151), after the verbs \( kṛt \) and \( gt \), the affix san would only optionally be augmented with \( i t \). Therefore, in

A 7.2.74: रिम्पुन्रुप्यक्ष्या सनि (हट)  
(smīpūṇiraṇjvaśām sani [ \( i t \) 58])

A 7.2.75: किरश्च पञचक्ष्या: (kiraś ca paṅcābhyaḥ)

Pāṇini specifically provides that \( i t \) occurs with san (sani) when this suffix follows smin, pūṅ, r, āṇjū, āśū as well as (ca) the five (paṅcābhyaḥ) verbs of the subgroup that begins with \( kṛt \) (kiraḥ). After these verbs, san thereby takes the augment \( i t \) obligatorily.

Remark.

As I pointed out earlier (see 86, 116), the nasal pronunciation of vowel markers and the svarita marking of adhikāras was lost in the Pāṇinian tradition. Similarly, the distinctive accentuations of base vowels and markers are not retained in the dhatupāṭha as handed down by commentators like Kṣīrasvāmin, Maitreya, and Śāyana, although Kṣīrasvāmin does say that the marker \( a \) of ṣupacās is nasalized (ṣānu-nāsikokāraḥ) and that the nasal pronunciation of this vowel serves to illustrate the pronunciation of other markers (KṣT 1.724 [p. 157]: सानुनासिकोस्कारःसवर्धामुपलक्षणार्थम्). The texts transmitted by these commentators include statements that given groups of verbs are udāṭta (set) or anudāṭta (aniṭ) and that specified sets of verbs have high-pitched, low-pitched, or svarita vowel markers (udāṭtet, anudāṭtet, svarīt) and are thereby among those verbs that have agentive forms with parasmaipada affixes (parasmaipadin,
parasmaibhāsa), atmanepada affixes (atmanepadin, atmanebhāsa), or both (ubhayapadin, ubhayatobhāsa). For example, after giving ēdha with its gloss, Kṣirasvāmin says that the thirty-five verbs from here on, through kāṭtha 'praise', have high-pitched base vowels and low-pitched markers. He then notes that, since the e of ēdha is high-pitched, this verb is set, and that, in accordance with A I.3.12 (I38), the verb is atmanepadin, since its a is low-pitched. Later, after giving kāṭtha with its gloss, Kṣirasvāmin closes the subsection in question with a statement that the verbs of this group have high-pitched base vowels and low-pitched markers. [KṣT I.3 (p. 11): इति: कत्यान्त: पञ्चविनोशतुवादात् अनुवातेतत्त्वः तेनायम्
एकारस्योदातित्वात् अकारस्य चानुवातित्वादनुवातित्तित्वम्
आत्मनेपपित्यात्मनेपदी: I.32 (p. 21): उदात्ता अनुवातेति:]
According to Maitreya, parasmaibhāsa, atmanebhāsa, and ubhayatobhāsa are terms of early teachers (pūrvacārya), equivalent to parasmaipadin, atmanepadin, ubhayapadin. [E.g., DhPr. I.1 (p. 8): परस्मैभाष । इति रस्मैपदिनः पूर्वार्थार्थसंज्ञा, I.36 (p. 11): आत्मनेभाषेत्यात्मनेपदिनां पूर्वार्थार्थसंज्ञेयम्]

1.3.2. Groups and subgroups of verbs in the dhātupātha.

The verbs of Pañini's dhātupātha are arranged in ten major groups (gana), the first items of which are as follows:
I. bhū 'be, become' II. adā 'eat' III. hu 'offer oblations' IV. divā 'gamble' V. suññ 'press juice out of something' VI. tūḍā 'shove, goad, wound' VII. rudhr 'hold in, oppress, besiege' VIII. iaññ 'stretch' IX. dukriñ 'buy' X. cura 'steal'

Verbs of different major groups can have similar markers and similarly accented base vowels serving purposes such as those noted in Section 1.3.1. For example, adā and divā are both parasmaipadin verbs (see 154 for the term), so that both
are marked with high-pitched vowels (A 1.3.78 [142]). suñ, tudā, rudhir, tanu, and dukriṇ are ubhayapadin verbs, so that they are marked with svarita vowels or i (A 1.3.72 [139]). bhū, divū, tanu are set verbs, but adā, hu, suñ, tudā, rudhir, and dukriṇ are anīt verbs, so that the former are taught with high-pitched base vowels, the latter with low-pitched base vowels (A 7.2.35,10 [145-146]). Both divū and tanu are followed by unaugmented -tvā or augmented -ltvā (dyūtvā, dyotītvā, tatvā, tanītvā), so that both are marked with u (A 7.2.56 [151]).

Further, as provided for in

A 3.1.67: सार्वधातुके यक् (भावकर्मणोऽधातोऽ)
(sārvadhātuke yak [bhāvakarmanoḥ 66, dhātoḥ 22])

the affix (A 3.1.1 [15]) yak follows (A 3.1.2) any verb (dhātoḥ) that occurs with a sārvadhātuka suffix (sārvadhātuke : A 3.4.113 [63]) which has been introduced on condition that an act or an object is to be signified (bhāvakarmanoḥ : A 3.4.69 [232]), as in ās-ya-te, kri-ya-te (< kr-ya-te) of (9)-(10) (138).

Nevertheless, distinct operations characterize the ten major groups of verbs. Consider, for example, the third singular indicative active present forms of the verbs given in

155: bhāvati, ātti, jūhoti, divyati, sunōti, tudāti, runāddhi, tanōti, kriṇāti, corāyati. These differ in respect of elements that directly follow the bases. Some forms are of the type V-A-E, with an affix between the verb and the ending. bhāv-a-ti (< ... bhū-a-ti) has a low-pitched suffix a (śap : A 3.1.4 [592]) after the verb bhū, the vowel of which is high-pitched (A 6.1.162 ), but in tud-ā-ti the base tud is followed by a high-pitched suffix ā (A 3.1.3). div-ya-ti (< div-ya-ti) includes the suffix ya (śyan), with a low-pitched vowel (A 6.1.197 [600]), but su-nō-ti (< ... su-nū-ti), tan-ō-ti (< tan-ū-ti), and kri-pā-ti (< kri-nā-ti ) have suffixes with high-pitched vowels. In addition, runāddhi (< ... ru-nā-dh-ti < ruḍh-ti ) contains the infix -nā- (śnam). cor-ā-y-ti (< ...
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cor-i-a-ti) has two suffixes in addition to the ending tip:
cor-i (< cor-i) contains the affix nic and is followed by śap. Other forms have no affix except the ending. Clearly, ātti (< ād-ti) consists simply of the verb ād and the ending tip. In jūhoti, an iterated base precedes this ending.

To account for such forms, Pānini provides that affixes are introduced to verbs when these occur with sārvadhatuka affixes (A 3.4.113 [63]) signifying agents. Of the affixation rules in question, the most general is

A 3.1.68: कर्तरि शण् (सार्वधातुके धातो:) (kartari śap [sārvadhātuke 67, dhātoḥ 22])

which simply provides that if a verb occurs with a sārvadhatuka affix (sārvadhātuke) signifying an agent (kartari), the suffix śap follows that verb. Other sūtras, exceptions to A 3.1.68, introduce other affixes to particular verbs under the same condition. The following are such rules:

A 3.1.69: दिवादिध्य: श्यन् (diévādibhyah śyan)
A 3.1.73: स्वादिध्य: श्नु: (svādibhyah śnuḥ)
A 3.1.77: तुदादिध्य: श: (tūdādibhyah śaḥ)
A 3.1.78: रुढादिध्य: श्नम् (rudhādibhyah śnam)
A 3.1.79: तनादिक्रन् उ: (tanādikrṇibhyah up)
A 3.1.81: क्र्यादिध्य: श्नाः (kryādibhyah śnā)

According to these sūtras, the affixes śyan, śnu, śnam, u, and śnā occur with verbs of major groups as follows:

A 3.1.69: śyan: the set beginning with div (diévādibhyah)
A 3.1.73: śnu: the set beginning with su (svādibhyah)
A 3.1.77: śa: the set beginning with tud (tūdādibhyah)
A 3.1.78: śnam: the set beginning with rudh (rudhādibhyah)
A 3.1.79: u: the set beginning with tan, including also krṇ (tanādikrṇibhyah)
A 3.1.81: śnā: the set beginning with kr (kryādibhyah)

These sūtras are part of the section headed by A 3.1.1 (15),
so that the elements introduced have the class name _pratyaya_: they are affixes. By A 3.1.2, such elements generally follow items to which they are introduced, items denoted by ablative forms such as _divadibhyah_, construed with _parah_. However, an affix marked with _m_ follows the last vowel of the item to which it is introduced (A 1.1.47 [16]). Thus, _sap_, _syan_, _shu_, _sa_, _u_, and _shan_ are suffixes, but _shnam_ is an infix. In addition, the affixes marked with _s_ belong to the _sārvadhātuka_ class, but _u_ is a member of the _ārdhādhātuka_ class (A 3.4.113-114 [63]).

After groups of verbs covered by sūtras such as A 3.1.69-81 (157) have been extracted, one is left with three major sets of verbs to which _sap_ is directly introduced, by A 3.1.68: verbs of the groups that begin with _bhū_, _adā_, and _hu_ (1-111 [155]). However, according to

_A 2.4.72: अविद्यमृत्तिभ्य: शप: (लुकः) (adiprabhṛtibhyah šapah [luk 58])_

_A 2.4.73: बहुलं छन्दसि। (bahulam chandasī)_

_A 2.4.75: जुहोत्यादिबध्य: झल:। (juhotyādibhyah jhol)_

_A 2.4.76: बहुलं छन्दसि।_

_Sap_ is replaced (šapah [sthe]: A 1.1.49 [90]) by zero (luk; jhol: A 1.1.61 [79]) after (A 1.1.67 [90]) verbs of the sets that begin with _ad_ (adiprabhṛtibhyah) and _hu_ (juhotyādibhyah), though this applies only variably (bahulam) in Vedic (chandasī). Once _sap_ has been dropped after verbs of the group that starts with _hu_, moreover, doubling applies to these bases (A 6.1.10 [382]). Verbs of the group beginning with _cura_ have a particular status in that the suffix _nic_ (A 3.1.25 [281]) unconditionally follows them to form derived verbs (A 3.1.32 [47]) of the type _cor-i_ (cur-i: A 7.3.86 [127]), after which _sap_ is introduced by A 3.1.68 (157).

Major groups of verbs in the dhatupātha include subgroups (antargana) connected with certain operations. One subset may overlap with or be included in another. These subgroups are shown below, according to their first members and the
major groups to which they belong.

1. Subgroups in the major group beginning with \textit{bhū}:

\textit{dyūta} 'shine, be bright': Verbs of this subgroup optionally have parasmaipada endings as replacements for \textit{lunā} (A 1.3.91 [143]), and these endings are preceded by the suffix \textit{aṅ} (A 3.1.55 [236]): \textit{adyutāt/aadyotiṣṭa}

\textit{vṛtu} 'occur, be': This set is included in the group that begins with \textit{dyūta} but its members also optionally have future, conditional, and desiderative forms with parasmaipada affixes (A 1.3.92 [143]). Moreover, the augment \textit{ī} is not added to an ārdhadhātuka affix in \textit{s}-after these verbs if it is followed by parasmaipada suffixes (A 7.2.59-60 [148]): \textit{avyutāt/avartiṣṭa, vartṣyati/vartiṣyate}

\textit{ghāta} 'strive, be busy, happen': There are two subgroups beginning with this verb. The longer set consists of verbs treated as marked with \textit{m} (\textit{mitah}: see 189b); the shorter subset, which ends with \textit{nītvārā} 'hasten, rush', consists of verbs that are also treated as marked with \textit{s} (\textit{sitah}: see 189a). Before the suffix \textit{nīc}, the penultimate vowel of a base marked with \textit{m} is replaced by a short vowel (A 6.4.92 [188]), as in the causatives \textit{ghati} (\textit{ghāt-ī: ghātayati}), \textit{tvari} (\textit{tvarayati}). Verbs marked with \textit{s} form feminine action nouns with the suffix \textit{aṅ} (A 3.3.104 [291]) of the type \textit{ghātā, tvarā}

\textit{phānā} 'move about, run': There are seven verbs in this group: \textit{phānā; rājī, bhrājī, dubhrāśr, dubhāśr 'shine'; svāmū, svānā 'sound'. These verbs optionally have perfect forms with no abhyāsa syllable (A 6.1.4 [52]) and a base vowel \textit{e} instead of \textit{a} or \textit{ā} (A 6.4.125 [458]), of the types \textit{paphātātukh/ pheṇātukh} (3du. act.), \textit{rājē/ reje} (3sg. mid.).

\textit{jvālā} 'burn, flame': Verbs in this subgroup, which ends with \textit{kāsā} 'move, open, develop', optionally form derivates of the type \textit{jvāla} 'flaming', with the agentive affix \textit{na}(A 3.1.140 [290]).

\textit{yajā} 'worship, perform a rite, sacrifice': This subset ends with \textit{ṭuosvī} 'swell', the last verb in the first major group. Verbs of this subgroup undergo samprasāraṇa substitution (A)}
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1.1.45 [38]) before suffixes marked with k (A 6.1.15 [388]); e.g.,

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iṣṭa (< ... yaj-ta), śūna (< ... ṣvī-ta [see 147]), with the participle suffix kta; see 170 (I.6).

II. Subgroups in the major group beginning with adā

rūdīr 'cry, weep': This set includes four other verbs: niṣvapā 'sleep', ṣvāsā 'breath, sigh', ānā 'breath', jāksā 'eat, laugh'. Verbs of this group are followed by augmented sārvadātuka endings, as in rodīti, svapīti, ṣvasīti, anīti, jaksīti, with the augmented ending iti; in addition, t and s receive the initial augment it or at after them, as in arodīti arodat, arodīthi arodah (A 7.2.76, 7.3.98-99 [440]).

niṣvapā: This subgroup ends with hnuā 'hide, deny', the last verb of the second major group. Forms such as svapānti svapānti, where these verbs are followed by vowel-initial endings the first vowel of which is not the augment it, optionally have high-pitched base vowels (A 6.1.188 [594]). As can be seen, four verbs of this subgroup also belong to the set that begins with rūdīr.

jaksā: Verbs of this subgroup, included in the set that begins with niṣvapā, belong to the abhyāsta class (A 6.1.6 [52]).

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III. Subgroups in the major group beginning with hu

gubhrī 'maintain, nurture': Two other verbs belong to this subgroup: mān 'measure, bellow' and ohān 'go'. The abhyāsa syllable (A 6.1.4 [52]) gotten by doubling for these verbs in forms where sap is deleted (A 2.4.75 [158]) has the vowel i (A 7.4.76 [385]): bibharti, mimite, jihite.

bijīr 'wash': This subset has two additional members: vijīr 'separate' and viṣīj 'surround'. In forms where sap is introduced then deleted, the abhyāsa syllable gotten by doubling for these verbs has the guṇa vowel e (A 7.4.75 [385]): nenekti leniktī, vevektī vevektī, veveštī veveştīe.

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IV. Subgroups in the major group beginning with divā

śūn 'give birth to': Verbs of this subgroup (see 173 [IV.B.2a]) are treated as marked with o (odītah: see 189c), so that the t-of kta and ktavatu following them is replaced by n-(A 8.2.45 [549]): sūna, sūnavat.

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puśā 'flourish, prosper, thrive, nourish': This set ends with grēdhū 'desire, be greedy', the last verb of the fourth major group. After verbs of this subgroup, aṁ precedes para-
smalipada endings that derive from lurā (A 3.1.55 [236]): apuṣat, agrdhat (3sg. aor.).

rādhā 'be harmed, subdued, finished': This is part of the set beginning with puṣā. An ārddhātuka affix beginning with a consonant other than y optionally has the augment ī after verbs of this subgroup (A 7.2.45 [150]): radhitum / raddhum.

śāmū 'become calm, peaceful': This subset, also included in the one that begins with puṣā, has seven other members: tāmū 'be anxious, exhausted', dāmū 'become tame', śrāmū 'get tired', bhrāmū 'wander about, err', ksāmūs 'tolerate', klāmū 'become tired, faint', mādī 'be glad, exhilarated'. When followed by Śyan (A 3.1.69 [157]), these verbs have long base vowels (A 7.3.74 [424]): śāmyati, tāmyati, dāmyati, śrāmyati, bhrāmyati, ksāmyati, klāmyati, mādyati. In addition, these verbs form agentive derivateis with ghinup (A 3.2.141 [290]) of the type śamin.

vi. Subgroups in the major group beginning with tudā.

kūtā 'bend, curve': After verbs of this set (see 175 [VI.B]), an affix not marked with ā or ē is treated as marked with ē (A 1.2.1 [513]), so that it does not condition guna or ārddhi substitution in a preceding stem (A 1.1.5 [98]). For example, kūtītum has kūt-followed by ētum, but, as can be seen from examples like totītum (« ... tud-tum), jōtītum (« jūṣt-ītum), the affix tūmūn, whether simple or augmented with ēt, generally conditions guna substitution for penultimate ērā of a stem (A 7.3.86 [127]).

kṣ' strew': After the five verbs of this subset, īt is obligatorily added to the desiderative affix san (A 7.2.75 [153]).

mucī 'release': This subgroup (see 175 [VI.F]) ends with piṣā 'carve, form', the last verb of the sixth major group. When followed by Sa (A 3.1.77 [157]), these verbs take the augment nūm (A 7.1.59 [439]): muṇcātī (« ... munc-a-tī),
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IX. Subgroups in the major group beginning with dukkhi.

puh 'purify': Final vowels of verbs in this subset (see 178 [IX. B]) are replaced by short vowels before an affix marked with ś (A 7.3.80 [424]), as in punāti (< pū-ṇā-ti), with the suffix śnā (A 3.1.81 [157]).

lōh 'cut' This subgroup consists of the verbs in the last-mentioned set except for pūh. After verbs of this group, the t-of kta and ktavatu is replaced by n-(A 8.2.44 [549]), as in lūna 'cut', lūnavat 'one who has cut something'; contrast krita, kṛitavat, pūta, pūtavat.

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X. Subgroups in the major group beginning with cura.

jñapa 'inform, please, sharpen, kill': Verbs of this set are treated as marked with m (mitah; see 200), so that their penultimate vowels are replaced by short vowels before nic (A 6.4.92 [188]): jñāpi (< jñāp-).

cita 'perceive, understand': Verbs of this subgroup are used with ātmanepada affixes only. As I have pointed out (158), nic is unconditionally added to bases of the tenth group, and derived verbs with this suffix take ātmanepada affixes signifying agents if the results of the acts in question are intended for their agents (A 1.3.74 [139]). This is only the general situation, however. Derived verbs formed from the bases of the present subgroup simply take ātmanepada affixes (see 192a), without this condition having to be met: cetayate.

yuja 'join, connect, yoke': Contrary to what obtains for verbs of the tenth major group in general, after bases of this subgroup, nic is introduced only optionally (see 192b), so that verbal affixes, including  śap (A 3.1.68 [157]), alternately occur with derived verbs in -nic formed from bases of this set or with these bases alone. For example, one has yojayati, yojati from yuja of the subset under consideration, as also yunakti from yujīr of the seventh major group; similarly, dhṛṣa 'be bold, daring' is included in the present subgroup (dhārṣayati, dhārṣati).

katha 'tell, relate': Verbs of this subgroup, which extends
to the end of the tenth major group, end in \(-a\). This vowel is deleted when a base precedes an ārdhadvati suffix (A 6.4.48 [450]), katha-1 > kath-i (kathayati), sūca-1 > sūc-i (sūcayati 'points out [faults]'), sprha-1 > sprh-i (sprhayati 'desires, yearns for'), with \(-a\) dropped before the ārdhadvati suffix \(\text{nic}\). By A 1.1.57 (101), the zero replacement for \(-a\) has the status of the original vowel with respect to an operation on what preceded that vowel, so that the penultimate \(a\) of kath- in kath-i is not subject to replacement by the vṛddhī vowel \(ā\) (see 101); nor are the \(ū\) of sūc- and the \(r\) of sprh- in sūc-i, sprh-i subject to replacement by gūṇa vowels (A 7.3.86 [127]).

\textit{pada'go':} Verbs of this set, included in the subgroup that begins with katha, form derivatives in \(-\text{nic}\) that take only ātmanepada affixes: padayate. In this respect, these verbs are similar to those of the group that begins with \textit{cita} (cetayate). However, the two groups differ in an important respect. As shown, the final vowel of \textit{cita} is a marker (\textit{it}: A 1.3.2 [80]), so that it is unconditionally deleted (A 1.3.9 [81]), leaving \textit{cit}, to which \(\text{nic}\) is affixed. The penultimate vowel of \textit{cit-} in \textit{cit-i} is then replaced by the gūṇa vowel \(e\) according to A 7.3.86 (127). The marker of śama 'look at, see' also is unconditionally dropped, and the penultimate \(a\) of śam- in śam-i is then replaced by the vṛddhī vowel \(ā\) (A 7.2.116 [417]): śām-i (ni śāmayate). The \(-a\) of \textit{pada} on the other hand, is not a marker, so that it is not dropped unconditionally. It is deleted before \(\text{nic}\), so that, by A 1.1.57, vṛddhī substitution in \textit{pad-} is precluded.

As shown, the final vowels of \textit{cura, cita, yuja, dhṛṣa, śama} are markers. However, they are not markers accented in a manner to show that a verb is parasmailpadin, ātmanepadin, or ubhayapadin. For the use of ātmanepada and parasmailpada affixes with derived verbs containing \(\text{nic}\) is covered in general by A 1.3.74, 78 (139, 142), and such verbs of the tenth major group as form derivatives with \(\text{nic}\) that take only ātmanepada affixes are put in special subgroups, beginning with \textit{cita} and \textit{pada} (166). On the other hand, if \textit{cur, cit, yuj,}
dhṛṣ, sam, and others were given in the dhatuṣṭha without the vowel markers shown, their final consonants would be classed as it hence deleted (A 1.3.3, 9 [80–81]). These vowel markers thus serve to cover the final consonants of verbs, leaving cur and so on after they have been deleted. The final vowels of katha and others of the subgroup beginning with this verb, however, are not nasalized markers. In the dhatuṣṭha versions handed down by commentators, Kśiravāmin and others explicitly provide that verbs of the group starting with katha end in -a ( adantah: KṣT X.240 (p. 310): अदन्ताः इत्या
गणान्तादिद्विसहानिष्ठधार्थमदन्तत्वं विधीयते।; cf. DhPr. p. 147
(immediately following X.293), MDhV X.243 (p. 567), SK 3.403).

Verbs are distributed among the major groups and subgroups of the dhatuṣṭha according to operations connected with them (see 157–167). Accordingly, Pāṇini recognizes homophonous bases. Some such verbs clearly differ in meaning. For example, vidad 'know' belongs to the second major group (vett/i veda), vida 'be, occur' to the fourth major group (vidyate, with a high-pitched base vowel), and vidį 'find' is included in the sixth major group, within the subgroup that begins with mucī (vindati, vindate, pass. vidyate). Other homophonous bases, however, do not differ in this way. For example, puṣā (IV: puṣyati, see 153) and puṣā (IX: puṣnāti) are patently related in meaning --- indeed commentators gloss them identically (e.g., KṣT IV.73, IX.60: puṣṭau) --- although puṣyati 'thrive' and puṣnāti 'makes to thrive, nourishes' can contrast. Still other homophonous verbs, on the other hand, do not differ semantically even to this possible extent; for example: krṣā (I: kāṛṣati), krṣā (VI: krṣāti, krṣāte) 'draw, plow'; dān (I: yācchati [A 7.3.78 (437)], dudān (III: dādāti, dātte) 'give'; mana (IV: mānyate), mānu (VIII: manutē) 'think, consider'; nīmida (I: médate), nīmida (IV: mēdyati) 'become moist'.

Within each major group of the dhatuṣṭha (see 155), verbs in general are arranged according to three criteria: They are
ātmanepadin, parasmaipadīn, or ubhayapadīn (137-143, 154); they are udātta or anudātta (144-154); they have final sounds in common. However, membership in subgroups associated with particular operations (159-166) takes precedence over these general criteria. The overall organization of the major groups in the dhatupāṭha is shown below.

1. First major group (bhūvidgana).

A. Udātta verbs that are either parasmaipadīn or ātmanepadin.

1. dhū (dhāvati) 'be, become'

2. Bases ending in consonants, arranged according to their particular final sounds, beginning with ēdha (ēdhae) 'thrive' and others with final dental stops. These follow bases that end in nonnasal velar, palatal, retroflex, and labial stops, then those ending in nasals, semivowels, and spirants. Within each of these sets, ātmanepadin verbs are given first, then parasmaipadīn verbs. In addition, the single udātta ubhayapadīn base of the first major group that ends in a semivowel is included here: dhāvu (dhūvati, dhāvate) 'wash'.

B. The special subgroups that begin with dyūta, vyūtu, ghāta, phānā, and jvālā (see 160). These sets resemble A.2 in that most of the verbs in question are udātta and either ātmanepadin or parasmaipadīn, but this is not always so. Thus, although rāja is ubhayapadīn, it has forms of the type found for the subgroup beginning with phānā, so that it is included in this group. For systematic reasons also, the subgroup beginning with jvālā contains anudātta verbs: sadī (sīdati: A 7.3.78 [437]) 'sit down, sink, become languid', śadī (sīyate: A 7.3.78) 'fall, disappear, perish', kruṣā (kroṣati) 'call, cry', ruhā (rohati) 'climb, mount, sprout'.

C. Udātta ubhayapadīn verbs.

1. Consonant-final bases, starting with nikka (nikkati, nikakte) 'hiccough' and others that end in velar stops. These follow bases with final palatal, retroflex, and dental stops, after which come those that end in nasals, semivowels, and spirants.

2. The vowel-final base śrīnī (śrāyati, śrāyate) 'resort
to, lean on, depend on.

D. Vowel-final anudātta bases.
   1. Ubbhayapadīn verbs, starting with hrī (hārati, hārate) 'take'.
   2. Parasmaipadīn verbs, beginning with dhe (dhiyati) 'suck'.
   3. Ātmaneipadīn verbs, starting with smi (smāyate) 'smile'.
C and D.1 make up a group of ubhayapadīn verbs.

E. Vowel-final udātta bases.
   1. Ātmaneipadīn verbs, beginning with pu (pāvate) 'purify, become purified'.
   2. The parasmaipadīn verb tī (tārati) 'cross, swim'.
C.2-E.2 make up a group of vocalic bases.

F. Consonant-final bases, anudātta except for nīksvidā.
   1. Ātmaneipadīn verbs, starting with gup (jūgupsate) 'be disgusted'.
   2. Parasmaipadīn verbs, beginning with nīksvidā 'hum', skanda (skanda) 'jump, fall'.
   3. Ubbhayapadīn verbs, starting with dana (didāmsati, didāmsate) 'cut'.

G. The special subgroup that begins with yaja (see 160).
   1. Anudātta verbs.
   a. Consonant-final bases: Ubbhayapadīn verbs: yaja (yājati, yājate), dvapā (vāpati, vāpate) 'strew, sow', vahā (vāhate) 'transport'; the parasmaipadīn verb vasā (vāsatī) 'dwell, remain'.
   b. Vowel-final bases, all ubhayapadīn: ve (vayati, vayate) 'weave', vye (vyayati, vyayate) 'cover', hev (hvayati, hvayate) 'call, challenge'.
   2. Udātta verbs: vada (vādati) 'say', tuo (svayati) 'swell'.

II. Second major group (adādigaṇa).

A. Consonant-final bases.
   1. Anudātta verbs.
   a. The parasmaipadīn verbs ad (ātti) 'eat' and han (hānti).
'strike, kill'
b. Uabhayapadin verbs, starting with oviṣā (oviṣṭi, oviṣṭe) 'hate'
c. The ātmanepadin verb cakṣin (āciste) 'say, call'
   2. Udātta ātmanepadin verbs, beginning with īra (īrte) 'move, go'
B. Vowel-final bases.
   1. Udātta verbs.
   a. The ātmanepadin verbs ṣūp (sūte) 'give birth to' and śin (śete) 'lie, sleep'
   b. Parasmaipadin verbs, beginning with yu (yuuti) 'unite, mix'
      2. Anudātta verbs, arranged according to their vowels:
         -u -o: from oyu (yuuti) 'go, advance towards' to brūḥ (brvlti, brūte) 'say, speak'
         -i -l: from in (ēti) 'go' to vr (vēti) 'go towards, seek, conceive'
         -ā: from yā (yāti) 'go, reach, travel' to ma (māti) 'measure
A.2 and B.1a make up a group of udātta ātmanepadin verbs.
C. Consonant-final bases.
   1. The anudātta parasmaipadin verb vacā (vākτi) 'say, speak'
   2. Udātta parasmaipadin verbs, from vidā (vētτi / vēda) 'know' to rūḍīr (röditτi) 'cry, weep'
D. The special subgroups that begin with rūḍīr, ṛṣvapa, and jākṣā (see 161).

III. Third major group (juhotyādigana).
A. Vowel-final bases.
   1. Parasmaipadin verbs.
      a. The anudātta verbs hu (jūhoti), ṛibhi (bibheti) 'be afraid',
         hri (jihreti) 'be ashamed'
      b. The udātta verb pt (piparti) 'nurture, fill'
   2. The special subgroup consisting of ġubhrī, mān, and
      ohān (see 162).
   3. Other anudātta verbs in -ā: ohāk (jāhāti) 'abandon',
      ġudān (dādāti, dattτe), ġudhān (dādhāτi, dhattτe) 'place, make.'
B. The special subgroup that begins with *nijir* (see 152).
C. A group of verbs, starting with *ghṛ* 'pour on', that generally have forms of the type *jigharti* in Vedic usage (*chandasi*, see 612).

IV. Fourth major group (*divādīgana*).

A. Consonant-final parasmaipadin verbs, starting with *divū* (*dvīyati*) 'gamble'; all but *ksipā* (*ksipyati*) 'throw' are udātta verbs.

B. Vowel-final bases.

1. The parasmai padin verbs *jīs, jhīs* (*jīryati, jhīryati*) 'age, decay'.

2. Ātmanepadin verbs.

a. The special subgroup that begins with *sūn* (see 153), bases being arranged according to their final vowels:
   - *ū*: *sūn* (*sūyate*) 'give birth to', *dūn* (*dūyate*) 'suffer pain',
   - *i*: *dīn* (*dīyate*) 'perish', *gīn* (*gīyate*) 'fly, flay', *dhīn* (*dhīyate*) 'support', *miṅ* (*mīyate*) 'suffer harm, perish', *riṅ* (*riyate*) 'flow',
   - *īn* (*īyate*) 'become attached', *vriṅ* (*vriyate*) 'choose'.

b. Other anudātta bases in -*ī*, from *pīn* (*pīyate*) 'drink' to *prīn* (*priyate*) 'be pleased, like'.

3. Parasmai padin anudātta bases in -o: *śo* (*śyāti*) 'sharpen', *cho* (*chāti*) 'cut', *so* (*syāti*) 'end, finish, terminate', *do* (*dāti*) 'bind, cut'.
C. Consonant-final bases.

1. Udātta verbs.

a. Ātmanepadin verbs, from *jānī* (*jāyate*) 'be born' to *vāsṛ* (*vāsyate*) 'roar, bleat'.

b. The ubhayapadin verbs *mṛṣā* (*mṛṣyati, mṛṣyate*) 'tolerate', *ṭuṣcīr* (*ṭucyati, ṭucyate*) 'be pained'.

2. Anudātta verbs.

a. Ubbhayapadin verbs: *nāhā* (*nāhyati, nāhyate*) 'gird, bind', *rānja* (*rājyati, rājyate*) 'be colored, have passion', *sāpā* (*śāpyati, śāpyate*) 'swear, curse, blame'.

b. Ātmanepadin verbs, starting with *pada* (*pādyate*) 'go, reach, understand'.

D. The special subgroups that begin with *puṣā, rādhā*, and
V. Fifth major group (svādīgāṇa).

A. Vowel-final bases.

1. Ubdhayapadin verbs, starting with suṇ (sunōti, sunute) 'press juice out of something'
2. Parasmaipadin verbs, beginning with īdu (dunōti) 'cause pain'

All the verbs in question, excepting vṛn (vṛnopi, vṛnut) 'cover, choose' and dhūṇ (dhūnōti, dhūnut) 'shake', are anudāta.

B. Consonant-final bases.

1. Anudāta parasmaipadin verbs, starting with āpī (āpnōti) 'reach, obtain, encompass'
2. Udāta verbs.

a. The ātmanepadin verbs āśū (aśnut) 'reach, encompass' and stīgha (stīhnut) 'attack'
b. Parasmaipadin verbs, from tikā (tiknōti) 'attack' to cámu (cāmnoti) 'sip'

C. A set of verbs, starting with āhā 'encompass', that have forms of the type anōti in Vedic usage (chandasi). This group includes dāghā 'kill, protect' and cámu of B.2b.

VI. Sixth major group (tudādīgāṇa).

A. Consonant-final bases.

1. Anudāta ubhayapadin verbs, from tudā (tudāti, tudāte) 'shove, goad, wound' to krṣā (krṣāti, krṣāte) 'draw, plough'
2. Udāta verbs.

a. The parasmaipadin verb īsī (rṣāti) 'push'
b. The ātmanepadin verbs jūṣī (jusāte) 'take pleasure in, enjoy', ovījī (udvijate) 'fear, tremble', olājī, olāsjī (lajāte, lajjāte) 'be ashamed, bashful'
c. Other parasmaipadin verbs, beginning with ovṛascū (vrsc̣-cāti) 'cut, hew'

Of the udāta verbs, īsī is the only parasmaipadin base in -s and it is accordingly put with other bases that end in this consonant.

B. The special subgroup that begins with kūtā (see 164).
a. Udātta parasmaipadīn verbs, starting with kuṭā (kuṭāti) ‘curve, bend’
b. The udātta ātmanepadīn verb gūrī (gurāte) ‘make an effort’

2. Vowel-final bases.
a. Parasmaipadīn verbs, from nū (nuvāti) ‘cry, praise’ to dhru (dhruvāti) ‘be firm’
b. The ātmanepadīn verb kuṇā (kuvāte) ‘sound, cry’
As can be seen, this subgroup contains verbs of the type in A.2c; in addition, kuṇā is of the type in C.1a.

C. Other vowel-final bases.

1. Anudātta verbs.
a. The ātmanepadīn verbs prā (vyā priyate) ‘be active, be engaged in something’, mrā (mriyate) ‘die’
b. Parasmaipadīn verbs, from ri (riyāti) ‘run’ to kṣī (kṣīyāti) ‘dwell’

2. The udātta parasmaipadīn verb sū (suvāti) ‘impel’

D. The special subgroup that begins with the udātta parasmaipadīn verb kṛṭ (kṛṭāti) ‘strew’ (see 153, 164). This has three other vocalic and one consonantal base: gṛṭ (girāti) ‘swallow’, drā (ā driyate) ‘consider, respect’, dhṛṭ (dhṛyāte) ‘exist, subsist’, prachā (prcchāti) ‘ask’

E. A group of consonant-final anudātta parasmaipadīn verbs, beginning with sṛjā (sṛjāti) ‘let loose, create’

F. The special subgroup that begins with mucṣ (see 164).


VII. Seventh major group (rudhādīgana), all bases of which end in consonants.

A. Anudātta ubhayapadīn verbs, from rudhir (runāddhi, rundhē) ‘hold in, oppress, besiege’ to yujir (yunākti, yunktē) ‘join, yoke, connect.’
B. Udātta verbs.
1. The ubhayapadin verbs uchrīdhir (cṛṇātī, cṛṇtē) 'vomit, shine, play', utrīdī (tṛṇātī, tṛṇtē) 'pierce, disregard'
2. The parasmaipadin verb kṛtī (kṛṇātī) 'spin, surround'
3. The ātmanepadin verb hīndhī (indnē) 'kindle, light'
A and B.1 constitute a group of ubhayapadin verbs; B.1 and B.2 consist of bases the end in dental stops preceded by r; kṛtī is the only udātta parasmaipadin verb of this type in the seventh major group.

C. Anudātta verbs.
1. The ātmanepadin verbs khida (khintē) 'be depressed, suffer', vīda (vintē) 'consider'
2. The parasmaipadin verbs sīśī (vīśinaśī) 'distinguish', pīśī (pinaśī) 'crush, grind', bhanjā (bhanāktī) 'break', bhujā (bhanāktī 'protects' versus bhunktē 'enjoys, eats': A 1.3.66 [141])

D. Udātta parasmaipadin bases, from tṛñā (trñēdhi) 'bruise, crush, destroy' to pṛcī (pṛṇāktī) 'blend', the last verb in the seventh major group.

VIII. Eighth major group (tanādīgaṇa); all but one of the verbs in this group end with -n.

A. Udātta bases in -n
1. Udbhayapadin verbs, from tānū (tanotī, tanutē) 'stretch' to ghrīnū (ghrīpotī, ghrīnutē) 'shine, burn'
2. The ātmanepadin verbs vānū (vanotē) 'seek to gain, ask for', mānū (manutē) 'think, consider'

B. The verb dūkrīṇī (karotī, kurutē) 'make, do'

IX. Ninth major group (kṛyādīgaṇa).

A. Udbhayapadin verbs, all vowel-final bases.
1. Anudātta verbs, from dūkrīṇī (kṛṇātī, kṛṇitē) 'buy' to yunū (yunotī, yunutē) 'blend, tie'
2. The udātta verbs knūnā (knūnātī, knūnitē) 'sound', dūnā (dūnātī, dūnītē) 'hurl, harm'
B. The special subgroups that begin with pūṅ and iṅṅ (see 165); all the bases end in long vowels.
1. Udātta verbs.
a. Ubhayapadin verbs, starting with pūn (punātī, punītē) 'purify'
b. Parasmaipadin verbs, beginning with ph (prānātī) 'fill, nurture'
   2. Anudātta verbs, all parasmaipadin, starting with jyā (jinātī) 'age'
   C. Anudātta parasmaipadin verbs, from vṛ (vṛṇātī) 'choose' to bandhā (bandhnātī) 'bind, tie', all vowel-final bases except for the last.
B.2 and C constitute a set of anudātta parasmaipadin verbs.
D. Udātta verbs.
   1. The ātmanepadin verb vṛ (vṛṇätē) 'choose'
   2. Parasmaipadin verbs, beginning with sranthā (sṛathnātī) 'loosen'
   3. The ubhayapadin verb grāhā (grāhnātī, grāhnītē) 'grasp, take, seize'

X. Tenth major group (curādīgana).
A. Ubhayapadin verbs, starting with cura (corāyatī, corāyate) 'steal' and including the subgroup that begins with jñāpa (see 166)
B. The subgroup beginning with cita (166)
C. Additional ubhayapadin verbs, starting with carca (carcāyatī, carcāyate) 'discuss'
D. The subgroups that begin with yuj and katha (166).

Remarks.

1. In 170-179, I have described the overall arrangement of verbs within the ten major groups of the dhātupāṭha as found in the versions of this text transmitted in the Kṣiratarāṅgini, Dhātupradīpa, Mādhaviyadhātuṃṛti, and Siddhāntakaumudi of Kṣirsavāmin, Maitreyarākṣita, Sāyana, and Bhaṭṭoji Dīkṣita, whose glosses are also reflected here. Not all Pāṇinīyas follow this order. In his Prakriyākaumudi (11.45), Rāmacandra has cita (cētati) 'perceive, understand' as the second verb of the first major group, instead of śdo. Other parasmaipadin
verbs follow, and only then (PK II.133) is ēdha given, followed by other ātmanepadin verbs. Nevertheless, the order dhū, ēdha, and so on is clearly quite old, since this is the order known to Patañjali (Bh. I.254.12 [see 133]). In his Prasāda on the Prakriyākaumudi, Viṭṭhala remarks (II.45: दौर्ग धातु-पाठमार्थित्य प्रतिधातु विशेषप्रक्रियामाह प्रिती) that Rāmacandra has based his presentation of verbs on the dhātupāṭha of Durgā, that is, the text associated with the Kātantra grammar. In general, this order of verbs is also as in Candragomin's dhātupāṭha, although there are differences in details.

2. There are numerous instances where the texts transmitted by Kṣirasvāmin and others differ as to the order of particular verbs, what verbs are included, and the shapes of verbs given. Two examples will suffice to illustrate.

a. The Kṣiratarāṅgini (1.637-638) and the Dhātupradīpa (1.902-903) have hrī 'take' followed by bhṛṅ 'bear, fill'. The Mādhavyadhātuvṛtti (1.627-628) and the Siddhāntakaumudi (1.898-899 [3.205-206]) have bhṛṅ followed by hrī. Since the Kṣiratarāṅgini and the Dhātupradīpa are the older texts, I have adopted the order found in these works (170 [1.D.1]). After the two verbs mentioned above, three of the texts give dhrī 'support' and niṅ 'lead' (DhPr 1.904-905, MDhV 1.629-630, SK 1.900-901 [3.207]), but the Kṣiratarāṅgini (1.639-640) has krī 'do, make' and niṅ, with krī instead of dhrī. Commenting on Rgveda 1.82.1cd: यदान्त: सुन्नातांबतः कर आदर्थ्यायस इति, Sāyana argues against including krī in the first major group of the dhātupāṭha, saying that this does not stem from the rṣi Pāṇini, and he supports this with references to Jinendra-buddhi's Nyāsa and to Haradatta's Padamaṇjari on A 8.3.50 (Nyāsa, PM VI.539). [Sāyana: नन्तु दुकृत करण इति भूवाददौ पथयनं अतो न्यत्तय: कस्मार्थियत इति चेन्नैवम् यस्मादस्य धातोत्त्तरपाठोपनाष्ट्य। तथा हि कः करत् करति इत्यत्र]
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यदाहतुर्य्यासकारहरवतौ नयत्येन शब्दितत तस्मादस्य धातोभूतावौ पाठो नास्तीति गम्यते॥, similarly, MDhV under l.629 (p. 235)) According to Puruṣakāra on verse 39 of the Dalva (p.38: कृत्यस्य इति श्रीरस्वामी), Kṣirasvāmin is supposed to have noted that some include krṣ in the first major group.

b. Maitreyā (DhPr 1.649-653) gives the verbs ūha 'consider, reason', gāhū 'plunge, bathe', grhū 'grasp, take, seize', then remarks that some also include ġlāha 'seize', and finally gives the verb ghūṣi 'make bright, beautiful' ('make love'? [Liebich 1930: 53 note 2]). [DhPr. p. 48: उह वितर्के ... गाहू विलोखने ... गृहू ग्रहणे ... क्रृह इत्येके ... घुषि कान्तिकरणे।] Kṣirasvāmin (KṣT I.429-432) gives ūha, gāhū, glāhū, ghāsi. Under the third of these entries, he remarks that Candra and Durga have grhū instead. [KṣT p. 92: गृहू हिति चन्द्रदुर्गी।] He also notes, under the entry ghāsi, that Candra and Durga respectively read ghāśi and ghūṣi. [KṣT p. 92: चन्द्रो घुषि इत्याद घंघते। घुषि कान्तिकरण इति दुर्गी: घुष्ठते। cf. Puruṣakāra on Dalva verse 169 (p. 1021) Sāyaṇa (MDhV I.419-422) lists ūha, gāhū, grhū, ghūṣi, and remarks (under l.422 [p. 169]) that his reading ghūṣi agrees with the Dalva and with Maitreyā and Durga, then notes that ghūṣi is read here in accordance with the similarity to the next verb, ghūṣīr 'sound, announce', which also has $.[MDhV p. 169: स्वामी घसेति दन्त्यान्तमदुपधम पपां। वर्षा वर्ष तथा देवमैत्रेयदुर्ग। नकारान्तोप्यायं घुषिरविशिष्टं इत्यूतरधातुसम्पादिक्रियाविषयं पठित।]

As can be seen from the following example, there is also evidence of earlier variation even where Kṣirasvāmin and
other commentators might agree.

c. The major sources agree in listing śāsu together with the preverb ān (ā šāste 'hopes, wishes') within the set of udātta ātmane padin verbs that begins with īra (see 171 [II.A.2]): ānāh śāsu (KṣT II.15, DhPr. II.12, MDhv II.15, Sk 1022). From what is said in the Mahābhāṣya on A 6.1.6 (52), however, it follows that earlier Paninīyas knew of an arrangement such that ānāh śāsu was recited after the special subgroup beginning with jāksā (171 [II.D]): In his second vārttiṣya on A 6.1.6, Kātyāyana suggests (अपरिगणनवागणान्तत्वात्) that the number of verbs to which the name abhyasta is assigned by this sūtra need not be explicitly stated (aparigaganam), this name being given instead to verbs starting with jāksā up to the end of the major group (āgaṇāntatvāt). Patañjali notes that the name abhyasta then obtains for śāsu. [Bh. III.11.10-11: इसापि तर्क प्राप्तिति आईः: शासु] Commentators remark that some recited ānāh śāsu after vēvin 'go after, seek'. [E.g., Pr. IV.308: वेभव्योगंन्तरमं कैसिन्तप्तवृत ति भावः] Additional details concerning A 6.1.6 are considered under this sūtra in part III.2 of my work.

3. Given the situation described in 181, it is not possible at present to determine down to the last detail the precise organization of Panini’s ḍhātupāṭha as he first propounded this text. From what Panini says in the Aṣṭādhyāyī, it is, nevertheless, clear that he distributed the verbs of his ḍhātupāṭha among ten major groups (155-158) and that he recognized special subgroups within these (160-166).

Now, terms such as bhuvādayaḥ (A I.3.1 [47]), divādibhyah (A 3.1.69 [157]) refer to entire groups whose first (ādi) members alone are specified. The last members of the groups are not indicated explicitly by comparable terms; for example, one does not know from divādibhyah itself that the group beginning with divu ends with gridhū, so that suṛ and items which follow this are not included in the set. However, there is no
need explicitly to say that these groups end with particular verbs, since the limits of the ten major groups are known from statements in the Aṣṭādhyāyī. Thus, A 3.1.69-81 provide, under identical conditions, that śyaṇa, śnu, śa, śnam, u, and śnā, respectively, occur with verbs of the groups that begin with divu, suṇ, tudā, rudhir, tānu, and dūkriṇ. The first verb in each of these groups is the limit separating that group from the one that precedes, so that the fourth through ninth major groups are known to be segregated from each other, and the fourth group is known to be separated from those which precede. In addition, A 2.4.72, 75 (158) concern verbs of the groups that begin with adā and hu, so that the second and third major groups are known to be separated from each other, and one can see that the first major group ends where the one beginning with adā starts. Similarly, A 3.1.25 (281) introduces nic after the verbs of the set that begins with cura, so that the tenth major group is known to be segregated from the rest, and, obviously, one can see that the ninth major group ends where the tenth begins.

Moreover, if the last member of an ordered subset within a major group of the dhātupāṭha is the last member of that group itself, it follows that this too need not be specified. Pāṇini can simply use yajādi (A 6.1.15), svapādi (A 6.1.188), puṣādi (A 3.1.55), nucādi (A 7.1.59) in referring to subgroups that begin with yajā (160, 170 [I.G]), niśvapā (161, 171 [II.D]), puṣā (163, 173 [IV.D]), and nucf (164, 175 [VI.F]), without having to specify the verbs that close these subsets: The groups in question end where the next major groups begin.

There are other instances, where Pāṇini must explicitly show the extent of a subset in the dhātupāṭha. He does this in several ways. First, he specifies the last verb of a group in addition the first member: jwalitikasanantebhyah of A 3.1.140 refers to a set of verbs the first of which is jvālā (jvaliti) and the last of which is kāsa (kasanta; see 160, 170 [I.B]). Secondly, Pāṇini refers to a given number of verbs starting with a particular base: In A 6.4.125, he refers to the seven
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(saptānām) verbs starting with phānā (phānām: 160, 170 [1.B]; cf. A 6.1, 6.7, 7.4.75-76, 7.3.74, 7.2.75 [52, 385, 424, 153]). Further, in the dhātupāṭha as transmitted, the closure of certain groups is indicated by the term vṛt. For example, the extent of the subgroup beginning with dyuta (160, 170 [1.B]) is shown in this manner (Kṣṭ 1.509, DhPr. p. 54 [following 1.765], MĐhv 1.497, SK 3.177).

vṛt is usually said to derive from the verb vṛtu 'occur, be' (e.g., Kṣṭ 1.509, DhPr. p.54, ŚiŚ 2.528, Bāl. 3.177), although some derive it from vṛdhu 'grow' (see Kṣṭ 1.509). Some who derive vṛt from vṛtu interpret this as an action noun, equivalent to vartanam (Kṣṭ 1.509), but others interpret it as an agent noun (ŚiŚ 2.528, Bāl. 3.177). Commentators also differ occasionally with respect to the use of vṛt and to the extent of the group this is intended to close. For example, Kṣirasvāmīn (Kṣṭ 1.561), Maitreya (DhPr. 1.823), Sāyana (MĐhv 1.550-551), and Bhaṭṭoji (SK 3.194) agree that the causative phāni (phānayati) is of the type ghati (ghatayati), with ā in the base that precedes nic (see 160). Maitreya, Sāyana, and Bhaṭṭoji have vṛt in their text following the entry for phānā, showing that the longer group which begins with ghatā ends with phānā. However, Maitreya notes (DhPr. p. 59 [under 1.823]) that according to some vṛt precedes phānā, so that this verb has a causative phāni (phānayati), which is, in fact, the earlier attested type. Kṣirasvāmīn also remarks (Kṣṭ p. 114 [under 1.561]) that according to some the longer subgroup beginning with ghatā excludes phānā. Moreover, he notes too that some have vṛt later on, after sāma, stāma (Kṣṭ 1.566-567 [p. 115-116], cf. MĐhv p. 205-206 [under 1.558]). Again, in the Kṣiritaraṅginī (11.86-87), vṛt follows the entry for ṣṇuṇ, the last verb of the second major group, and Kṣirasvāmīn remarks that vṛt serves here to close the subgroup beginning with niṣvapā [वृत्त स्वप्पादं: स्वरार्थ
वर्तिताः] Maitreya (DhPr. p. 85 [under 11.72]) also has vṛt after his entry for ṣṇuṇ, but he says this occurs because the
second major group is now complete. [वृद्धित्वदारिकिरिसभाप्ते:ि] The Kāśikā to A 6.1.188 notes that the group beginning with niśvapa extends to where vr̥t is given (Kāś. II.644: स्वपारिकारवृक्करणात्) showing that in this case vr̥t occurred in versions of the dhātupāṭha known before Kṣirāsvāmin. On the other hand, this vr̥t does not occur in the dhātupāṭha versions adopted by Sāyaṇa and Bhaṭṭoji (MDhV p. 383, SK 3.307).

I think it plausible to consider that a mechanical marking of the ends of subgroups, by means of vr̥t, was extended to places where it was neither strictly necessary nor originally found in the dhātupāṭha which Pāṇini adopted. Additional details will be considered later in my work, under pertinent sūtras. Suffice it to say here that the use of vr̥t to close subgroups in the dhātupāṭha was doubtless already known to Kātyāyana and Patañjali. Thus, In vaṛttika I to A 7.4.75, Kātyāyana remarks (त्रिग्रहणार्थक्यंगणानंतत्वात्) that using tri (gen.pl. trayaṇām) in the sūtra serves no purpose (त्रिग्रहणार्थक्यांगणानंतत्वात्), since the last verb which one has to refer to comes at the end of a subgroup (गणांतत्वात्). This can only mean that the third entry of the subgroup in question was followed by vr̥t in some version of the dhātupāṭha, as commentators note. [ Pr. V.269: त्रिग्रहणार्थकयैं बृक्करणार्थिन्यस्त्वप्य एव निजादय इत्यर्थ:ि, Udd. X.264: धातुलाप्पाठिन्नर्णान्तभृक्करणमित्यर्थ:ि] There is also no reason to doubt that Pāṇini himself used this means of closing particular subgroups. Note finally that the extent of some subgroups in the dhātupāṭha is known from ganasūtras (Section 1.3.3).

1.3.3. Sūtras in the dhātupāṭha.
The versions of the dhātupāṭha which commentators have transmitted contain not only verbs with glosses (see §33) but also sūtras, called ganasūtra, concerning particular sets of verbs. It is possible to attribute at least some of these ganasūtras to Pāṇini.

Derivates of certain verbs with penultimate short a in their basic forms and of verbs with basic -ā which replaces -ai (A 6.1.45 [392]), require special statements. The base dupacās (pacate 'cooks something for himself', pacati 'cooks something for someone else') and the derived verb pāci (pācayate, pācayati 'has ... cook'), formed with the causative suffix nīc (A 3.1.26 [281]), exhibit a pattern that is widespread: to penultimate -a- of a basic verb corresponds -ā- in a derivate with the suffix i (A 7.2.116 [417]), as in tyajā 'loose, abandon', pāthā 'recite, read out', yātī 'make an effort', ṣadī 'sit' and the corresponding causatives tyāji, pāthi, yāti, sādi. There are also exceptions to this general pattern. Consider the following.

(a) ghāta 'happen, strive': ghaṭate: causative ghaṭi (ghaṭayati), action noun ghaṭā 'striving'; vyātha 'be agitated': vyathate: vyathayati, vyathā 'agitation'; prātha 'spread, be famous': prathate: prathayati, prathā 'fame'; hitvāra 'hasten, rush': tvarate: tvarayati, tvarā 'haste'

(b) jvārā 'have a fever': jvārati: jvarayati, kākhē 'laugh': kakhati: kakhayati

(c) jānī 'come into being, be born': jāyate: jānayati, jīś 'age (intr.):' jiriyati: jaryayati, gamī 'go': gaccati: gamayati

(d) jvālā 'flame': jvalati: jvalayati, jvalayati, pra jvalayati, hvalā 'go wrong, crooked': hvalati: hvalayati, hvalayati, vi hvalayati, hmalā 'shake (intr.):' hmalati: hmalayati, hmalayati, pra hmalayati, namā 'bow, bend': namati:纳米yati, namayati, pra namayati

(e) glai 'be weary': glāyati: glāpayati, glāpayati, pra glāpayati, snā 'bathe': snāti: snāpayati, snapayati, pra snāpayati

(f) vānu 'gain, win': vānati: vānayati, vānayati, pra vānayati, āvāmvū 'vomit, throw up': vamati: vāmayati, vāmayati, ud
vamayati

(g) kāmu 'love, desire': kāmayate; āmā 'shine, be splendid, sound, move': amati: āmayati; cāmū 'drink, sip, consume': ācamati: ācāmayati

(h) sāmū: šāmyati 'becomes calm': šūmayati 'calms, suppresses': ni šāmyati 'perceives'

(i) yāmū: yacchati 'checks, controls': āyāmayati 'stretches out, sets out to work': yamayati 'serves food'

As can be seen from the examples given, in some instances a verb has penultimate -a- also when pic follows, and in other cases this affix follows a base with either -a- or -ā- as penultimate sound. Moreover, glāp-i, snāp-i (184e) exhibit the same variation of penultimate -a- and -ā- before the final augment puk, which is regularly added to bases with -ā (A 7.3.36 [124]), whether this final vowel is primitive or results from replacement (e.g., glā < glai). In view of these facts, it is proper to provide for the following: First, -ā- substitutes for penultimate -a- of bases followed by an affix pi (pic, pīn), so that derivatives such as pāc-i have long penultimate vowels, as do derivatives like glāp-i, snāp-i, in which -ā- is not conditioned by the occurrence of the affix. The penultimate -ā- of certain such derivatives is then replaced by short -a- in specified cases, optionally in particular instances.

Verbs that undergo obligatory or optional shortening of penultimate -ā- before an affix pi cannot all be grouped together in the dhātupāṭha. The verbs of 184a,b belong to the first major group and have derivatives of the type ghat-, with -a-; but jāni, jīṣ (184c) belong to the fourth major group in the dhātupāṭha, although they too form derivates in -pic with penultimate short a. The verbs of 184d have derivatives of the type jväli- / jval-, with optional shortening, and all these verbs belong in the first major group. In addition, the verbs of 184e form the causatives glāp-i / glap-i and snāp-i / snap-i, but glai belongs to the first major group of the dhātupāṭha and snā is in the second major set.

One way of designating verbs that share a particular
operation but cannot be assigned to a single subgroup in a
major gana of the dhātupātha is to append a particular marker
to all the verbs in question. These are then referred to by
means of their marker in the sūtra which provides for the
common operation. For example, jfś (184c), kṣīṣ 'harm,
destroy', trāpūṣ 'feel shame', and mrjūṣ 'wipe, clean' re-
spectively belong in the fourth, ninth, first, second, major
groups: jīryati, kṣīñāti, trapate, māṛṣṭi. However, they all
form derivates in -ā: jarā 'aging', kṣīyā 'destruction', trapa
'shame', mrjā 'cleansing'. As shown, Pāṇini appends the final
consonant ś to all of these as a marker (it: A 1.3.3 [80]). A
3.3.104 (291) provides that the affix aṇ follows verbs marked
with ś --- as well as the bases of a group of derivates
beginning with bhidā (ṣidbhidādibhyāḥ) --- to form feminine
abstract action nouns; such nominals then take the suffix ṭāp
(A 4.1.4 [271]), giving derivates in -ā

Suppose now that, in accordance with the sūtra
A 6.4.92: mītāṁ haśvā: (upadhāya: jō) (mitāṁ hrasvāh
[upadhāyāḥ 89, nau 90])
Pāṇini appended a marker m to verbs which have penultimate
-a- in derivates with an affix ni By this sūtra, a short vowel
(hrasvāh : A 1.2.27 [35]) replaces (A 1.1.49 [90]) the pen-
ultimate (upadhāyaḥ [sthāne]: A 1.1.65 [41]) vowel (A 1.2.28
[96]) of presuffixal bases (A 6.4.1 [105]) marked with m
(mitāṁ [aṅgānām]) if there follows (A 1.1.66 [90]) an affix ni
(nau). In fact, however, it would be hard for Pāṇini actually to
append the marker m to all the verbs in question. Recall that
certain verbs are marked with ś to show that they form der-
ivates of the type jarā, with the suffix aṇ by A 3.3.104 (187).
These verbs are so marked for this purpose because they
cannot be put into a single subgroup within the dhātupātha.
Now, jfś is one of these verbs, and it is also one of the verbs
which should be subject to shortening by A 6.4.92: jār-i >
jar-i. Nevertheless, once jfś is explicitly marked with -ś, it
cannot also be recited with a marker m. Thus, m cannot be
given as the final sound of the verb as it is recited in the dhāturpātha, since non-final ś would then not be classed as an ī and deleted (A 1.3.3, 9 [80-81]). Nor is it proper to provide that penultimate ś in a verb is classed as ī. The penultimate ś of verbs such as krṣā (karsati), krṣā (krṣati, krṣate) ‘draw, plow’, juṣi (juṣate) ‘enjoy’ would thereby wrongly be made an ī and deleted. Similarly, one cannot posit, for example, jī/ṃṣ and provide that penultimate m of a verb is classed as ī, since this would allow the penultimate sounds of verbs such as gant ‘go’, namā ‘bow, bend’ to be deleted. Again, it would not do to posit mjī/ś and provide that initial m in a verb is ī. The initial consonant of a base such as mana ‘think, consider’ would then be subject to deletion. Further, as I noted in 186, verbs subject to shortening of penultimate ā- before ni cannot be put in a single subgroup of the dhāturpātha, so that it is not possible to provide that non-final m of bases belonging to such a subgroup is classed as ī. In sum, jī/ś requires two consonantal markers in the Pāṇinian system, and this double marking poses problems.

Moreover, it is not merely a question of a single verb. Consider again the verbs of 184a,b. All these bases appear with penultimate -a- in derivates with ni. In order that the replacement provided for in A 6.4.92 apply to give ghat-i, vyath-i, prath-i, tvar-i, jvar-i, kakh-i, then, these verbs should be marked with m. On the other hand, the bases of 184a form derivates in -ā of the type ghatā, which the verbs of 184b do not form. In order that the affixation provided by A 3.3.104 (187) apply, the bases in 184a should thus be marked with ś. These require a double marking, then, which entails the problems noted.

These difficulties are encountered only if one requires that ghatā and the other verbs in question be recited in the dhāturpātha with both the required markers. There is, however, another procedure, under which these problems do not ensue. Instead of reciting particular elements with given markers, one can provide by rule that they are so marked. Pāṇini
explicitly follows this procedure in his grammar for certain affixes, introduced by sūtras of the Aṣṭādhyāyī proper. For example, A 1.2.1(513) provides that an affix not marked with ṇ or ṇ is marked with ṇ after gāṇ and verbs of the subgroup beginning with kūṭa (164). By this rule, an affix such as tumun or sic is treated as marked with ṇ when it follows the verbs in question. Similarly, there could be sūtras whereby particular verbs, although they are not recited in the dhātupātha with both $ṣ$ and $m$, are said to have both these markers. Pāṇini's sūtrapātha proper lacks such rules, but the dhātupātha as transmitted has gaṇasūtras providing for these markings. Two sūtras concern the two subgroups of verbs beginning with ghāṭa (160):

(a) घटादय: षित: (ghatādayah ṣitah)

(b) घटादयो मित: (ghatādayo mitah)

The second sūtra applies to the larger subgroup: Verbs of this set are said to have the marker $m$ (mitah), so that they are subject to the operation stated in A 6.4.92 (188). (a) concerns the set of verbs beginning with ghāṭa included in the larger subgroup noted: Verbs of this set are said to be marked with $ṣ$ (ṣitah), so that they are subject to the affixation provided for by A 3.3.104 (187, 291).

Pāṇini explicitly formulates A 6.4.92 (188), but he does not, so far as is known from the earliest testimony of Pāṇinīyas, teach any verb recited with an appended marker $m$ it is therefore plausible to accept that the gaṇasūtra (b) stems from Pāṇini. Granted this, it is also plausible to say that the gaṇasūtra (a), which is pertinent to a set that again begins with ghāṭa but is included in the larger group covered by (b), also stems from Pāṇini. Once this is accepted, it is easy to see why Pāṇini did not formulate (a) and (b) as sūtras in his Aṣṭādhyāyī sūtrapātha. Since there are two groups of verbs beginning with ghāṭa, the term ghatādayah is potentially ambiguous. However, if ghatādayah is used in a sūtra stated immediately after the last verb of the particular subgroup in
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question, the term is then unambiguously understood to refer to verbs in this subset alone. Hence, Pāṇini states the gaṇasūtras (a) and (b) respectively after the last verb of the smaller and larger subgroups that start with ghāṭa.

Similarly,

(c) स्वादय ओदितः। (svādaya odioḥa)
appears immediately after the verb vrīḍa 'cover' of the fourth major group. The subgroup of verbs covered by this gaṇasūtra (DhPr. IV.34 [p. 91], KṣT IV.31, MDhV IV.32, SK 3.326 [under verb 1140]) begins with sūñ (163). These verbs are treated as marked with o, so that the t- of kta and ktavatu following them is replaced by n-, as in sūna, vrīṇa.

Given that gaṇasūtras cited in 189 have to be stated in the dhātupātha, other sūtras, related to these, also are placed in the dhātupātha, although the verbs with which these deal are such that the rules in question could be stated within the Aṣṭādhyaśi sūtrapātha. Thus,

(a) जनीजूष्क्वसुरन्ते मोक्षस्तत्तास्य (मिति:)

(janījṣukvasuranto'mantāś ca [mitaḥ (189b)])

provides that the following verbs also (ca) are marked with m: jānti, jṛṣṭi (see 184c), knāsū (knasyati, knasayati) 'be crooked', ranjā (rajati, rajate, rajyati, rajyate, rajayati [see 194]), and verbs that end in am. According to

(b) ज्वलहवलहमनमानमनुसर्गादि

(jvalahvalahmalanamānānupasargād vā)

(c) क्रास्नानवुनुमामि (glāsnāvanuvamām) [see 196]

the bases jvalā, hvālā, hmālā, namā (see 184d) as well as glai, snā (see 184e), vānū, and tuvāmū (see 184f) are optionally (vā) marked with m except when used with a preverb (anupasargāt). Now, jvalā, hvālā, hmālā, vānū are included in a subgroup beginning with ghāṭa, so that they are marked with m by another gaṇasūtra (189b), and (a) allows m marking for namā and tuvāmū, which end in -am. For these verbs, then, (b) and (c) provide optional marking with m if they are not used
with a preverb. If they are used with a preverb, on the other hand, they are obligatorily marked with \( m \) by the more general gaṇasūtras. The verbs glai and snā are not subject to these rules, so that (c) lets these optionally be marked with \( m \) except when they occur with a preverb, in which case they are not so marked.

There are also gaṇasūtras that disallow \( m \)-marking which would apply by other rules. Thus, kāmu, āmā, câmū end in -am, so that these could be marked with \( m \) by 190a. However, one must derive kām-i (affix \( niḥ: \ A 3.1.30 \ [281] \)), ām-i, câm-i (see 184g). Hence, the gaṇasūtra

(a) न कक्यामिचमाम् (na kamyamicamām)

provides that these verbs are not (na) marked with \( m \).

According to

(b) शमदर्शाने (ṣamodarśane [see 199])

(c) यमोपरिवेशाणे (yamoparivesāne [see 199])

marking with \( m \) is denied to śāmū and yamū (184h,1) under particular meaning conditions: The first verb is not marked with \( m \) if it is used in the meaning 'see' (darśane), the second if it is used in a meaning other than 'serve food' (aparivesāne).

The gaṇasūtras considered in 189 are placed immediately following the last verbs of subgroups in the dhātupāṭha. There are also gaṇasūtras in the dhātupāṭha that serve as headings, hence are stated immediately before the first members of particular subgroups. Thus,

(a) आ कुस्मादातमेनेविनः (ā kusmād ātmanepadinah

[see 201])

immediately precedes the entry cita of the tenth major group. Verbs from cita through kusma 'sneer' (ā kusmāt) take ātmanepada affixes for derivates with nīc (ātmanepadinah [see 166]). Similarly,

(b) आ धृषादाः (ā dhṛṣād vā [KṣT X.201, DhPr. p. 144, MDhv X.200, SK 3.404])
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Immediately precedes yuja of the tenth major group and provides for something that applies for the bases which follow, through dhṛṣa (ा dhṛṣāt): nīc optionally (वा) occurs with verbs of this set (see 166).

Remarks.

193 1. Major commentators agree in transmitting the gaṇasūtras of 189 as they are cited here; see KṣT 1.522, 553, IV.31; DhPr pp. 55, 58, 91; MDhv 1.509, 542, IV.32; SK 3.180, 189, 326. As I have pointed out, these sūtras also can properly be said to stem from Pāṇini. Certain gaṇasūtras, on the other hand, have been transmitted in variant forms, and one can show that some sūtras included in the versions of the dhātupātha handed down may not be attributed to Pāṇini as formulated.

194 2. By 190a, ranjā is marked with m, so that the -ā of rāj-ī is replaced by -a- to give raj-ī. The vowel of rāj- in rāj-ī is gotten in the first place as a substitute for penultimate a (A 7.2.116 [417]), which presupposes that the n of ranj is dropped before nīc, giving raj-ī to begin with. There is, however, no Pāṇinian sūtra providing for this deletion, so that Kātyāyana suggests (A 6.4.24 vt. 3: रञ्जेन्निमगरमणै) an addition to the grammar: The n of ranj (raṇjēḥ) is dropped before nīc (nāv) if the verb is used in the sense of enchanting or hunting deer (mrğaramāṇe); this deletion does not apply in ranj-ī 'color'. Since dropping the n of ranj before nīc is not explicitly provided for in the Aṣṭādhyāyī itself, it is reasonable to consider that the gaṇasūtra 190a as given should not be attributed to Pāṇini, although major commentators (Kāṣ. 11.737 [on A 6.4.24], KṣT 1.554, DhPr. p. 58, MDhv 1.543, SK 3.189-190) have transmitted the sūtra in this form. In support of the conclusion drawn, there is the evidence of Kātyāyana's suggested addition to the grammar, which is also accepted by commentators (e.g., Kāṣ. 11.737). Of course, despite such evidence, one may resort to interpretation in order to maintain
that the gaṇaśūtra as given was indeed known to Pāṇini. One could say, for example, that the gaṇaśūtra providing for ranj to be marked with m shows that Pāṇini implicitly allowed deleting the n of the verb ranj before nič. [PM V.378: एतदेव मित्वकरण्णापकम् रञ्जेरकित्तपयुपधालोपो भवतीति] 

3. The gaṇaśūtra 190a also has variants. Now, under the reading shown, this sūtra refers specifically to the verb jṛṣ of the fourth major class, the base marked with s. It does not apply to the verb jṛṣ of the ninth major group (jṛṣati 'ages'), which is not marked with s and the causative of which is thus jār-i. Put slightly differently, jṛṣ 'age, decay' forms two types of present-imperfect forms and causatives. According to commentators (MdhV I.543, SK 3.190), some accept a variant of the gaṇaśūtra in question, with janijṛṣnasu... instead of janijṛṣknasu... Under this version, the sūtra allows jṛṣ of both the fourth and ninth classes to be marked with m. In addition, the sūtra now refers to a verb snāṣu of the fourth major group (snasyati), which is thereby marked with m. The verb in question is given various glosses: 'throw down' (nirasane: KṣT IV.4), 'eat' (adane: DhPr IV.5, MdhV IV.5, SK 3.322 [verb 1111]), 'take' (ādāne), 'not see' (adarśane); Sāyaṇa and Bhaṭṭoji attribute the last two to scholars other than themselves. Maitreyā notes (DhPr IV.6) that according to some the base snāṣu means 'throw down' and is marked with m.

4. As I have shown, the nominative plural mitaḥ is understood to carry over from the gaṇaśūtra 189b to 190a, which also has a nominative plural form. Since 190b,c also provide that certain verbs are marked with m, the term mitaḥ should also be understood in these sūtras. Consequently, one might expect these to have nominative plural forms: ज्वलित्वच्छलनमोनुपसर्गाद्या स्नासनवनुमत्या (jvalahvalahamalanamo'nupasargād vā, glāśvanuvamaś ca). In fact, the sūtras are thus read by some, as Sāyaṇa notes (MdhV I.544, 545). However, they are usually transmitted as I have given
them (DhPr pp. 58-59, MDhv 1.544-555, SK 3.190-191, see also
197), which entails modifying mitaḥ to mittvam ‘the property
of having the marker m’, construed with the genitive plural
forms referring to bases that have this property. Yet in
comparable sūtras (e.g., A 1.2.1 [513]), Pāṇini regularly uses
nominative forms as in the variants of 190b,c noted above.
Hence, it is at least quite possible that these gaṇāsūtras do not
stem from Pāṇini in the forms given.

197 5. Kṣīrasvāmin (KṣT I.555-556) also accepts versions of
190b,c with genitive plural forms referring to the verbs in
question. However, according to him the sūtra 190b also refers
to cālā ‘move, shake’: ज्वललिङ्गलचलनमामन्तपसर्गद्वा
(jvalahvalahmalacalanām anupasargād vā).

198 6. What I have said (196) about the gaṇāsūtras 190b,c
applies mutatis mutandis for 191a-c. Here too one expects
nominative forms construed with mitaḥ. In fact, a related
sūtra found in the dhātupāṭha transmitted by Kāśakṛtsna does
have a nominative instead of a genitive plural form: Kdhv
1.624: क्लास्तनावुवमस्थनकम्यपिच्चमः (glaśnāvanuvama-
śvanakamyamicamaḥ ). As explained by the commentator, this
sūtra provides that a group of verbs, including kām, am, and
cam, is optionally marked with m.

199 7. The sequence शमोदर्शने (śamodarśane) is ambiguous
in that it can contain a term darśane (शमो दर्शने [śamo
darśane]) or adarśane (शमोदर्शने [śamo darśane]). Accord-
ingly, 191b is susceptible of two interpretations. Most
commentators (Kāś. I.73 [on A 1.3.89], Nyāsa I.490, DhPr. p. 59,
MDhv 1.547-548, SK 3.191-192) accept that 191a-c is a group of
negative sūtras, so that na of 191a is understood to recur in
the next sūtra, which has darśane: śam in the meaning ‘see’ is
not marked with m. On the other hand, Kṣīrasvāmin (KṣT I.558,
cf. Puruṣakāra p. 93) interprets 191b as a positive rule
providing that śam used in a meaning other than ‘see’
(adarśane) is marked with \( m \). Bhaṭṭoji (SK 3.193) rejects this interpretation because it conflicts with what was said in earlier works such as the Kāśikā and the Nyāsa, and indeed the gaṇasūtras 191a-c are most smoothly interpreted as a group of negative rules. Still, there is no substantive difference between the two interpretations of 191b.

Whether 191c is a negative rule or not, however, does make a substantive difference. Under the majority interpretation, this provides that \( yam \) used in a meaning other than 'serve food' (apariveśane) is not marked with \( m \), but according to Kṣirasvāmin (KṣT 1.559) it provides that \( yam \) is marked with \( m \) when used in a meaning other than 'serve food'. Additional details will be considered subsequently, in the course of the full discussion of A 6.4.92.

8. The tenth major group of the dhātupātha contains a small subgroup beginning with \( jñapa \) (166). In the dhātupātha version transmitted by most commentators (DhPr X.86, MDhv X.76, SK 3.393 [verb 1625]), the entry \( jñapa \) is accompanied by a statement that the verb is marked with \( m \): जप मिच्चा (\( jñapa \) micca). As transmitted by Kṣirasvāmin, the text also includes a lengthy gloss: KṣT X.75: हप मारणतोषणनिनिनशामनेषु मिच्चा(\( jñapa \) māraṇatoṣaṇaniśāmaneṣu mic ca). According to Sāyaṇa (MDhv X.76), this accords with the text adopted by followers of Śakaṭāyana. After the last verb of the subset beginning with \( jñapa \), there follows a gaṇasūtra: KṣT X.80: नान्ये मितोहेतौ चा (nānye mito'hetau ca), DhPr p. 135, MDhv X.82, SK 3.395: नान्ये मितोहेतौ. This provides that verbs in the tenth major group other (anye) than those of the preceding subgroup are not (na) marked with \( m \) (mitaḥ) when followed by \( nic \) that is introduced redundantly and not to signify the act of a causal agent (ahetau). For example, śama 'perceive' is part of the subset headed by 192a; this is not marked with \( m \): \( ni śāmayate \). But yama is part of the group that begins with
jñapa and is so marked: jñapayati. As can be seen from the examples, the question arises whether gaṇasūtras stated elsewhere (191b,c) are sufficient to provide for the required derivates, without this sūtra in the tenth gaṇa. This will be considered in a later part of my work (IV.1) under A 6.4.92.

9. I have given the gaṇasūtra 192a as transmitted by most commentators (DhPr p. 137, MDhV X.120, SK 3.397), with the plural ātmanepadīnāḥ Kṣirasvāmin (KṣT X.123) gives the sūtra with the singular ātmanepadī.
1.4. Pāṇini’s gaṇapāṭha.

1.4.0. Introduction.

The gaṇapāṭha consists principally of groups of items associated with particular operations. This ancillary is like the dhātupāṭha in that it too contains gaṇasūtras, some of which are properly attributed to Pāṇini (see Section 1.4.3). It differs from the dhātupāṭha, however, in that the lists in question are recited together with pertinent sūtras. In addition, the items that make up a set by virtue of being connected with certain operations may or may not require a class name. For example, the set of nominal bases that begins with sarva is given along with the sūtra A 1.1.27 (53), which assigns to these items the class name sarvanāman, a term used for referring to these in rules that state operations particular to the set. Similarly, by A 1.1.37 (54), the class name avyaya is given to nominal bases of the group beginning with svar as well as to members of the nipāta set, and A 1.4.57 (55) provides that members of the group beginning with ca, if they do not signify beings, are called nipāta. According to A 4.1.105 (335), the taddhita suffix yaḥ follows genitive forms of nominal bases in the set that begins with garga. These bases are given in a gaṇa recited along with this operational rule.

Items such as sarva, svar, ca, garga are nominal bases (pratipadika: A 1.2.45 [48]), but not all elements given in gaṇapāṭha groups are pratipadikas. Thus, the list referred to in A 3.1.27 (282) contains verbs. Further, some lists give derivates which result from operations, and the bases subject to these operations are to be abstracted from these derivates. For example, A 4.1.4 (271) is stated under the headings A 4.1.1, 3 (105, 107), so that the items to which ajādi refers should be nominal bases of a set beginning with ajā 'goat'. However, the gaṇapāṭha text transmitted with A 4.1.4 actually lists derivates, beginning with ajā ‘she goat’, gotten by combining
aja with the suffix țāp. In connection with this, consider some forms of ajā and khatvā 'bed': aje, khatve (nom.-acc. du.), ajayā, khatvayā (instr. sg.), ajayai, khatvāyai (dat. sg.), ajayāṁ, khatvāyāṁ (abl.-gen. sg.), ajayāṁ, khatvāyāṁ (loc. sg.). It is patent that the two nominals are formally alike. Similarly, both ajā and khatvā cooccur with adjectival terms like prathamā (nom. sg. fem.) 'first'. It makes sense, therefore, to treat ajā and khatvā in the same way, as derivates formed with an affix (țāp). After such derivates, the dual endings au are replaced by śi (A 7.1.18 [493]), and the locative ending ni is replaced by āṁ (A 7.3.116 [497]); -e substitutes for the final sound of a stem in -āp before the instrumental ending ā (A 7.3.105 [483]); and endings marked with ń receive the initial augment yāṭ after such a stem (A 7.3.113 [499]).

Nevertheless, ajā and khatvā also differ in an important way. The feminine derive ajā is paired with aja 'goat', but in actual usage khatvā is not similarly paired with a non-feminine khatva, although one has khatva as a second member of a compound, for example, in bahukhatva 'one who has many beds'. Stating that țāp follows nominal bases of a set that begins with aja and giving derivates with this affix in the ganapāṭha is a way of capturing these facts. Both ajā and khatvā are used, and one is justified in treating both as derivates, but not all such terms can truly be said to derive from bases that end with a; hence, terms with -ā are listed in the ganapāṭha, and from these one infers bases with -a, some of which are simply grammarians' abstractions. The list beginning with ajā given under A 4.1.4 is considered simply to illustrate a type (ākṛtigāṇa, see 204).

1.4.1. Exhaustive listings and type listings.

Pāñinīyas distinguish two kinds of groups in the ganapāṭha. First, there are groups whose members are exhaustively listed (pathyante 'are recited') in a given order. In addition, there are type listings (ākṛtigāṇa: see 210) such that
only illustrative instances of a class are recited in the 
panapatha texts accompanying particular sutras. Consider, for 
example, A 2.1.59 (313), which provides that forms of the items 
śreṇi 'row, order' and following (śrenyādayaḥ ) combine with 
coreferential forms of kṛta 'made' and such (kṛtādibhiḥ ) to 
form tatpuruṣa compounds such as śreṇi-kṛta 'made into a row, 
arranged in a row'. According to Paninīyaś from Patañjali (Bh. 
1.400.13) onwards, the set referred to by śrenyādayaḥ is one 
whose members are exhaustively listed, but the group referred 
to by kṛtādibhiḥ is a type listing that includes only illustrative instances of participles such as kṛta (see 210).

1.4.2. Groups and subgroups in the ganapātha.

As groups of verbs in the dhatupātha include certain 
subgroups (see Section 1.3.2), so do groups in the ganapātha 
include subgroups pertinent to particular operations. For 
example, the set of pronominials (sarvanāman ) given in con-
nection with A 1.1.27 (53) has several subgroups. Some opera-
tions apply to the set of pronominials in general. Thus, when 
used with reference to a cause and in construction with hetu 
'cause', any sarvanāman is followed by a third-triplet or 
sixth-triplet ending (A 2.3.27 [250]), and pronominal terms 
take the affix akac under conditions that determine the use of 
the suffix ka with other nominals (A 5.3.71 [354]). The ordered 
set of pronominials begins with sarva and continues with other 
bases in -a, through antara 'exterior', after which there is 
listed the subgroup that begins with tyad 'that' and ends with 
the interrogative pronoun kim, the last item of the pronominal 
set.

Before endings, the final sounds of tyad and following are 
replaced by -a (A 7.2.102 [476]), but ka replaces all of kim (A 
7.2.103 [487]). One thus gets stems in -a, after which smai 
substitutes for ūṇe and smāt, smin respectively substitute for 
ṛasi, ṇī (A 7.1.14-15 [492]). These substitutions apply also 
after stems with primitive -a, but ṇasi and ṇī are only
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optionally replaced by śmat and smin after a subgroup of nine pronominals, starting with pūrva ‘prior, eastern’ (A 7.1.16). Further, there is a subgroup that starts with dvi ‘two’ and ends with kim: Certain taddhita affixes follow terms with pronominals other than dvi etc., but including kim (A 5.3.2 [349]).

1.4.3. Sūtras in the gaṇapātha.

The gaṇapātha as transmitted by Pāṇiniyas also contains gaṇasūtras. For example,

उपसर्गविभक्तिस्वरप्रतिरूपायकास्य निपाताः
( upasargavibhaktisvarapratirūpākāś ca nipātāḥ )
[E.g., Kā. 1.88 (on A 1.4.57)]

is a gaṇasūtra accompanying A 1.4.57 (55). It states that items with the same shapes (pratirūpa) as preverbs ( upasarga ), as items with endings ( vibhakti ), and as vowels ( svara ) also are included among elements with the name nipāta. One such item is asti, homophonous with the verb form asti ‘is’ but a nipāta according to this gaṇasūtra, hence a member of the avyaya class by A 1.1.37 (54). It is certain that the gaṇasūtra cited above was already part of the gaṇapātha known to Kātyāyana. Thus, in vārttika 21 to A 2.2.24, Kātyāyana suggests

( सुबधिकारेः स्तिक्षीरा रविवचनम् [ subadhiκārēs tistikṣirārdvavaca-
nam ] ) that an addition has to be made to the grammar so as to include in the section on compound formation derives such as astikṣirā ( brāhmaṇī ) ‘a Brāhmaṇa’s wife’ who has much milk’ ( see Bh. 1.425.8 ), the feminine corresponding to astikṣira. Such a compound should be derived from related nominal forms. Under the assumption that asti is a verbal form, with the ending tip, not a nominal form, the composition rule A 2.2.24 (317) will not allow deriving astikṣira in vārttika 22 on this rule, however, Kātyāyana goes on to say (न वाययत्वात् [ na vāyyayatvāt ] ) that the suggested addition need not be stated,
since *asti* is an avyaya. That is, as Patañjali explains, *asti* of a derivate like *astikṣirā* is not a present form of *as*; it is a nipāta in accordance with the gaṇasūtra given above, hence a member of the avyaya class, so that it is indeed a nominal. [Bh. 1.425.11-13: न वा वक्तव्यम् किंतु रणम् अन्यायत्वात् अन्यमेशोऽस्तिसतः सैषास्तेतुहात् कथमान्यायत्वम् उपसर्ग-विभक्तिस्वरप्रतिरूपकाश्च निपातसंज्ञा भवन्तीति निपातसंज्ञा निपातोऽन्यमित्यन्यिन्यसंज्ञा] In the course of this explanation, Patañjali literally alludes to the gaṇasūtra, and Kātyāyana’s reasoning presupposes that the gaṇapātha known to him also contained this sūtra.

It is probable that some such gaṇasūtras stem from Pāṇini himself. Consider now A 1.4.68: अस्त्रक्षा (55). This provides that the term *astam* which is an avyaya has the class name *gati*. Obviously, Pāṇini here assumes that there is an avyaya *astam*, homophonous with but distinct from a pada such as *astam* ([acc. sg. masc., nom.-acc. sg. nt.] < *asta-am*) ‘thrown’. The term in question is not included in the set that begins with *svar*, so that it is not an avyaya according to A 1.1.37 (54) by virtue of belonging to this group; nor is *astam* part of the group beginning with *ca*, so that it is not an avyaya according to A 1.1.37 by dint of belonging to the nipāta class. On the other hand, *astam* could indeed be a nipāta by the gaṇasūtra given in 206.

Remarks.

1. In referring to groups of items both in the dhātupātha and in the gaṇapātha, Pāṇini uses terms such as *divādi*, *juhotyādi*, *saryādi* (A 3.1.69, 2.4.75, 1.1.27 [157, 158, 53]), which are bahuvrīhi compounds (A 2.2.24 [317]) of a particular kind. Now, if one uses the bahuvrīhi *citragu* ‘spotted-cow, a person who has spotted cows’ in चित्रगुरारनीयताम् (citragu rā
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nīyatām (nīyati) 'Spotted-cow should be brought', one asks that a man who has spotted cows be brought, not that cows be brought. On the other hand, if one says chitravāsasam ā naya (chitravāsāsam ā naya) 'Bring the man with the bright outfit', one requests that a man be brought who is wearing a bright or multicolored garment (chitravāsāsam), so that the man's garment comes along with him. Similarly, when one says lohitōsniṣa pra caranti (lohitōsniṣa rtvijah pra caranti) 'Red-turbaned priests are proceeding', one is speaking of priests with their turbans proceeding in a rite. In the case of compounds like citravāsas 'bright-garb', lohitōsniṣa 'red-turban' used as illustrated, although these terms refer to persons characterized by their garments and their turbans, not merely to these characteristics, it is understood that such properties get involved in the activities spoken of, along with the people they characterize (tadgupasarvāsāvijñāna). Terms such as sarvādī are used similarly: They refer to groups that include the elements denoted by the first members of the bahuvr̥ihi compounds. This is pointed out explicitly in the Mahābhāṣya on A 1.1.27 (Bh. 1.86.5-8), in meeting the objection that sarvādī might not refer to sarva.

2. Pāṇini also uses compounds with -prabhṛti (‘starting with’) to refer to groups of the dhātupātha and the gaṇapātha; for example, adiprabhṛti, sākṣatprabhṛti (A 2.4.72, 1.4.74 [158, 55]). In addition, a plural form may be used to refer to a group of elements; for example, kādārāṅ in A 2.2.38 (321) refers to the group that begins with kādāra.

3. As commentators point out (e.g., Dipikā 213.8-12, Pr. II.635), śrenyādayaṁ and kṛtādibhiḥ can be considered to refer to different kinds of listings (204) in accordance with the different ways ādi is used. First, this term is used with reference to an arrangement (vyavasthā) such that a given element is the first of an ordered group. For example, someone
who says देवदत्तायानीयन्ताम् (devadattādayā anīyantām) ‘Devadatta and the rest should be brought’, speaking of Devadatta and others who are sitting together, is referring to a group of people arranged in a particular order; these people are fetched and brought. Further, ādi is used in the sense of ‘kind, sort’ (prakāra), as when one uses devadattādi with reference to a group of men who are like Devadatta in that they are rich, learned, handsome, and have many followers. [cf. Bh. 1.258.24-26: अयमादिशब्वस्त्येव न्यवस्थायां वर्तति। तदथा देवदत्तादीन्समुपविष्टानाह देवदत्ताय आनीयन्तामिति। त उत्साप्यानियन्ते। असित प्रकारे वर्तति। तदथा देवदत्ताय आद्यया अभिरूपा दर्शनिया: पक्षवन्तः। देवदत्तप्रकारा इति गम्यते।] Terms like śrenyādi, which refer to elements in exhaustive lists, have ādi in the first sense; terms such as krtādi, which refer to type listings, contain ādi in the second sense.

4. Commenting on the passage where Patañjali cites the ganaśūtra given in 206, Kalyāṇa remarks that this overlooks the possibility of asti being part of the gana connected with A 1.1.37 (54). [Pr. II.714: उपसर्गविभक्ति:। स्वरादिप्य-रितशब्वपाठमनपेश्यैतुवुक्तम्] The Kāśikā (1.17) does indeed consider asti part of the group that begins with svar; but, as Nāgeśa points out (Ud. II.714: अनपेश्यै:। सोस्पारमाणिक इति तत्त्वम्) this lacks ancient authority, as is clear from what is said in the Mahābhāṣya. From this and other instances, it can be seen that Pāṇiniyas sometimes differ concerning what elements are included in particular groups of the ganapāṭha and the scope of ganaśūtras. It is also known that the ganapāṭha was subject to expansion. Details on these points will be considered in connection with individual pertinent sūtras.
2. PĀNINI’S DERIVATIONAL SYSTEM

2.0. Introduction.

Pāṇini describes Sanskrit utterances and their constituents by means of a derivational system the units of which are: bases, presuffixal base elements or stems (aṅga: A 1.4.13 [46]), affixes (pratyaya: A 3.1.1 [15]), syntactic words (pada: A 1.4.14 [49]), and utterances (vākya [see 227]). Bases are of two general kinds: verbs (dhātu: A 1.3.1, 3.1.32 [47]) and nominal bases (prātipadika: A 1.2.45-46 [48]). Verbs and nominal bases are either primitive or derived. An utterance which is or could be found in actual usage (aṅukikāṁ vākyam) is derived, by operations stated in the Aṣṭādhyāyī, from a string that cannot be found in actual communication (aṅukikāṁ vākyam) but is posited, in order to describe a real utterance, as a sequence of syntactically and semantically related words gotten by introducing affixes to items as provided for in the grammar. Complete strings as posited in the grammar are of the type

\[(11) (N-E^p)_p ... (V-E^v)_p\]

That is, they consist of related padas (p) in which nominal endings (E^p) and verb endings (E^v) respectively follow nominal and verbal stems (N, V) whose meanings bear stateable relations with each other. Strings of this type are themselves derived from more abstract ones of the type

\[(12) N-E^p ... V-L\]

in which L-affixes follow verbs (232). Posited strings and the utterances they serve to account for can be simple or complex (Sections 2.1-2.2). Stems (aṅga) in respect of endings are also simple or complex, so that (11) can be rewritten as

\[(13) ([[B^p]]_a (A^f) f)_a -E^p_p ... ([[B^v]]_a (A^v) v)_a -E^v_p\]

A simple stem with respect to a nominal or verbal ending is merely a nominal or verbal base (B^p, B^v). A complex stem in
respect of a nominal ending consists of a nominal base and a feminine affix (A'). A complex stem with respect to a verb ending consists of a verb and one of a group of affixes, including \( \text{šap} \) (see 156-157), which Pāṇinīyas call \( \text{vikarāṇa} \) (A').

Affixes are introduced under meaning conditions and cooccurrence conditions. An affix treated as signifying a particular meaning is introduced after a given unit on condition that this meaning is to be signified. An affix treated as co-signifying a meaning is introduced after a unit on condition that this be used in a meaning to be co-signified by the affix. An affix may also be introduced to a given item on condition that this cooccur with another item. Further, some affixes have to be introduced as totally redundant elements (see Section 4.1.3).

Pāṇini thus takes meanings into consideration from the very outset of a derivation. The particular meanings in question may be semantic notions which one can assume known to any speaker of Sanskrit, so that Pāṇini simply speaks of them using conventionally known terms. These include such notions as time references: present, current (\( \text{vartamāna} \) [loc. sg. \( \text{vartamāne} \): A 3.2.123 [233]], past (\( \text{bhūta} \) [\( \text{bhūte} \): A 3.2.110]), future (\( \text{bhaviṣyat} \) [\( \text{bhaviṣyatī} \): A 3.3.13]); modalities such as commands (\( \text{vīdhi} \): A 3.3.161); numbers (A 1.4.21-22 [234]). In addition, Pāṇini operates with six syntactic-semantic categories to which sūtras of the Aṣṭādhyāyī assign direct participants in actions (kāraka). Operational rules then provide for different affixes to occur when particular kārakas as assigned to these kāraka categories are to be signified. The six category names are: \( \text{apādāna} \), \( \text{sampradāna} \), \( \text{karaṇa} \), \( \text{adhikarāṇa} \), \( \text{karman} \), \( \text{kartṛ} \); the kartṛ class also includes a subcategory called \( \text{hetu} \). These class names are assigned to direct participants in actions by sūtras under the heading of

A 1.4.23: कारके (kārake)

which provides that subsequent rules apply with respect to kārakas (kārake [loc. sg.] 'in the domain of a kāraka'). Seven of
these sūtras are:

A 1.4.24: धृवमपायेसपादानाम् (dhruvam apāye pādānām)
A 1.4.42: साधकतमकरणम् (sādhakatamāni karaṇam)
A 1.4.45: आधारोधिकारणम् (ādāro’dhikaraṇam)
A 1.4.54: स्वतन्त्रः कर्ता (svatantrah kartā)
A 1.4.55: तत्प्रयोजको हेतुस्या (tatprayo jako hetuś ca)
A 1.4.49: कर्तुरीपिसतत्तमस्य (kartur īpsitataṁ karma)
A 1.4.32: कर्मणाः यमभिप्रेरित स सम्प्रदानाम् (karmaṇā yam abhipraitī sa sampradānam)

According to these rules, the class names apādāna and so on apply to kārakas as follows:

A 1.4.24: apādāna: a firm point (dhruvam) with respect to movement away from something (apāye), that is, a point of departure
A 1.4.42: karaṇa: that kāraka which most serves to bring about an act (sādhakatamam), the means of accomplishing this act
A 1.4.45: adhikaraṇa: a locus (ādāraḥ)
A 1.4.54: kartr: that kāraka which is spoken of as an independent (svatantrah) participant in comparison with other participants in an act
A 1.4.55: hetu: A kāraka that plays the role of causing an independent one (tatprayo jakaḥ) to participate in an act is simultaneously given the class names kartr and (ca) hetu
A 1.4.49: kārman: primary goal, that kāraka which a participant of the kartr class (kartruh [gen. sg.]) most wishes to reach or obtain (īpsitataṁ) through the act in which it participates
A 1.4.32: sampradāna: indirect goal, that kāraka which a kartr intends (abhipraitī) as goal through the kārman (karmaṇā) of an act

The above sūtras of themselves concern categories that are semantically characterized. Nevertheless, the kāraka
categories are not purely semantic, as can be seen from other related rules. Thus,

A 1.4.43: दिवः कर्म च य (divah karma ca)

provides that a कर्मका which would have the category name karana by A 1.4.42 also (ca) has the class name karman if the act in which it serves as means is gambling denoted by the verb दिव (divah [gen. sg.]) 'gambled, play', and according to

A 1.4.46: अधिश्रृग्वसांक्म (adhiśructhasān karma)

a locus (adhāra: A 1.4.45) has the class name karman instead of adhikaraṇa if it functions as locus in acts denoted by three verbs with the preverb adhi: adhi-śi 'lie on', adhi-ştthā 'stand, remain at', adhy-śas 'sit on, sit in, inhabit'. Obviously, the karman category is neither homogeneous nor exclusively semantic in character, since membership in the class depends also on grammatical properties. Other कर्मका categories too

are not exclusively semantic (see Part III.4 of my work).

215 Deriving real utterances from strings of the type (11) (212) involves positing for bases and affixes single basic forms found in such abstract strings and subject to contextual operations which account for the distribution of related variants (see Section 4.2). These operations include not only substituting one grammatical element for another and adding augments to items in grammatically characterized contexts but also replacing sounds in phonological contexts. Pāṇini thus treats both grammar and phonology in his Aṣṭādhyāyī. Moreover, in dealing with grammar, Pāṇini considers aspects of syntax, including grammatical features associated with कर्मका categories (214), and takes into account relations that hold among various simple sentences and between simple and complex sentences (see Section 2.2).

216 The Aṣṭādhyāyī does not, however, deal systematically with phonetics or phonotactics. Pāṇini does not describe how sounds are produced or state the distribution of sounds --- saying, for example, that particular sounds occur in word-initial and word-final position --- separately from
phonological rules, as do śīkṣā and prātiśākhya works. On the contrary, Pāṇini presupposes, in rules like A 1.1.9-10 (33-34), an acquaintance with phonetics as a basis for his phonological statements (see 43, 224).

Pāṇini also does not deal with certain aspects of syntax. The Aṣṭādhyāyī does not give information about what one could characterize as the neutral word order of Sanskrit or what possible meaning differences are associated with variations in word order. Sentences such as

(14) a. पात्रमाहरा (pātram ā hara)

b. आहर पात्रम् (ā hara pātram) 'Bring a/the cup.'

are simply derived as equivalent utterances in which a cup or vessel (pātra) functions as object, hence is classed as karman (A 1.4.49 [214]), in relation to an action that someone is commanded or asked to carry out.

Similarly, Pāṇini does not treat of the variation in word order of sentences such as

(15) a. भवति भिक्षान्देहि (bhavati bhikṣān dehi)

b. भिक्षाम्भवति देहि (bhikṣām bhavati dehi)

c. भिक्षान्देहि भवति (bhikṣān dehi bhavati) 'Lady, please give me alms.'

These are to be used respectively by a Brāhmaṇa, a Kṣatriya, and a Vaiśya when begging for alms (see 226).

Social status can nevertheless be pertinent to a Pāṇinian rule. To account for an utterance such as

(16) भो आयुष्मानेधि देवदत्तस् (bho āyuṣmān edhi devadattaḥ) 'Be long-lived, Devadatta.'

In which the final vowel of the vocative devadatta is prolated and high-pitched, A 8.2.83 (621) must specify that this holds in an utterance used when one answers the greeting of a non-Śūdra, since the prolation and accentuation in question do not apply in an answer made to a Śūdra.

Moreover, the structure of Sanskrit requires Pāṇini to
describe the positions of certain padas. Thus, according to

A 1.4.80: ते प्राम्यातोः (te prāg dhātoḥ)

those items (te) that are assigned the class names upasarga and gati by preceding sūtras (see A 1.4.59-60 [55]) occur before (prāk) any verb (dhātoḥ) to which they are linked. In

A 1.4.81: छन्दसि परेशी (chandasi pare'pi)

A 1.4.82: व्यवहितार्थः (vyavahitāḥ ca)

Pāṇini goes on to say that in Vedic usage (chandasi) these also follow (pare'pi) and may be separated from (vyavahitāḥ ca) the verbs with which they are connected. Similarly, the Aṣṭādhyāyī includes rules stating the order of padas in compounds (see 319-321).

Now, compounds are derived from padas, which can be independent constituents of strings. Once composition takes effect, however, the endings of padas are obligatorily deleted in most instances (A 2.4.71 [278, 301]), leaving derived nominal bases (A 1.2.46 [48]), whose constituents not only have fixed orders but also are not syntactically or semantically fully autonomous elements. For example, the padas rājan-as and pūrṣa-s of a posited string rājan-as pūrṣa-s or pūrṣa-s rājan-as are separate units the order of which is not fixed, just as the order of words in rājñāḥ pūrṣaḥ 'king's servant' and pūrṣaḥ rājñāḥ 'king's servant', derived from such posited strings, is not fixed. Being distinct syntactic units, terms like rājñāḥ (< rājan-as ) can be construed with elements other than pūrṣaḥ, including qualifiers; for example, one can also say rājñīḥ bhāryāḥ 'king's wife', rūdhāsyā rājñāḥ pūrṣaḥ 'servant of a rich king'. The order of constituents in a compound such as rājapuruṣā (< ... rājan-as pūrṣa-s ), however, is fixed; a compound pūrṣarājā 'king of men, supreme man' would have a different meaning. Moreover, neither of the components of rājapuruṣā is independently accented. The derived nominal base is an accentual unit with high pitch on its last vowel (A 6.1.223 [602]). Further, not
being autonomous, the constituent rāja- of this compound cannot be construed with a qualifier such as pūdhā 'thriving, rich'. Sūtras of the Aṣṭādhyāyī providing for the order of padas in compounds thus concern items that are not autonomous elements. Padas formed from preverbs, such as ā (<ā-s) in ā hara of (14) (217) also are not syntactically or semantically autonomous. For a verb can be used without a preverb, but a preverb regularly occurs only with a verb. In terms of relative autonomy, then, padas formed from preverbs and padas that are constituents of compounds have a status comparable to that of units smaller than the word: bases (prakṛti), affixes (pratyaya), augments (āgama). All such items have generally fixed positions, which are described in rules of the Aṣṭādhyāyī. Opposed to these, one has padas that are syntactic units in utterances. Such items have various possible orders, which are not dealt with in the Aṣṭādhyāyī.

As I pointed out in 215, Pāṇini takes into account relations among various utterances. He considers such relations, however, only in so far as they are linked to particular grammatical features and operations such as affixation. Consequently, Pāṇini does not describe systematically relations among certain types of sentences, such as positive and negative, declarative and interrogative sentences, or sentences with and without relative clauses.

Briefly, then, the Aṣṭādhyāyī is essentially a grammar the upper limit of which is the utterance, although this can be a complex sentence. In this grammar, Pāṇini takes into account explicitly what is describable in terms of affixation or composition rules and related rules of substitution and iteration, including accentual rules, all concerning bases, stems, affixes, and syntactic words in sentences. This is done by means of a derivational system which aims strictly at describing Sanskrit —- including Vedic —- usage, without attempts at universality.
1. Patañjali remarks that grammar (vyākaranam) is a later science (uttarā vidyā), which a student can understand once he has received instruction in works relative to Vedic texts (chandhasāstresu abhivinitaḥ). [Bh. I.208.19-20: न्याकरणानामयमुत्तराविद्या|तोसवसुन्द्र:|शास्त्रेन्मभिविनीता|अपलब्ध्यावाण्गनमुस्मत्सही|] As Nāgeśa notes (Ud. II.49: छन्दः शास्त्रेण प्रातिशाख्यशिक्षाविषु), these works include prātiśākhya and śikṣā treatises. That is, Patañjali speaks here of works that deal with phonetics, an area one is supposed to know when undertaking the study of grammar. As I pointed out (216), Pāṇini does indeed presuppose a background in phonetics of those who study his grammar. There is only one sūtra in the Aṣṭādhyāyī which actually teaches the pronunciation of particular sounds. According to A I.2.32 (35), a vowel that has the name svarita by A I.2.31 is high-pitched (udāttam) for the length equivalent to that of half a short vowel (ārdhahrasvam) from its beginning (āditaḥ). This is clearly a statement of phonetic detail, describing a svarita vowel as high-pitched for the duration of half a mora. Pāṇini describes the pronunciation of svarita vowels, however, for a metalinguistic reason: One of competing pronunciations of such vowels is used for marking adhikāras (A I.3.11 [115]; see 'Pāṇini's definition, description, and use of svarita', Pratidānam [Festschrift F. B. J. Kuiper, The Hague: Mouton, 1968], pp. 448-461).

2. Patañjali remarks also (Bh. I.39.17-19: नेव प्रयोगनियम|आरभ्यते|किन्तहि|संस्कृत्य संस्कृत्य पदान्युत्सृप्यन्ते|तेषु|यथेष्टमिभिस्मन्धो|भजति|तद्यथा|आहर|पात्रमपत्रमाहरेति|) that no restriction concerning the order of padas used in an utterance is undertaken in the grammar; padas are formed and left to be (samskrtya samskrtya padany utsṛjjyante, see 843), their order (abhisambandhaḥ) being according to what one wishes (yathestam), as in (14a,b) (217). Commenting on this
Bhāṣya passage, Kaiyāṭa notes that Patañjali here uses prayoga (in prayoganiyamah ‘restriction on what is used’) as an object noun referring to independently used padas. Kaiyāṭa also remarks that while no restriction is undertaken in the grammar with respect to autonomous padas, the grammar does undertake a restriction on the order of terms which make up such padas: bases, affixes, prior members of compounds, augments. [Pr. 1.129: नेहेति प्रयुक्त इति प्रयोगः। तस्य स्वतन्त्रस्य पदस्य प्रयुक्तमानस्य नियमो नारभ्यते अपि तु पदावयवस्य प्रकृतिप्रत्ययोपसर्जनागमाविरूपस्या]

3. The Aṣṭādhyāyī deals with phonological properties of sentences like (16) (219), but Pāṇini does not concern himself with the word order variation in sentences like (15a-c) (218). Works concerned with rules of behavior do deal with such variation. Pāraskaragṛhyasūtra 2.5.2-4 (भवत्युर्वाचर्याणां भिक्षेत्र भवन्मध्यां राज्यां भवद्वन्म्यां वैस्यां), Manusmṛti 2.49 (भवत्युर्वचर्चरोपनीतो द्विजोत्तम:। भवन्मध्यन्तु राजस्यो वैस्यस्तु भवुलुतरस्मि) say that a Brāhmaṇa (brāhmaṇaḥ, dvijottamaḥ), a Kṣatriya (rājanyah), and a Vaiśya (vaiśyaḥ) respectively should ask for alms (bhikṣeta, bhāikṣaṇi caret) using sentences in which the respectful pronoun bhavatu (voc. sg. fem. bhavati) comes first, in the middle, and last. Examples (15a-c) are taken from commentaries on these texts.

4. From the verb vacā ‘say, speak’ are derived, with the suffix nyat (A 3.1.124 [292]), both vācyā, which refers in general to anything that can be said or is to be said, and vākyā, which denotes in particular a speech unit, an utterance or sentence. Pāṇini provides in A 7.3.67 (432) that the -c of vac is not replaced by a velar stop before nyat unless the derivate in question is a term naming a linguistic unit (aśabdasaṁjñāyāṃ). Pāṇini thus obviously recognizes that vākyā denotes a particular speech unit, and he uses the term
accordingly (e.g., A 8.2.62 [621]). He does not, however, introduce vākya as a technical term of his grammar in the way he introduces terms such as anīga, pratyaya, pada (see 212), and vākya does not refer, in Pāṇini’s system, to any particularly circumscribed utterance such as one would call technically a sentence. For there are no specific operations stated in the Aṣṭādhyāyī that call for introducing vākya as a class name for any utterance so defined. Later, Pāṇinīyas from Kātyāyana onward attempt to define a vākya in particular ways. I take up this issue in a subsequent part of my work.

5. Pāṇini uses two terms with reference to what any verb can denote: kriyā (‘doing, action’) and bhāva (‘being, becoming, state’). The former, a derivate of gukṛṇi ‘do, make’, reflects the view that verbs denote varieties of actions; the latter, a derivate of bhū ‘be, become’, ultimately reflects the view that verbs denote various states of being and becoming. Pāṇini clearly does not adhere to either view exclusively. He does not attempt any semantic definition of verbs (cf. A 1.3.1, 3.1.32 [47]). On the other hand, Pāṇini does consider that any verb denotes something that is brought to accomplishment in time. The term kāraka, which Pāṇini uses without defining (A 1.4.23 [214]), refers to something that directly contributes to an act’s being accomplished. Any kāraka, then, is properly termed sādhaka ‘that which accomplishes’. In A 1.4.42, Pāṇini uses the superlative sādhetamam in order to exclude from the karaṇa category kārakas that are not the immediate means of accomplishing an act. Similarly, Pāṇini uses the superlative īpsitamam ‘most sought to be reached, obtained’ in A 1.4.49 to exclude other goals from the karaṇa category. However, a given act may have more than one karaṇa or karaṇam taking part in it.

In connection with the karaṇa category names, note that, although these categories are clearly not purely semantic, I shall use ‘instrument’, ‘locus’, ‘object’, and ‘agent’ as conventional glosses for the Pāṇinian terms karaṇa, adhikaraṇa, karman, and karaṇ. There is no single English term
appropriate even as a conventional gloss for either apādāna or sampradāna, so that I adopt these Sanskrit terms in English. Note, finally, that I shall use 'act' or 'action' as conventional English equivalents for kriyā and bhāva used with reference to a verb's meaning (dhatvartha), without thereby implying any particular theoretical stance.

2.1. Simple sentences.

A simple sentence involves a single action, denoted by a verb (see 228). Nominal terms in such a sentence may be linked to the verb or to other nominals. For example, in

(17) राजः पुरुषो नगरं गच्छति (rajanah puruṣo nagaran; gacchati) 'The king's servant is going to the city.'

two nominal terms are linked to the verb form gacchati: puruṣo (nom. sg. < puruṣa-s) 'man' and nagaraḥ (acc. sg. < nagara-am) 'city'; but rajah (gen. sg. < raja-as) 'king' is linked only with puruṣo. Nominal bases linked with verbs are said to refer to kā rakas (see 214, 228). In (17), the bases puruṣa and nagara respectively signify an agent and object (kartr, karman: A 1.4.54, 49 [214, 228]) of going, signified by the verb gami' (3sg. pres. indic. gacchati). The base raja, on the other hand, here refers to a king spoken of merely as related to a man in his service.

Affixes are introduced to bases and stems with feminine affixes on condition that given kā rakas are to be signified. The affixes thus introduced are deltic in that they designate unspecified kā rakas. The nominal stems used in sentences denote the particular individuals in questions, so that they are coreferential (samāndhikaraṇa) with affixes which signify kā rakas. In addition, certain nominal endings are introduced when relations between the meanings of nominals are to be signified. Nominative endings stand apart in that they are not treated as signifying kā rakas or relations (A 2.3.46-47 [240]).
The bases and affixes of (17) are shown in

(18) राजन-अस्पर्श-स्नागर-अम्ब-कर्म-अ-तिकर्तः

(rājan-as puruṣa-s nagara-am karman gam-a-ti kartr)

an abstract string from which (17) is derived. The nominal stem nagara- is followed by the object-signifying ending am (A 2.3.2 [240]), the verbal stem gam-a- by the agent-signifying ending tip (A 3.4.69, 77, 78 [232]), the verb gam by the vikaraṇa āpat (A 3.1.68 [157]); the relational ending ānas (A 2.3.50 [251]) follows rājan-, and the ending su follows puruṣa-.

At an earlier stage of derivation, gam is followed simply by the L-affix ālat (A 3.2.123 [233]).

Pāṇini's derivational system serves not only to describe utterances but also to show how certain utterances are related to others. In order to illustrate this, let us consider the following simple sentences with abstract strings from which they derive.

(19) b. देवदत्त ओदनं पचति। (devadatta odanam pacati) 'Devadatta is cooking rice.'

   a. देवदत्त-स् ओदन-अम्पच-अ-तिः (ङ पच्लट) (devadatta-s odana-am pac-a-ti [ङ pac-lat])

(20) b. देवदत्तेनौदन: पच्यते। (devadattaenaudanah pacyate) 'Rice is being cooked by Devadatta.'

   a. देवदत्त-आ ओदन-स्पच-य-ते (ङ पच्लट) (devadatta-a odana-s pac-ya-te [ङ pac-lat])

(21) b. देवदत्त ओदनमपक्षीत! (devadatta odanam apakṣit) 'Devadatta has cooked rice.'

   a. देवदत्त-स् ओदन-अम्पच-सः (ङ पच्लट) (devadatta-s odana-am pac-s-t [ङ pac-lūn])

(22) b. देवदत्तेनौदनोपाचा (devadattenaudano pācī) 'Rice has been cooked by Devadatta.'

   a. देवदत्त-आ ओदन-स्पच-इ-तः (ङ पच्लट)
(devadatta-ā odana-s pac-i-ta [< pac-luni])

(23) b. देवदत्त ओदनमपचत् (devadatta odanam apacat) 'Devadatta cooked rice.'
   a. देवदत्त-स् ओदन-अपच-अ-त् (< पच्च-लङ्घ)  
      (devadatta-s odana-am pac-a-t [< pac-lan])

(24) b. देवदत्तेनावधोपचत्यात (devadattenaudano pacyata) 'Rice was cooked by Devadatta.'
   a. देवदत्त-आ ओदन-स् पच्च-य-त् (< पच्च-लङ्घ)  
      (devadatta-ā odana-s pac-ya-ta [< pac-lan])

(25) b. देवदत्त ओदनं पपाचा (devadatta odanam papāca) 'Devadatta cooked rice.'
   a. देवदत्त-स् ओदन-अपच-अ (< पच्च-लिट्ट)  
      (devadatta-s odana-am pac-a [< pac-til])

(26) b. देवदत्तेनावधू: पेचा (devadattenaudanāh pece) 'Rice was cooked by Devadatta.'
   a. देवदत्त-आ ओदन-स् पच्च-ए (< पच्च-लिट)  
      (devadatta-ā odana-s pac-e [< pac-til])

(27) b. देवदत्त ओदनं पचति स्मा (devadatta odanam pacati sma) 'Devadatta cooked rice.'
   a. देवदत्त-स् ओदन-अपच-अ-ति(< पच्च-लट)  
      स्म-स् (devadatta-s odana-am pac-a-ti  
      [< pac-lat] sma-s)

(28) b. देवदत्तेनावधू: पनचति स्मा (devadattenaudanāh pacyate sma) 'Rice was cooked by Devadatta.'
   a. देवदत्त-आ ओदन-स् पच्च-य-त् (< पच्च-लट)  
      स्म-स् (devadatta-ā odana-s pac-ya-ta  
      [< pac-lat] sma-s)

(29) b. देवदत्त ओदनं पक्षःति (devadatta odanam pakṣyati) 'Devadatta will cook rice.'
231 (19)-(34) concern one activity, cooking, denoted by different temporal and modal third person singular forms of *dupacās* ‘cook, bake’: *pacati* (pres. Ind. act. [(19), (27)]), *pacyate* (pres. ind. pass. [(20), (28)]), *apāksit* (aor. ind. act. [(21)]), *apāci* (aor. ind. pass. [(22)]), *apacat* (impfct. ind. act. [(23)]), *apacyata* (impfct. ind. pass. [(24)]), *papāca* (pfct. ind. [172])
act. [(25)], pece (pfct. ind. pass. [(26)]), pakṣyati (fut. ind. act. [(29)]), pakṣyate (fut. ind. pass. [(30)]), pacatu (imper. act. [(31)]), pacyatām (imper. pass. [(32)]), pacet (opt. act. [(33)]), pacyeta (opt. pass. [(34)]). These sentences all speak of this act being performed by a man named Devadatta, whose primary goal in cooking is to produce softened rice (odana): Devadatta is the agent (kartr: A 1.4.54 [214]) and the rice is the object (karman: A 1.4.49) relative to cooking. (19)-(34) are thus all related to each other. Some of these sentences, however, are more closely related than others. Active and passive pairs (19)-(20), (21)-(22), and so on are equivalent utterances in that they not only involve the same particular kārakas related to the same action in a like manner but also the same time reference or modality. Now, (21)-(28) have a general time reference in common, but there are here three groups of equivalent sentences: (21)-(22), (23)-(24), and (25)-(28). The first two are used if cooking has been accomplished at some time in the past (bhūte: A 3.2.110 [233]). (23)-(28), on the other hand, can be used only if the act has been accomplished at a time in the past that excludes the day on which a speaker referring to it utters the sentences (anadyatane: A 3.2.111). Further, (25)-(28) differ from (23)-(24) in that they are used if the act in question was not witnessed by the speaker (parokṣe: A 3.2.115).

In his derivational system, Pāṇini shows that sentences such as (19)-(34) (230) are related by having them share operations. He posits ten abstract L-affixes (lakāraḥ 'L's') that are introduced after verbs (dhātoḥ: A 3.1.91 [66]). Six of these are marked with ṭ (ṭitaḥ), four with ni (nitaḥ): laṭ lūṭ lūṭ līṭ līṭ līṭ. In his derivational system, Pāṇini shows that sentences such as (19)-(34) (230) are related by having them share operations. He posits ten abstract L-affixes (lakāraḥ 'L's') that are introduced after verbs (dhātoḥ: A 3.1.91 [66]). Six of these are marked with ṭ (ṭitaḥ), four with ni (nitaḥ): laṭ lūṭ lūṭ līṭ līṭ līṭ. In his derivational system, Pāṇini shows that sentences such as (19)-(34) (230) are related by having them share operations. He posits ten abstract L-affixes (lakāraḥ 'L's') that are introduced after verbs (dhātoḥ: A 3.1.91 [66]). Six of these are marked with ṭ (ṭitaḥ), four with ni (nitaḥ): laṭ lūṭ lūṭ līṭ līṭ līṭ.

A 3.4.69. लः (कर्तीरि) कर्मणि च भाजे चाकर्मकेभ्यः।

(laḥ [kartāri 67] karmāṇi ca bhāve
cākarmakebhyaḥ)

any L-affix (laḥ) follows a verb when an agent (kartāri) or an object (karmāṇi) is to be signified and, with verbs that are
objectless (akarmakebhyah) in given derivations, when an agent or the mere act signified by the verb (unāye: see 228) is to be designated. In general, any L-affix is replaced (lasya [stāne]: A 1.1.49 [so]) by a verb ending. The sūtras

A 3.4.77: लस्या (lasya)

A 3.4.78: तिपत्रिसिप्तपस्थितस्मस्तातान्तायाःसाधानेन
ध्वजिनिनिमहिमहिन (tiptasnisipthasthamib-
vasmastātānīhathāsāthāndhaviṃghinahin)
provide for basic verb endings (see 64 with Figure A) to replace any L-affix. Pairs of equivalent sentences such as (19)-(20) are thus reduced to alternative strings of the type (12) (212):

(35) a. देवदत्त-सोदन-अम् कर्म पच्छकर्ता
(devadatta-s odana-am karman pac-L kartṛ)

b. देवदत्त-आकर्ता ओदन-स पच्छकर्म
(devadatta-a karṭṛ odana-s pac-L karman)

with an L-affix introduced alternatively to signify an agent or an object. In strings of the type (35a), a second-triplet (accusative) ending (am) signifying an object (karman: A 2.3.2 [240]) follows odana and a first-triplet (nominative) ending (su) follows devadatta; in strings of the type (35b), a third-triplet (instrumental) ending (ṭā) signifying an agent (karṭṛ: A 2.3.18) follows devadatta, and a first-triplet ending follows odana.

An L-affix may alternately be replaced by either a verb ending or a participial suffix. Thus, according to

A 3.2.106: लिट: कानज्वा (छन्विः)
(līṭāḥ kānaj vā [chandāsi 105])

A 3.2.107: कवसुश्चा (kvasuṣ ca)

līṭ is replaced not only by verb endings but also, optionally (vā), by the participial suffixes kānac, kvasu; e.g., cikyāna

[ 174 ]
[nom. sg. masc. cikyañaḥ, jaksivas (jaksivān) from ci 'gather, heap up', ghas 'eat'. These sūtras account for usage in Vedic language (chandasi), but

A 3.2.108: भाषायां सदवसाृवुच। (bhāṣāyaṁ sadavasaśrvuḥ)

provides that kvasu optionally substitutes for īṭ after sad 'sit', vas 'remain, dwell', śru 'hear, listen' (svidvas, ūśivas, ṣuśruvas [sēdvān, ūśivān, śuśrūvān]), and this rule accounts for usage in the non-Vedic language (bhāṣāyaṁ).

Other rules give conditions under which particular L-affixes are introduced. For example:

A 3.2.110: लुट् (भूते) (iuṅ [bhuṭe 84])

A 3.2.111: अनधातने लुट् (anadyatane laṅ) 

A 3.2.115: परोक्षे लित् (parokṣe īṭ) 

A 3.2.118: लट्स्मेव (laṭ sme) 

A 3.2.123: वर्तमाने लट् (vartamāne laṭ) 

A 3.3.13: लूट (भविष्यति) शेषे चा (īṭ [bhaviṣyati 3] šeṣe ca) 

A 3.3.15: अनधातने लुट् (anadyatane īṭ) 

provide that different L-affixes occur when various time references are involved, as follows:

A 3.2.110: iuṅ: past (bhuṭe)

A 3.2.111: laṅ: past excluding the day on which the speaker uses the utterance in question (anadyatane [bhuṭe] '... excluding today')

A 3.2.115: īṭ: past excluding the day on which the speaker uses the utterance in question, provided also that the speaker has not witnessed the action spoken of (parokṣe 'beyond direct perception')

A 3.2.118: laṭ: the conditions that apply for īṭ by A 3.2.115, with an additional cooccurrence condition: the verb is used with sme.
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A 3.2.123: *laṭ*: present, current (*vartamāne*)
A 3.3.13: *lṛṭ*: future (*bhavisyati*)
A 3.3.15: *loṭ*: future excluding the day on which the speaker uses the utterance in question (*anadyatane*)

L-affixes are also introduced under modal conditions. For example,

A 3.3.161: विधिनिमित्ताणांत्रणाणाधिष्टसङ्क्रामप्रारथनेषु
लिङ्ग (vidhinirmanāntraṇānadhiṣṭa-
sampraśnaprārthanesu *līṇ*)

lets *līṇ* follow a verb when the following are involved: command to an inferior (*vidhi*), summoning someone to do something that person should do (*nimantraṇa*), invitation to do something one may do (*āmantraṇa*), respectfully made request (*adhīṣṭa*), deliberation (*sampraśna*), prayer (*prārthana*).

A 3.3.162: लोट्चा (*lōṭ ca*)

provides that *lōṭ* also (*ca*) occurs under the same conditions. Further, according to

A 3.3.173: आशिष्टिङ्ङङ्गोटि (āśiṣṭi *līṅloṭau*)

*līṇ* and *loṭ* (*līṅloṭau*) are alternately introduced when one expresses a wish (*āśiṣṭi*). In abstract strings that account for utterances used in sacred literature (*chandasi*), moreover, *loṭ* occurs under the meaning conditions that serve for introducing *līṇ* (*līṅarthe*):

A 3.4.7: लिङ्कर्थ लेट्छन्वसि (*līṅarthe leṭ
cchandasi 6)*

That is, not only optative but also subjunctive forms are found in Vedic usage where later Sanskrit uses only the optative. (19a)-(34a) (230) contain forms with different L-affixes under conditions shown: (19a)-(20a): *laṭ* by A 3.2.123, (21a)-(22a): *lūṇi* by A 3.2.110, (23a)-(24a): *laṇi* by A 3.2.111, (25a)-(26a): *līṭ* by A 3.2.115, (27a)-(28a): *laṭ* by A 3.2.118, (29a)-(30a): *lōṭ* by A 3.3.13, (31a)-(32a): *loṭ* by A 3.3.162, (33a)-(34a): *līṇ* by A 3.3.161.
A 3.4.78 (232) simply allows a series of basic verb endings possibly to substitute for an L-affix. Restrictive rules come into play to specify what particular endings occur under different conditions. First, a choice is made between the sets of endings called ātmanepada and parasmaipada (see 137-143). The verb gupacāś is taught in the dhātupāṭha with a svarita vowel marker, so that it takes ātmanepada affixes signifying an agent if the agent in question cooks something for himself (A 1.3.72 [139]). (19b), (21b), (23b), (25b), (27b), (29b), (31b), and (33b) are used to speak of Devadatta cooking rice for someone else, so that parasmaipada endings are selected to replace L-affixes signifying an agent (A 1.3.78 [142]). The L-affixes of (20a), (22a), (24a), (26a), (28a), (30a), (32a), and (34a) are introduced to signify an object, so that they are replaced by ātmanepada endings (A 1.3.13 [138]).

Within the parasmaipada and ātmanepada sets of endings, a selection is next made among the triplets called prathama, madhyama, and uttama (A 1.4.101 [64]). According to

A 1.4.105: युष्मद्युपपदेः समानाधिकरणे स्थानिन्यं पि
मध्यमः (युष्मद्य उपपदे समानाधिकरणे
स्थानिन्य अपि मध्यमाः)

A 1.4.107: अस्मध्यत्तमः (अस्मद्य उत्तमाः)

If a form of the second person pronoun yuṣmad (yuṣmadi [loc. sg.] that is coreferential (samānādhikarane) with an L-affix in a derivation could be used as a cooccurring word (upapade), even if it is not actually used (sthānīny api), then a madhyama ending is selected to replace the L-affix, and an uttama ending replaces an L-affix if, under the same conditions, the potentially usable term is a form of the first person pronoun asmad. By

A 1.4.108: शेषे प्रथमः (शेषे प्रथमाः)

a prathama ending substitutes for an L-affix if none of the conditions given in preceding sūtras obtains (śeṣe'remaining'). The L-affixes of (19a)-(34a) are coreferential with either
devadatta-s or odana-s, so that prathama endings are chosen in accordance with A 1.4.108.

Once a choice has been made among prathama, madhyama, and uttama endings, one finally selects an ekavacana, dvivacana, or bahuvacana ending (A 1.4.102 [64]). The choice depends on the number of things signified:

A 1.4.21: बहुशु वहुवचनम् (bahuśu bahuvacanam)
A 1.4.22: द्वियेकयोर्द्विचर्चनैकवचने (dvyeKayor
drivacanaikavacane)

provide that a bahuvacana ending occurs if there are many (bahuśu) things and that dvivacana and ekavacana endings occur respectively if there are two and one (dvyeKayōḥ).

In this way, the agentive ending selected for (19), (21), (23), (25), (27), (29), (31), and (33) is the parasmaipada prathama ekavacana affix tip, and the object-signifying ending chosen for (20), (22), (24), (26), (28), (30), (32), and (34) is the ātmanepada prathama ekavacana affix ta.

Basic endings such as tip and ta are subject to operations that depend on the sources and contexts of the endings. As I pointed out in 232, some L-affixes are marked with ū, others with ō. That part of an ātmanepada ending that begins with its last vowel (ti: A 1.1.64 [41]) is replaced by e (A 3.4.79 [396]) if the ending derives from an L-affix marked with ū, and -ē of a parasmaipada ending that replaces an L-affix marked with ō is dropped (A 3.4.100 [400]). If ta and tip derive from īt, however, they are respectively replaced by es and pal (A 3.4.81-82 [396-397]). Endings deriving from loṭ undergo particular substitutions: -ē, -e of such endings are replaced by -u, -ām (A 3.4.86, 90 [398]). Some endings also receive augments. Thus, an ātmanepada ending replacing īn gets the initial augment sūj, and a parasmaipada ending derived from this L-affix is augmented with yasūj (A 3.4.102-103 [401]). In addition, sut is added before for th of an ending gotten from īn (A 3.4.107). Augments are also added to endings after particular stems. For example, the
Initial augment *It* is added to an aprekta affix (A 1.2.41 [74]) after a stem that ends with the suffix *sic* (A 7.3.96 [440]).

Some verbal suffixes determine the introduction of additional affixes to verbs. Among these affixes, which Pāṇiniyas call vikarana, are *yak* of forms such as *pacyate, apacyata* in (20), (24), *sap* of forms such as *pacati* in (19), and other affixes introduced to verbs of particular stems when these occur with agentive sārvadhatuka suffixes (see 156-157).

Other vikaranas are introduced to verbs when these occur with suffixes that replace particular L-affixes. Thus, by

A 3.1.33: स्यतासी लूलुटोः (syatāsi luluṭoḥ)

*sya* and *tāsi* respectively (A 1.3.10 [91]) follow verbs used with suffixes that replace L-affixes *lr* (A 3.3.13,15 [233]); *lr* is a cover term used to refer to two t-affixes: *lṛt* (A 3.3.13) and *lṛṇā* (A 3.3.139 [258]). The vikarana *sya* occurs in forms such as *paksyati, paksyate* of (29), (30), and conditional forms such as *apaksyat* 'would cook, would have cooked', *apaksyata* 'would be cooked, would have been cooked'; *tāsi* is found in forms such as *paktāsmai* 'I shall cook'.

To account for Vedic subjunctive forms such as *dāsat* 'should, will give', *mandiṣat* 'should, will gladden', with *-s* and augmented *-iṣ*;

A 3.1.34: सिब्‌हुला मेटिः (sib bahulam metiḥ)

provides that *sīp* is introduced, variously (bahulam), after a verb used with an ending that derives from *leṭ* (*leṭi*).

According to

A 3.1.43: चिल लूही (cili luhi)

*cili* follows a verb that occurs with endings that replace *luhi*. *cili* is an abstract suffix, always subject to replacement. The most general rule of substitution concerning this element is

A 3.1.44: च्लेः सिचा (chle sic)

which provides that *sic* replaces *cili*, as in *apaksit* of (21). Additional sūtras let other replacements occur for *cili* if *luhi* has been introduced under particular meaning conditions and
after particular verbs. By

A 3.1.66: चिण्य भावकर्मणोऽ (चले ते) (cīn
bhāvakarmanoḥ [cīle 44, te 60])

cīn substitutes for cīl in the ending ta(te) introduced
on condition that an act alone is to be signified or to signify an
object (bhāvakarmanoḥ), as in apāci(ṃ ... apac-i-ta) of (22).
Among rules providing for other replacements of cīl are:

A 3.1.45: साल इगुपधाधिन्त: कसः (sala igupadhād
anītah kṣah)

A 3.1.55: पुषाविद्युताद्यंविद्यं (अद्व)
(puṣāvidyutādyādītaḥ parasmaipadaśu
[āri 52])

A 3.1.56: सर्त्तिशास्त्रपरित्यथाच (sarttiśāstyarttibhyaś
cā)

A 3.1.57: इरितो वा (irito vā)

After a verb with penultimate i i u ū r ō ṛ (igupadhāt) and
final ś ś s h (śalaḥ), kṣa substitutes for cīl, provided the
verb does not condition the use of the initial augment īt with a
following affix (anītah); e.g. avikṣat (ṃ ... avīṣ-sa-t) ‘has
entered’, from viśā. Before parasmaipada suffixes (parasmai-
padeśu), aṁ replaces cīl following verbs of the subgroups
that begin with puṣā and dyūta (see 163, 160) as well as verbs
marked with ī (puṣāvidyutādyādītaḥ ); e.g., apuṣat ‘(has
thrived’), adyutat ‘(has) shone’, agamat ‘(has gone’ (gamj).
The vikarāṇa aṁ also follows sṛ ‘run, flow’, śas ‘instruct,
command’, r ‘go’, and, optionally (vā), any verb marked with
ir (irītaḥ), provided parasmaipada endings follow; e.g., asarat,
asīṣat (ṃ ... asās-a-t), ārat, achiṭat ‘(has) cut’ (chidir).

Ārdhadhātuka affixes (A 3.4.114-116 [63]), on the other
hand, regularly do not occur with vikaraṇas. For example,
bhavet (ṃ ... bhū-a-yāsst < bhū-liṇ) ‘should be’, with the
sārvadhātuka ending t as a substitute for liṇ by A 3.3.161
(233), is derived with the vikaraṇa śap, but bhūyāt (ṃ ...
bhū-yāsṭ < bhū-liṁ) 'may ... be', with the ārdhadhātuka ending t as a replacement for liṁ by A 3.3.173, lacks this affix. Similarly, papāca and pece, as in (25)-(26), lack a vikaraṇa before the liṭ endings pal, eṣ. Not only do such endings fail to condition the use of vikaraṇas, they are contexts for doubling, as provided for in A 6.1.8 (382): before an ending that derives from liṭ (liṭi), a syllable of a verbal base (dhamoḥ) is doubled, provided it is not an abhyāsa syllable (anabhyāsasya: A 6.1.4 [52]).

Endings derived from three L-affixes are contexts for adding augments to stems. According to

A 6.4.71: 

A 6.4.72: 

a stem (arīgasya: A 6.4.1 [105]) receives a high-pitched vowel (udāṭṭaḥ) a as initial augment (aṭ: A 1.1.46 [17]) if it is followed by endings that replace lũṇ, laṇ, lṛṇ, but high-pitched ā (āṭ) is added to stems that begin with vowels (ājāḍinām); apākṣit, apāci, apacat, apacyata of (21)-(24) (230) contain augmented stems followed by endings which derive from lũṇ and laṇ.

As I pointed out earlier (235), an ending such as t derived from lũṇ receives the initial augment īṭ after a stem with the suffix sīc. An ending can also be deleted after a particular stem. Thus, as provided for in

A 6..4.104: 

a suffix is replaced by zero (luk: A 1.1.61 [79]) after a stem that ends with cin (A 3.1.66 [236]), as in apāci (< apāc-i-ta) of (22).

Pāṇini accounts for pairs of sentences such as (19)-(20) being equivalent utterances by deriving them as alternative expressions of the same relations between the same kārkas and a single act denoted by the same verb. He therefore lets L-affixes follow verbs alternately to signify an agent or an
object \(A\ 3.4.69\ [232])

In addition, the expression of kārkas by nominal endings is made subordinate to their expression by verbal affixes. A series of sūtras under the heading of

A 2.3.1: अनभिहित (anabhihite)

provides for triplets of endings (vibhakti: A 1.4.104 [65, 67]) to occur on condition that given kārakas are to be signified if they are not otherwise signified (anabhihita); the locative singular anabhihite of this heading is construed with locatives such as karman of subsequent sūtras. Six such rules are

A 2.3.2: कर्मणि द्वितीया (karmani dvitiya)

A 2.3.13: चतुर्थि सम्प्रदाने (caturthi sampradane)

A 2.3.18: कर्तृकरणयोस्तृतीया (kartrkaranayostritiya)

A 2.3.28: अपादाने पद्यम (apadane pañcam)

A 2.3.36: सप्तमयः पद्यम् (saptmy adhikarane ca)

A 2.3.65: कर्तृकर्मणाः कृति (षष्ठी) (kartrkarmanoh krti [saṣṭhi 50])

These let different triplets of endings occur to signify different kārakas (see 67, 214) as follows:

A 2.3.2: karman: second triplet (dvitiya [sc. vibhaktih])

A 2.3.13: sampradāna: fourth triplet (caturthi)

A 2.3.18: karaṇa: third triplet (ṭritiya)

A 2.3.28: apādāna: fifth triplet (pañcam)

A 2.3.36: adhikaranā: seventh triplet (saptam)

A 2.3.65: kartr, karman: endings of the sixth triplet (ṣaṣṭhi), if the nominal to which endings are introduced is construed with a term ending in a krt affix (krti: A 3.1.93 [66]).

Further, according to

A 2.3.46: प्रातिपदिकार्थिनिपरिमाणवचनमात्रे प्रथमा

(pratipadikärthalingaparimāṇavacanamātre prathamā)

A 2.3.47: सम्बोधने चा (sambodhane ca)
endings of the first triplet (prathama) are introduced when there is to be signified nothing more (-mātre) than a base meaning (prātipadikārtha) and a gender (ilīga), a measure (parimāṇa), or a number (vacana), as well as when a term is used in calling (sambodhane) what it signifies.

(19a) (230) contains an ending that has replaced lat̐ introduced to signify an agent. Since this kāraka is thus already signified by a verbal affix, an agent-signifying ending of the third triplet is not introduced after devadatta, but an object-signifying ending of the second triplet does follow odana; the nominal devadatta takes a first-triplet ending by A 2.3.46. In (20a), on the other hand, the verb ending has replaced lat̐ introduced to signify an object, so that odana is not followed by an object-signifying ending of the second triplet, but a third-triplet ending signifying an agent now follows devadatta; in this utterance, odana takes a first-triplet ending. Other equivalent pairs of active and passive sentences given in 230 are similarly derived.

The basic nominal endings with which Pāṇini operates (see 67 with figure B) are given in

A 4.1.2: svaujasamaut-chaṣṭāḥhyāṁbhisnēbhyāṁhyasnīsibhyāṁhyas-rīnasāṁryossup

Sūtras such as those considered in 240 provide for the occurrence of particular triplets of these endings under stated conditions. Which ending of each triplet is selected for a given derivation is determined by the number of things designated, in accordance with A 1.4.21-22 (234): endings called ekavacana, dvivacana, and bahuvacana (A 1.4.103 [67]) respectively occur when one, two, and many things are denoted.

Basic nominal endings are subject to operations in various contexts. Thus, after a stem in -a, the ending tā --- as in devadatta-ā of (20a) and so on --- is replaced by ina (A 7.1.12[492]). The final vowel of a nominal and the vowel of the
ending *am* are both replaced by the former (*A* 6.1.107 [533]); e.g., the two contiguous vowels of *odana-am* are both replaced by the first *a*.

Although Pāṇini thus operates with both basic verb endings and basic nominal endings, there is a major difference between the two kinds of endings: Pāṇini has to introduce basic verb endings as substitutes for abstract L-affixes (232), but he does not have to operate with abstract affixes replaced by nominal endings, which are introduced directly.

Once affixation rules have taken effect and operations have applied to endings consequent on their deriving from particular L-affixes, one has strings like (19a)-(34a) (230), made up of related paddas. Contextual operations, both grammatical and phonological, then apply within such paddas, as summarized below:

- *odana-am* → *odanam* (*A* 6.1.107 [see 242])
- *devadatta-ā* → *devadatta-ina* (*A* 7.1.12) → *devadattena* (*A* 6.1.87 [528])
- *pāc-s-t* → *pāc-s-t* (*A* 7.2.3 [412]) → *apāc-s-t* (*A* 6.4.71[238]) → *apāk-s-it* (*A* 7.3.96 [440]) → *apāk-s-it* (*A* 8.2.30 [544]) → *apākṣit* (*A* 8.3.59 [563])
- *pāc-i-ta* → *pāc-i-ta* (*A* 7.2.116 [417]) → *apāc-i-ta* → *apāci* (*A* 6.4.104 [239])
- *pāc-a-t* → *apacat, pac-ya-ta* → *apacyata*
- *pāc-a* → *pac-pac-a* (*A* 6.1.8 [382]) → *pa-pac-a* (*A* 7.4.60 [383]) → *papan-a* (*A* 7.2.115)
- *pāc-e* → *pac-pac-e* → *pece* (*A* 6.4.120 [458])
- *sma-s* → *sma* (*A* 2.4.82 [307])
- *pāc-sya-ṭi* → *pak-sya-ṭi* → *pakṣyati, pac-sya-te ... *pakṣyate*
- *pāc-a-yaśst* → *pac-a-lysst* (*A* 7.2.80 [442]) → *pac-a-lyt* (*A* 7.2.79) → *pac-a-lt* (*A* 6.1.66 [522]) → *pacet, pac-ya-slysta* → *pac-ya-lyta* → *pac-ya-īta* → *pacyeta*.

Contextual phonological operations then take effect at and across pada boundaries:

- *devadattas o* → *devadattaR o* (*A* 8.2.66 [551]) → *devadattay o* (*A* 8.3.17 [557]) → *devadatta o* (*A* 8.3.19 [558])
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ohanam \( \rightarrow \) ohana\( \text{m} \) \( \text{p}-(\text{A} 8.3.23 [559]) \) \( \) (optionally) ohana\( \text{m} \) \( \text{p}-(\text{A} 8.4.59 [580]) \)
devadatta\( \text{n} \) \( \rightarrow \) devadat\( \text{tn} \)au\( -(\text{A} 6.1.88 [529]) \)
-\( \text{audan} \text{a} \)\( \rightarrow \) -\( \text{audanaR} \)\( \text{p} \)\( \rightarrow \) -\( \text{audana} \text{h} \)\( \text{p}-(\text{A} 8.3.15 [557]) \)
-\( \text{audan} \text{a} \)\( \text{a} \)\( \rightarrow \) -\( \text{audanaR} \)\( \text{a} \)\( \rightarrow \) -\( \text{audana} \text{h} \)\( \text{a}-(\text{A} 6.1.113 [525]) \)\( \) >
-\( \text{audan} \text{a} \)\( \text{a}-(\text{A} 6.1.87 [528]) \)\( \) > -\( \text{audan} \)\( \text{a}-(\text{A} 6.1.109 [533]) \).

The derivational procedure that serves to describe sentences like (19)-(34) (230) accounts as well for other sentences, which can concern other kāraṇas. For example, consider

(36) दे́वदत्त: स्थाल्यां काष्ठै रोधनं पचैति (devadattaḥ
sthālayāṁ kāṣṭhair odanaṁ pacati\/) 'Devadatta is
cooking rice with firewood in a pot.'

(37) दे́वदत्तेन स्थाल्यां काष्ठै रोधन: पचयते (devadattena
sthālayāṁ kāṣṭhair odanāḥ pacayate\/) 'Rice is being
cooked by Devadatta with firewood in a pot.'

(38) दे́वदत्तो ग्रामादगच्छति (devadatto grāmād ā
gacchat\/) 'Devadatta is coming from the village.'

(39) दे́वदत्तोः स्वातपतति (devadatto śvāt patati)
'Devadatta is falling from the horse.'

(40) दे́वदत्त उपाध्यायाय गां दवाति (devadatta
upādhyaśāya gāṁ dāati\/) 'Devadatta is giving a
cow to his teacher.'

(36)-(37) concern Devadatta cooking rice in a pot (loc.sg.
sthālayām\/) using pieces of wood (Instr. pl. kāṣṭha\(s\)) to do the
cooking. By virtue of serving as the locus in which rice is
cooked, the pot (sthālī\/) is classed as adhi\(k\arana\) (A 1.4.45
[214]), so that sthālī is followed by a seventh-triplet nominal
ending (A 2.3.36 [240]), specifically the ekavacana ending \(nī\)\(/(A\)
1.4.22 [234]): sthālī-\(i \) > sthālī-ām (A 7.3.116 [497]) >
sthālī-ām (A 7.3.112 [499]) > sthālī-ām (A 6.1.90 [529]) >
sthālayām (A 6.1.77 [125]). The pieces of firewood serve as
means of cooking, so that they are assigned to the kāraṇa
category (A 1.4.42). Hence, kāṣṭha is followed by an ending of
the third triplet (A 2.3.18), specifically the bahuvacana ending bhis (A 1.4.21): kāṣṭha-bhīṣ > kāṣṭha-ais (A 7.1.9 [492]) > kāṣṭhais (A 6.1.88 [529]).

The village of (38) functions as point of departure in relation to the act of coming performed by Devadatta, so that it is assigned to the apādāna category (A 1.4.24). Therefore, grāma is followed by the ekavacana ending of the fifth triplet (A 2.3.28): grāma-as > grāma-āt (A 7.1.12 [492]) > grāmāt (A 6.1.101 [532]). Although the horse referred to in (39) could be moving, it functions as point of departure in respect of falling, so that it too is classed as apādāna, and aśva takes the ending nāśi: aśva-as > aśva-āt > aśvāt.

The cow (go) and teacher (upādhyāya) referred to in (40) are assigned respectively to the karman and sampradāna categories (A 1.4.49, 32), so that go and upādhyāya are followed by the ekavacana endings of the second and fourth triplets (A 2.3.2, 13): go-am > gām (A 6.1.93 [530]), upādhyāya-e > upādhyāya-ya (A 7.1.13 [492]) > upādhyāya-ya (A 7.3.102 [482]).

To derive (36) and (38)-(40), lāt is introduced after ṡupacās and gambh (with the preverb ā: ā gam‘come‘), pātā, and ṡudānī to signify an agent. This affix is then replaced by the ending līp, which conditions the introduction of the vikarana ṡap. Before this suffix, the -m of gambh is replaced by ch (A 7.3.77 [434]): gambh-a-ti > gachh-a-ti > gatchh-a-ti (A 6.1.73 [536]) > gacchati (A 8.4.40 [574]). The verb dā belongs to the major group that begins with ṡu, so that ṡap is dropped after it (A 2.4.75 [158]); consequent on this deletion, however, the verb is subject to doubling (A 6.1.10 [382]): dā-ti > dā-a-ti > dā-ti > dā-dā-ti > dādāti (A 7.4.59 [383]).

If one uses dice (aṅsa) to gamble with, they serve as means (sādhakatama) of performing this act. However,

(41) अक्षार्दीन्यति (aṅsaṁ dīvyaṁti)

(42) अक्षान्दीन्यति (aṅsaṁ dīvyaṁti)

can both be used to say that someone is gambling (dīvyaṁti)
with dice. It is therefore not sufficient to have the dice classed as karaṇa by A 1.4.42 (214). This would allow deriving (41), with aksa, as (36) has kāṣṭhā, but it would not allow deriving (42), with aksān (acc. pl.). Pāṇini assigns the semantic means (sādhakatamam) of gambling denoted by div alternately to two kāraka categories, karaṇa and karman (A 1.4.43). Hence, a nominal that refers to such a means of gambling is followed by an ending of either the third or the second triplet (A 2.3.18, 2 [240]). Since many dice are involved in the situation under consideration, the bahuvacana endings bhis and ṣas follow aksa: aksa-bhis → aksa-ais → aksais, aksa-as → aksās (A 6.1.102 [532]) → aksān (A 6.1.103).

Consider now

(43) पर्णशालायामास्ते | parṇaśālāyām āste

(44) पर्णशालामध्यायास्ते | parṇaśālām adhy āste

both of which refer to a hut made of leaves (parṇaśālā) as a semantic locus (ādhāra), a place where someone stays (āś; adhy-āś [3sg. pres. ind. āste]). By A 1.4.45 (214), the hut of (43) is classed as adhikaraṇa, so that parṇaśālā is followed by the ekavacana ending of the seventh triplet: parṇaśālā-i → parṇaśālā-ām (A 7.3.116 [497]) → parṇaśālā-yāām (A 7.3.113 [499]) → parṇaśālāyām (A 6.1.101 [532]). However, parṇaśālām (acc. sg.) of (44) cannot be accounted for in this manner. In accordance with the syntax of such a sentence, Pāṇini assigns the semantic locus of the act denoted by āś with the preverb adhi to the karman category (A 1.4.46), so that parṇaśālā is now followed by an ending of the second triplet (A 2.3.2 [240]): parṇaśālā-am → parṇaśālām (A 6.1.107 [533]).

(45) त्वया सह सुग्रीवः: सर्वं करिष्यति | tvayā saha sugrīvāḥ sakhyāni karisyati

(46) सर्वंस्यस्तव सुग्रीवः: कारकः | sakhyasya tava sugrīvāḥ kārakaḥ

are related sentences. Both mean ‘Sugriva will make friends with you’, and (45) can be used to paraphrase (46) (see 255),
although the former conveys overtly that the act of making will take place in the future (3sg.fut. *kariṣyatī*) and the latter does not. Sugrīva is the agent (*kaṭṛ* : A 1.4.54 [214]) of making, the object of which is friendship (*sakhyā*). Since friendship is assigned to the karman category (A 1.4.49), the base *sakhyā* is followed by the second-triplet ending (A 2.3.2 [240]) *am* to account for *sakhyam* in the derivation of (45): *sakhyā-am* > *sakhyam* (A 6.1.107 [533]).

Clearly, *sakhyasya* (gen. sg.) of (46) cannot be accounted for in this way, although in this sentence also Sugrīva is spoken of as the agent of making friends, so that here too friendship is the object of making. (46) also has the term *kārakaḥ* instead of *kariṣyatī*. Now, endings such as *tip, ta* are not the only affixes that occur with verbs to signify agents and objects. *Kṛt* affixes (A 3.1.93 [66]) also function in this way. According to

A 3.4.67: कर्त्तिर कृत् (kartari kṛt)

A 3.4.70: तयोरेव कृत्यक्तखलर्थ: (tayor eva

\[ kṛtyaktakhalarthāḥ \])

*kṛt* affixes in general are introduced on condition that an agent is to be signified (*kartari*), but *kṛtya* affixes (A 3.1.95), *kta*, and affixes with the meanings of *khal* (A 3.3.126 [295]) occur only in the two meanings (*tayor eva*) explicitly given in A 3.4.69 (232): if an object or an act is to be signified; e.g., *kaṭṛ; kāraka* 'one who makes, does', *kartavya* 'to be made, done', *kṛta* 'made, done', *sukara* 'easily made, done'. *Kta(ktaḥ)* also occurs to signify an agent (*kartari ca*), provided it is the initial moment of an action that is spoken of (*ādikarmāni*):

A 3.4.71: आदिकर्मणि कतः कर्तरी चा (ādikarmāni

\[ ktaḥ kartari ca \])

For example, *prakṛta* can refer to an agent who has begun to do or make something, to an object that someone has begun to make, or to an act that has been started. *Kta* is so used also after verbs signifying movement (*gatyartha*, e.g., *gam 'go*:
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*gata*), objectless verbs (akarmaka, e.g., ās 'be seated': āsīta), and śiś (e.g., ā-siś 'embrace': āśliṣṭa), śi (adhī-śi 'lie on': adhiśayita, A 1.4.46 [214]), sthā (e.g., adhi-ṣṭhā: adhiṣṭhita), ās (e.g., adhi-ās: adhyāsīta, cf. (44) [247]), vas (e.g. anu-vas 'stay with': anuṣīta), jan (e.g., anu-jan 'be born after': anujāta), ruh (e.g., ā-ruh 'mount': āruḍha), jī (e.g., anu-jī 'grow old with': anujīma), which take objects when used with preverbs:

A 3.4.72: गत्यथाकर्मकस्तिष्ठितस्थास्वसवसाजनस्या-वत्सित्वित्विध्यान -

The general rule

A 3.1.133: पञ्चतत्वो (pñcūtrcau)

provides that the kṛt suffixes *pvul* (> aka: A 7.1.1 [509]) and *trc* follow any verb (dhiṭoh: A 3.1.91 [65]). The agentive derivate *kr-vu* ( ... > kāraka ) is a derived nominal base (A 1.2.46 [48]), followed in (46) by the ekavacana member of the first triplet of nominal endings, *su*. Since the derivate *kr-vu* contains a verb affix signifying an agent, the base sugrīva, which refers to the specific agent in question, does not take an agentive ending; this too is followed by *su*. The friendship which *sakhyā* denotes is related in (45)-(46) to the act of making, signified by *dukrīṇī*. However, instead of a finite verb form like karisyati, (46) contains a derivate with the kṛt affix *pvul*, so that A 2.3.2 (240) does not apply to introduce a second-triplet ending after *sakhyā*. Instead, a sixth-triplet (genitive) ending is introduced, by A 2.3.65: *sakhyā-as > sakhyasya* (A 7.1.12 [492]).

In Pāṇini's system, a form such as *pacati*, pakṣyati, karisyati derives from a more abstract item with an L-affix: *pac-laṭ, pac-ṛṛ, kr-ṛṛt*. Moreover, L-affixes are, strictly speaking, members of the kṛt class (A 3.1.93 [66]). It is required, nevertheless, that items such as *pac-laṭ* cooccur with padas like *odana-am*, containing second-triplet endings,
not with padas that have sixth-triplet endings. Now, although A 2.3.65 (240) lets sixth-triplet nominal endings follow nominals which are construed with derivates formed with kṛt affixes, this is only a general rule, to which the following are exceptions:

A 2.3.69: न लोकान्यपनिष्ठाकलर्थतृतुनाम् (na lokāvyayanisthākalarthatṛtnām)

A 2.3.70: अकेलोर्भिष्यवधाधमण्ययोः (akenor bhaviṣyadādhamāṇyayōḥ)

These sūtras provide that a sixth-triplet ending does not (na) occur with a nominal to signify an agent or an object if the item in question is syntactically connected with terms that have particular kṛt affixes: L-affixes, u (e.g., cikīrṣu 'wishing to make, to do'), uka (e.g., āgāmuka 'one who comes to ...'), affixes that form items of the avyaya class (A I.1.39-40 [54], see (51a) [260]), those of the niṣṭhā set (A I.1.26 [66]), those with the meaning of khaṭ (e.g., sukara 'easily made, done': A 3.3.126 [295]), the suffix trāṇ (A 3.2.135 [290]), aka, if this is explicitly introduced on condition that an act is referred to the future (see (51b)), and affixes of the shape in; provided these are introduced when an act is referred to the future (e.g., gamin 'one who will go') or on condition that an agent is a debtor (ādhamāṇya, e.g., dāvin 'a debtor who will give ...': A 3.3.170 290). A 2.3.65 is itself an exception to A 2.3.2.18. By excluding sixth-triplet endings under the conditions noted, A 2.3.69-70 realow endings of the second and third triplets to signify agents and objects. For example, cikīrṣu is used with terms like kātam 'mat' (<kāta-am), and a participle such as kṛta 'made, done' is used with terms such as devadattaṇa.

A 2.3.69 would not allow genitives such as rājñāḥ in rājñō mataḥ 'honored by the king' and eṣām 'of these' in eṣām bhuktam 'the place where they eat'. Hence,

A 2.3.67: कत्स्य च वर्त्तमाने (षष्ठी) (ktasya ca vartāmāne [ṣaṣṭhi 50])

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A 2.3.68: अधिकरणवाचिनिन्या (adhikaranaśvacinaś ca)
are needed, to reallow sixth-triplet endings after nominals
construed with derivates that have the niśṭha suffix kta, if
this affix is used when an action is referred to present time
(vartamanē : A 3.2.188 [294]) or to signify a locus (adhikaraṇaśvacinaḥ : A 3.4.76 [293]).

Of course, not all relations concerned in sentences to be
described by means of Pāṇini’s derivational system are such as
obtain between activities and kārakas. Consider now the
phrase tvayā saha of (45) (248). The instrumental singular
tvayā ‘you’ does not refer here to an agent, as does
devadatta in (20c) (230), or to an instrument, as does
kāśṭhais of (36) (245). Indeed, Rāma, the referent of tvayā in
(45), is not spoken of as a kāraka in this sentence. He is
referred to as secondarily associated with an act (apradhāne
‘non-principal, subsidiary’), through a direct participant, but
not as a direct participant in that act: Sugrīva will form a
friendship, and that friendship will be with Rāma. According
to

A 2.3.19: सहयुक्तेःप्रधानेः (sahayukteśpradhāne
[tritiyā 18])
an ending of the third triplet (tritiyā) is introduced after a
nominal that refers to an indirect participant (apradhāne) and
is syntactically connected or connectible with saha ‘with’
(sahayukte). In the derivation of (45), then, the third-triplet
ending tā is introduced after the second person pronoun
yuṣmad : yuṣmad-ā > tvad-ā (A 7.2.97 [478]) > tvad-ā (A
6.1.97 [531]) > tvayā (A 7.2.89).

Sūtras that concern non-kāraka relations may also
provide for the occurrence of particular nominal endings on
condition that a nominal is construed with one of a particular
group of items. Thus,

A 2.3.8: कर्मप्रवाचनीययुक्तेः द्वितीया
(karmapravacanīyayukte dvitiyā)
A 2.3.9: *yasmādadhikam yasya ceśvaravacanam tatra saptami*

A 2.3.10: *pañcami apānparibhiḥ* (pañcamy apānparibhiḥ)

concern the use of particular endings after nominals construed with elements of the karmapravacanīya class (see A 1.4.83-98 [55]). In general, a second-triplet ending (*ōvitlyā*) follows a nominal if this is linked with a karmapravacanīya (*karmapravacanīya yuyukte*), as in *samhitām anu' consequent on* (the recitation of) the *samhitā*, where *samhitām (< samhitā-am)* is derived with such an ending. However, if the nominal linked to a karmapravacanīya denotes something relative to which something else spoken of is greater (*yasmād adhihakam*) or if one speaks of the meaning in question as connected with a master (*yasya ceśvaravacanam*), then an ending of the seventh triplet (*saptam*) occurs with that nominal; e.g., *adhi devadatte 'under Devadatta's dominion'. A fifth-triplet ending (*pañcamī*) follows a nominal that is syntactically connected with *apa, ān, or pari (apānparibhiḥ)*, as in *ā pātaliputrāt 'up to Pātaliputra'.

According to

A 2.3.23: *hetau (tūṣīya)* (*hetau [ūrtlyā 18]*)

a third-triplet ending (*ūrtlyā*) occurs with a nominal if a cause is to be signified (*hetau*); e.g., *vidyāya yaśah 'fame due to knowledge' has vidyāya (< vidyā-ā), with the third-triplet ending *ā* after *vidyā*, which here refers to knowledge spoken of as the cause of fame. On the other hand, if the term *hetu* is used (*hetuprayoge*), a sixth-triplet ending (*saṣṭhi*) is used when speaking of a reason or cause, as in *annasya hetop 'on account of food':

A 2.3.26: *ḥetupprayoge (saṣṭhi hetuprayoge)*

However, if the nominal used to refer to such a cause is a pronominal (*sarvanāminah*: 53), both sixth- and third-triplet endings (*ūrtlyā ca*) alternately are used with that nominal:

[ 192 ]


A 2.3.27: सर्वनाम्यस्तृतीया च (sarvanāmnas tritīyā ca)

For example: kasya hetoh, kena hetunā' on account of what?

Endings of the fifth triplet (pañcamī) follow nominals construed with anya 'other', ārāt 'far off, near', itara 'other', āte 'without', direction words (dikṣabda), compounds whose second members contain ancu (ančuttarapada), and derivatives with the suffixes āc, āhi (anyāditarartedikṣabdānčuttarapadājāhiyukte):

A 2.3.29: अन्यारादितरस्तृटीक्षन्द्वदेष्टरपदाजिहीयुक्ते (pañcamī) (anyāditarartedikṣabdānčuttarapadājāhiyukte [pañcamī 28])

For example: anyo devadattāt 'someone other than Devadatta', pūrvo grāmāt 'before the village, east of the village'.

A 2.3.41: यतस्य निर्धारणम् (षष्ठी सप्तमी) (yataś ca nirdhārayam [ṣaṣṭhi 38, saptami 36])

A 2.3.42: पञ्चमी विभक्ते (pañcamī vibhakte)

cconcern terms like the genitive and locative plurals manuṣyānām, manuṣyesu in constructions of the types manuṣyānām śūratamaḥ 'most heroic of men', manuṣyesu śūratamaḥ 'most heroic among men' and ablatives such as pātaliputrakebhyaḥ in the construction type pātaliputrakebhyaḥ māthurāḥ āgyatarāh 'The inhabitants of Mathurā are richer than those of Pātaliputra', all of which involve a setting apart (nirdhārayam) of one thing from another or within a class. By the first sūtra, either a sixth-triplet ending or an ending of of the seventh triplet follows a nominal referring to something from which (yataḥ) another is thus set apart, and A 2.3.42 provides that such a nominal is followed by a fifth-triplet ending in the case that a separation (vibhakte) of the two things in question is intended.

With respect to all the conditions given in A 2.3.2 and sūtras which follow (240), including rules such as A 2.3.19 (250), there is a remainder (ṣesā) of relations. By
A 2.3.50: शष्ठि शेषे (śaṣṭhi śeṣe)

An ending of the sixth triplet (śaṣṭhi) follows a nominal when any such residual relation (śeṣe) is involved. That is, a genitive ending occurs to signify a relation that holds with respect to something that does not play a role as a direct participant in an act, provided there are no other conditions met, such as a nominal being used in construction with saha, which determine the use of other endings. For example, in (17) (229) a king is spoken of as related to his servant, not as bearing any direct relation to an action. By A 2.3.50, a sixth-triplet ending, specifically the ekavacana ending ānas (A 1.4.22 [234]) follows ṛājan: ṛājan-as > ṛājīn-as (A 6.4.134 [502]) > ṛājīnas (A 8.4.40 [574]). Similarly, in (46) (248) Rāma is spoken of as related to friendship (sakhyasya tava 'of your friendship'), so that ṣuṣmād takes a sixth-triplet ending: ṣuṣmād-as ... > tava (A 7.2.96 [478]).

Remarks.

252 I. Pāṇinīyas, from Kātyāyana on, use upapadavibhakti in opposition to kārakavibhakti. The latter refers to an ending that signifies a kāraka, the former to an ending the occurrence of which is determined by the use of a nominal with a cooccurring item (upapada). The ending in tvayā of (45) (see 248, 250) is an upapadavibhakti.

253 2. I have not dealt here with examples such as मातुः स्मरति (mātuh smarati) '... remembers his mother', where an object (karman) is considered to bear a residual relation. Such examples and the sūtras which account for them will be discussed in part III.4 of my work.

254 3. Since verb endings are explicitly excluded from the kṛt class (A 3.1.93 [66]), A 2.3.65 (240) could not apply to give padas like odana- as (> odanasya) in strings such as (19b) (230) once the L-affix is replaced by an ending, even if the rule were
permitted somehow to give odana-as and the like in initial strings with L-affixes. However, participles such as pacat (A 3.2.124 [262]) also should occur with padas of the type odana-am, not with the type odana-as, and such participles do not have verb endings as substitutes for L-affixes. Moreover, allowing odana-as in an initial string with pac-laṭ and then having odana-am in (19b) and so on, once the L-affix is replaced, would let conflicting forms occur in strings which should not conflict. Hence, in A 2.3.69 (249) Pāṇini provides that a sixth-triplet ending does not occur with a nominal that is linked to a term with an L-affix. By A 1.1.56 (100), then, a participial affix like Satṛ behaves in the same way as the L-affix laṭ it replaces, so that a sixth-triplet ending is not allowed after a nominal construed with a participial form that contains such an affix.

4. Example (44) (247) is based on Raghuvamśa 1.95: निर्दिष्टं कुलपतिना स पर्णशालामध्यास्य प्रयत्नपरिग्रहद्वितीयः। तत्रिद्धाध्ययनननिवेदितावसानां संविष्टः कुशवायने निषाणा निनाया।, where Kālidāsa says king Dīlīpa passed the night (niśām nināya) resting on a bed of kuśa grass (saṇīvīṣṭāḥ kuśaśayane), accompanied by his wife, after settling in a hut of leaves (parṇāsālām adhyāśya) which Vasiṣṭha had indicated to him (nirdiṣṭām kulapatinā).

Example (46) (248) is taken from Bhaṭṭikāvyā 6.71ab: सर्व्यस्य तव सुग्रीवः कारकः कपिन्दनः, and (45) is based on Jayamaṅgala's paraphrase of the verse: ... त्वया सह मैत्री करिष्यन्ति, (45) and Jayamaṅgala's paraphrase differ only in that I have substituted sakhyam for maitrīm 'friendship'.

[195]
2.2. Complex sentences.

Complex sentences involve two or more related activities. I shall illustrate how Pāṇini accounts for such utterances with examples concerning activities related as follows:

Acts are spoken of as cause and effect in conditional sentences.

Actions performed by the same agent take place in sequence.

In a sentence with a purpose clause or its equivalent, an activity is said to be carried out in order that another act may be performed.

One action serves to characterize how or when another act takes place, and these are spoken of in sentences with participial and absolute constructions; an activity is said to be the reason for performing another, in a sentence with a participial construction.

Verbs are construed with verbs of wishing.

Someone has someone else carry out an activity.

(47) कृष्णं नमेच्छेत्सुभुं यायात् (kṛṣṇam name cēt sukhaṁ yāyāt) 'If one does obeisance to Kṛṣṇa, one attains happiness.'

Involves two actions related as cause and effect: doing obeisance (nam 'bow, bend') to Kṛṣṇa is said to let one attain (yā 'go, reach') happiness (sukha). Each of these acts has an object (karman: A 1.4.49 [214]), respectively Kṛṣṇa and happiness, and each is performed by a single unspecified agent (kartr: A 1.4.54). According to A 3.4.69 (232), an L-affix follows each of the verbs to denote an agent, and

A 3.3.156: हेतुहेतुमलोपरि (hetuhetumato līṇ) specifies which L-affix in particular is introduced when deriving sentences like (47): līṇ follows verbs whose meanings are related as cause and effect (hetuhetumatoḥ). The derivation of namet from nam- līṇ proceeds in the same manner as the derivation of pacet from pac- līṇ (see 235, 243). yāyāt differs from namet in that sap is deleted after yā, a
verb of the second major group (A 2.4.72 [158]): \( yā-a-yāsst \rightarrow yā-yāsst \rightarrow yāyāt \). The nominal padas \( kṛṣṇam, sukham \) are gotten from \( kṛṣṇa-am, sukha-am \) in the same way as \( odanam, sakhyam \) are derived from \( odana-am, sakhya-am \) (see 243, 248). \( cet′if \) is a member of the set that begins with \( ca \), so that it belongs to the nipāta class (A 1.4.57 [55]), hence is included in the avyaya set (A 1.1.37 [54]). Therefore, the ending \( su \) is introduced after \( cet \) (A 2.3.46 [240]) and then dropped (A 2.4.82 [307]).

The following sentences also concern acts related as cause and effect:

\[ \text{(48) यदि सुवृष्टिरभविष्यत् सुभिक्षम भविष्यति} \]
\[ (yadi suvṛṣṭir abhaviṣyat subhikṣam abhaviṣyat) \] 'If there were to be good rains, there would be plenty of food (but there will not be):'

\[ \text{(49) एधानि चेदलप्यतो दानादमपक्यात्} \]
\[ (edhāṁs ced alapsyataudanam apakṣyat) \] 'If he had gotten firewood, he would have cooked rice.'

However, these involve contrary-to-fact conditions: There will not be good rain (\( suvṛṣṭi \)), so that there will not be an abundance of food (\( subhikṣa \)), and the person spoken of in (49) has not found firewood (\( edha[\text{acc. pl. edhān}] \)), so that he has not been able to cook rice. According to

A 3.3.139: \( लिन्निमित्ते लृड्ड क्रियातिपत्तो (भविष्यति) \)
\[ (liṅnimitte lṛḍḍ kriyātipattau [bhaviṣyati 136]) \]

A 3.3.140: \( भूते चा (bhūte ca) \)

the L-affix \( lṛḍḍ \) follows verbs under a condition which determines that \( liṅ \) is introduced (\( liṅnimitte \)) --- that is, if related verbs denote acts spoken of as cause and effect (A 3.3.156 [257]) --- when the acts in question are referred either to the future (\( bhaviṣyati \)) or the past (\( bhūte \)), provided that these fail to take place (\( kriyātipattau \)). The meanings of \( bhū \) 'be, become', \( lābḥ \) 'obtain', \( pac \) 'cook, bake' in the situations
firewood.'
in which ā-hr: is not used. By

A 2.3.14: क्रियार्थोपपदस्य च कर्मणि स्थानिनः।
(kriyārthopapadasya ca karmanī sthānīnāh
[ caturthī 13])
an ending of the fourth triplet (caturthī) follows a nominal to
signify an object (karmanī) of an act denoted by a potentially
coccurring verb that can be construed with a verb denoting an
act-performed in order to carry out the activity signified by
the potentially occurring verb (kriyārthopapadasya), provided
this verb is not actually used (stānīnāh). vraj of (53) denotes
an act performed in order to fetch firewood, but the verb that
could be used to signify fetching, as in (52), is not used, so that
edha now takes the fourth-triplet ending bhyas: edha-bhyas >
edhēthyas (A 7.3.103 [482]).

A 3.2.124: लट: शतृशान्यावप्रथममासमानाधिकरणेः (lataḥ
satṛśānacāv aprathamāsamānādikarane)

A 3.2.126: लक्षणेहत्वोऽ: क्रियायाः। (lakṣanahetvoh
kriyāyāḥ)
provide that, contrary to A 3.4.78 (232), satṛ and śānac sub-
stitute for lata under particular conditions. These replace-
ments apply if lata is coreferential with a nominal pada that
contains an ending of a triplet other than the first
(aprathamāsamānādikarane) and if the verb that lata follows
denotes an act spoken of as a characteristic or a cause
(lakṣanahetvoh) with respect to another action (kriyāyāḥ).
For example,

(54) यज्ञदतो देवदत्तं ग्रामं गच्छन्तमद्राक्षीति। (yajñadatto
devadattaṁ grāmam gacchantaṁ adrākṣit)
Yajñadatta saw Devadatta going to the village.

(55) शयणा भूजते यवनाः। (sāyānā bhūjate yavanāḥ)
Yavanas eat while lying down.

(56) अधियानो वसतः। (adhīyāno vasati) '...is staying
while he studies (i.e., in order to do his studies) involve participants that take part simultaneously in two activities: (54): Devadatta is at once the agent of going (gam), relative to which a village (grāma) is object, and the object of seeing (drś), in which Yajñadatta is agent. (55): Yavanās are simultaneously agents of lying (śī) and eating (bhuj); their eating is characterized as done while they recline. (56): A certain youth remains (vas) in a place to do his studies (adhī-i 'study'). Abstract strings from which (54)-(56) are derived contain two agentive L-affixes (A 3.4.69 [232]).

\[
\text{(54a)} \quad \text{yajñadatta-s devadatta-am grāma-am gam-laṭ drś-luṇi} \\
\text{(55a)} \quad \text{śī-laṭ bhuj-laṭ yavana-as} \\
\text{(56a)} \quad \text{adhī-s i-laṭ vas-laṭ luṇi} \text{ (A 3.2.110 [233])}
\]

In (54a) signifies an agent relative to seeing, so that yajñadatta, which refers to the particular agent in question, takes the first-triplet ending (A 2.3.46 [240]) su. The affix of gam-laṭ signifies an agent of going, and the second-triplet ending (A 2.3.2) am follows grāma luṇi denote an object of this action. Since laṭ signifies an agent of going here and the particular agent involved is referred to by devadatta of devadatta-am, the L-affix of gam-laṭ in (54a) is coreferential with a pada ending with am. By A 3.2.124, then, the parasmaipada affix (A 1.4.99, 1.3.78 [64, 142]) sat replaces laṭ: gam-/ > gam-at. By A 3.2.126, the ātmanepada affix (A 1.4.100, 1.3.12, 66 [64, 138, 141]) sat ac substitutes for laṭ of śī-laṭ, bhuj-laṭ, i-laṭ in (55a) and (56a).

According to

A 3.3.14: लृष्टि: सद्दा (lṛṣṭiḥ sad vā)

an affix called sat (A 3.2.127 [66]) optionally substitutes for lṛṣṭि- (lṛṣṭati: A 3.3.13 [233]). This allows for sentences comparable to (54), except that they contain forms such as
gamisyantam (fut. ptcpl. acc. sg. masc.) 'going'.

263 A 2.3.69 (249) disallows the use of a sixth-triplet ending signifying an object after nominals construed with terms that contain L-affixes. Šatr and Šānac gotten by A 3.2.124, 126 (262) replace laṭ, so that they have the status of this affix (A 1.1.56 [100]). Consequently, there is no question of a string derived from (54a) having a genitive form grāmasya (< grāma-as) because of grāma being construed with a term that contains a kṛt suffix (A 2.3.65 [240]). Now, Šatr and Šānac are indeed kṛt affixes (A 3.1.93 [66]), so that derivates with these items are nominal bases (prātipadika: A 1.2.46 [48]), to be followed by nominal endings (A 4.1.1 [105]). Moreover, as laṭ of gam-laṭ signifies an agent, so does Šatr of gam-at, and as laṭ of gam-laṭ is coreferential with devadatta-am, so is Šatr of gam-at. Since Devadatta is spoken of simultaneously as agent of going and object of seeing, gam-at takes the ending am signifying an object (gam-at-am) in the same way that devadatta is followed by this ending. On the other hand, since the derived nominal bases śi-āna and i-āna contain Šānac signifying an agent, they are followed by first-triplet endings, jas and su: śi-āna-as, i-āna-s.

264 Šatr and Šānac are marked with ś to show that they belong to the sārvadhātuka class (A 3.4.113 [63]). They also replace agentive laṭ of (54a)-(56a), so that they too signify an agent. Consequently, Šap is introduced after the verbs which precede these suffixes (A 3.1.68 [157]), then deleted after śi and i (A 2.4.72 [158]): gam-a-at-am > gach-a-at-am (A 7.3.77 [434]) > gach-a-at-am (A 6.1.73 [536]) > gach-at-am (A 6.1.97 [531]) > gach-ant-am (A 7.1.70 [488]) > gach-amit-am (A 8.3.24 [559]) > gacch-amit-am (A 8.4.40 [574]) > gacchantam (A 8.4.58 [580]), śi-āna-s > se-āna-as (A 7.4.21 [419]) > say-āna-as (A 6.1.78 [524]) > sayānās (A 6.1.102 [532]), i-āna-s > iyānas (A 6.4.77 [452]).

265 (57) abhināyu hūyamāneṣu devadatvagamat (agnisu hūyamāneṣu devadatvagamat) 'Devadatta went
while offerings were being made in the fires, also concerns two activities such that one serves to characterize the other: Devadatta left at the time oblations were being offered. The fires (agni [loc. pl. agniṣu]) referred to in (57) participate directly in the act of offering oblations, as object (Karman: A 1.4.49 [214]). They are also indirectly related, through this act, with Devadatta's going. By

A 2.3.37: Yasya ca Bhāvena Bhāvalakṣaṇam (Saptami) (yasya ca bhāvena bhāvalakṣaṇam [saptami 36])
an ending of the seventh triplet (saptami) follows a nominal if an act connected with what it signifies serves as a means (yasya bhāvena) of characterizing another act (bhāvalakṣaṇam). Thus, (57) is derived from

(57a) Abni-su hu-lat Devadatta-s gam-uluḥ (agni-su hu-lat devadatta-s gam-uluḥ)
in which gam is followed by uluḥ signifying an agent relative to going, lat signifying an object with respect to offering oblations follows hu, and agni is followed by the seventh-triplet ending sup according to A 2.3.37. The object-signifying affix lat is then replaced (A 3.2.124 [262]) by the atmanepada affix śānac. The nominal base hu-āna is coreferential with agni-su, and takes the same ending as this. In addition, since śānac is here an object-signifying sārvadhatuca affix, yak follows hu (A 3.1.67 [156]): hu-ya-āna-su > hū-ya-āna-su (A 7.4.25 [426]) > hū-yam-āna-su (A 7.2.82 [439]) > hū-yam-āne-su (A 7.3.103 [482]) > hūyamāneṣu (A 8.3.59 [563]).

(58) Icchāmi Bhūjijita Bhavān (icchāmi bhūjijita bhavān)

(59) Icchāmi Bhūktāṁ Bhavān (icchāmi bhūktāṁ bhavān)
both mean 'I want you to eat', but they differ in that (58) has the optative bhūjijita (3sg.) and (59) has the corresponding imperative bhūktāṁ in construction with is 'wish' (lsg. pres. ind. icchāmi). In
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(60) भोक्तुमिच्छामि (bhoktum icchāmi) 'I want to eat.' also, bhuj is construed with is, but here wishing and eating have the same agent. Accordingly,

A 3.3.157: इच्छार्थेशु लिङ्लोटाः (icchārtheṣu liṅloṭau)
A 3.3.158: समानकृत्तेषु तुम्ना (samānakṛtteṣu tumna)

provide that liṅ and loṭ (liṅloṭau) alternately follow verbs used with verbs meaning 'wish' (icchārtheṣu) and that verbs take the affix tumun under the same cooccurrence condition if both related verbs have the same agent (samānakṛtteṣu [icchārtheṣu] 'when (the verbs meaning "wish") have the same agent'): bhuj-liṅ > bhuj-ta (A 3.4.77-78, 1.3.66, 1.4.108, 22 [232, 141, 234]) > bhuj-siṣyata (A 3.4.102, 107 [401]) > bhunaj-siṣyata (A 3.1.78 [157]) > bhunaj-iyta (A 7.2.79 [442]) > bhunaj-ilta (A 6.1.66 [522]) > bhunj-ita (A 6.4.111 [456]) > bhunj-ita (A 8.3.24 [559]) > bhunjita (A 8.4.58 [580]), bhuj-loṭ > bhuj-ta > bhuj-te (A 3.4.79 [396]) > bhuj-tām (A 3.4.90 [398]) > bhunaj-tām > bhunj-tām > bhung-tām (A 8.2.30 [544]) > bhunj-tām > bhunjita (A 8.4.55 [578]) > bhunktām (A 8.4.58), bhuj-tum-s > ... bhoktum (see 260). In addition, a sentence like (60) alternates with one that has a form of a desiderative from a verb that denotes the object of wishing, such as buddhukṣe 'I wish to eat' (see 279).

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Consider now how Pāṇini relates noncausative and causative sentences in his derivational system. There are derived verbs formed with the causative affix pic (A 3.1.26 [281]). Derivates such as kr-i (> kār-i) 'have ... make, do', pac-i (> pāc-i-) 'have ... cook, bake' are verbs (dhātu: A 3.1.32 [47]), so that they can be followed by L-affixes signifying an agent or an object (A 3.4.69 [232]). Causal sentences with such derived verbs are of two general types, depending on whether the agent of an act he is caused to perform is referred to by an instrumental or by an accusative form. For example,

(61) यज्ञदत्तो देवदत्तेनौदन पाचयते (yajñadatto

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devadattenaudanaṃ pācayate) 'Yajñadatta is having Devadatta cook rice (for Yajñadatta to eat).' is a causal sentence related to (19) (230). The verb pāci denotes causing relative to cooking. The causal agent (hetu: A 1.4.55 [214]) here is Yajñadatta, and the agent of cooking is Devadatta. In the abstract string from which (61) derives,

(61a) यज्ञवत्त-स्वेच्छत-आओवन-अम्पच-इ-लट
(yajñadatta-s devadatta-ā odana-am pac-i-laṭ)
pac-ī is followed by laṭ introduced on condition that an agent is to be signified (A 3.4.69 [232]) relative to causing, and the third-triplet ending ṭā, signifying an agent (A 2.3.18 [240]) with respect to cooking, follows devadatta.

Similarly, corresponding to

(62) देववत्तः कुम्भान्करोति (devadattaḥ kumbhān
karoti) 'Devadatta makes pots.'

(62a) देववत्त-स कुम्भ-अस्क्र-लट (devadatta-s
kumbha-ā kṛ-va laṭ)
one has

(63) यज्ञदत्तो देवदत्तेन कुम्भान्कारयते (yajñadatto
devadattena kumbhān kārayate) 'Yajñadatta is having Devadatta make some pots.'

(63a) यज्ञदत्त-स्देवदत्त-आकुम्भ-अस्क्र-इ-लट (yajñadatta-s devadatta-ā kumbha-as kṛ-va laṭ)

However, (63) alternates with

(64) यज्ञदत्तो देवदत्त कुम्भान्कारयते (yajñadatto
devadattam kumbhān kārayate)
derived from

(64a) यज्ञदत्त-स्देवदत्त-अम्पकुम्भ-अस्क्र-इ-लट (yajñadatta-s devadatta-am kumbha-ā kṛ-va laṭ)
with the second-triplet ending am after devadatta.

In addition, certain verbs form causatives that regularly occur in a double-accusative construction of the type (64). For
example:

(65) मानवको ग्रामं गच्छति। (māṇavako grāmam gacchati) 'The boy is going to the village.'

(66) मानवको ग्रामं गमयति। (māṇavakam grāmam gamayati) '... has the boy go to the village, sends the boy to the village.'

(67) मानवको धर्मं बुध्यते। (māṇavako dharmam bodhayate) 'The boy perceives his duty.'

(68) पिता मानवकं धर्मं बोधयति। (pitā māṇavakam dharmam bodhayati) The father shows the boy his duty.'

(69) मानवको ओदनं भुज्यते। (māṇavaka odanam bhūjyate) 'The boy is eating rice.'

(70) माता मानवको ओदनं भोजयति। (mātā māṇavakam odanam bhojayati) 'The mother is feeding the boy rice.'

(71) शिष्यो वेदं पाठति। (śaśyoh vedam pāthati) 'The student is reciting the Veda.'

(72) आचार्य: शिष्यो वेदं पाठयति। (ācāryah śaśyam vedam pāthayati) 'The teacher is having the student recite the Veda.'

Further, verbs that do not take objects (akarmaka 'objectless') form causative derivates in -pić construed with accusatives; for example,

(73) देवदत्त आस्ते। (devadatta āste) 'Devadatta is seated.'

(74) देवदत्तमासयति। (devadattam āsayati) '... is seating Devadatta.'

Terms like māṇavakam in (66), (68), (70), śaśyam in (72), and devadattam in (74) are of course most straightforwardly derived in the same manner as grāmam, dharmam, odanam,
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*vedam*: from padas with an object-signifying ending *am* of the second triplet. Accordingly, by

**A 1.4.52**: गतिबुद्धिप्रत्यवासानांगाश्रद्धकर्मकारणाभिनिकर्ता स णौ (कर्म)

(gatibuddhipratyavasānārthaśabdakarmā-karmakāṇām anikartā saṇau [karma 49])

Pāṇini provides that a kāraka assigned to the kartṛ category (A 1.4.54 [214]) with respect to the act denoted by a noncausative verb without *pi* (*anikartā*) is classed as karman (*sa ... karma*) with respect to what is denoted by the corresponding derivate in -*pi*(*nau*) --- that is, causation --- if the verb without *pi* denotes a movement, perception, or consuming (gatibuddhipratyavasānārtha), if it denotes an activity whose object is a sound (*śabdakarma*), or one that has no object (*akarmaka*). According to

**A 1.4.53**: हकोरन्यतरस्यायम् (hrkror anyatarasyām)

the agent of the acts signified by *hr* ‘bear, bring, take’ and *kr* ‘do, make’ (*hrkroḥ*) is optionally (*anyatarasyām*) made the object of causation denoted by the corresponding causative derivates *hr*-i, *kr*-i.

Now, if the only purpose of A 1.4.52 were to provide that the kārakas in question belong to the karman category, this sūtra would be redundant. For the agent of going, perceiving, eating, reciting, sitting, and so on is the primary goal of the act of causing, denoted by derivates such as *gami* ‘have go, send’, *bodhi* ‘cause to perceive’, *bhoji* ‘feed’, *pāṭhi* ‘have recite’, *āsi* ‘seat’, and such a kāraka is assigned to the karman category by A 1.4.49. In effect, A 1.4.52 serves as a restrictive rule: Only agents (*kartṛ*) of the verbs specified are assigned to the karman class for deriving corresponding causative sentences, and others remain members of the kartṛ category. Thus, *devadatta* in (61a) is followed by the agentive ending *tā*, not by the object-signifying ending *am*.
In A 2.3.14 (261), Pāṇini speaks of a verb that could possibly be used but does not actually occur: sthāninaḥ 'which has a place, a possible occurrence'. However, he does not provide for deleting whole padas, although entire affixes are indeed explicitly deleted in his system. Thus, to derive (53), Pāṇini does not first allow āhartum(<ā-s hr-tum-s) to occur and then have it dropped by a special rule. Similarly, to derive sentences such as (त्वं) पचसिः ([tvaṁ] pacasi) 'You are cooking', Pāṇini does not first allow for a pada yuṣmad-s (> ... tvam) and then optionally delete this. Instead, he considers such pronominal forms to have a potential occurrence (sthānini: A 1.4.105 (234)). Note also that Pāṇini does not operate with any type of what modern linguists call embedding to account for sentences like (54) (262). Such sentences are derived from single complex structures like (54a).
2.3. Agreement phenomena and feminine affixes.

As I pointed out earlier (see 232, 234, 240), Panini's Astadhyayi has sutras whereby L-affixes follow verbal bases to signify an agent or an object, other rules whereby nominal endings are introduced on condition that such kārakas and others are to be signified, and still other sutras providing for the proper distribution of ekavacana, dvivacana, and bahuvacana sets of endings. Consider now the sentences

(75) देवदत्त: कम्बलं करोति (devadattaḥ kambalam karoti) 'Devadatta is making a blanket.'

(76) देवदत्त: शुक्लं कम्बलं करोति (devadattaḥ suklam kambalam karoti) 'Devadatta is making a white blanket.'

(77) देवदत्त: शुक्लं गामानयति (devadattaḥ suklaṁ gām ā nayati) 'Devadatta is bringing the white cow.'

For deriving these sentences by Panini's system, Devadatta is assigned to the kārtṛ category and a blanket (kambala) and a cow (go) are assigned to the karman category relative to making (kṛ) and bringing (ā-nī). In each derivation, lat is introduced to signify a kārtṛ (kṛ-lat), (nī-lat), a second-triplet nominal ending to signify a karman (kambala-am, go-am). As kambalam (< kambala-am) and gām (< go-am) contain the ekavacana ending am, so do karoti, nayati, and devadattas have ekavacana endings (tip, su), since each of the sentences concerns one kāraka of the kārtṛ and karman categories. In addition, elements in these sentences show number and case agreement: devadattas and karoti, ā nayati agree in containing ekavacana endings; the qualifiers suklaṁ (< sukla-am) 'white (acc. sg. masc.)', suklaṁ (< sukla-am) 'white (acc. sg. fem.)' and their qualifications kambalam, gām all have the ekavacana ending am of the second triplet of nominal endings. The rules considered up to this point take care of such number and case agreement. Panini does not have
additional rules in his grammar specifically for such concord features.

The initial string from which (75) derives contains *kr-iaṭ*. By virtue of signifying a kartṛ, *iaṭ* is here coref-erential with *devadatta*-s, which denotes the specific kāraṇa of the kartṛ category referred to in the sentence. Since there is one such kāraṇa spoken of, the ekavacana ending *tip* substitutes for *iaṭ*, and the ekavacana ending *su* follows *devadatta*. Now, *śukla* and *kambala* are bases with distinct meanings: The former can refer to anything qualified by whiteness, the latter to any blanket. In specific utterances, such as (75), however, both these terms are used with reference to one thing, a blanket qualified as being white and the object (*karmaṇ*) of making. The rule which provides for a second-triplet ending to occur when a karman is to be signified (A 2.3.2 [240]), then, lets such an ending occur with all bases in a string that refer to a particular kāraṇa classed as karman, and the rule that serves to let an ekavacana ending occur when there is one thing to signify applies to provide for the ending *am* with each of these bases. In brief, since Pāṇini lets L-affixes and nominal endings occur with stems under meaning conditions, he can let coreference determine case and number agreement in all such sentences.

Terms like *śukla* ‘white’, *krṣṇa* ‘black’, *guru* ‘heavy’, *lāghu* ‘light’ can be used to denote properties. One can say, for example, *pātaśya śuklaḥ* ‘the white of the cloth’, *kambalasya śuklaḥ* ‘the white of the blanket’. Such terms can also be used with reference to things qualified by properties, as in (76)-(77) (269). When so used, these items are associated with different genders (śrīga), depending on the qualificand in question; for example, śuklaḥ *pataḥ* ‘white cloth’, śuklaḥ *kambalaiḥ* ‘white blanket’, śuklaḥ *gauḥ* ‘white cow’, śuklaḥ *vastram* ‘white cloth, garment’, with masculine, feminine, and neuter śuklaḥ, śuklā, śuklam (nom. sg.). Moreover, as can be seen from śukla, śuklā, some nominal bases take particular affixes when they are used in the feminine (*strīyāṁ*). As far
as concerns bases like śukla, which denote properties and things qualified by these properties (guna-vacana, see 273), gender agreement depends on the qualificand in question.

Now, Pāṇini has to provide not only for derivates such as śukla (śukla-ā), krṣṇa (krṣṇa-ā), gaurī (gaurī-ā) 'white', mahāt-ā 'great', laghva-ī, gurī-ī but also for feminine derivates such as ajā 'she goat' (aja-ā), kartrī (kartrī-ā) 'doer, maker, agent', bhavatī (fem. of bhavatu 'you'), nartakī (nartaka-ī) 'female dancer', mayūrī (mayūra-ī) 'pea hen', kurū (kurū-ō) 'female descendant of a Kuru king', from nominals that do not denote properties of things, such as whiteness. The Aṣṭādhyāyī contains a section of rules, headed by A 4.1.3 (107), which introduce affixes after nominal bases (pratīpadika: A 4.1.1 (105)) on condition that they are used in the feminine (striyām). The following are such sūtras:

A 4.1.4: अजाधत्षपा (ajādryatapa tāp)
A 4.1.5: अन्नेभ्यो हः (rnenbhyo nip)
A 4.1.6: उगित्स्या (ugitas ca)
A 4.1.20: वयसि प्रथमे (vayasi prathame)
A 4.1.21: द्विगोः (dvigoḥ)
A 4.1.41: दक्तोरादिभ्यस्य (deśāḥ) (śiḍgaurādibhyāsa ca [niṣ 40])
A 4.1.44: वोपो गुणवचनात् (voto guṇavacananat)
A 4.1.63: जातेरस्रीविष्ण्यायक्ष्यपहात् (jāter astrapivasayād ayopadhat)
A 4.1.66: उक्तत: (manuṣyajāte:) (ūn utaḥ [manuṣyajāteḥ 65])

The first of these rules provides for the suffix tāp in derivates of the set that begins with ajā (see 203) and after bases that end in -a (at: A 1.1.70 [85]); e.g., śukla-ā (śukla: A 6.1.101 [532]). The next four rules cited provide for the affix nip after bases ending in -r, -n (rnenbhyaḥ) as well as those
marked with *u r!/ (ugitaḥ), after a term used with reference to someone in the first stage of life (vayasi prathame), and dvigú compounds; e.g., *kərtṝ- (>kərtṝ́- : A 6.1.77 [125]), *daṅgaṇ- 'one who bears a staff', bhavat-ı; pacant-ı (< pacat-ı [A 7.1.81 (489)], pres. ptcple. with suffix ṣatṛ [see 262]), kumāri (< kumāra-ı: A 6.4.148 [504]) 'girl', aṣṭādhyāyī 'group of eight chapters'. The following three sūtras serve to introduce niṣ. This suffix follows bases that end in an affix marked with ś and members of the set beginning with gaura 'white' (ṣidgaurādibhyāḥ), as in nartakı (nartaka, with śvun [A 3.1.145 [290]], gaurı. This suffix also occurs, optionally (vā), after a guṇavacana base that ends in -u (utāḥ); e.g., laghvīl i laghu. Further, niṣ is introduced after a base that denotes a generic (jāteḥ) and is not limited to the feminine in that meaning (aṣtrivīlayāt), provided also it does not have a penultimate sound y (ayopadhāt); e.g., mayūrī, but kṣatriyā 'female Kṣatriya'. According to A 4.1.66, ūṇ follows a base which denotes a class of humans (manuṣyajāteḥ) and ends in -u, as in kurū.

There are feminines like indrāṇi 'wife of Indra', such that not only is a feminine affix added to a base but the base itself is augmented. According to

A 4.1.49: इन्न्वरणभवश्वरश्मुहिमारण्ययव्यवहन-मातुलाचार्यणामानुकः (indravarunabhava-
śarvarudramṝdhimāranyayavayavana-
mātulācāryānām ānuk)

the following items take the final augment ānuk concurrently with the feminine suffix niṣ: indra 'Indra'; varuṇa 'Varuṇa'; bhava, śarva, rudra, mṛda 'śiva', hima 'snow' (himāni 'big snow'), aranyā 'forest' (aranyāni 'large forest'), yava 'barley' (yavāni 'spoiled barley'), yavana 'Yavana' (yavanāni 'Yavana woman' ['Yavana script', according to commentators]), mātulā 'maternal uncle', ācārya 'teacher'.

There are also nominal bases which, although they have varying referents, do not take feminine affixes. For example,
śaś 'six', pañcan 'five' do not have separate feminine forms. Further, terms such as svāsṛ 'sister', duhitṛ 'daughter' do not take feminine suffixes. Accordingly,

A 4.1.10: न बद्धस्वार्दिभयः (na śaṭsvasradibhyāḥ)
provides that a feminine suffix does not (na) occur after nominals of the śaś class (A 1.1.24 [60]) and items of the group that begins with svāsṛ (śaṭsvasradibhyāḥ).

It is not possible to make the introduction of feminine affixes always contingent on coreference between qualifiers and qualifying. In sentences such as

(78) भवती किमिच्छति (bhavati kim icchati) 'What do you wish?'

(79) नर्तकी नृत्यति (nartaksi nṛtyati) 'The dancer is dancing.'

the use of bhavati, nartaki does not depend on the occurrence of coreferential nominals. Consider also

(80) इयं गौः शुक्ला (iyan gauḥ śuklā) 'This cow is white.'

(81) भूतमयं ब्राह्मणी (bhūtam iyam brāhmaṇi) 'This Brāhmaṇa woman is a demon.'

Using western concepts, one would say that śuklā in (80) is an adjective in predicate position, as opposed to the attributive adjective śuklām in (77) (269), and that the adjective agrees with the noun it modifies, whether it is attributive or predicative. A term such as bhūta(nt.) 'demon, ghost', on the other hand, does not show obligatory gender agreement with a grammatical subject when it is used in a predicate, as in (81). However, the concepts of subject and predicate and attributive or predicative use of adjectives are foreign to Panini's system. Nor does Panini make a strict syntactic distinction between nouns and adjectives. Both are members of the class of nominal bases (prātipadika), to which are introduced particular affixes.
Now, as far as the type sukla, sukla is concerned, one could say that such items always show gender agreement with coreferential nominals, just as they agree with these in respect of case and number. In Pāṇini’s system, this agreement does not have to be stated formally by rules separate from those already discussed, since it is given that the two nominals in question are coreferential, so that whatever pertains to a nominal used to designate a particular thing pertains to the other. It happens that Sanskrit has particular feminine forms like sukla, which in Pāṇini’s derivational system call for affixation rules. Further, the affixes in question occur with nominals whether or not they are of the type sukla, sukla; e.g., nartaki. In the case of terms like nartaki, brāhmaṇī, it cannot be said that coreference determines gender marking through affixation. If one were to say that any nominal which is coreferential with a feminine is susceptible to being marked as feminine, one would have to allow, wrongly, *bhūtā instead of bhūtām in (81). Accordingly, Pāṇini simply lets particular affixes occur with certain nominals if these are used in the feminine. The affixation rules which provide for this are not put in terms of agreement. Indeed, there are no explicit concord rules for number and gender agreement in the Aṣṭādhyāyī, and Pāṇini’s derivational system does not require such rules.

Remarks.

I have intentionally used the somewhat vague ‘in the feminine’ to render striyām of A 4.1.3 (107). Pāṇini uses stri, purīs, and napūrisaka in ways which could be considered to indicate that he treated gender either as a feature of a nominal or as a property of what a nominal signifies; full details concerning his usage are dealt with in part IV.2 of my work. Pāṇiniyās generally treat gender (linga) as a property of what a nominal signifies, just as number (sāṅkyā, vacana) is considered a semantic property. For example, Patañjali brings
up on several occasions the principle that 

\textit{gunavacana terms} \ (\textit{gunavacarananām sabdānām}; see 274-275) have different genders and numbers \ (\textit{liṅgavacanānī}) \ according to the 

substrate \ (\textit{āśrayataḥ}) of the properties in question. A 

property has whatever gender and number belong to the 

substance \ (\textit{dravyam}) in which it resides, as when one says 

\textit{suklam vastram} 'white garment', \textit{sukiā śati} 'white śati (a 

woman's garment)', \textit{suklaḥ kambalaḥ} 'a white blanket', \textit{suklau 

cambalau} 'two white blankets', \textit{suklāh kambalāh} 'many white 

blankets'. [E.g., Bh. I.228.20-21; ...

\textit{guṇavacananāṁ sabdānām-a-

śrayato liṅgavacananī bhavatī ...}, I.246.19-22: \textit{guṇavacananāṁ 

śabdānāmāśrayato liṅgavacananī bhavatī।} \textit{shuklau vistrām} \textit{shukla 

śātī shukla}: \textit{kambalau} \textit{shuklā kambalā} \textit{śātī} \textit{yadā 

śātī śātī bhavatī guṇastasya yāllīṅgāṁ vachanaṁ 

tadbhūvanastāyāpyā bhavatī।}

Nevertheless, \textit{Pāṇinīyas} cannot and do not equate 

grammatical gender with external characteristic marks 

\ (\textit{liṅga}) \ which serve to show that one is a male \ (\textit{puṁśa}), a 

female \ (\textit{strī}) \ or neither of these \ (\textit{napuṁśaka}), such as body 

hair, long hair, etc. They do recognize that a grammarian 

operates with grammatically pertinent gender. The views they 

expound will be considered in part IV.2 of my work. In 

accordance with the above, I shall use 'in the masculine', 'in the 

feminine', and 'in the neuter' as translations of \textit{puṁsi}, \textit{strīyām}, 

and \textit{napuṁśake}. Let me note that treating gender as a semantic 

feature is not so strange as a western linguist might at first 

be tempted to think. As I have pointed out, \textit{Pāṇini} lets number 

--- which no grammarian should hesitate to treat as a 

semantic property --- determine the choice of particular 

endings in triplets \ (A I.4.21-22 \ [234, 241]), and number 

agreement is determined by the coreference of items, so that 

no special rules are required to account for this. In such a 

context, it makes sense to do without rules for gender

[215]
agreement also, especially since, as I have also noted, one is dealing with a system in which concepts such as subject and predicate do not play a role. One can, then, let gender distinctions also have a semantic status. Of course, such distinctions are not specifically correlated with physical features of males, females, and others, so that a blanket (kambala) can be said to be masculine, a sāti feminine, and so on.

274. 2. The statement गुणवचनानां शब्दानामात्रयतो लिप्न-वचनालिङ्खचन्ति (see 273) would have to be made explicitly if Pāṇini’s grammatical rules served to explain, by means of a derivational system, only padas (A I.4.14 [49]) in isolation (padasamāskāra ), not padas as related to other padas in utterances (vākyasaṃskāra ). As Bhartṛhari remarks, in a grammatical explanation which has utterances as its limit (vākyāvadhike tv anvākhyaṁ ) a property denoted by a guṇavacana term such as śukla is always combined with a thing it qualifies (nityasaṁśṛṣṭasya guṇasya ) in such a way that it is not distinguished from its substrate (āśrayaviśeṣaṁtyantam avivekā ), so that there is always a delimitation of a particular qualified thing as opposed to any other thing (sarvato vyavacchāde), with the result that there is no mere property denoted in general as a meaning of a guṇavacana term (sāmānyārthatvam eva na vidyate). [Vṛtti on VP I.24c [69.1-2]): वाक्यावधिकृतवचनांकारानेनियतसंसृष्टस्य गुणस्याश्रयविशेषेणात्यन्तमविवेकाकास्वतो ब्यवचे देय सामान्यां-थत्वलेख न विद्यते] That is, in the context of a grammar that serves to explain utterances, a term such as śukla, if it is used as a qualifier, always refers to a qualified thing, which can also be referred to by a coreferential nominal. Pāṇinian rules introduce nominal endings after bases under certain conditions, which involve relations among the meanings of items in strings to be formed. Combinations of bases and endings, such as śukla-s, śukla-am, are thus not treated in isolation, and in any string where it is a qualifier a term such
as *sukla*-s is coreferential with another nominal element. I have omitted details concerning undesirable consequences of adopting the view that padas in isolation are explained through derivation; these will be considered in part IV.2 of my work. For the present, note only that, in his comments on Mahābhāṣya 1.246.19-22 (see 273), Kaiyata remarks that the statement *gūṇavacanāṇām śabdānām* ... requires explicitly to be formulated (*vācanika*), under the view that padas alone are explained through derivation (*padasamśkarārapakṣe*). [Pr. II.104: पदसंस्कारपक्षेवाचनिकमेतत्त्]

3. Pāṇini distinguishes a type of nominals which he called *gūṇavacana*, as in A 4.1.44 (271) and elsewhere. These are nominals that denote properties and things qualified by such properties. Pāṇini does not, however, set up a separate syntactic category of nominal bases consisting of what in western terminology would be called adjectives. Instead, he merely specifies in particular instances that given rules apply with respect to *gūṇavacana* elements. Pāṇini also recognizes the distinction between nominals used to signify qualifiers (*viśeṣaṇa*) and qualificands (*viśeṣya*); e.g., A 2.1.57 (313). But he does not thereby set up a separate grammatical category of adjectives. This is understandable in his system: What in western terminology are called nouns and adjectives are subject to the same affixation rules in deriving Sanskrit utterances by letting nominal endings occur after elements, including coreferential nominals.

4. Pāṇini also does not recognize a separate syntactic category of adverbs. In (82) उच्च्वैर्षसति(*uccair vasati*) ... 'lives high up', the action qualifier (*kriyāviśeṣana*) *uccais* 'high' occurs. *uccais* is included in the set that begins with *sva*, so that it belongs to the avyaya class (A 1.1.37 [54]), after members of which nominal endings are dropped (A 2.4.82 [307]). The terms *sobhanam* 'well', *suṣṭhu* 'well' in (83) शोभनः पचति (*sobhanam pacati*), (84) सुष्ठु पचति (*suṣṭhu pacati*)
... cooks well' also signify an action qualification. Such items are neither assigned to a class of adverbs nor included in the sets that begin with *sva* and *ca* (A 1.4.57 [55]). On the other hand, they belong to the avyaya class by a gañasūtra that accompanies A 1.4.57 (see 206).
2.4. Derived bases.

2.4.0. Introduction.

277 The derivational system described in Sections 2.1-2.2 involves rules that apply not only with respect to primitive bases but also to derived bases, nominal and verbal (prātipadika, dhātu). The Aṣṭādhyāyī includes groups of sūtras which provide for the formation of such derived bases.

2.4.1. Derived verbal bases.

278 Derived verbs (dhātu: A 3.1.32 [47]) are either deverbative or denominative, that is, derived from other verbs or from nominal padas (A 1.4.14 [49]). A nominal ending (supā) included within such a derivative is generally deleted, by

A 2.4.71: सुपोधातुप्रातिपदिकयोः (लुक्) (supo
dhātuprātipadikayoḥ [luk 58])

which provides that zero (luk: A 1.1.61 [79]) occurs in place of (A 1.1.49 [90]) a nominal ending (supāḥ) that is part of a verb or a nominal base (dhātuprātipadikayoḥ).

2.4.1.1. Deverbatives.

279 If the action denoted by a verb $V_1$ (dhātoḥ) is the object (karmanah) of desiring and both these acts have the same agent (samānakartṛkāt 'which has the same agent [as desiring]'), then the affix san optionally (vā) follows $V_1$ to form a derived verb used in the meaning 'wish to . . . , desire to . . . '

A 3.1.7: धातोः कर्मणः समानकर्तृकादिच्छायां वा (सन्)

(dhātoḥ karmanah samānakartṛkādichchāyāṁ
vā [san 5])

For example, from गुक्रिः with san one has the derived verb
ciṅṛṣa, forms of which alternate with syntactic complexes made up of kartum and forms of iṣ; e.g., ciṅṛṣati and kartum icchatī 'wishes to make, to do'; similarly, (60) bhoktum icchāmi (266) and bubhukṣe 'I wish to eat' are alternants.

yan is optionally affixed to a monosyllabic (ekācaḥ) verb (dhātoḥ) that begins with a consonant (haladeḥ) to form a derivate used to signify that the act in question is performed repeatedly, intensively (kriyāsamabhīhare):

A 3.1.22: धातोरकाचो हलादे: क्रियासमभिहारे यान् (वा)
(dhātorekāco halādeḥ kriyāsamabhīhare yān [vā 7])

For example: yāyajyate = punaḥ punaḥ yajati '... repeatedly performs sacrificial rites', jājvalyate = bhrśam jvalati 'flames intensely'. In addition, yān optionally (nityam) follows a verb of movement if one is to convey crookedness in respect of the movement (kauṭilye gatau):

A 3.1.23: नित्यान् कौटिल्ये गताः (nityān kauṭilye gatau)

For example: caṅkrāmyate 'strides crookedly', jaṅgamyate 'goes crookedly'. Similarly, as provided for in

A 3.1.24: लुपसचरजपजभवदक्षगृहो भावगहर्याम्
(lupasadacarajapahadhadasaṅghyro bhāvagarhāyām)

yan optionally follows the following verbs on condition that censure relative to the acts in question (bhāvagarhāyām) is to be conveyed: lup 'cut, destroy', sad 'sit', car 'go about', jāp 'mutter', jaḥ 'yawn', daḥ 'burn', daś 'bite', gī 'swallow'; e.g., lojupāye 'uselessly destroys'.

A 3.1.25: सत्यापपाशरूपवीणातूलिस्तोकसेनालोमतवचर्मार्णचूर्णचुरादिभ्यो निच्
(satyāpapāśaśrūpaṃvilāśaṅkalasena-lomatvavacarmavarnacūrānacurādibhyo nīc)

provides that nīc follows certain nominals (see 283) and verbs of the tenth major group in the dhātupātha (curādibhyah,
see 155, 157, 156). Since no meaning condition is given for the use of *nic* with such verbs, this affix is introduced redundantly (see 686–687); e.g., *cori* (« *cur-i* ) ‘steal’. Similarly, by

**A 3.1.30: कमेर्निन्द्रा** (kamer niñ)

*niñ* is introduced redundantly after *kam* ‘love, desire’: *kāmi* (« *kam-i* : kāmayate).

On the other hand, according to

**A 3.1.26: हेतुमति चा** (hetumati ca)

*nic* also (ca) occurs, after any verb, if there is to be signified an act that has a causal agent (hetumati, see A 1.4.55 [214]), that is, causation. Examples of causatives and the noncausative verbs from which they are derived have been given in 267.

282 The suffix *yak* as introduced by

**A 3.1.27: कण्डवादिभ्यो यक्** (kaṇḍvādibhyo yak)

occurs redundantly after a group of verbs, beginning with *kaṇḍūn* ‘scratch’ (kaṇḍvādibhyah); e.g., *kaṇḍūya* ‘scratch’ (kaṇḍūyati).

2.4.1.2. Denominatives.

283 **A 3.1.25 (281)** not only provides that *nic* occurs with verbs of the tenth major group in the dhātupātha but also that this suffix follows: *satyāp* (satyāpayati ‘tells the truth, says something is true’), *pāṣa* (vi pāṣayati ‘unfetters’), *ruṣa* (ni ruṣayati ‘observes’), *vinā* (vinayati ‘plays the vinā’), *tūla* (anu tūlayati ‘strokes with the end of a reed’), *śloka* (upa ślokatī ‘praises with ślokas’), *senā* (abhi ṣenayati ‘advances against ... with an army’), *loma* (anu lomayati ‘strokes along the grain’), *tvaca* (tvacayati ‘grabs the skin’), *varman* (sam varmayati ‘girds in armor’), *varṇa* (varṇayati ‘colors’), *cūrṇa* (cūrṇayati ‘sprinkles with powder’). The derivatives formed thereby are clearly denominative. Nevertheless, *satyāpi* is formally of the
type dāpi 'cause to give', the regular causative formation for primitive verbs in -ā, with the final augment puruk added to the base before nic (A 7.3.36 [124]).

Other sūtras providing for denominative verbs also differ from A 3.1.25 in that they give specific conditions under which affixes are introduced. For example,

A 3.1.8: सुप आत्मनः क्यच् (कर्मणः इच्छायाम् वा)  
(supa ātmanah kyac [karmaṇaḥ icchāyām vā 7])

A 3.1.9: काम्यचा (kāmyac ca)

A 3.1.10: उपमानादाचारे (upamānād ācāre)

A 3.1.11: कर्तुः क्यप्त सलोपसचा (kartuḥ kyan salopaś ca)

A 3.1.19: नामोविरिविचित्रान्तः क्यच् (कर्मणः करणे)  
(namo-virivichitraṇah kyac [karmaṇaḥ 15 karane 17])

Introduce kyac, kāmyac, and kyan as follows. The first three sūtras let affixes follow nominal padas (supah) signifying an object (karmaṇaḥ). By A 3.1.8, kyac follows such a pada if it refers to an object someone desires for himself (ātmanah), and the following rule lets kāmyac also (ca) occur after such a pada under the same conditions. According to A 3.1.10, kyac is introduced after a pada that refers to an object with which a comparison is made (upamānāt), to form a derivate denoting a way of behaving (ācāre). The next rule, which introduces kyan, also serves to derive a verb that denotes a way of behaving, only now the affix follows a nominal pada which refers to an agent (kartuḥ). Moreover, if the base of the pada in question ends in -s, this is also deleted (salopaś ca) in the derivate. A 3.1.19 introduces kyac after a pada that denotes an object (karmaṇaḥ), if the nominal base of the pada is nāmas 'bowing, obeisance', varivas 'space', or citra 'marvel', to form derivates meaning 'do ...' (karane). All these rules introduce affixes optionally (vā), so that the derivates formed by them alternate with other expressions, as shown in the
examples below:

(85) a. पुत्रीयति (putrīyatī) b. आत्मनःपुत्रमिच्छति।
(ātmanaḥ putram icchatī) '... desires a son for himself.'

(86) a. पुत्रकाम्यति (putrakāmyati) b. आत्मनः
पुत्रमिच्छति। '... desires a son for himself.'

(87) a. छात्रं पुत्रीयति (chātram putrī... 'i) b. छात्रं
पुत्रमिच्छति। (chātram putram ivācarati) '... treats the student like a son.'

(88) a. काकः स्यनायते (kākah śyenāyate) b. काकः
स्यना विवाचरति। (kākah śyena ivācarati) 'The
crow is acting like a falcon.'

(89) a. नमस्यति देवान् (namsyati devān)
b. नमस्यरोति देवश्यः। (namas karoti devebhyaḥ) '...
does obeisance to the gods.'

The endings of padas such as putra-am, śyena-s, namas-am in
derived verbs like putra-am-ya, putra-am-kāmya, śyena-s-ya,
namas-am-ya are dropped (A 2.4.71 [278]); putra-am-ya >
putra-ya > putrīya (A 7.4.33 [485]), putra-am-kāmya >
putrakāmya, śyena-s-ya > śyena-ya > śyenāya- (A 7.4.25
[425]), namas-am-ya > namasya.

**2.4.1.3. Special rules for derived verbs.**

The derived bases gotten by rules such as those
considered in Sections 2.4.1-2.4.2 are verbs, so that they are
subject to the same operations as apply to primitive verbs in
derivations (Sections 2.0-2.2). Thus, they are followed by L-
affixes, which are replaced by other affixes, including verb
endings, and yak or śap is introduced after derived verbs
when they are accompanied by sārvadḥatuka affixes (A 3.1.67-
68 [156-157]). Derived verbs nevertheless require special
rules, in particular with respect to the distribution of ātmanepada and parasmaipada affixes and the occurrence of particular vikaranas.

*yāṇi* and *kyaṇi* (A 3.1.22-24,11 [200, 283]) are marked with *n* to show that verbs formed with them take agentive ātmanepada affixes (A 1.3.12 [138]): yāyajyate, caṅkramyate, lolopyate, śyenāyate. In addition, derivates with *kyac*, *kāmyac* have agentive parasmaipada affixes in accordance with A 1.3.78 (142). Such markings and general rules cannot, however, account for the distribution of ātmanepada and parasmaipada affixes with all derived verbs, so that special rules are also required. Two such sūtras are A 1.3.74, 62 (139-140), which concern causatives and desideratives.

The suffix *yāṇi* (*yāṇah*) is replaced by zero (*luk*) before *ac* (*aci*), as in *loluva* (see 98):

**A 2.4.74:** यहोशिचः (लुकः) (*yāṇo'ci ca [ luk 58]*)

By A 3.1.43 (236), *clī* is introduced after any verb, if the verb occurs with endings that replace *lunī*, and this applies in the case of derived verbs formed with *nic*.* Moreover, if the endings in question replace *lunī* introduced on condition that an action or an object is to be signified, *clī* is then replaced by *sic* (A 3.1.44), as in the passive *akārayiṣātām* (3du.) '... have been made'. Before agentive endings, on the other hand, *caṇi* substitutes for *clī* following a derivate with *nic*. According to

**A 3.1.48:** निस्रिद्रुसङ्ख्याः कर्तारी चढः (*niśridrusrubhyaḥ kartari caṇi*)

*caṇi* replaces *sic* followed by an ending that signifies an agent (*kartari*), after verbs in -ṇi as well as after *śri* 'lean on, resort to, depend on', *dru* 'run', and *srū* 'run, flow' (*niśridrusrubhyaḥ*); e.g., *acikarat* (ṅ ... kāri-a-t) 'had ... do, make'. The penultimate (*upadāyāḥ*) vowel of a stem such as *kār*, which is followed by *nic* at one time, is replaced by a short vowel (*hṛsvaḥ*) before *caṇi* (*caṇi*), as in *acikarat* (3sg. caus. aor., see 387):

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A 7.4.1: जी चड़युपधाया हस्तः। (nau caiy upadhāya
hrasvaḥ)

Derived verbs also take a particular affix with /iti (A
3.2.115 [233]). By

A 3.1.35: कास्प्रत्यादाममन्त्रे लिति। (kāspratyayād ām
amantrē iti)

If /iti follows (/iti), the affix ām is introduced after kās
'cough' and verbs formed with affixes (kāspratyayāt), except
in the domain of Vedic mantra usage (amantrē). The suffix that
thereby follows ām is deleted (A 2.4.81 [408]). Now, the
L-affix /iti belongs to the kṛt class (A 3.1.93 [66]), so that an
item that ends with this affix is a nominal base (prātipadika:
A 1.2.46 [48]). Accordingly, an item that ends in -ām after
/iti has been dropped also is a prātipadika (A 1.1.62 [103]),
after which a nominal ending will occur (A 4.1.1 [105]); e.g.,
kṛ-i-ām-s (> ... kārayām). In addition, as stated in

A 3.1.40: कृत्वाचापपुन्युस्याते लिति। (kṛṇa
caṇuprayujyate iti)

a form of kṛ (kṛṇa) is used after (caṇuprayujyate) a derivate
with -ām and is itself followed by /iti (iti). That is,
derivatives such as kārayām, lolūyām (< lolū-ya-ām) are
followed by perfect forms of kṛ. dukṛṇ is an independent
verb, which takes both ātmanepada and paraśaṁpada endings
in agentive forms (A 1.3.72, 78 [139, 142]), as does also a
causative such as kāri (A 1.3.74). Accordingly, forms like
kārayān caṅkāra, kārayān caṅkre'... had ... do or make something'
are accounted for in terms of how the derived verb and the
postposed verb regularly behave. On the other hand, there are
instances such as lolūyān caṅkre, from the intensive lolūya,
which are not so simply accounted for: The derived verb
lolūya takes only ātmanepada affixes in agentive forms, and
postposed kṛ should behave in the same manner when used
with this and similar derivates. Hence, Pānini provides that
postposed kṛṇ (kṛṇo'nuṣpryogasya) has ātmanepada affixes in

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accordance with what holds for the accompanying derived verb with the affix ām (āmpratayahavat):

A 1.3.63: आम्प्रत्ययवत्कृत्रिःनुप्ययोगस्या
(āmpratayahavat krñonuprayogasya)
See also 139-140.

Remarks.

1. Denominative verbs were called subdhātu or nāma-
dhātu, terms already certainly established by the time of
Kātyāyana, who uses both (e.g., vt. 1 on A 6.1.64 [subdhātu], vt.
4 on A 6.1.3 [nāmadhātu]). In A 6.1.92: बा सुप्यापिस्थः (529),
Pāṇini uses sup (loc. sg. sup/) with reference to denominative
verbs, so that it is probable that subdhātu was used of such
verbs already in his time, if not also earlier.

2. I have used 'causation' with reference to an act which
has a causal agent (hetumati: A 3.1.26 [281]), although this is
to be understood as a general term covering a wide semantic
area. To Pāṇinīyas, and doubtless already for Pāṇini himself,
the activity performed by a causal agent (hetu, prayojaka-
kartṛ) could be of various kinds: commanding an inferior do
something (preśana), requesting a superior to do something
(adhyēśana), providing, bringing about what is necessary for
something to be done (samarthācarana). [E.g., VP 3.7.125:
प्रेशाध्येषेन कुर्वस्तत्समर्थानि चाचरनां कर्तवं विहितं सास्ते
हेतुसाभ्यामप्रपधते।] Details are considered in part III.4 of my
work.

2.4.2. Derived nominal bases.

2.4.2.1. Derivates with kṛt affixes.

289 As I pointed out earlier (66), affixes other than verb
endings, introduced after verbs by sūtras of the section headed
by A 3.1.91, belong to the kṛt class (A 3.1.93), which includes a subset of affixes, called kṛtya (A 3.1.95). Kṛt affixes are introduced under both meaning and cooccurrence conditions of several kinds. In addition, derivates with such affixes are both independent elements and items obligatorily combined with related items to form compounds. In general, kṛt affixes are introduced on condition that an agent is to be signified (A 3.4.67 [248]), but kṛtya affixes, kṛta, and suffixes with the meanings attributed to khal are regularly introduced if an act or an object is to be signified (A 3.4.70). Moreover, time references also play a role in the use of particular kṛt affixes.

A 3.1.133 (248) provides for the use of either gāvul or trc after any verb. The rule gives no condition for introducing these affixes, so that only the general condition given in A 3.4.67 applies: these suffixes occur if an agent is to be signified. Other agentive kṛt affixes occur with particular verbs. For example,

A 3.1.134: nandigrahipacādi bhāyo lpyuninīyacah

(provides that lėu, pini, and ac respectively (A 1.3.10 [91]) occur with verbs of the groups --- given in gaṇas that accompany the sūtra --- whose first members are nandi 'gladden', grah 'seize, grasp', and pac 'cook, bake'; e.g., nandana (ṅ nandi ana) 'son', grāhin 'one who seizes', paca 'one who cooks'. By

A 3.1.135: igupadhajñāprikirō kaḥ

ka follows verbs with penultimate i-, u-, r-, or l-vowels (igupadha), jñā 'know', pri 'please', and kṛ 'strew, scatter', as in budha 'wise', jña 'one who knows' (< jñā-a: A 6.4.64 [451]), priya 'dear' (< pri-a: A 6.4.77 [452]), kira 'one who strews' (< kṛ-a: A 7.1.100 [423]). And according to

A 3.1.137: pāḍādāmahetdr: śa: (uśpamē)
the suffix śa, a member of the sārvadhātuka class (A 3.4.113 [63]), follows pā 'drink', ghrā 'smell', dhmā 'blow', dheṭ 'suck', dhṛṣ 'see, look' used with a preverb (upasarga): utpība 'one who drinks up' (pība < ... pā-a-a : A 3.1.68, 7.3.78 [157, 437]), vijīghra 'one who sniffs about', uddhama 'one who blows up something with air', uddhaya 'one who sucks', vipāṣya 'one who looks about'. These sūtras do not specify any meaning conditions, so that the affixes in question are allowed to occur under the general condition that an agent is to be signified. Similarly,

A 3.1.140: ज्वलितिकसन्तेघ्यो न: (विभाषा)
(jvalitikasantebhyo naḥ [vibhāṣā 139])
lets the agitative affix na optionally (vibhāṣā) follow verbs of the subgroup that starts with jval and ends with kas (see 160).

Other agitative kṛt suffixes are introduced under more specific meaning conditions. With the additional condition that the agent in question be a professional, an artisan (śilpini), śvun is introduced after verbs in general, thakan after gā 'sing':

A 3.1.145: सिल्पिनि ध्वुन् (śilpini śvun)
A 3.1.146: गस्थकन् (gas thakan)
For example, nartaka (< ... nrt-vu) 'dancer', gāthaka 'singer'. By

A 3.3.170: आवश्यकाधमर्ययोपरिनिः (āvaśyakādhāmarmayor piniḥ)
pini follows a verb if the agent to be signified is qualified as necessarily performing an act or as a debtor (āvaśyakādhāmarmayoh); e.g., avaśyakārin 'one who necessarily will do or make something', sataṁ dāyi '... will give back one hundred ... (that he owes)'.

There is a section of sūtras, headed by

A 3.2.134: आक्वेस्तच्छीलतद्वर्ततस्ताधुपकारिः
which extends through a pair of rules (A 3.2.177-178) that introduce *kvip* (ākveḥ). Kṛt affixes provided for by rules of this section occur on condition that the agent in question performs an action as part of his nature, habitually (*tacchila*) or as a duty (*taddharna*), or that he performs an act well (*tatsādhukārin*). As provided for in

A 3.2.135: तृण (trṇ)

trṇ occurs with any verb under these conditions, as in *kar-tr* (< *kr-tṛ*) 'one who does or makes ...'. Other affixes occur, under the same conditions, with particular verbs. For example, by

A 3.2.141: शमित्यास्ताभ्यो धिनुन (śamityāstābyo ghinun)

ghinun occurs after the eight verbs of the subgroup that begins with *sāmū* (śamityāstābyaḥ 163). According to

A 3.2.154: लषपतपदस्थाभृशहनकमगमश्य उकान (laṣapatapadasthābhūṛṣahānakamagama-śābhya ukaṇ)

ukaṇ occurs with *laṣ* 'desire' (*laṣuka*), *pat* 'fall, fly' (*pātuka*), *pad* 'go, fall' (*pāduka*), *sthā* 'be in place, remain' (*sthāyuka*), *bhū* 'be, become' (*bhāvuka*), *ṛṣ* 'rain' (*vāṛṣuka*), *han* 'strike, kill' (*ghātuka*), *kam* 'love, desire' (*kāmuka*), *gam* 'go' (*gāmuka*), ṣṭ 'destroy' (*sāruka*).

A 3.2.175: स्तेशभासपिसकसो वरच (stṛṣabhāsa-pisakaso varac)

A 3.2.176: यथेच यथः (yaś ca yaṇaḥ)

introduce *varac* after *sthā* (*sthāvara*), *iś* 'have power, be able' (*iṣvāra*), *bhāṣ* 'shine' (*bhāṣvāra*), *pis* 'move, penetrate' (*pisvāra*), *kas* 'move, open' (*kasvāra*) as well as (*ca*) after the derivative in *yaṇ* (yaṇaḥ) formed from *ya* 'go' (yāyāvara, see 102).

Certain kṛt affixes are introduced on condition that an act
(bhāva, see 228) or a kāraka other than an agent is to be signified. A 3.3.18-19 (111, 114) introduce ghañ after any verb under these conditions; e.g., pākā 'cooking' (< ...pac-a: A 7.2.116, 7.3.52 [417, 431]). Other derivates are formed from particular verbs with different affixes. Thus,

A 3.3.56: ērça (er ac)
A 3.3.57: ādorapa (ōdor ap)
A 3.3.59: upasargavī (upasarge'dah)

introduce ac after verbs that end in i-vowels (EH), ap after verbs ending in -f or u-vowels (ōdoh) and after ad 'eat' used with a preverb (upasarge: A 1.4.59 [55]); e.g., caya, kara, stava, praghāsa from ci 'collect, pick, heap', kī 'strew', stu 'praise', pra-ad 'eat voraciously' (A 2.4.38 [380]). According to

A 3.3.88: dhvnt: vītra (ōvitaḥ ktriḥ)
A 3.3.89: tvito'cuc (tvitō'cuc)

a verb marked with ā (ōvitaḥ) takes the affix ktri and athuc follows a verb marked with ṭu (tvitāḥ); e.g., paktri 'cooking', in paktrima 'which has been made by cooking, baking' (A 4.4.20 [359]), vepathu 'trembling', from the verbs āpacaś, ṭuvēpr. After yaj 'reverence, perform a rite, offer a sacrifice' yāc 'request, pray', yat 'exert oneself, make an effort', vich 'go', prach 'ask', raks 'protect, keep', the affix nañ is introduced:

A 3.3.90: yajayācyatavicchapraccharakṣo nañ
(yajayācayatavicchapracccharakṣo nañ)

For example: yajña (< yaj-na: A 8.4.40 [574]) 'rite', praśna(< prach-na: A 6.4.19 [430]) 'question'.

In addition, some kṛt affixes are conditioned by the designation of an act qualified in a particular way. For example, A 3.3.44 (115) provides for inup to form derivates denoting encompassing acts. Moreover, a gender is a possible qualifier conditioning the use of particular affixes. Thus, A 3.3.94 (114) specifies striyām 'feminine' (see 273). Consider
also action nouns such as *hasita* ‘laughing’, *karana* ‘doing, making’. Such derivates are neuter. Accordingly,

A 3.3.114: नपुषके भावे क्तः। (*napuṣakē bhāve ktaḥ*)

A 3.3.115: ल्युटः चा (*lyut ca*)

give as conditions for the occurrence of *kta* and *lyut* (> *ana*: A 7.1.1 [509]) not only that an act is to be signified but that this be qualified as neuter (*napuṣakē bhāve*). Further, specific affixes occur with particular verbs under such qualified conditions. For example, the conditions that apply in A 3.3.94 hold also for

A 3.3.103: गुरोधचरः (अ) (*guroś ca harah [a 102]*)

A 3.3.104: शिष्मवास्त्रेयोशः (*śidbhīdādibhyoś*)

The first of these sūtras introduces *a* after verbs with final consonants (*harah* [abl. sg.] preceded by a heavy vowel (*guroś*: A 1.4.11-12 [37]). The second rule introduces *aṇī* after verbs marked with *a* and members of the group that begins with *bhīd* ‘split, break’ (*śidbhīdādibhyāḥ*); e.g., *lḥā* ‘desire, effort’ (*lḥ-a > lḥ-a-ā- > lḥā*: A 4.1.4, 6.1.101 [271, 532]), *jīr-a* (> ... *jarā*: A 4.1.4, 7.3.84, 6.1.101 [271, 127, 532]), *bhid-a* (> ... *bhidā*: A 4.1.4, 6.1.101), from *lḥā ‘strive’, jīr ‘age’, bhidīra. And by

* A 3.3.102: अ प्रत्ययात् (*a pratyayāt*)

under the same conditions, *a* follows a verb that ends in an affix (*pratyayāt*), that is, a derived verb; e.g., *cikīrśā* ‘desire to make, do’, *lolīyā* ‘intense, constant cutting’. On the other hand, *yuc* (> *-ana*) occurs following derived verbs in *-ṇi* and the primitive verbs *ās* ‘be seated’, *śrath* ‘loose’ (*nāśa-śranthāḥ*):

A 3.3.107: प्यासश्रान्त्यो युच्चः (*nāśaśranthō yuc*)

For example: *kārapā*, action noun to the causative *kāri*, and *āsanā* ‘being seated’, *śranthanā* ‘letting loose’.

A 3.1.96 (121) simply provides that the kṛtya affixes *tavyat*, *tavya*, and *anīvar* follow verbs. Since no other conditions are given, these suffixes are allowed to occur with any
verb under the general conditions stated in A 3.4.70 (248). Certain kṛtya affixes, however, are used under more specific conditions. For example, A 3.1.97 (122) provides for yat after vowel-final verbs. Similarly, according to

A 3.1.98: पोरदुपधात (yat) (por adupadhät [yat 97])

A 3.1.124: शहलोण्यत् (rhah īyar)
yat follows a verb that ends in a labial stop (poph) and has short a for its penultimate sound (adupadhät), but verbs that end in r-vowels and consonants (rhah) take īyat; e.g., labhya 'which is to be obtained', kārya 'which is to be done', vācyā 'which is to be said'. Further, by

A 3.1.125: ओरवश्यके (or āvasyake)
a verb that ends in an u-vowel (oph) takes the kṛtya suffix īyāt if there is the additional meaning condition 'necessarily' (āvasyake); e.g., lāvyā 'necessarily to be cut'.

Unlike L-affixes (A 3.4.69 [232]), kṛt affixes are introduced on condition that kārakas other than agent and object are to be signified (cf. A 3.3.19 [iii]). For example, kta serves to derive nominals that denote a locus (adhikarana: A 1.4.45 [214]), from verbs denoting static acts (dhruvyā), movement (gati), and consuming (pratyavasāna):

A 3.4.76: क्तोधिकरणेः च धौन्यवायितप्रत्यवसानार्थेयं (kto'dhikaraṇe ca dhruvyagati-pratyavasānārthebhyaḥ)

ītu forms derivates signifying instruments (karaṇa: A 1.4.42) and loci (karaṇādhikaraṇayoh):

A 3.3.117: करणाधिकरणयोयो (lyūṭ)
(karaṇādhikaraṇayoś ca [lyūṭ 115])
E.g., āsita 'place where sitting takes place', yāta 'place where going takes place', bhukta 'place where eating takes place', vraṣcana 'instrument for hewing', dohān 'pail in which milk is put'. After the verbs r 'move', lū 'cut', dhū 'shake', sū 'impel', khan 'dig', sah 'bear', car 'go about', the suffix ītra is
Introduced to form derivates denoting instruments:

A 3.2.184: आर्तिलूध्युसुक्ष्णसहचर इत्रः
(arttilūdhūśūkṣkhaṇasaḥacara itraḥ)

This accounts for aritra 'oar', lavitra 'sickle', dhavitra 'fan', savitra 'means of impelling' khanitra 'spade', sahitra 'means of enduring, overcoming', caritra 'foot, leg'.

Indeed, the system of derivation with kṛt affixes lacks strict restrictions to such a degree that Pāṇini must not only have a sūtra A 3.3.19: अकर्तरिच कारके संज्ञायाम् (111) in his grammar but must also provide, in

A 3.3.113: कृत्यल्प्युटो बहुलम् (kṛtyalpyuto bahulam)

that kṛtya affixes and iyut are allowed to occur variously (bahulam). Thus, although derivates with kṛtya affixes usually denote objects or acts (A 3.4.70 [248]), snāniya, with aniyar (A 3.1.96 [121]) after snā 'bathe', refers to an instrument, as in snāniyam cūrṇam 'powder with which one bathes'; and dāniya can be used of someone to whom one gives something, as in dāniyo brāhmaṇapah 'A Brāhmaṇa to whom one gives'. Again, bhojana, with iyut after bhuj, can signify not only eating but also an object that is eaten, food.

Time references and modalities also serve as conditions for the occurrence of kṛt affixes. kta and ktavatu (niṣṭhā. A 1.1.26 [66]) are regularly introduced when an activity is referred to the past (bhūte):

A 3.2.102: निष्ठा (भूते) (niṣṭhā [bhūte 84])

For example,

(90) देवदत्त ओदनं पक्ववान् (devadatta odanam pakvavān)

(91) देवदत्तेनौदनः पक्वः (devadattenaudanah pakvah)

alternate with (21) and (22) respectively (see 230). pakvavat (nom. sg. masc. pakvavān), pakva (nom. sg. masc. pakvah) derive from participles in which ktavatu, kta follow pac (pac-ta > pak-ta > pakva: A 8.2.30, 52 [544, 549]).
In certain cases, kta is also used when an act is referred to the present (vartamāne); after verbs with the marker ni (nītaḥ) and verbs meaning ‘intend, wish’ (mati), ‘know’ (bud- dhi), ‘honor’ (pūjā):

A 3.2.187: वीत: कत: (वर्तमाने) (nītaḥ ktaḥ (vartamāne 123))

A 3.2.188: मतिबुद्धि पुजार्थमिव्ययचा (matibuddhi- pūjārthehyas ca)

For example: dhṛṣṭa ‘bold’ (nīdhrṣṭā), līpīta ‘desired, intended’, vidita ‘known’, sammata ‘honored’ are used with present reference, of someone who is overly bold, something one now desires or knows, and someone now held in honor.

Not only do certain modalities serve to condition the use of particular kṛt affixes, as they do the use of certain L-affixes, but formations of both types can alternate. Thus, in speaking to someone who should marry a certain girl because he merits this, one can use

(92) a. भवान्कन्या बहेत् (bhavān kanyāṃ vahet) ‘You should marry the girl.’

b. भवता कन्या बोढन्या (bhavatā kanyā vodhavyā) ‘The girl should be taken in marriage by you.’

c. भवान्कन्याया बोढा (bhavān kanyāyā vodhā) ‘You should marry the girl.’

(92a) has the optative vahet (v... vah-īnī) construed with kanyām (kanyā-am), the ending of which is introduced to signify an object (A 2.3.2 [240]), but (92b) has vodhavyā (nom. sg. fem.), with the kṛtya suffix tavya (v... vah-tavya-ā-s), used coreferentially with kanyā, and (92c) has the agent noun form vodhā (nom. sg. masc.), with the affix tṛc, and the genitive kanyāyā (A 2.3.65). Accordingly, in

A 3.3.169: आहें (विद्ध्य) कृत्यतृचर्चा (arhe [īni 168]
kṛtyatṛcaś ca)

Pāṇini provides that both īni and (ca) kṛtya affixes and tṛc

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are used if the agent in question is one who merits (arhe) performing the act spoken of.

Particular kṛt suffixes serve to form derivates that occur in complex sentences. For example, snātvā, bhoktum, bhojakaḥ, āhartum of (50), (51), (60), (52) (259-261, 266) contain such affixes. For deriving terms like bhoktum, bhojaka of (50), moreover, cooccurrence conditions are used: A 3.3.10 lets tumun and āvul follow a verb V₁ if this is used with another verb V₂ the meaning of which is an action whose purpose is performing the act denoted by V₁. V₂ is a cooccurring item (upapada). Now, A 3.3.10 contains the locative kriyāyāṁ kriyārthāyāṁ 'action that has an action as its purpose', used with reference to the meaning of such a cooccurring verb. According to

A 3.1.92: तत्रोपपदं सप्तमीस्थाम् (tatropapadam saptamistham)
such a cooccurring item, referred to by a locative form (saptamistham) in a rule of the section headed by A 3.1.91 (tatra 'in this'), is called upapada. The following sūtras also involve such upapada items:

A 3.2.1: कर्मण् (karmay an)
A 3.2.2: ह्यामस्च (hvāvamaś ca)
A 3.2.3: आतोषुपासर्गे कः (āto'nupasarge kaḥ)
A 3.2.15: अधिकरणे शेते: (अच्) (adhikarane šeteḥ [ac 9])
A 3.2.58: स्पृशोदनवे किचनः (spršo'nudake kvin)
A 3.2.59: ऋतिविद्धृक्सविद्युधिनिगांच्छुष्णिकृक्रमां च (ṛtvigadhṛsragṣadighṣṇigaṇçyujikruṇcāṁ ca)
A 3.2.61: सत्सुधिपदुधुहुपुज्ञविद्यमदिष्ठजनी-राजामुपासर्गंपि किवप् (satsūdvīsadvadaduha-yujavidabhidacchidajinīrajām upasargepi kvip)
The first three rules introduce affixes to verbs used with upapadās denoting objects of the actions in question. By A 3.2.1, *ap* generally can follow any verb; the next rule provides that this suffix occurs also (*ca*) with *hvā* 'call, challenge', *vā* 'weave' (*hvāvāmaḥ*), *mā* 'measure'; but according to A 3.2.3 other verbs in *-ā* (*ātaḥ*), provided they are not used with a preverb (*anupasargē*), take the affix *ka*. These sūtras account for derivatives such as *-kāra*, *-hvāya* (*-hvā-a*: A 7.3.33 [439]), *-vāya*, *-pa* (*-pā-a*: A 6.4.64 [451]) in *kumbhakāra* 'pot maker', *svarga-hvāya* 'one who calls out to heaven', *tantu-vāya* 'thread weaver', *nr-pa* 'king, protector of men'.

A 3.2.15 provides that *ac* follows a verb construed with an upapada signifies a locus (*adhikarane*), as in *śaya* (*śi-a*: A 7.3.84, 6.1.78 [127, 524]) of *kha-śaya* 'one who lies in heaven'.

A 3.2.58 introduces *kvin* after *sprś* 'touch' construed with a nominal other than *udaka* 'water'; e.g., *ghṛta-sprś* 'one who touches ghee'. A 3.2.59 gives certain ready-made derivatives with *kvin*, not all of which involve upapadas: *rtvij* 'a priest', *dadhrś* 'daring', *sraj* 'garland', *diś* 'direction', *uṣṭhit* (name of a particular meter). The rule also lets *kvin* follow the verbs *ancu* 'move (towards)', *yuj* 'join, yoke', and *krunc*
'curve'. By A 3.2.61, kvip is introduced to the verbs sad 'sit', sū 'give birth to', dvīs 'hate', druḥ 'wish harm to someone', duḥ 'milk', yuj, vid 'know', 'occur', bhid 'split', chid 'cut', ji 'conquer, be victorious', nī 'lead, guide', and rāj 'shine' construed with nominals (upasarge/pi). Both kvin and kvip are deleted (A 6.1.67 [409]). The next four sūtras include also a condition of time reference: The act signified by the verb to which an affix is added must be referred to the past (bhūte). By A 3.2.85, nini (niniih) follows yaj (yajah) construed with a term referring to an instrument (karane); e.g., agniṣṭoma-yājin 'one who has performed the Agniṣṭoma rite (as a means of accomplishing desired fruits)'. According to A 3.2.87, kvip is affixed to han 'strike, kill' construed with any of three upapadas referring to objects (karman): brahman 'Brahman', bhrūṇa 'foetus', vrtra 'Vṛtra', as in brahma-han 'one who has killed a Brahman', bhrūṇa-han 'one who has killed a foetus', vrtra-han 'slayer of Vṛtra'. A 3.2.90-91 introduce kvip to two verbs construed with specific nominals referring to objects: suṇ and ci in construction with soma and agni, as in soma-sut (≪su-v: A 6.1.67, 7|[409, 394]) 'one who has pressed out Soma juice', agni-cit 'one who has set up the sacrificial fires'.

The next two sūtras introduce ki after verbs of the ghu class (ghoṣ: A 1.1.20 [51]) under the conditions stated in A 3.3.18-19 (III). Any verb of the set takes this suffix if it is used with a preverb (upasarge), as in antar-dhi (≪ -dhā-i) 'disappearing'. In addition, the affix follows a verb construed with an upapada that signifies an object (karman) of the act in question, to form a derivate which denotes a locus (adhikarane); e.g., jala-dhi 'ocean', interpreted as a term signifying something in which water is set.

According to A 3.3.126, khal follows verbs construed with ḫsat ('slightly'), dus ('badly, hardly'), su ('well, easily') used to connote difficulty and ease (kṛcchrākṛcchrārthesu), as in ḫsat-kara, su-kara 'easily made, done', dus-kara 'hard to make, do', which refer to objects (karman: A 3.4.70 [248]).
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As shown in the examples given, these affixes form derivates which occur only in compounds (A 2.2.19 [315]).

Remarks.

1. Pāṇini not only introduces particular verbal affixes to form derived nominal bases by rules of his grammar, he also recognizes a group of affixes, beginning with up (unādayaḥ), which are not introduced by rules of the Aṣṭādhyāyi but which serve to form derived nominal bases. Pāṇini explicitly refers to these affixes in his grammar. A 3.3.1: उणादयो बहुलम् (वर्तमाणे) (unādayo bahulam [vartamāne 3.2.123]), 3.3.2: भूतेष्विस्यान्ते (bhūtepi drṣyante); 3.3.3: भविष्यति गम्यादयः (bhavisyati gamyādayah) concern these affixes and their time references: up etc. (unādayaḥ) are introduced variously (bahulam), if the act denoted by a verb is referred to the present, current time (vartamāne); these affixes appear (drṣyante 'are seen') also when the time reference is past (bhūtepi); and derivates of the set beginning with gamin ('one who will go') have future reference (bhavisyati). The base gamin is derived with the unādi suffix ini (US 4.6: गमरिनिन
[gamernini]); this is not otherwise provided for by any rule of the Aṣṭādhyāyi. Elsewhere in his grammar, Pāṇini deals briefly with the kārakas unādi affixes designate. A 3.4.73: दाशगोघनां सम्प्रदाने (dāṣagoghnaṁ sampradāne), 3.4.74: भीमादयोपादाने (bhimādayo pādāne) concern the derivates dāsa 'one to whom something is given, one who is honored', goghna 'a guest, for whom a cow is killed', and a set of derivates beginning with bhima 'one whom people are afraid of'. The first two are derived to signify sampradānas, and members of the set beginning with bhima signify apādānas. In A 3.4.75: ताभ्यामन्यत्रोणादयः (tābhyaṁ anyatronādayah),
Pāṇini then states that affixes of the set beginning with *up* occur to signify kārakas other than these two (*tābhyām anyatāra*). This sūtra covers the general use of *uṇādi* affixes. In addition, *bhīma* itself is derived with the *uṇādi* suffix *mak*, which also enters into the formation of *bhīśma* (US 1.147: भिय: बुः (मक्) [bhiyah sug vā (mak144)]. Now, in works such as the Aṣṭādhyāyī, affixes are not merely listed; they are provided for, under various conditions, by rules. A mere list of affixes, beginning with *up*, divorced from grammatical rules providing for their occurrence, would be an anomaly in the Indian context as known to us from works that have been handed down. It is therefore probable, though not provable definitively, that the affixes in question were part of at least a partial grammar known to Pāṇini. It is true, nevertheless, that the groups of *uṇādisūtras* available to us cannot be attributed to any predecessor of Pāṇini. Additional details concerning *uṇādi* affixes and rules that introduce them will be dealt with in connection with pertinent sūtras of the Aṣṭādhyāyī.

2. As noted in 291, some kṛt affixes are introduced on condition that an act (*bhāva*) is to be signified, thus accounting for nomina actionis such as *pāka*. L-affixes also are introduced on condition that an act is to be signified (A 3.4.69 [232]), thus accounting for forms such as *āsyate* in (9) (138). Pāṇiniyaśas distinguish between two varieties of *bhāva* in connection with these. One, termed *ābhyaṅtara bhāva* ('internal bhāva'), is the meaning of a verbal base itself, an act viewed in progress. The other, termed *bāhya bhāva* ('external bhāva'), is what an action noun signifies. This variety of *bhāva* is said to behave like a substance (*dravyavat*). That is, a nomen actionis such as *pāka* can be used in a sentences such as पाको वर्तति (pāko vartate) 'Cooking is taking place', where it denotes a kāraka. (See, for example, Bhāṣya II.57.7-12, 145.10, 15-18, 177.12, 18-21 [on A 3.1.67, 3.3.19, 3.4.67]; full details are considered in part IV.1 of my work.)
3. The set referred to by bhidādi in A 3.3.104 (291) is not a subset of the seventh major group in the dhātupāṭha (155). Indeed, it cannot be, since the rule should account not only for bhidā, chidā, from verbs of this group, but also for derivates such as vidā, from vid 'know', which belongs to the second major group. bhidādi in A 3.3.104 refers to a gāṇa that accompanies the sūtra, and this gāṇa contains derivates bhidā etc., with the affix that is introduced by the rule (cf. 203).

2.4.2.2. Subordination and time references of derivates.

Consider now the sentence
(93) देवदत्तेन ग्रामं गच्छता भुक्तम् (devadattena grāmam gacchatā bhuktam) 'Devadatta ate while he was going to the village.'

The term bhuktaṃ (bhukta < bhuj-ta; A 3.2.102 [294]) refers to an action performed in the past. The act signified by gam in gacchatā (gacchat < ... gam-laṭ; A 3.2.124 [262]) here is also referred to the past: Devadatta's going to the village is spoken of as taking place at the time he ate. Now, eating is the main act referred to in (93), which can be an answer to the question देवदत्तेन कदा भुक्तम् (devadattena kadā bhuktam) 'When did Devadatta eat?' Accordingly, it is possible to say that, although laṭ of gam-laṭ, from which gacchat derives, is introduced if an action is referred to current time (A 3.2.123 [233]), in sentences such as (93), where a verb is connected with another and is subordinate, laṭ contextually has the time reference of the main verb. Similarly, although the suffix in -yājin of agniṣṭoma-yājin is introduced on condition that the act in question is referred to past time (A 3.2.91 [294]), in
time. Here the time reference is the same as that of janitā 'will be born'. Pāṇini accounts for such usages by providing that the affixes (pratyayāh) that are introduced under certain conditions of time reference occur also when their verbs are connected with other verbs (dhātusambandhe):

A 3.4.1: धातुसम्बन्धेप्रत्ययाः (dhātusambandhe pratyayāḥ)

Remark.

Pāṇinīyas agree that in a sentence such as (93) one action --- here eating --- is the main act and the other qualifies this. The time reference of the principal verb is followed by the subordinate verb. Details of what Pāṇinīyas say about this will be treated under A 3.4.1 in part IV.1 of my work. Commentators also note that, although A 3.4.1 is part of the large section headed by A 3.1.1 (15), so that the term pratyaya could be understood in the sūtra, Pāṇini again states pratyayāḥ explicitly in order to include in the scope of A 3.4.1 affixes that are not introduced after verbs (A 3.1.91 [66]). Thus, one can say गोमानासीत् (gomān āsīt) '... was rich in cows', with the preterital form āsīt (< as-lāni) and a form of gomat, with the taddhita suffix matup, which is introduced (A 5.2.94 [346]) under a condition of present time reference. In view of where A 3.4.1 is actually stated, I have nevertheless considered the rule here.

2.4.2.3. Compounds.

2.4.2.3.0. Introduction.

Rules of the section headed by A 2.1.3 (26) serve to derive compounds (samāsā), which are generally formed from two or more nominal padas (A 1.4.14 [49]). That an item terminating in a nominal ending (sup) combines with another such item (sahā supā) to form a compound is provided for by
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A 2.1.4: (सुप्) सह सुपा। ([sup 2] saha supā)

Four major kinds of compounds are derived by rules of the following subsections: avyayibhāva: A 2.1.5-2.1.21, tatpurusa: A 2.1.22-2.2.22, bahuvrihi: A 2.2.23-28, dvandva: A 2.2.29. The tatpurusa class includes two subtypes, called dvigu (A 2.1.52, 23) and karmadhāraya (A 1.2.42).

Compounds are also of two general types, alternating and obligatory. Alternating compounds are those which alternate with strings containing the padas from which the compounds are derived. For example, rāja-puruṣa 'king's servant' (A 2.2.8, see below) alternates with a string: The nominative singular rājapuruṣo can be substituted for rājñāḥ puruṣo in (17) (229). Both such a final string and the compound derive from a posited string rājan-as puruṣa-s (see 221). Obligatory compounds (nityasamāsa) in turn are of two kinds. First, there are compounds which do not correspond to strings of actual usage (laukika vākya) formed from the padas posited to derive the compounds. For example, corresponding to kumbha-kāra 'pot maker' (A 3.2.1, 2.2.19 [295, 315]) there is no final string *kumbhānām kārah, derived from kumbha-ām kāra-s (A 2.3.65 [240]), as there is a final string kumbhānām kartā, with a form of a derivate in trc (A 3.1.133 [248]). The agent noun -kāra is not independently used, and a posited string containing this derivate in construction with kumbha-ām serves only to derive the compound kumbha-kāra Second, though there may be a possible final string of padas corresponding exactly to the items included in a compound, if the two do not correspond semantically, the compound is obligatory. For example, khatvārūgha (lit. 'one who has climbed into bed') is derived from a string khatvā-am ārūgha-s, from which one could also derive khatvām ārūgha. The connection between such a final string and the compound is broken, however, when khatvārūgha comes to be semantically specialized, used of an intemperate person, one who does not have the patience to wait for marriage until his teacher has
properly dismissed him from his studies or who sleeps in a bed, instead of on the ground as prescribed by custom, during the time of his studies at his teacher's home.

Alternating compounds are derived according to rules headed by

A 2.1.1: विभाषा (vibhāṣa)

which provides that padas optionally (vibhāṣa: A 1.1.44 [31]) combine to form compounds. One such rule is

A 2.2.8: षष्ठी (ṣaṣṭhi)

which serves to derive tatpuruṣa compounds such as rāja-puruṣa.

This sūtra simply says that an item which ends in a sixth-triplet (ṣaṣṭhi) nominal ending (sup) combines with an item which also terminates in a nominal ending (A 2.1.4). Now consider the string

(95) भार्य राज: पुरुषो देवदत्तस्या (bhāryā rājīnāḥ puruṣo devadattasya),
derivable from

(95a) भार्यास्त् राजान्त अस्पुरुष-स्देवदत्त-अस् (bhāryā-s rājan-as puruṣa-s devadatta-as)
in which bhāryā-s 'wife' is linked to rājan-as and puruṣa-s 'man' is connected with devadatta-as. If A 2.2.8 provided simply that a pada with a sixth-triplet ending combines with an item terminating in a nominal ending, one could derive rājapuruṣa by this sūtra from rājan-as puruṣa-s of (95a). This should not be. For A 2.2.8 serves to derive compounds that alternate with corresponding strings, so that rājapuruṣaḥ and rājīnāḥ puruṣaḥ should indeed be equivalent. But rājan-as and puruṣa-s in (95a) are not connected with each other, so that such equivalence cannot hold here. In order to have compounds appropriately derived, therefore, Pāṇini states his composition rules under the heading of A 2.1.1: समर्थः पदविधि: (109), so that only such padas as are syntactically
and semantically connected (samartha) are subject to composition. Compounds are derived nominal bases (prātipadika: A 1.2.46 [48]), so that endings of constituent padas are generally deleted (A 2.4.71 [278]).

Remarks.

1. In saying compounds are generally formed from padas, I have used the qualifier 'generally' because the view common to Pāniniyas, beginning with Kātyāyana (vt. 4 on A 4.1.48: गतिकारकोपपदानां कृष्णः सह समासवचनम्), is that in the derivation of compounds whose prior members are a gati, a pada signifying a particular kāraka, or an upapada (A 2.2.18-19, 2.1.32 [308, 315]) and whose second member contains a kṛt affix, the term with this affix enters into composition before nominal endings are introduced after it. One example will show what is at issue. A 4.1.50: क्रितात्करणपूर्वत (डीष) (kṛitā karaṇapūrvaṭ [潢25]) introduces the feminine affix niṣ after krita 'bought' if this is preceded by a term denoting an instrument (karaṇapūrvā) of buying; e.g., aśvakriti 'bought with a horse'. A 4.1.50 is an exception to A 4.1.4 (271). If, now, the compound aśvakritā is formed, by A 2.1.32 (308), after all nominal endings have been introduced, the posited string from which the compound is derived will be aśva-ā kṛitā-ς, the basis for the string aśvena kṛitā, equivalent to aśvakritī (nom. sg.). Once the related padas are combined, the compound will have the shape aśvakṛitā, a term in -ā, which does not qualify then for taking niṣ by A 4.1.50. All is in order if kṛita, the mere derived nominal base with the kṛt suffix kīta, combines with āśva-ā. Other arguments given for this view (vtt. 5-8 on A 4.1.48) cannot be considered here. Nor can I take up other possible solutions to the problems at issue or whether this view of Pāniniyas —- canonized as paribhāṣā 75 of the Paribhāṣenduśekhara (गतिकारकोपपदानां)}
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कृति: सह समासवचन प्राक्षेत्रम्: 1) is justifiably attributed to Panini himself. I take up these issues in part IV.2 of my work.

2. Taking into consideration all treatises of Paniniiyas, six compound types are recognized, as follows: 1. All constituent padas are nominal (the type rāja-puruṣa); 2. All constituents are nominal, but one is a derivate with a kṛt suffix and does not contain any nominal ending (see 301); 3. The first member is a nominal pada, the second a verbal pada that is either accented (e.g., yat pari-yānti ‘when they go round’) or preceded by a gati (A 1.4.60 [55], e.g., anu-praviṣat ‘entered’); 4. The first component is a nominal pada, the second a verbal base (e.g., āyata-stū ‘one who praises for an extended time’); 5. Both members are verbal padas (e.g., aśnīta-pibatā [aśnīta pibata] ‘constant eating and drinking’); 6. The first component is a verbal pada, the second a nominal one (e.g., jahī-stamba ‘strike [jahī] the post’). Type 5 is provided for by a gaṇasūtra (Pathak-Chitr Rao 699, no. 178.60–61) which was known at least as early as Patañjali’s time (Bh. 1.235.14 [on A 1.2.64 vt. 8]). Type 6 is represented by members of the gana beginning with mayūravyaṁsaka (Pathak-Chitr Rao 698, no. 178) and provided for by a gaṇasūtra (Pathak-Chitr Rao 698, no. 178.56). Second members in compounds of type 4 are treated by Kātyāyana as containing the agentive suffix kvip (vt. 2 on A 3.2.178). Other details on this classification (for which see, e.g., ŚK on A 2.1.4, VBhs kārikā 28) cannot be discussed here. Suffice it to say that the padapātha to the Rgveda already recognizes compounds of type 3 (e.g. RV 1.115.2 विस्तन्यवे [vi-tanvate] corresponding to वि तन्यवे [vi tanvate] of the samhitāpātha) and that, so far as rules of the Aṣṭādhyāyī are concerned, compounds are described essentially in the way summarized in 300. I also leave for a subsequent part of my work a discussion of semantic classifications of compounds mentioned in the commentatorial literature.
Avayībhāva compounds are formed by rules under the heading of

A 2.1.5: अन्यपीभावः (avayībhāvah)

which provides that compounds derived by subsequent sūtras have the class name avayībhāva. Such compounds are both alternating and obligatory (see 301). Obligatory avayībhāvas are derived by rules preceding A 2.1.11. According to

A 2.1.6: अन्यपं विभक्तिसमीपसमृद्धिन्यूद्धयथाभावानात्यपात्या-
सम्प्रदत्तश्रावध्यायवस्ययात्मपुर्योगपद्य-
साक्ष्यसम्प्रदत्साक्ष्याण्तवचनेषु (avayayām
vibhaktisamipasamanrdhivyrdhhyarthabhāvā-
tyayāsampratisabdaprādurbhāvapāscād-
yathānupūrvavayayagapadāyasādṛṣyasampatti
sākalyāntavacaneṣu)

an avyaya (see 54) combines with a related pada to form an avayībhāva compound if it is used to convey the following: a. what is signified by a nominal ending (νιβάκτι: A 1.4.104 [67]); for example, adhi-stri (> adhi-stri: A 1.2.47 [459]) 'with reference to women', where adhi is used to convey the meaning of a seventh-triplet ending, as in the paraphrase striṣv
adhiṃktṛya 'with reference to women' (loc. pl. striṣu). b. proximity (samipa); e.g., upakumbham (< upakumbha-am: A 2.4.83 [307]) 'near the pot'. c. flourishing (samanrdhi); e.g.,
sumadram in सुम्रि वर्तति (sumadram vartate) 'Things are going well for the Madras.' d. lack of prosperity (vyrdhhi); e.g., duryavanam in दुर्वानि वर्तति (duryavanam vartate)
'Things are going badly for the Yavanas.' e. absence of an object (arthabhāva); e.g., nirmāśikam 'lack of flies'. f. a passing, elapsing (atyaya); e.g., atihimam in आतिहिमि वर्तति (atihimam vartate) 'The time is here when snow is past.' g.
that a moment is not proper for something (asamprati); e.g.,
अतिनिधि वर्तिते (atinidram vartate) 'The moment is not proper
for sleeping.' h. the appearance of a sound or word
(śabdaprādurbhāva); e.g., itihari '(The name) "Hari" (is wide
spread).' i. posteriority (the meaning of paścāt); e.g.,
anuratham 'after the chariot(s)'; j. a meaning of yathā; e.g.,
anurūpam 'fitting(ly)'; k. sequence, order (ānupūrya); e.g.,
anujyeśthām 'eldest first', as in अनुज्येष्ठप्रवीणस्मद्यवन्तः (anujyeśthāṁ praviṣantu bhavatāh) 'Please enter, oldest ones
first.' l. simultaneity (yaugapadaḥ); e.g., sacakram 'along with
the wheel' in सच्चरक्षिणेहि (sacakraṁ nīdehi) 'Set it down
along with the wheel.' m. similarity (sādṛṣya); e.g., sakikhi
'like a monkey' n. fulfillment, success (sammattī); e.g.,
sakṣatram 'as it should be with a Kṣatriya' o. completeness
(sākalya); e.g., satṛṇam 'down to a blade of grass', as in
satṛṇam abhivyavarhati (satṛṇam abhvīyavaharati) '... eats every-
thing, right down to a blade of grass.' p. end, terminal point
(anta); e.g., sāgni in साम्यधीते (sāgny adhīte) '... studies
through the section dealing with the fire.'

The avyaya yathā is connected with several meanings,
which the Kāśikā on A 2.1.6 gives as follows: fitness, aptness,
compatibility (yogvatā), repetition (vīpsā), similarity
(sādṛṣya), not transgressing (padārthānātivṛtti). Although A
2.1.6 alone would allow a compound to be formed containing
yathā associated with any of these meanings, this cannot be
allowed. One can indeed correctly use an avayalbhāva
yathāsakti 'within one's power, as well as one can', but there
is no such compound for yathā used as in

(96) यथा देवदत्स्थ यज्ञवतः (yathā devadattas tathā
yajñadattah) 'Yajñadatta is just like Devadatta.'

Hence, Pāṇini specifies that yathā enters into an avayalbhāva
compound only if it is used in a meaning other than similarity
(asādṛṣye).
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A 2.1.7: यथासाह्ये (yathāsādṛṣṭye)

These avyayībhāva compounds do not alternate with sequences of padas derived from strings posited to account for the compounds. For example, upakumbha is derived from upa-s kumbha-as, but upakumbham does not alternate with ṭa kumbhasya; it is equivalent to kumbhasya samjpe. Similarly, suṇaprati 'a bit of broth' and sākaprati 'a bit of vegetables' are non-alternating avyayībhāva compounds. By

A 2.1.9: सुप्रतिन्या मात्रायें (sup pratinā mātrārthe)

a nominal pada (sup) combines with a form of prati used in the meaning 'a bit' (mātrārthe) to form an avyayībhāva compound.

Alternating avyayībhāva compounds are formed by sūtras under the heading of A 2.1.11 (301). The following are examples of such rules:

A 2.1.12: अपपरिबहिरथवः पञ्चम्या (apaparibahiraṇcaḥ pañcamyā)

A 2.1.13: आँ मर्यादाधिविद्योः (āṁ maryādābhividyoh)

A 2.1.19: सम्ब्रा वंस्येना (sāṁkhyā vamsyena)

A 2.1.20: नदीभिस्सा (nadiḥś ca)

The first two sūtras concern items that are construed with nominals in fifth-triplet endings (A 2.3.10, 29 [250]). apa 'away from', pari 'round', bahis 'outside', and derivate with -ancu (apaparibahiraṇcaḥ) combine with related padas, as does āṁ used in the sense of 'boundary, included limit' (maryādābhividyoh). For example, apatrigartam 'away from the Trigarta country', paratrigartam 'round the Trigarta country', bahirgrāmam 'outside the village', prāgrāmam 'east of the village', āpāṭalipuram 'up to (and including) Pāṭalipurā' alternate with apa trigartebhyah, pari trigrtebhyaḥ, bahir grāmāt, prāg grāmāt, ā pāṭaliputrāt. Similarly, ākumāram, as in
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(97) आकुमरां पाणिनेयर्ति: (ākumāram pāṇiner yaśaḥ)

'Pāṇini's fame extends to youths.'

alternates with ตร न िमः. According to A 2.1.19, a number word (śaṅkhyā) forms a compound with a related pada denoting a descendant of a lineage (vamśyena), which can be physical or spiritual. For example, त्रिनिमिन िरकारणस्या त्रिनिमिन िरकारणस्या, both used with reference to Pāṇini, Kātyāyana, and Patañjali. By A 2.1.20, number words also (ca) form avyayībhāva compounds with names of rivers (nadiḥbhīṣ); e.g., सप्तगंगः 'the seven (rivers that make up the) Gangā', which alternates with सप्तगंगः.

The compound उन्मत्तगंगः, which refers to a place where the Gangā rages, also contains a river name, so that the rule which serves to form this,

A 2.1.21: अन्यपदार्थं च संज्ञायाम् (anyapadārthe ca samjñāyām)

is placed after A 2.1.20. According to A 2.1.21, a nominal pada combines with a river name also to form a compound that refers to something other than its constituents' meanings (anyapadārthe) and is a name (samjñāyām). Since the compound thus formed is specifically a place name, it does not alternate with a corresponding string such as unmatṭa gangā 'the raging Gangā', which is semantically different. Although the sūtra providing for the compound is stated in the section headed by A 2.1.11, then, the avyayībhāva it serves to derive is nevertheless obligatory.

Avyayībhāva compounds are assigned to the avyaya class (A 1.1.41 [54]). In general, nominal endings are deleted after an avyaya.

A 2.4.82: अन्यपदार्थस्यः (luk) (avyayād āpsupāḥ [luk 58])

provides for zero (luk) to replace a feminine affix āp or a nominal ending (āpsupāḥ) after an avyaya. For example, sāka-
prati in शाकप्रति भुज्व्वत् (śākaprati bhūṅkte) ‘... is eating a
bit of vegetables' contrasts with śākam ‘vegetable' in शाकम
भूज्व्वत् (śākam bhūṅkte). There are, in addition, special rules
concerning avyayibhāva compounds in particular. After an
avyayibhāva in -a (avyayibhāvād atāḥ: A 1.1.67, 70, 72 [90, 85,
30]), all nominal endings are not (na) dropped; instead, they are
replaced by am, except for endings of the fifth-triplet
(apāñcamyāḥ), which remain:

A 2.4.83: नान्ययीभावादतोष्मूत्त्वपुष्चम्याः
(nāvyayibhāvād ato m tv apañcamyāḥ)
E.g., upakumbham; similarly, corresponding to ā pātaliputrāt,
one has an avyayibhāva āpātaliputram, but if such a compound
is followed by a fifth-triplet ending, replacement by am does
not apply: ā upakumbhāt 'up to near the pot'. In addition,
substitution by am applies only variously (bahulam), not
obligatorily, to endings of the third and seventh triplets
(trtiyāsaptamyoḥ):

A 2.4.84: नूत्त्वयासप्तम्योर्बहुलम्
(trtiyāsaptamyor bahulam)
For example, a locative singular upakumbhe (upakumbha-ī)
alternates with upakumbham.

2.4.2.3.2. Tatpuruṣa compounds.

308 Tatpuruṣa compounds are formed by rules under the
heading of

A 2.1.22: तत्पुरुषः (tatpuruṣaḥ)
Composition rules of this section provide that padas
terminating in (A 1.1.72 [30]) nominal endings of given triplets
combine with related padas to form compounds called
tatpuruṣa. Thus, according to A 2.2.8 (301) a pada with an
ending of the sixth triplet combines with a related pada. By

[ 250 ]
A 2.1.24: द्वितीया श्रीतातीतपतितगतात्यस्तप्राप्तापन्नेः।

(oditiya śrītātītatagatātyastaprāptāpannaḥ) a pada with a second-triplet ending (oditiya) combines with a related form of śrīta 'resorted to, reached', atīta 'gone beyond', patita 'fallen', gata 'gone', atyasta 'thrown beyond', prāpta 'reached, attained', āpanna 'gotten to'; e.g., kaṣṭaśriitāḥ (= kaśtam śriitāḥ) 'one who has gone through difficulty', kāntarātītāḥ (= kāntaram atītāḥ) 'one who has gone beyond the forest', narakapatiitāḥ (= narakam patiitāḥ) 'fallen into hell', grāmagatāḥ (= grāmam gatah) 'gone to the village', taraṅgātyastāḥ (= taraṅgan atyastaḥ) 'thrown beyond the waves', sukhapraaptāḥ (= sukham prāptāḥ) 'one who has attained happiness', duḥkhapraaptāḥ (= duḥkham prāptāḥ), duḥkhāpannah (= duḥkham āpannah) 'one who has come upon unhappiness'.

A 2.1.30: तृतीया तत्क्रतार्थेन गुणवचनेः। (tritiya tatkrtaarthena gunavacane)

provides that a pada with a third-triplet ending (tritiya) forms a compound with a related pada that is a guṇavacana element (gunavacana; see 273-275) on condition that the property in question is produced by what the first pada denotes (tatkrtaarthena); e.g., kirikānāḥ (= kiriṇā kānāḥ) 'one who has been blinded in one eye by a boar'. Padas with third-triplet endings also form tatpuruṣa compounds with related forms of pūrva 'previous', sādṛśa 'similar', sama 'same', items meaning 'lacking ...' (ūnārtha), kalaha 'quarrel', nipuṇa 'adept', miśra 'mixed', ślaksna 'gentle'.

A 2.1.31: पूर्वसदर्शामोनार्थकलहनिपुणामिश्रलक्षणे। (pūrvasadṛśasamonaarthakalahanipuṇa-miśralaksṇai)

E.g., māsapūrvāḥ (= māsena pūrvāḥ) 'earlier by a month', mātrsadrśaḥ (= mātrā sadṛśaḥ) 'resembling his mother', pitṛsamaḥ (= pitṛa samaḥ) 'just like his father', kārsāpaṇonaḥ (= kārsāpanonaḥ) 'lacking one kārsāpana', vāk-kalahāḥ (= vāgbhiḥ kalahāḥ) 'quarrel with words', vāgniṇuṇaḥ (= vācā
nipuṇaḥ 'adept at speech', guḍamisraḥ (= guḍena miśraḥ) 'blended with raw sugar', ācāraśaktanā (= ācāreṇa śaktanā) 'gentle in conduct'. And by

A 2.1.32: कर्त्तृकरणे कृता बहुलम् ( kartṛkarane kṛtā bahulam)

A pada with a third-triplet ending signifying an agent or an instrument ( kartṛkarane ) variously ( bahulam ) forms a compound with a related pada from a base that ends in a kṛt affix, as in ahīhataḥ (= ahinā hataḥ) 'killed by a snake', paraśucchināḥ (= paraśunā chinnāḥ) 'cut with an axe'.

According to

A 2.1.36: चतुर्थीं तद्धार्थविलिहितसुक्खरक्षिताः ( caturthi tadarthārthabaliḥitasukharakṣitāḥ)

A pada with a fourth-triplet ending ( caturthi ) is combined with one that refers to something intended for what the first pada denotes ( tadartha ) as well as with forms of artha 'purpose', bali 'offering', hita 'beneficial', sukha 'comfortable, beneficial', rakṣita 'protected, kept'; e.g., yūpadāru (= yūpāya dāru) 'wood for a sacrificial pole', kuberabalih (= kuberāya baliḥ) 'offering to Kubera', gohitam (= gobhyo hitam) 'beneficial to cattle', gorakṣitam (= gobhyo rakṣitam) 'saved for the cattle'.

A pada with an ending of the fifth triplet ( pañcamī ) forms a tatpurūṣa compound with a form of bhaya ( bhayena):

A 2.1.37: पञ्चमी भयेना ( pañcamī bhayena)

For example: caurabhayam (= caurebhyo bhayam) 'fear of thieves'.

According to

A 2.1.40: सप्तमी शौचेभ ( saptami śaūḍaiḥ)

A pada with a seventh-triplet ending ( saptami ) enters into a compound with a pada formed from a word in the group beginning with śaūḍa 'addicted to, fond of, adept at' ( śaūḍaiḥ [ instr. pl., see 209 ]), as in aksaśaūḍaḥ (= aksēsu śaūḍaḥ) 'fond of, skilled at dice'.

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In addition to compounds of the type rājapuruṣa, formed by A 2.2.8 (301), there are tatpurusas in which a component derived from a pada with a sixth-triplet ending is the second member of the compound. Two rules will illustrate this:

A 2.2.1: पूर्वार्धाधरोत्तरमेकदेशिनैकाधिकरणे
\( \text{(pūrvāparāḍharottaram ekadesināikādhikarane)} \)

A 2.2.2: अर्ध नपुष्कम् (ardham napuṣaksam)

The first sūtra provides that a pada formed with पूर्वा 'front, fore', अपरा 'back', अधरा 'lower', उत्तरा 'upper' combines with a related pada that denotes a whole entity (ekadesinā [inst. sg.] 'which has parts'), provided the latter refers to a single thing (ekādhikarane). For example, काया in pūrvakāyaḥ (= kāyasya pūrvam) 'the front of the body' refers to a single thing, a body, part of which is referred to by pūrva. As is clear from ekadesinā of A 2.2.1, the relation between the meanings of constituent padas is that of part and whole (avayavāyavābhāvasambandha), to express which a sixth-triplet ending is introduced (A 2.3.50 [251]), so that Pāṇini need not specify in A 2.2.1 that a pada with an ending of the sixth-triplet is a constituent. By A 2.2.2, a pada containing ardha used as a neuter (napuṣaksam) --- that is, used as a noun meaning 'half' and not as a qualifier --- combines with a pada referring to a single whole thing; e.g., ardhapippalī (= ardham pippalyāḥ) 'half of a pepper'.

A 2.1.26: खट्वा क्षेपे (khaṭvā kṣepe [dvitiyā 24, ktena 25])

provides that a pada consisting of khaṭvā 'bed' and a second-triplet ending combines with a related pada from a derivate in -kta (ktena), on condition that censure is to be conveyed (kṣepe). This rule provides for an obligatory compound, as shown in 301.

The rules for deriving tatpuruṣa compounds considered up to now concern padas from nominal bases that can be followed by different endings. An avyaya such as the negative particle
naññ, included in the group which begins with svar (A 1.1.37 [54]), is not eligible to take various nominal endings; it is followed only by a first-triplet ending (A 2.3.46 [240]). However, this too forms tatpuruṣa compounds. By

A 2.2.6: नव्य (naññ)

a pada containing naññ combines with a related pada; e.g., abhrāhmaṇa (〈 nabhrāhmaṇa: A 6.3.73 [461]〉 non-Brāhmaṇa.

The pada dātra-ā (〈 dātreṇa) 'with a sickle' contains a third-triplet ending introduced to signify an instrument, and lūnavat-s (nom. sg. masc. lūnāvān) 'one who has cut something' contains a derivate lūnavat(< lū-tavat: A 8.2.44 [549]) formed with the kṛt suffix ktavatu. The conditions are thus met for dātra-ā and lūnavat-s possibly to form a compound as provided for by kartrkaraṇe kṛṭa of A 2.1.32 (308). Although it is proper to say dātreṇa lūnāvān, however, such an expression does not alternate with a compound *dātralūnāvān. Therefore, A 2.1.32 also states that, under the conditions stipulated, padas form compounds only variously (bahulam).

Now, consider again A 2.2.8 (301). This is a completely general rule, which allows any pada with a sixth-triplet ending to form a compound with any related nominal pada. For example, one could thereby derive a compound consisting of manuṣya-ām (〉 manuṣyānām) 'of men' and śūratama-s 'most heroic'. But a string manuṣyānām śūratamaḥ does not alternate with a compound. Pāṇini therefore provides that a pada with a sixth-triplet ending does not (na) form a compound with a related pada if its ending is introduced on condition that a setting apart is to be denoted (nirdhāraṇe), that is, if it is gotten by A 2.3.41 (250):

A 2.2.10: न निर्धारणे (बष्ठी) (na nirdhāraṇe [ṣaṣṭhi 8])

Similarly, according to

A 2.2.12: क्तेन च पूजायाम् (ktena ca pūjāyām)

A 2.2.13: अधिकरणवाचिना च (adhikaraṇavācinā ca)

a pada with a sixth-triplet ending does not form a compound
with a related pada that contains a derivate in -\textit{kta} (\textit{ktena}) introduced on condition that honoring is conveyed (\textit{pūjāyam}: \textit{A} 3.2.188, 2.3.67 [294, 249]) or which signifies a locus (\textit{adhikaranavācina}: \textit{A} 3.4.76, 2.3.68 [293, 249]). For the genitive forms of complexes like \textit{rājñāh sammataḥ} 'honored by the king', \textit{esāṃ bhuktam} 'the place where they eat' do not form compounds with the other nominal forms. Nor do the genitives of the following sequences enter into composition with the other padas: \textit{gavām dohaḥ} 'milking of the cows' \textit{apāṃ sraṣṭā} 'creator of the waters', \textit{vajrasya bhartā} 'bearer of the vajra' (\textit{A} 2.3.65 [240]). Accordingly,

\textit{A} 2.2.14: \textbf{कर्मणि च} (\textit{karmāṇi ca})

\textit{A} 2.2.16: \textbf{कर्तरि च (तुजकाभ्याम्)} (\textit{kartarī ca)

\textit{[trjakaḥbhyām 15]})

provide that a pada with a sixth-triplet ending signifying an object (\textit{karmāṇi}: \textit{A} 2.3.65) does not form a compound with a related pada and that this negation applies for genitives construed with padas that contain bases ending in \textit{trc} and \textit{aka} (\textit{trjakaḥbhyām}) introduced to signify an agent (\textit{kartari}).

There is a series of tatpurusa compounds formed from coreferential (\textit{samāṇādhi-karaṇa}) padas. For example, in the string \textit{nīla-s utpala-s}, from which \textit{nīlam utpalam} 'blue lotus' is derived, the qualifier \textit{nīla-s} 'blue' and the nominal \textit{utpala-s} 'lotus' refer to the same thing, a lotus qualified as being blue. The padas \textit{nīla-s utpala-s} form an alternating compound \textit{nīlotpala}. Such a compound is provided for by a general rule,

\textit{A} 2.1.57: \textbf{विशेषणं विशेष्येनं बहुलम् (समानाधिकरणेन)}

\textit{(vīśeṣaṇam vīśeṣyena bahulam)

[ samāṇādhi-karaṇena 49]}

according to which a pada denoting a qualifier (\textit{vīśeṣaṇam}) combines variously (\textit{bahulam}) with a coreferential pada (\textit{samāṇādhi-karaṇena}) denoting a qualificand (\textit{vīśeṣyena}). For the present discussion, it will suffice to consider four additional rules of this kind:
The first of these sūtras provides that padas with the following items combine with a coreferential pada: a term that refers to an earlier time (pūrvakāla), eka ‘one’, sarva ‘whole, all’, jara ‘aged’, purāna ‘old, ancient’, nava ‘new’, kevala ‘only’; e.g., snātānulipta ‘bathed and then anointed with oil’, ekanātha ‘one and only lord’, sarvadevaḥ (nom. pl.) ‘all the gods’, jaradhasit ‘aging elephant’, purāṇamlāṁśakāḥ ‘the ritual exegetes of old’, navapāṭhaka ‘new recitor’, kevalavaiyākaraṇa ‘only (a) grammarian’. By A 2.1.50, padas from terms that denote directions and from number words (dikṣaṇīkhye) combine with coreferential padas, provided the compound to be formed is a name (samjñāyām), as in pūrveṣukāmaśāmi ‘East Iṣukāmaśāmi’, the name of a village, and saptarṣaṇaḥ (nom. pl., lit. ‘the seven rṣis’), the name of Ursa major. According to A 2.1.51, direction and number words also combine with coreferential padas under the following conditions: a. A meaning is to be expressed that conditions the introduction of a taddhita affix (taddhitārtha), which then occurs with the compound; e.g., the padas pūrvā-ī sālā-ī, from which the string purvasyaṁ śālāyām ‘in the eastern house’ is derived, are combined to form the tatpurusa compound pūrvaśālā (< pūrvaśālā: A 6.3.34 [327]), which is the base of the derivate pūrvaśālā-ā (< paurvaśāla ‘located in the eastern house’), with the taddhita suffix nā (A 4.2.107 [344]). b. The two padas from which will be formed the tatpurusa compound occur before a subsequent component pada (uttarapada) of a
compound, that is, before the third member of a three-part bahuvrihi (A 2.2.24 [317]); e.g., given पूर्व-स तला-स प्रिय-; the first two padas form a tatpurusa compound पूर्व-स तला- in पूर्वातलाप्रिय, whence पूर्वातलाप्रिय (A 1.2.48 [322]) 'one to whom the eastern house is dear'. c. A conglomerate, group (समाहार) is to be signified; e.g., अष्टाध्याय (काष्टाध्याय-: A 4.1.21 [271]) 'collection of eight chapters'. A 2.1.59 lets padas from bases of the set that begins with श्रेणि 'row' combine with coreferential padas formed from terms of the type क्रत 'made' (see 204, 210).

A tatpurusa compound that is formed by A 2.1.51 (313) and has a number word as its first constituent (सामक्षयअप्रवह) is called दिगु.

A 2.1.52: सध्यापूर्ण (सामक्षयअप्रवो दिगु) As provided by

A 2.1.23: दिगु (तत्पुरश:) (दिगुङ्च [तत्पुरशः 22])
a dīgu compound also has the class name तत्पुरुष. Another subgroup of तत्पुरुष compounds is called कार्मिकारया. By

A 1.2.42: तत्पुरश: समानाधिकरण: कर्माङ्करण:
(tatpuruṣaḥ samānahikaranaḥ karmadharayāḥ)
a tatpuruṣa whose constituents are coreferential (समानाधिकरण) has this class name.

Certain obligatory tatpuruṣa compounds are provided for by sūtras in which nityam 'necessarily' is either directly stated or understood to recur. A 2.2.16 (312) disallows a compound consisting of a genitive referring to an object and agent nouns with tṛc and aka, but by

A 2.2.17: नित्यं क्रियादित्याविकयोः (nityam kṛitādīvikayoh) a genitive referring to an object obligatorily forms a compound with a pada containing an agentive derivate in -aka, if the derivate denotes a game or a means of living (kṛitādīvikayoh); e.g., uddālakapūṣpabhāñjikā 'a game in which flowers of the Uddālaka plant are torn off', dantalekhaka 'one who makes his living scraping teeth'. nityam is understood to
recur in

A 2.2.18. कुगतिप्रादयः (kugati prādayah)

A 2.2.19. उपपदमतित्रः (upapadam atīri)

These sūtras provide that padas containing ku members of the gati class (A 1.4.60-61 [55]) and the group beginning with pra (A 1.4.58) obligatorily combine with related padas, as does an upapada (A 3.1.92 [295]), provided it is not a pada with a verb ending (ati); e.g., kupuruṣa 'worthless man', ārākṣya 'having accepted', atilakṣmi 'one who has surpassed in wealth Lakṣmi, the goddess of wealth', kūmbhakāra 'pot maker' (A 3.2.1).

Remark.

316 I have cited A 2.1.11, 12 (301, 305) as separate sūtras, in accordance with the usual Pāṇiniya practice, although Patañjali's short discussion of these begins (Bh. 1.380.7) with the statement that a rule split (yogavibhāgaḥ) has to be made (kartavyaḥ), in order that vibhāsa might be a heading. Obviously, Patañjali knew of a tradition in which there was a single rule विभाषापपतिनिविधिरस्वमया. Even if one adopts this, however, vibhāsa could remain a heading to be understood in subsequent sūtras, just as ātmanepadaṁ of A 1.3.12 (138) is understood to recur in a long series of sūtras that follow. Addition details will be considered in part V.2.2 of my work.

2.4.2.3.3. Bahuvrīhi compounds.

317 A compound that is part of a remainder (sesaḥ) with respect to the compounds provided for by A 2.1.6-2.2.22 is called bahuvrīhi according to

A 2.2.23. शेषो बहुव्रीहिः (śesō bahuvrīhiḥ)

In preceding rules of composition, Pāṇini states, wherever appropriate, that padas with endings of particular triplets
combine with related padas. In effect, then, A 2.2.23 provides that the class name bahuvinī applies to a compound from padas with endings which have not been specified in preceding rules. The one triplet of nominal endings which does not come into play in such rules is the first. The constituents of bahuvinī compounds are regularly padas with first-triplet endings. Another difference between compounds considered earlier and bahuvinīs has to do with the number of constituents. In

A 2.2.24: अनेकमन्यपदार्थी (anekam anyapadārthe)

Pāṇini provides that any number of padas (anekam) can combine with related padas to form a bahuvinī. It follows that compounds derived by preceding rules do not have this liberty; they are formed from two padas each. A 2.2.24 also states a condition for forming a bahuvinī compound: that it denote something distinct from what the constituent padas signify (anyapadārthe). Given that the constituent padas generally have first-triplet endings, if we let the relative pronoun yad serve as a variable whose values will be what is denoted by a bahuvinī compound, then yad can be followed by an ending of a triplet other than the first. For example, from prāpta-s udaka-s (prāptam udakam) is derived the bahuvinī prāptodaka. This is used with reference to something that water (udaka, nom. sg. udakam) has reached (prāpta, nom. sg. nt. prāptam), as in prāptodaka grāmāḥ 'a village that the water has gotten to'. The compound thus used is paraphrased as follows: ये ग्राममुदकं प्राप्तं स प्राप्तोदकं इत्युच्यते (yam grāmam udakam prāptam sa prāptodaka ity ucyate) 'A village which water has reached is referred to as prāptodaka.' The pronoun yad here is followed by the second-triplet ending am (acc. sg. masc. yam < ... yad-am). Other examples, according to the triplet of endings that occurs with yad, are: ṛgharatha 'one by which a chariot has been drawn' (ṛgha-s ratha-s yad-ā [ṛgho ratho yena (yayā)], upahṛtapasū 'one to whom an animal has been offered' (upahṛta-s paśu-s yad-e [upahṛtaḥ

[259]
paśur yasmai (yasyai)), uddhrtaudana 'something from which rice has been lifted' (uddhrt-s odana-s yad-as [ v uddhrt-s odano yasmät (yasyāḥ )], bahuvrhi 'one who has much rice' (bahu-s vrihi-s yad-as [ v bahu vrihir yasya (yasyāḥ )]), virapurṣa 'a place where there are heroic men' (vīra-as puruṣa-as yad-i [ v virāḥ puruṣā yasmin (yasyām )]), with endings of the third through seventh triplets, respectively.

Other sūtras provide for deriving bahuvrhi compounds under more particular conditions. The following will suffice to illustrate:

A 2.2.26: दिनामान्यन्तराले (dirināmānī antarāle)
A 2.2.28: तेन सहेति तुल्ययोगे (tena saheti tulyayoge)

According to the first rule, names of directions (dirināmānī) combine to form a compound that refers to the intermediate direction (antarāle); e.g., daksinapūrvā (dik) 'south east' refers to the direction that is intermediate between the south (daksināvā disāḥ) and the east (pūrvasyās ca disāḥ). A 2.2.28 provides that a form of saha 'with' combines with a pada that contains a third-triplet ending (tena), if a like relation (tulyayoge) is involved between two participants and an act; e.g., saha-s and putra-ā (saha putreṇa 'with his son'. A 2.3.19 [250]) combine to form sahaputra, as in sahaputra āgatah; came with his son': The father and his son have the same relation to the act of coming to a place, although only the father is spoken of as the principal participant in this act.

2.4.2.3.4. Dvandva compounds.

An unrestricted number of paddas may combine to form a compound called dvandva under the condition that part of the derivate's signification is a meaning of ca 'and' (cārthe):

A 2.2.29: चार्थे बन्धः (अनेकम) (cārthe dvandvah [anekam 24])

For example: śiṣṭoṣṇa ‘hot and cold’, vāktvaca ‘voice and skin’,
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plakṣanyagrodha ‘Plakṣa and Nyagrodha trees’.

2.4.2.3.5. Upasarjanas and the order of constituents.

Certain terms in rules of composition appear in the nominative, that is, in first-triplet forms. According to

A 1.2.43: प्रथमानिर्दिष्टं समास उपसर्जनम् (prathamā-nirdiṣṭam samāsa upasarjanam)

whatever is referred to by such a nominative (prathamā-nirdiṣṭam) in a composition rule (samāse) is called upasarjana. Classification of elements as upasarjanas is meant in the first instance for establishing an order among constituents of compounds. By

A 2.2.30: उपसर्जनम्पूर्वम् (upsarjanam pūrvam)
an upasarjana is the prior (pūrvam) constituent in a compound. For example, A 2.2.8 (301) contains the nominative singular form śaṣṭhi. According to A 1.2.43, a pada with a sixth-triplet ending, then, is classed as upasarjana, so that it is the first constituent of a compound such as rājapuruṣa, derived by A 2.2.8. Similarly, dvitiyā, tṛtiyā, caturthi, pañcamī, saptamī in A 2.1.24, 30-32, 36, 37, 40 (308) refer to padas that are classed as upasarjanas and occur as first constituents of compounds.

On the other hand, certain padas which belong to the upasarjana class by A 1.2.43 are second constituents in particular compounds. For example, the tatpuruṣa rājadantah ‘front tooth’ is derived, by A 2.2.8, from a string danta-ām rājan-s (> dantānām rājā, lit. ‘king of the teeth’). According to A 2.2.30, one would derive *dantarāja instead of rājadanta. To account for compounds of this sort, Pāṇini lists them in a gana, beginning with rājadanta, and provides that in these derivatives (rājadantādiṣu) an upasarjana occurs as a subsequent constituent (param):

A 2.2.31: राजदन्तादिषु परम् (rājadantādiṣu param)
Special provision has to be made for the order of constituents in bahuvrīhi and dvandva compounds (317-318), since any constituent pada referred to by the nominative anekam is an upasarjana, hence eligible for being a prior constituent by A 2.2.30. According to

A 2.2.32: द्वन्द्वे धि (पूर्वम्) (dvandve ghi [pūrvaṃ 30])
A 2.2.33: अञ्जायदन्तम् (añjāyadantam)
A 2.2.34: अल्पाच्छतरम् (alpāctaram)

Padas of the following kinds are prior constituents in a dvandva compound: one formed from a base of the ghi class (A 1.4.7 [57]), from a base that begins with a vowel and ends in short a (añjāyadantam), and one with less syllables (alpāctaram) than another constituent; e.g., paṭugupta 'clever (paṭu) and secret', ustrakha 'camel (uṣṭra ) and ass', plakṣa- nyagrodha 'plakṣa and nyagrodha trees'. By

A 2.2.35: सप्तमीविशेषणे नहुब्रीहा (saptamīviśeṣane bahuvrīhau)
A 2.2.36: निष्ठा (niṣṭhā)

A pada with a seventh-triplet ending and one that signifies a qualifier (saptamīviśeṣane), as well as one formed from a base with a niṣṭhā suffix (A 1.1.26 [66]) are prior constituents in bahuvrīhi compounds; e.g., kanthekāla 'Śiva, on whose throat there is black' (= kanthe [sthitah] kālo yasya), citrāgū 'one who has spotted cows' (citrāgūḥ = citrā gāvo yasya), krtakāta 'someone by whom a mat has been made' (krtakātaḥ = krtah kato yena). There are also certain bahuvrīhs with constituents such as āhita 'set up', hata 'killed' that have varying orders of elements. For example, one can have āhitāgni 'one who has set up a sacrificial fire' or agnyāhita, hataputra 'one whose son has been killed' or putrahata. Such compounds are illustrated in a gaṇa beginning with āhitāgni, traditionally considered a type listing (ākṛtīgana: 204).

A 2.2.37: वाहिताम्याविद्यु (vāhitāmyādīṣu)
provides that a pada formed from a base with a niṣṭhā suffix optionally (vā) is a prior constituent in such compounds (āhitāṇyādiṣu).

viśesānam of A 2.1.57 (313) refers to padas classed as upasarjana by A 1.2.43 (319), hence eligible for being the first constituents of karmadhāraya compounds (A 1.2.42 [314]), as in nilotpala. There are, however, some compounds of this type with variable order; for example, one can have both kadārapuraśa and puruṣakadāra 'tawny man'. Qualifiers that are constituents in such compounds are given in a gana whose first member is kadāra 'tawny'. According to

A 2.2.38: कहारा: कर्मधारये (kahāraḥ karmadhāraye)

members of this group optionally occur as first constituents in a karmadhāraya compound.

A 1.2.44: एकविभक्तिः चापूर्विनिपाते (समास उपसर्जनम्)

(ekavibhakti caṇḍāvanipāte [samāsa upasarjanam 43])

provides that a pada which is eligible to take only one triplet of endings (ekavibhakti) for purposes of deriving a compound also (ca) is assigned the class name upasarjana, except with respect to its being placed in prior position (apūrvāvanipāte).

Classification as an upasarjana thus has a purpose other than accounting for the proper arrangement of constituents in compounds. For example, according to

A 1.2.48: गोस्त्रियोरुपसर्जनस्य (हरस्वः) (gostriyōr

upasarjanasya [hrasvā 47])

the vowel of go 'cow, bull' occurring as an upasarjana and the final vowel of an upasarjana that ends in feminine affix (stri) are replaced by a short vowel (hrasvā). Thereby, the -o in citrago is replaced by the short vowel -u, and the -i of niṣkauśāmbi, formed by A 2.2.18 (315), is replaced by -ī: citragu 'one who has spotted cows', niṣkauśāmbi 'one who has departed from Kauśāmbi'. The latter is an obligatory compound derived from a string in which kauśāmbi can have only an
ending of the fifth triplet (nis-s kauśāmbi-as), so that the
pada kauśāmbi-as is classed as upasarjana according to A
1.2.44.

2.4.2.3.6. Deletion and retention of endings in
compounds.

Compounds are nominal bases (prātipadika: A 1.2.46 [48]).
In general, then, endings of constituent padas are deleted,
according to A 2.4.71 (278, 301). There are particular com-
ounds, however, in which endings of some constituents are not
dropped. Sūtras under the heading of

A 6.3.1: अलुगुत्तरपदेः (alug uttarapade)
provide for not deleting (aluk 'absence of zero') nominal en-
dings of padas in compounds, before a following constituent
(uttarapade) under given conditions. For example, by A 2.1.36
(308), ātman-e 'for oneself' combines, as the first member (A
1.2.43, 2.2.30 [319]) of a tatpurusa compound, with pada-s
'word, term': ātman-e-pada-s. The ending of the second
constituent is deleted, but not that of the first component, in
the derivate ātmanepada used as a grammatical term;
similarly, one has parasmaipada, in which parasmai (< para-e)
retains its ending. Accordingly,

A 6.3.7: वैयाकरणारुपायाच्छन्नतयाः (आत्मनः:)
(vaiyākaranārūpa-āchāntaḥ [ātmanah 6])

A 6.3.8: परस्य चा (parasya ca)
provide that a fourth-triplet ending is not deleted (catur-
thyāḥ [aluk]) if it is used with the first constituents ātman
(ātmanah) and para (parasya) in a derivate which is a tech-
nical term used by grammarians (vaiyākaranārūpāyaṁ). By

A 6.3.12: अमुर्धमस्तकात्स्वाभावादकामे (सप्तम्यः:)
(amūrdhamastakāt śvāṅgād akāme [saptamyah 9])
an ending of the seventh triplet (saptamyah) is retained after
a term denoting a body part (svāṅgāt) other than mūrdhan,
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mastaka 'head', before any constituent except kāma 'love' (akāme). For example, the bahuvrihi (A 2.2.23 [317]) kāṁthe-kāla (A 2.2.35 [320]) has a constituent kāṁthe'throat' in which a seventh-triplet ending has been retained: kāṁthe < kāṁtha-i; but the first constituent of mūrdhāsikha 'one on whose head there is only a tuft of hair (a Brāhmaṇa) lacks an ending. A seventh-triplet ending is optionally (vibhāṣā) retained after a term other than a time word (akālāt) before the constituents saya 'one who reclines, lies' vāsa 'dwelling', vāsin 'one who dwells' (sayavāsavāsiṣu):

A 6.3.16: शयवासवासिष्वकालात् (विभाषा सप्तम्यः)

(śayavāsavāsiṣv akālāt [vibhāṣā 16, saptamyaḥ 9])

E.g., kheṣaya / khaṣaya 'one who lies in heaven' (A 3.2.15, 2.2.19 [295, 315]).

A 6.3.21: षष्ठया आक्रोशः (saṣṭhyā ākrośo)

A 6.3.22: पुत्रेण्यतारस्याः (putreṇyatarasyām)

concern sixth-triplet endings in first constituents of compounds (A 2.2.8 [301]) used to convey abuse (ākrośe). An ending is generally retained, but only optionally, (anyatara-syām) if the second constituent is putra 'son' (putre); e.g., caurasyakula 'crook's family', dāsyāḥputra / dāsīputra 'son of a slave woman':

2.4.2.3.7. Special number rules for compounds.

There are instances where A 1.4.21-22 (234) cannot apply straightforwardly to regulate the choice of nominal affixes. For some compounds, although their meanings are such as would allow the use of bahuvacana affixes, are used with ekavacana endings. For example, the dvīgu compound (A 2.1.51-52 [313-314]) pañcapūḷī refers to five bundles (pañca pūḷāḥ) that form a group (samāḥṛtāḥ), but one says pañcapūḷī (nom. sg. < pañcapūḷī-ś), using a singular form. Accordingly, in

[ 265 ]
A 2.4.1: द्विगुरेकवचनम् (dvigu ekavacanam)

Pāṇini provides that a dvigu compound has singular value (ekavacanam). That is, a derivate of the type pāñcapūrī is treated as denoting a single entity, so that it takes ekavacana endings by A 1.4.22.

Similar provisions have to be made for particular dvandva compounds (A 2.2.29 [318]). Consider, for example, the following derivates: pāṇipādam 'hands and feet', mārdaṅgikapāṇavikām 'mṛdaṅga and pāṇa players', rathikāśvāroham 'charioteers and cavalry'; ārāśastri 'awl and knife'; ahi-nakulam 'snake and mongoose'. As is evident from the forms cited (nom.-acc. sg.), the compounds pāṇipāda and so on take ekavacana endings, although their meanings are not singular. Accordingly,

A 2.4.2: द्वन्द्रस्व प्राणितूर्य्यसेनाधकानाम् (dvandvaś ca prāṇitūryyasenāngānām)

A 2.4.6: जातिरप्राणिनाम् (jātir aprāṇinām)

A 2.4.9: येषालच्च विरोधः शास्त्वतिकः (yesāni ca virodhah śāśvatikāḥ)

let a dvandva also (dvandvaś ca ) have singular value, if its constituents have particular meanings, as follows: a. parts of living beings, of a musical group or of an army (prāṇitūryyasenāngānām); b. a general class (jātih) of inanimate things (aprāṇinām); c. things between which there is perennial (śāśvatikāḥ) conflict (virodhaḥ). According to

A 2.4.10: शुद्रानामनिरवसितानाम् (śudrānām anirvasitānām)

a dvandva whose components denote Śūdras that are not excluded (anirvasitānām) is singular; e.g., takṣayaskāram 'carpenter and smithy' (see 840). And by

A 2.4.13: विप्रतिश्चध्वन्यानधिकरणवाचि (विभाषा) (vipratis śiddhaś nadhikaraṇavāci [vibhāṣa 12])

a dvandva is optionally singular also if each of its constituents
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denotes a meaning that is the contrary of the other component's meaning (vīpratiśiddham), but does not refer to a substance (anadhikaraṇavāci); for example, śītoṣṇa used with reference to the opposed qualities cold and hot is optionally singular (śītoṣṇam/śītoṣṇe), but used with reference to cold and hot water (udake [nom.-acc. du.]) it is not (śītoṣṇe).

2.4.2.3.8. Gender rules for compounds.

Bahuviṣṭhi compounds such as pṛāptodaka, udbhṛtaudana (A 2.2.24 [317]) have referents distinct from those of their constituent padas, and their genders vary according to the genders connected with the referents in question. For example, pṛāptodaka used as a modifier of grāma in speaking of a village that water has gotten to is masculine (pṛāptodaka grāmaḥ), but udbhṛtaudana linked with sthāli 'pot' in speaking of a pot from which rice has been taken is feminine (udbhṛtaudanā sthāli). Other compounds require special rules stating their genders. For such derivates include two or more bases, each of which is associated with its own gender. Nor can Pāñini allow the genders of such compounds to be determined by which constituent's meaning is the chief one, since he does not class these derivates according to such semantic criteria. Moreover, using such criteria, one would have to let dvandva compounds formed from constituents with different genders have variable genders, which is not the case. Consequently, Pāñini formulates special rules for the genders of dvandva, tatpurusa, and avyayābhāva compounds. By

A 2.4.26: परवलिकम्बन्धत्रत्परुषोऽ (paraval liṅgaṇa dvandvatatpuruṣayoh)

the gender (liṅgaṇa) of a dvandva or a tatpuruṣa compound is that of the subsequent constituent (paravat 'like that of the following'). For example, the dvandvas (A 2.2.29 [318]) mayūrīkukkuṭa (masc.) 'pea hen and cock', kukkuṭamayūrī (fem.) 'cock and pea hen' have the genders of kukkuṭa and mayūrī,
respectively. The tatpurūṣas rājapuruṣa (masc.) 'king's servant', rājabhāryā (fem.) 'king's wife' (A 2.2.8 [301]), ardhapippalī (fem.) 'half a pepper' (A 2.2.2 [309]) have the genders of puruṣa, bhāryā, and pippali.

A dvīgu or dvandva which is singular by rules such as those in 324–325 is neuter (napūṃsakam), as is also an avyayibhāva compound:

A 2.4.17: स नपूंसकम् (sa napūṃsakam [see 329])

A 2.4.18: अन्ययीभावन्या (avyayibhāvaś ca)

Thus, pānipāda, ārāśastri, etc. are neuter, as is adhistri (A 2.1.6 [304]).

There are, of course, exceptions to these general rules. One example will serve to illustrate. By A 2.4.26, a dvandva whose second constituent is vādava 'mare' would be feminine, but aśvavadava is masculine (e.g., nom-acc. du. aśvavadavau). Accordingly,

A 2.4.27: पूर्ववद्ववहवौ (pūrvavad aśvavadavau)

provides that the gender of this compound is that of its first component (pūrvavat).

A bahuvrihi (A 2.2.24 [317]) darśanīyabhārya 'one whose wife is beautiful' derives from a sequence darśanīyā-s bhāryā-s. The last -ā of darśanīyā-bhāryā gotten by dropping the endings is replaced by -a (A 1.2.48 [322]). A special provision has to be made in order let the first constituent of the compound be darśanīya- instead of darśanīyā- (A 4.1.4 [271]). Similarly, rūpavadbhārya 'one whose wife is beautiful' has rūpad- (< rūpavat-), not rūpavati- (A 4.1.6), as in rūpavatī bhāryā. Therefore,

A 6.3.34: स्त्रिया: पुनःवृद्धाधितपुनःकादनूढः समानाधिकरणे रिन्यामपूरणीप्रियावितः (striyāḥ purvad bhāṣitapurūṃskārd anūrī samānādhikaraṇe striyāṃ apūranipriyādīṣu)

provides that a feminine item (striyāḥ) is treated as
masculine (puṇiṣva), that is, has the form of the masculine from the same base, under the following conditions: the item is such that, in the same base meaning; it has a masculine counterpart (bhāṣitapumāskā); it does not end in ūrī (A 4.1.66); it is followed by a coreferential (saṃāṇādhikarane) feminine item (straṣyām) which is neither part of the group beginning with priyā 'dear' nor contains an ordinal suffix (aprūraṇī-priyādiṣu). Under the conditions given for a first constituent in A 6.3.34, the same provision is made for a first constituent in a karmadhāraya compound (A 1.2.42 [314]), although the exceptions concerning the second constituent do not hold, and the extension of masculine form is provided for also before the suffixes jātiya, deśiya:

A 6.3.42: पुन्तकर्मधारयज्ञातीयदेशीयेषु (puṇiṣva
karmadhārayajātiyadeśīyesu)
For example, a karmadhāraya referring to a woman who is great (mahāt) and dear (priyā) is mahāpriyā (< mahat-priyā: A 6.3.46 [463]).

Remarks.

328 1. Pāṇini has to make provisions for the genders of bases derived by grammatical rules (326), not for genders associated with primitive bases. On the contrary, as is evident from sūtras like A 2.4.26, he assumes these to be known. The gender (liṅgam) of an undervived base does not have to be taught (aṣiṣyaṃ) in the grammar, since this is based on usage (lokāśrayatvāt: लिङ्गमशिर्ष्यं लोकाश्रयत्वालिङ्गश्च [Bhāṣya 1.390.18-19 and elsewhere]).

329 2. I have described the intent of A 2.4.17 (326), in accordance with the interpretation of most Pāṇiniyas, who take sa 'that' of the sūtra to refer not only to a dvandva but also to a dvīgu compound. On the other hand, in A 2.4.30 vt. 2 (द्विगृष्ण), it is proposed that one must provide explicitly for
dvigu compounds to be neuter, which implies that *sa* of A 2.4.17 is considered to refer only to a dvandva compound. Details of this issue will be considered in part V.2.2.

2.4.2.4. Taddhita affixes.

2.4.2.4.0. Introduction.

Taddhita affixes are introduced by sūtras of the section beginning with A 4.1.76 (70). They occur with nominal bases (*prātipadika*: A 1.2.45–46 [48]) and padas (A 1.4.14 [49]), verbal as well as nominal, although predominantly after the latter. Derivates formed with taddhitas are also of two kinds, as are compounds (301), according to whether the affix in question is obligatory or not. All such derivates are derived nominal bases (A 1.2.46), so that endings included in the padas to which they are introduced are deleted (A 2.4.71 [278]).

2.4.2.4.1. Affixes introduced optionally.

There is a series of taddhita suffixes which are introduced, by rules of the section beginning with A 4.1.82 (111), after padas that are syntactically and semantically related (*samartha*) with other padas. Given a pair of related padas $P_1 P_2$, a taddhita $T$ is introduced after $P_1$ to form a derived nominal base $P_1-T$ equivalent to and alternating with $P_1 P_2$. For example, from the padas *upagu-as apatyā-s* one can derive a syntactic string *upagor apatyam* 'descendant of Upagu'. In addition, the pada *upagu-as*, with a relational genitive ending (A 2.3.50 [251]), can be followed by the taddhita suffix $ap(A 4.1.83 [335])$ to form the derivate *upagu-as-a*. Since this is a derived nominal base, the ending *as* is dropped: *upagu-a > upago-a* (A 6.4.146 [504]) $> aupago-a$ (A 7.2.117 [479]) $> aupagava$ (A 6.1.78 [524]) 'descendant of Upagu'. A form of this derivate alternates with an equivalent string made up of two...
padas, one of which consists of upagu and a sixth-triplet ending and the other is a form of apatya ‘offspring, descendant’ or a synonymous term; e.g., aupagavaḥ = upagor apatyaṃ.

The sūtra that serves to form aupagava and comparable derivates is

A 4.1.92: तस्यापत्यम् (tasyāpatyam)

This consists of two padas: tasya, genitive singular of tad ‘that’ used as a variable, and apatyaṃ (nom. sg. nt.). In accordance with A 4.1.82, a taddhita affix is introduced optionally (vā) after the first (prathamāt) pada in question, namely one that is a value of tasya and is related to a term meaning ‘offspring, descendant’. The resulting derivate is equivalent to and alternates with a string of the type tasyāpatyam.

A pada P₁ involved in such derivation may also be characterized by the shape of the pada’s nominal base. For example, given P₁P₂ in which the first pada consists of a nominal base ending in short a (at: A 1.1.70 [85]) followed by a sixth-triplet ending and the second contains a base meaning ‘offspring’, the affix in follows P₁. This procedure accounts for a derivate such as dākṣi ‘son of Dakṣa’: dakṣa-as-i > dakṣa-i (A 2.4.71 [278]) > dakṣ-i (A 6.4.148 [504]) > dākṣi (A 7.2.117 [479]); dākṣiḥ = dakṣasya putraḥ ‘son of Dakṣa’.

Obviously, dakṣasya putraḥ conforms to the schema given in A 4.1.92 as much as upagor apatyaṃ does. The difference between aupagava and dākṣi is that the former is accounted for by a general affixation (A 4.1.83) but the latter takes an affix that forms a derivate meaning specifically ‘offspring of’ and follows padas whose nominal bases end in -a. The rule which introduces in to form such a derivate is

A 4.1.95: अत इन् (ata in)

The ablative atāḥ is construed, as a qualifier, with prātipadikāt of the major heading A 4.1.1 (105); it refers to a
nominal base which ends in \(-a\) (A 1.1.72 [30]). Thus, together with A 4.1.92 and the headings A 4.1.1, 82, the sūtra A 4.1.95 is understood to provide that a pada which is a value of \(tasya\) takes the suffix \(i\) to form a derivate meaning 'offspring of ...' if its base ends in \(-a\).

The nominal base of a \(P_1\) to be followed by a taddhita affix can also be characterized semantically. Given related padas \(P_1, P_2\) such that the first contains a first-triplet ending and the second has an ending of the sixth triplet (\(asya\)), an affix appropriate to the phonological shape of the base in \(P_1\) follows this pada if the base denotes a divinity (\(devatā\)). This is provided for in

A 4.2.24: सास्य देवता (sāsyā devatā)
The pada subject to receiving an affix is a value of \(sā\) ([nom. sg. fem.] \(<\ldots tād-s\ldots>\), coreferential with \(devatā\). This rule serves to account for a derivate like \(aindra\), as in \(aindramaḥ \) 'oblation dedicated to \(Indra\)': \(indra-s-a\) (affix \(ap\): A 4.1.83 [335]) > \(indra-a\) > \(\ldots aindra\).

The second term of a string such as \(tasyāpattyām\) (A 4.1.92 [331]) denotes the meaning that characterizes a derivate and is incorporated as part of its meaning. This is the affix's meaning (\(pratyayārtha\)). One aspect of this affixal meaning can be that what the derivate signifies is an object of an action (\(karman\): e.g., A 1.4.49 [214]). For example, according to

A 4.2.1: तेन रक्तं रागात् (tena raktam rāgāt)
\(ap\) (A 4.1.83 [335]) follows a pada which is a value of \(tena\), that is, one with a third-triplet ending, on condition that the base of this term denotes a coloring agent (\(rāgāt\)), to form a derivate which signifies something that has been colored (\(raktam\)). The term \(raktam\), which specifies the affixal meaning, denotes an object of coloring (\(kta\): A 3.4.70 [248, 289]; e.g., \(kaśāya-ā-a\) > \(kaśāya-a\) > \(kaśāya\), as in \(kaśāyan ≡ kaśāyenā raktam vastram ≡ a garment dyed with kaśāya\).
The sūtras which introduce a taddhita affix after a pada $P_1$ of related padas are basically arranged in the following way. Meanings that serve as conditions for introducing the affixes are domains for certain general affixes. Under such meaning conditions, other affixes can be introduced instead of the ones provided for in general, after padas that have particular characteristics. Thus, according to

A 4.1.83: प्रामधि्वतोषण् (prāg divyatoṇ)

$ap$ is the general affix introduced after a $P_1$ under all the meaning conditions given in subsequent sūtras up to (prāk 'before') A 4.4.2: tana divyati ... (339). Under the same conditions, given in the same section of the Asṭādhyaśyā,1

A 4.1.85: दित्यदित्याबित्यप्तवत्तपदाद्याप्तत्त (dityadityādityapatyuttarapadāṇ nyāḥ)

provides that $nyā$ follows a pada which contains a base $diti$ 'Diti', $aditi$ 'Aditi', āditya 'sun', or a compound whose second constituent is $pāti$ 'master, husband'; and according to

A 4.1.86: उत्सादिभ्योषण् (utsādibhyoṇ)

$an$ is introduced after padas formed with bases of the group beginning with $utsa$ 'water spring'.

Sūtras that give meaning conditions under which such affixes are allowed to occur are also headings valid for certain subsections, within which are also given particular affixes that occur when the base of a $P_1$ is specifically characterized by some semantic, grammatical, or phonological feature. For example, A 4.1.92 (331) heads a set of rules for forming taddhita derivates corresponding to a sequence $P_1P_2$ meaning 'offspring of ...'. The general taddhita for such derivates is $ap$, by A 4.1.83, as in aupagava, but if the base of $P_1$ is one of those given in A 4.1.85, one forms a derivate with $nya$; e.g., āditya 'descendant of Diti', pṛajāpatya 'descended from Prajāpati'. In addition, if the base of $P_1$ ends with $-a$, the affix introduced is $in$ (A 4.1.95 [332]). However, $ap$ is
introduced if the base of $P_i$ is a member of the group that begins with $\text{śiva}$ ($\text{śivādibhyah}$), as in $\text{śaiva}$:

A 4.1.112: शिवादिभ्योषणी ($\text{śivādibhyoṣṇī}$)

On the other hand, if the base in $-a$ is one of the specific subset listed as beginning with $\text{tika}$, then the taddhita introduced is $\text{phifi}$ ($\text{āyānī}$: A 7.1.2 [509]), as in $\text{tākāyānī}$:

A 4.1.154: तिकादिभ्य: $\text{fiṇī}$ ($\text{tikādibhyah \ phifi}$)

In addition, as provided for by

A 4.1.168: जनपदशब्दाक्षरस्त्रयायावली ($\text{janapadaśabdāt}$ $\text{kṣatriyād aṇī}$)

$aṇī$ follows a $P_i$ whose base is the name of an area, a district ($\text{janapadaśabdāt}$), used with reference to a $\text{Kṣatriya}$ ($\text{kṣatriyāt}$); e.g., $\text{pāṇcāla}$ ‘offspring of a Paṇcāla Kṣatriya’. Further, if the offspring in question is a gotra descendant (A 4.1.162 [78]), by

A 4.1.99: नादादिभ्य: $\text{phak}$ ($\text{gotre 98}$)

A 4.1.105: गर्गादिभ्यो यण् ($\text{gargādibhyo yaṇī}$)

$\text{phak}$ and $\text{yaṇī}$ respectively follow $P_i$’s whose bases belong to the groups beginning with $\text{nāḍa}$ and $\text{garga}$ ($\text{nāḍādibhyah}$, $\text{gargādibhyah}$). Moreover, according to

A 4.1.101: यणिनोख्या ($\text{yaṇiṇoṣ ca}$)

$\text{phak}$ also occurs with a $P_i$ whose base contains $\text{yaṇī}$ or $\text{īṇī}$. For example, $\text{nāḍī}$ and $\text{gārgī}$ refer to immediate offsprings of Nāḍa and Garga, but $\text{nāḍāyana}$, $\text{gārgya}$ --- with $\text{phak}$ and $\text{yaṇī}$ --- refer to gotra descendants, and $\text{gārgāyana}$ refers to a yuvana descendant (78) in the lineage of Garga.

The following sūtras also serve to form derivate with the meaning ‘descendant of …’:

A 4.1.104: अनृप्यान्तर्य विदादिभ्योषणी ($\text{anṛṣyaānantarī ye vidādibhyoṣṇī}$)

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The first rule introduces the suffix an after padas containing bases of the group that begins with *vīda* (*vidādibhyāḥ*). The affix serves to form derivates that denote gotra descendants, if the base in question refers to a ṛṣi; e.g., *vaidya*. However, the list in question also contains terms that refer to people who are not ṛṣis. These bases enter into derivates that denote immediate descendants; e.g., *pauruṣa ‘son’s child’, daughōtra ‘daughter’s child’. If, on the other hand, a pada *P₁* contains *svasr ‘sister’, then, according to A 4.1.143, the affix *cha* (→ *lya*: A 7.1.2 [509]) is introduced, and by A 4.1.144, both this suffix and *vyāta* alternately follow a pada with *bhrātr ‘brother’*; *svasriya ‘sister’s child’, *bhrātrīya / bhrātrīya ‘brother’s child’*.

A 4.2.24 (333) does not specify an affix to be introduced; except as otherwise provided for, the general affix *an* occurs, by A 4.1.83 (335). But if the base of *P₁* is *soma*, the taddhita allowed to occur is *tyān*, and *ghak* (→ *eya*: A 7.1.2 [509]) is introduced if the base is *agni*, as in *saumya ‘dedicated to Soma’, āgniya ‘dedicated to Agni’*.

A 4.2.30: *somātyān* (somātyān)

A 4.2.33: *agneryā* (agneryā)

Under the conditions given in A 4.2.1 (334), the general affix *an* is introduced, but *ṭhak* (→ *ika*: A 7.3.50 [509]) follows a *P₁* whose base is *lākṣā ‘lac’ or roca (a certain pigment), as in *lākṣika ‘dyed with lac’*:

A 4.2.2: *lakṣārocanat ṭhak* (lakṣārocanat ṭhak)

Another sūtra of the section headed by A 4.1.83 (335) is

A 4.2.59: *tadvēde* (tadvēde)

which introduces an affix after a *P₁* containing a second-triplet ending, to form a derived base meaning ‘studies (ādhiṭe)’ X
(tad'), 'knows (veda) X'. Derivates such as vaiyākarana (vyākarana-am-a) 'one who studies or knows grammar, a grammarian', naimitta (nimitta-as-a) 'one who knows omens' are formed with ap. If, however, the base of P₁ is one of the set beginning with krama, the affix introduced under the conditions given is vun (aka: A 7.1.1 [509]):

A 4.2.61: क्रमाविभ्यो चुना (kramādibhyo vun)

E.g., kramaka 'one who studies or knows the krama text of a Veda'.

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A 4.4.1: प्राम्वहतेष्ठकः (prāg vahates thak)
A 4.4.75: प्राम्ब्हितायतत् (prāg ghitād yat)
A 5.1.1: पाक क्रिताच्छ: (prāk krlāc chaḥ)
A 5.1.18: प्राम्ब्वतेष्ठनः (prāg vates thañ)

are sūtras of the same kind as A 4.1.83 (335), providing for the occurrence of general affixes under conditions stated in rules of given sections, as follows: thak: up to A 4.4.76 (...vahat... [340]), yat: up to A 5.1.5 (... hitam [341]), cha (iya: A 7.1.2 [509]): up to A 5.1.37 (... kritam [342]), thaṅ (ika, ka: A 7.3.50-51 [509]: up to A 5.1.115 (... vatih [347]).

The following are examples of sūtras of the section beginning with A 4.4.1:

A 4.4.2: तेन दीन्यति खनित जयति जितम् (tena divyati khanati jayati jitam)
A 4.4.3: संस्कृतम् (samskṛtam)
A 4.4.5: तरति (tarati)
A 4.4.7: नौद्व्याच्छ ठान् (naudvyaça ṣthan)
A 4.4.12: वेतनाविभ्यो जीवति (vetanādibhyo jīvati)
A 4.4.14: आयुधाच्छ च (āyudhāc cha ca)
A 4.4.51: तद्वस्त्य पण्यम् (tad asya panyam)

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A 4.4.52: लवणात् ठान (lavāṇāt thaṅ)

The first six of these introduce an affix after a P₁, which is a value of tena, that is, after a pada with a third-triplet ending, to form derivates meaning 'gambles (divyati) with X', 'digs (khanati) with X', 'conquers (jayati) with X', 'conquered (jitam) with X', 'prepared (saṁskṛtam) with X', 'crosses (tarati) by means of X', 'lives (jivati) by means of X'; e.g., āksika'one who plays with dice' (aṅkṣair divyati), ābhrika'one who digs with a spade' (abhṛyā khanati), āksika'one who beats someone else at dice' (aṅkṣair jayati), 'won with dice' (aṅkṣair jitam), dādhika'prepared with yogurt, curds' (dadhāna saṁskṛtam), audupika'one who crosses water in a raft' (udupena tarati). A 4.4.7 provides that thaṅ occurs, instead of thaṅ, to form a derivate under the condition given in A 4.4.5. If the base of P₁ is nau 'boat' or a dissyllabic term (naudhyacaḥ); e.g., nāvika'one who crosses by boat' (nāvā tarati), bāṅuka'one who crosses, swims across by means of his arms' (bāṅhubhyāṁ tarati). The first vowel of a derivate with thaṅ is high-pitched, but the first vowel of the affix thaṅ is so accented (A 6.1.197, 3.1.3 [600, 592]). A 4.4.12 specifies that an affix follows a pada whose base is one of those in the group beginning with vetana'salary' (vetanādibhyāḥ); e.g., vaitanika 'one who lives on a salary' (vetanena jivati). A 4.4.14 lets not only the suffix thaṅ, provided for by A 4.4.1, but also cha (cha ca) follow a pada formed with the base āyudha'weapon', as in āyudhika āayudhiya 'one who lives by his weapon' (āyudhena jivati).

The last two sūtras introduce affixes after a P₁ that has a first-triplet ending (tad) to form derivates meaning 'X (tad) pertains to Y (asya)', on condition that the base of P₁ denotes something that Y has for sale (panyam). A 4.4.51 does not specify a particular affix, so that thaṅ applies, by A 4.4.1, but A 4.4.52 specifies that thaṅ follows a P₁ whose base is lavaṇa'salt' (lavāṇāt). For example, āpūpika'one who sells
apūpas (a kind of cake) has *thak*, but *lāvanika* 'one who sells salt' has *thaṅ*. The first vowel of a derivate with *thaṅ* is high-pitched (A 6.1.197 [600]).

**A 4.4.76: तद्वहति रथयुगप्रासाङ्गम् (tād vahati rathayugaprāsaṅgam)**

Introduces *yat* (A 4.4.75 [338]) after a *P₁*, which contains a second-triplet ending (tād) following *ratha* 'chariot, car', *yuga* 'yoke', or *prāsaṅga* 'a kind of yoke', to form derivates meaning 'one who carries, transports ...' (tād vahati), as in *rathya* '(a draught animal) that draws a chariot', *yugya* '(an animal) that bears a yoke'. According to

**A 4.4.77: धुरो यहदकाँ (dhuro yadhakau)**

**A 4.4.80: शकाताध (śakatād ṣaṁ)**

On the other hand, a *P₁* whose base is *dhur* 'yoke' takes one of two affixes, either *yat* or *dhak*, and one whose base is *śakaṭa* 'cart' takes the suffix ṣaṁ: *dhurya dhaureya* '(an animal) that bears a yoke', *śakaṭa* '(an animal) that draws a cart'.

**A 5.1.1 (338) gives cha as the affix that generally follows a pada under conditions to be given in the subsequent section, but according to**

**A 5.1.2: उगवादिभ्यो यत् (ugavādibhyo yat')**

Under all conditions stated in the section, if the base of the pada subject to affixation ends in a *u*-vowel or is one of the group that starts with *go* 'cow, ox', then the pada takes the suffix *yat* instead of *cha*. For example,

**A 5.1.5: तस्मै हितम् (tasmai hitam)**

Provides that an affix follows a pada which is a value of *tasmai*, that is, one with a fourth-triplet ending, to form a derivate meaning 'beneficial (hitam) to X'. The pada *vatsa*-e takes *cha*, but *go*-e is followed by *yat*: *vatsīya* 'good for a calf', *gavya* 'good for a cow'.

In the section beginning with **A 5.1.18 (338) there is a subsection that begins with**
This provides that, under the meaning conditions given in subsequent sūtras, up to and including

A 5.1.63:  

\textit{thaḥ} is introduced instead of \textit{thān}, except where the base of \textit{pī} is \textit{gopuccha} 'cow's tail, oxtail', a number word (\textit{saṅkhyā}), or a term denoting a measure (\textit{parimāṇa}). This subsection includes

A 5.1.37: \textit{tena kritam}  

These rules let appropriate taddhitas follow a pada that is a value of \textit{tad} to form a derivate meaning 'merits (\textit{arhat}) X' and a pada that is a value of \textit{tena} to form a derivate meaning 'bought (\textit{kritam}) with X'. For example, \textit{svaitacchātrika} 'one who merits a white parasol' has \textit{thāk} by A 5.1.19, but \textit{gaupuccchika} 'bought for a cow's tail', \textit{sāṣṭika} 'bought for sixty ...', and \textit{prāsthika} 'bought for a prastha (a particular measure)' have \textit{thān} by the general rule A 5.1.18. Derivates with \textit{thān} and \textit{thāk} differ accentually: The first vowel of a base with \textit{thān} is high-pitched (A 6.1.197 [600]), but the first vowel of the affix \textit{ika}, which derives from \textit{thāk} (A 7.3.50 [509]) is high-pitched (A 3.1.3 [592]).

Now, \textit{nāṣkika} 'bought for a nīṣka' and \textit{uttamanaṣkika} 'bought with the final nīṣka' differ in accentuation. Accordingly,

A 5.1.20: \textit{asamase niṣkādibhyāḥ}  

provides that \textit{thāk} follows a pada under the conditions given, if the base in question is one of the group that begins with \textit{nīṣka} (a monetary unit) except in a compound \textit{(asamase)}: \textit{nāṣkika} has \textit{thāk}, but \textit{uttamanaṣkika} has \textit{thān} by A 5.1.18.

Another sūtra of the subsection headed by A 5.1.19 is

A 5.1.22: \textit{saṅkhyāyā atiśadantaṁyāḥ kan}

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which introduces *kan* after a pada if its base is a number word (*sankhyāyāḥ*) other than one ending in *-ti* or *-sat* (*atiśadantāyāḥ*); e.g., *pañcaka* 'bought for five ...', with *kan*, but *saptatika* 'bought for seventy (*saptati*') and *cātvārimśatka* 'bought for forty (*cātvārimśat*'), with *thaṇī*.

There is a remainder (*seṣa*) of possible conditions with respect to the meaning conditions given in taddhita affixation rules that come before

A 4.2.92: शेषा (*seṣe*)

In connection with this, consider the derivates *bhānava* 'descendant of Bhānu (*bhānavah* = *bhānor apatyam*) and *bhānaviśya* 'which pertains to Bhānu, of the sun, solar', *aupagava* 'which pertains to Upagu'. In accordance with Pāṇinian usage, let *idam* (nom. sg. nt.) 'this' be a variable whose values are padas denoting anything that is somehow related to something else, and let *tasya* (gen. sg. masc.-nt.) 'of this, of that' be a variable whose values are padas referring to any such other thing. A sūtra

A 4.3.120: तस्येदम् (*tasyedam*)

then introduces a taddhita suffix to a *P₁* that ends in a relational sixth-triplet ending (*tasya*), to form a derivate meaning 'Y (*idam*) related to X (*tasya*), Y of X'. Of course, being related to someone as his descendant is included in the very general set of possible relations covered by A 4.3.120. And indeed there are derivates like *aupagava*, which have both a very general relational meaning and a more specific meaning 'descendant of ...'. But this is not always the case. For example, *bhānaviśya* has a general relational meaning, but the patronymic related to *bhānu* is *bhānava*. The sūtra that accounts for *bhānaviśya*,

A 4.2.114: वृद्धाचः (*vṛddhāc chaḥ*)

provides that *cha* follows a *P₁* under conditions to be given, if the base of this pada is a vṛddha element (A P1.1.73-74 [61]). The rule should not, however, allow *cha* after a pada *bhānu-as*
in deriving a patronymic: bhānava should be derived with āp. For this and other comparable reasons, Pāṇini states rules such as A 4.3.120 in a section headed by A 4.2.92: Affixes are introduced by these rules under conditions that constitute a remainder with respect to those given earlier.

The section which A 4.2.92 (343) heads begins with rules specifying affixes other than the general suffix āp, which occur with padas characterized by particular bases. For example,

A 4.2.93: राष्ट्रावारपारादः (rāṣṭrāvārapārād ghakhau)
A 4.2.97: नद्यादिभ्यो ढक् (nadyādibhyo ḍhak)
A 4.2.104: अन्यायात्यपि (avyayāt tyap)
A 4.2.107: दिक्पूर्वपवादसंज्ञायां जः (dikpūrvapadād asamjñāyām ṃ)
A 4.2.115: भवतङ्गकक्षसौ (bhavataṣ thakchasau)
A 4.3.11: कालात ठय (kālāt ṃhan)
A 4.3.16: सन्ध्वेनाह्यतुनमत्योषण (sandhivelādy-ṛtanakṣatṛbhṛṣyān)
A 4.3.18: वर्षभ्यष्ठक (varṣābhyaṣ thak)

provide for affixes with padas that contain particular bases, as follows: rāṣṭra 'kingdom', avārapāra 'the near and far banks of a river': gha and ḍha (∴ iya, śna: A 7.1.2 [509]), respectively, as in rāṣṭriya, avārapārīna; bases of the set beginning with nadi 'river' (nadyādibhyāh): ḍhak (∴ eya: A 7.1.2, e.g., nādeya); an avyaya (54): tyap (e.g., tatratiya); a compound whose first constituent is a direction word (dikpūrvapadāt) and is not used as a name (asamjñāyām): ni a (e.g., paurvasāla); bhavat (bhavataḥ), if this is a vṛddha element, that is, the pronominal bhavatu 'you' (A 1.1.74 [61]): ṭha and chas (∴ ka, śna: A 7.3.51, 7.1.2, bhāvatka / bhavadiya); a time word (kālāt): ṃhan (e.g., māsika, with māsa 'month'); particular time words: a group
beginning with sandhivela 'time of juncture, transition (at sunrise, noon, sunset)', season names (rtu), names of asterisms (nakṣatra), used to refer to particular times: añ (sāndhivela, graiṣma [graiṣma 'hot season'] taiṣa [tiṣya 'the asterism Tiṣya']); varṣā 'rain season': ṭhak (vārṣī-ka).

Subsequent sūtras, starting with A 4.3.25, give the sequences $P_1P_2$ to which derivates with these affixes correspond, together with additional conditions. For example:

A 4.3.25: तत्र जातः। (tatra jāṭah) 'born (jāṭah) in X
(tatra)

A 4.3.53: तत्र भवः। (tatra bhavah) 'located (bhavah) in or at X

A 4.3.74: तत्त आगतः। (tata āgataḥ) 'come (āgataḥ) from X (tataḥ)

A 4.3.85: तद्वष्ट्वति पथिदुतैयोः। (tad gacchati
pathidūtayoḥ) 'goes (gacchati) to X (tad)', provided that what goes to the place in question is a path or a messenger (pathidūtayoḥ)

A 4.3.89: सोस्य निवासः। (so'ya nivāsaḥ) 'X (saḥ) is Y's
(asya)', provided X denoted by the base of $P_2$ is a place where Y stays, lives (nivāsaḥ)

A 4.3.90: अभिजनस्य। (abhiṣaja ca) 'X is Y's', provided the base of $P_1$ denotes an ancestral place of origin (abhiṣaja)

A 4.3.101: तेन प्रोक्तम्। (tena proktam) 'enunciated
(proktam) by X'

A 4.3.115: उपजातो। (upajñāte) 'discovered (upajñāte) by X'

A 4.3.116: कृते ग्रन्थे। (kṛte granthe) 'produced (kṛte) by
X', provided what has been produced is a text (granthe)
Derivates formed with affixes given in earlier sūtras can correspond to various such $P_1P_2$ sequences. For example, rāṣṭriyāḥ can refer to someone born in a kingdom (rāṣṭre jātah), located there (rāṣṭre bhavaḥ), come from a kingdom (rāṣṭrād āgataḥ), to a path that leads to a kingdom (rāṣṭram gacchati); pāṇiniyam can be used of a treatise (śāstram) propounded by Pāṇini, a grammar (vyākaraṇam) originated by Pāṇini, or any literary work produced by Pāṇini.

In the section which A 4.2.92 (343) heads, as in other sections of sūtras dealing with taddhita affixes, there are subsections concerning given meaning conditions, under which particular suffixes are given for padas with specific bases. For example, under the subsection beginning with A 4.3.53 (344),

A 4.3.55: शरीरावयवाच्च (यत्) (śarirāvayavāc ca [yat 54])

A 4.3.62: जिह्वामुलाङ्गुलेः (jihvāmūlaṅguleś caḥ)

provide for introducing yat after a pada whose base donates a part of the body (śarirāvayavāt) in general, but chaḥ if the base is jihvāmūla 'root of the tongue' or ānguli 'finger'; e.g., dantyaḥ 'dentai' (= danteṣu bhavaḥ), jihvāmūlyaḥ 'located at the root of the tongue' (= jihvāmule bhavaḥ). Under the conditions given in A 4.3.90,

A 4.3.94: तूढीशलतातुर्वर्मतीकूचवाराहं दक्षपद्यकः
(tūḍīśalāturvarmatikūcavāraḥ
dhakchandhañyakah)

ghak, chaḥ, dhaḥ, and yak respectively are introduced after padas whose bases are the place names tūḍī (taudėya), śalātura (śalāturīya [see 5]), varmati (vārmateya), kūcavāra (kaucavārya).

The meanings of certain derivates with taddhita affixes include particular time references. Thus, jātah, āgataḥ, proktam of A 4.3.25, 74, 101 (344) are participial forms used if an act is referred to past time (bhūte: A 3.2.102 [294]).
Similarly,

A 5.2.94: तद्व्यःस्त्यर्विमेन्नितितपतमतपः (tad asyāsty asmīnīni matup)

includes a time reference in the conditions for introducing matup. This affix follows a pada with a first-triplet ending (tad) to form derivates corresponding to tad asyāsti 'Y has X', tad asmin nastī 'X is (astī) in or on Y (asmin)'; e.g., gomat 'one who has many cows' (gomān = gāvo'sya santi), vṛksavat 'something in or on which there are trees' (vṛksavān = vṛksā asmin santi). The form astī'is' has reference to present, current time.

Other affixes also occur under the conditions given in A 5.2.94; for example:

A 5.2.115: अत इनिथनाग्र (ata inīthanau)

A 5.2.121: अस्वायमेद्धास्त्रोविनिहि (asmāyāmedhāsrajo vinīḥ)

A pada with a base in -a (ataḥ) takes inī or than, as in dāṅgin and dāṅgika'someone who has a staff (dāṅga). vinī follows a pada whose base ends in -as or one that contains the base māyā 'wile, deceptive power', medhā 'wisdom', sraj 'garland', as in yāsasvin 'famous', māyāvin 'wily', medhāvin 'wise', sragvin 'garlanded' (<sraj-vin : A 8.2.30 [544]).

Some derivates formed with taddhita suffixes are avyayas (54). For example,

A 5.1.115: तेन तुल्यं क्रिया चेदवति (tena tulyam kriyā ced vatih)

introduces vatī after a pada which is a value of tena to form a derivate meaning 'like X' (tena tulyam), if what is similar is an action (kriyā), and by

A 5.1.116: तत्र तस्येवा (tatra tasyeva)

vatī follows padas that are values of tatra, tasya to form derivates meaning 'like (iva) ... at X, similar to ... of X'. The gana which begins with svar includes vat, so that a derivate
with this suffix is an avyaya by A 1.1.37; e.g., brāhmaṇavat 'like a Brāhmaṇa, in the manner of a Brāhmaṇa', pātaliputratvat 'like ... at Pātaliputra', as in

(98) जान्मणकद्वार्तत (brāhmaṇavad vartate) '... behaves like a Brāhmaṇa.'
(99) पाठलिपत्रवतसकेतेपरिखा (pātaliputratvat sākete parikha) 'The moat at Sāketa is like the one at Pātaliputra.'

According to

A 5.3.42: संत्याया विधायथे धा (saṁkhyaṁa vidhārthe dhā)
the affix dhā follows a number word (saṁkhyaṁa: see 59) used in the sense of vidhā 'manner' (vidhārthe); e.g., ekadhaṁ 'in one way'.

A 5.4.17: संत्याया: क्रियाभ्यावृत्तिगणने कृत्वसुचा (saṁkhyaṁa kriyaḥbhavyavṛttigānane kṛtvāsucā)
A 5.4.18: द्वितीचत्वर्भ्यं सुचा (dvitīcaturbhyaḥ sucā)
A 5.4.19: एकस्य सकृत्चा (ekasya sakṛca ca)
also serve to derive avyaya derivates from terms with number words, if these are used with reference to counting the times an act is performed (kriyābhavyavṛttigānane). In general, such derivates have the suffix kṛtvāsucā, as in pāṇ Nakrtvas 'five times'. Comparable derivates from paddas with ovi 'two', tri 'three', catur 'four', however, take the affix sucā, and this also occurs with ekaone, which is then replaced by sakṛt: ovis 'twice', tris 'three times', catus 'four times', sakṛt 'once'.

A 5.4.50: कृत्वस्वातियोगे सम्पद्यकर्तिरिन्द्रि (kṛtvāsvastiyoge sampadyakartrini cviḥ)
introduces cvi after a pada that refers to an agent of becoming (sampadyakartari), if it is used with kr 'make', bhū 'be, become', or as 'be' (kṛtvāsvastiyoge). For example, śveti karoti 'makes white' is equivalent to śvetām karoti; the pada
śveta-am is optionally followed by cvi: śveta-am-v > śveta-v (A 2.4.71 [278]) > śveta (A 6.1.67 [409]) > śveti (A 7.4.32 [485]). A derivate with cvi belongs to the gati class (A 1.4.61 [55]), so that it is an avyaya. Under the conditions given in A 5.4.50, sāti is introduced optionally (vibhāṣā) if the additional sense of an agent’s totally becoming something (kārtnye) is understood:

A 5.4.52: vibhāṣa sāti kārtnye (vibhāṣā sāti kārtnye)

For example: agnisād bhavati I agni bhavati ‘totally becomes fire, is engulfed in flames’. See also 357.

Special provision is made in a section of taddhita affixation rules to allow several suffixes to alternate. By

A 5.1.119: tasya bhāvas tvatalau (tasya bhāvas tvatalau)

tva or tal follows a pada with a sixth-triplet ending (tasya) to form a derivate that denotes the property of being (bhāvah) what the base of the pada denotes; e.g., pūruṣatvam, pūruṣatā (= pūruṣasya bhāvah) ‘the property of being a man, manhood’. Under the same conditions,

A 5.1.122: prthvādhībhya iamanī (vā) (prthvādhībhya iamanī vā)

introduces imanic after padas whose bases contain nominals of the group that begins with prthu ‘bread’. The sūtra lets imanic occur optionally (vā), so that it allows also for other affixes, which could obtain by other rules. For example,

A 5.1.131: Igamnācyālaphupurūvrānt (A) (igamnācyālaphupurūvrānt (A))

introduces ap after a pada whose base ends in a vowel denoted by the abbreviation ik (see 129), if a preceding vowel in the base is also light (lagninācyālaphupūrvarānt: A 1.4.10 [37]). By A 5.1.122, 131, then, derivates such as prathimān (< ... prthu-imān), pārthava (< ... prthu-a) ‘breadth’ are formed. In addition,

A 5.1.120: A ca tvāt (A ca tvāt)

stipulates that tva and tal also (ca) occur under all the special conditions given in subsequent rules, through

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which introduces tvā. Thereby, derivates such as prthutvā, prthutā 'breadth' are also accounted for. Moreover, in accordance with A 4.1.82 (111), each such derivate alternates with a sequence of padas: prthutvam, prthutā, prathimā, pārthavam = prthor bhāvah.

Certain taddhitas are introduced optionally after padas that have endings of particular triplets but are not necessarily construed with second padas in specific syntactic schemas. The procedure is best illustrated with rules that provide for taddhita affixes after padas with the following bases: bahu 'much, many', pronominals (sarvanāman : 53), excluding all members but kim (interrogative) of the subset of pronominals that starts with dvi:

A 5.3.2: किंसर्वनामबहुः (kimśarvanāmabahubhyo)

Some of the affixes in question are introduced merely after padas with specified endings. Thus, according to

A 5.3.7: पञ्चम्यास्तसिल् (pañcamyās tasil)

A 5.3.10: सप्तम्यास्तल् (saptamyās tral)

tasil follows a pada with a fifth-triplet ending (pañcamyāḥ), tral a pada with an ending of the seventh triplet (saptamyāḥ); tatas and tatra are equivalent to and alternate with items such as tasmāt (abl. sg. masc.-nt.), tasyāḥ (abl. sg. fem) and tasmin (loc. sg. masc.-nt.), tasyām (loc. sg. fem.). Contrary to A 5.3.10, padas in which seventh-triplet endings follow idam 'this' and kim take the suffixes ha and at, respectively.

A 5.3.11: इवमो हः (idamo haḥ)

A 5.3.12: किमोऽत् (kimo'त)

The equivalents to asmin, kasmin are iha, kva. Moreover, certain affixes follow padas with seventh-triplet endings after particular bases under the additional condition that reference is made to a time (kāle):
A 5.3.15: सर्वाकान्याकिंयत: काले दा
(sarvaikanyakimyattadah kale da)

A 5.3.16: इदमोरहिल (idamo'rhil)

A 5.3.18: दानीठा (dāniṭha)

A 5.3.19: तादो दा चा (tadō dā ca)

Under these conditions, dā follows padas that contain the bases sarva'ali, whole', eka'one', anya'other', kim, the relative pronoun yad, or tad 'that'; both arhil and dānim follow a pada with idam 'this', and a pada with tad takes dā as well as dānim; e.g., sarvadā always (= sarvasmin kāle), etarhi / idānim now (= asmin kāle), tadā / tadanāmil then (= tasmin kāle).

Other suffixes occur with padas terminating in endings of the seventh (saptamī), fifth (pañcamī), or first (prathamā) triplets, provided the endings follow direction words (dikṣādebhyaḥ) used with reference to directions, places, or times (digdeśakāleśu). Under these conditions, astāṭī is introduced:

A 5.3.27: दिक्षाबदेभ्य: सप्तमीपञ्चमीप्रथामाभ्यो

(dikṣādebhyaḥ
saptamipañcamipraṇhamābhya digdeśakāleśv
astāṭīḥ)

If, however, the particular direction word is dakṣina 'right, south' or uttara 'left, north', instead of astāṭī, one has atasuc or āṭī, which also occurs if the direction word is adhara 'lower, below':

A 5.3.28: दक्षिणोत्तराभ्यामतसुचा

(dakṣiṇottarābhyaṁ atasuc)

A 5.3.34: उत्तराघरदक्षिनावानि:

(uttarādharadakṣinād āṭī)

E.g., purastāt 'in the east' (< pūrva-i-astāt), 'from the east' (< pūrva-as-astāt), 'the east' (< pūrva-s-astāt), dakṣinatas /
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daksināt... south. Padá covered by A 5.3.34, excepting those with fifth-triplet endings (apañcamyāh), also optionally (anyatarasyām) take the suffix enap, on condition that reference is made to a place not far off (adūre):

A 5.3.35: ānacchānātāntarasvarayamdūrerṣaṭपुल्लयम्।(enab anyatarasyām adūre pañcamyāh)
E.g., uttaratas / uttarāt / uttareṇa.

Remarks.

350 1. The order of padas such as upagoḥ and apatyam, corresponding to a derived term such as aupagavah (cf. 217-218). In śūtras such as A 4.1.92 (331), however, the order of padas cannot be free: A term such as tasya, whose value is a pada to which a taddhita is introduced optionally in accordance with A 4.1.82 (111) must come first.

351 2. The Kāśikā gives a very loose paraphrase of A 4.1.95 (332): अकारान्तात्पूर्विकानिधिप्रत्ययो भवति। The affix in occurs after a nominal base that ends in a. It paraphrases comparable śūtras in a similar fashion. A paraphrase such as the following (SK 2.302) is more precise: अद्वन्त मयात्पूर्विकं तत्प्रकृतिकां भगवताविव्व स्यादपत्यायी। 'Let in occur in the meaning “descendant” after a term that terminates with an ending of the sixth triplet whose base ends in a.'

352 3. In śūtras like A 4.1.83 (see 335, 338), Pāñini is concerned with sections of meanings which condition the introduction of affixes. For example, the section of rules in which cha is introduced actually extends only to A 5.1.18, which begins a new section. Hence, one might suggest that A 5.1.1 should actually read प्राक्तवाचः।(prāk thaṇaḥ chaḥ).

However, Pāñini is providing for sections of meanings: A 5.1.1 begins a section in which affixes are introduced when there
are particular $P_1P_2$ sequences; \textit{thañ} is valid for all the meanings provided thereby in rules up to A 5.1.37 (342); for the rules between A 5.1.18 and A 5.1.37 do not state any new $P_1P_2$ sequences, only particular affixes that occur after padas with specified bases. [Cf. Kāś. II.465 (on A 5.1.1): अर्थोऽवधित्वेन गृहीत: न प्रत्ययः। तेन प्राकऽवश्च इति नोक्तमः ‚Meaning is taken as the boundary, not an affix. Therefore, (Pāṇini) has not said \textit{prāk} \textit{thañas} \textit{chah}.Ñ]

4. A 4.1.101 (335) does not explicitly say that \textit{phañ} occurs to designate a yuvan descendant, but Pāṇini does not have to say this in the sūtra. A 4.1.94: गोत्राध्युन्यसत्रियामा (\textit{gotrād yūny astriyām}) provides that, except in the case of feminines (\textit{astriyām}), an affix used with reference to a yuvan descendant (\textit{yūni}) follows a gotra affix (\textit{gotrāt}), and according to A 4.1.93: एको गोत्रे (\textit{ekō gotre}), only one (\textit{ekah}) taddhita affix is allowed to occur to signify a gotra descendant.

2.4.2.4.2. Other taddhita affixes.

There are other groups of taddhitas introduced by rules organized in the way I described earlier (see 335-339). Thus, A 5.3.70: प्रागिवात्कः (\textit{prāg ivāt kah}) states a general affix, valid for subsequent rules, up to A 5.3.96: इवे प्रतिकृताः (\textit{ive pratikṛtā})

The taddhita suffix \textit{ka} is introduced under the meaning conditions given. Under all these conditions, however, the affix \textit{akac} occurs with avyayas and pronominals (\textit{avyayasarvanāmānām}; see 53-54); moreover, this affix occurs in a particular position: before (\textit{prāk}) that segment of these items that begins with the last vowel (\textit{ṭeh}: A 1.1.64 [41]):

A 5.3.71: अन्ययसर्वनामनामकाच प्राक्ते:। (\textit{avyayasarvanāmnām akac prāk \textit{ṭeh}})
Subsequent sūtras given meanings that condition the use of such taddhitas. For example,

A 5.3.73: अहातै (ajñāte)
A 5.3.74: कुतिसितै (kutsite)
A 5.3.76: अनुक्ष्यपायम् (anukampāyām)
A 5.3.85: अल्पै (alpe)
A 5.3.86: ह्रस्वै (hrasve)

provide for the affixes to occur when something’s being unknown (ajñāte) or despised (kutsite) is conveyed, if one is to convey pity (anukampāyām) with respect to something, and when something is qualified as of little quantity (alpe) or small, short (hrasve). For example, āsvaka is used with reference to a horse of unknown ownership, a miserable or pitiable horse, putraka refers to a pitiable boy, tailaka to a small amount of oil, and vrkṣaka to a small tree. These derives contain ka, but uccakais (uccais ‘high up, loud’) ahakam (aham [nom. sg.] ‘I’), used with comparable shades of meaning, have akac.

In addition, particular affixes are provided for with specified items under the meaning conditions given earlier. For example, A 5.3.86 allows for the general affix ka as well as akac, but by

A 5.3.88: कुटिशमीशणाभ्यो रा (kuṭiśamiśuṇḍābhya ra)

ra occurs under the same meaning qualification with the bases kuṭī ‘hut’, śami ‘Śami tree’, suṇḍā ‘elephant’s trunk’, kuṭīra ‘small hut’, samīra ‘small Śami tree’, suṇḍāra ‘small trunk’.

Derivates provided for by sūtras such as those given in 354 are clearly different from derivates like aupagava, which are formed by introducing taddhita affixes to padas of $P_1P_2$ sequences specified in rules (331). They are also different from derivates of the type tatas, tatra (349): A base such as tatra is equivalent to and alternates with a pada like tad-
tasmīn, tasyām), to which the taddhīta suffix is introduced.

In addition, a derivate such as *avika* 'sheep', formed with the suffix *ka* by

A 5.4.28: अवेचः कः। (aveś kaḥ)
differs not only from the types *aupagāva* and *tatra* but also from a derivate like *śundāra*, in that it contains a redundant affix: *avl* and *avika* do not differ in meaning; both mean 'sheep'. Accordingly, A 5.4.28 does not give any condition for introducing the affix. But a derivate like *śundāra* is not equivalent to *śundā* in effect, suffixes such as *ra* in *śundāra* are required for expressing the meanings in question by means of nominal bases that include the items with which the suffixes occur. Pāṇinīyas characterize these as obligatory (*nitya*) affixes.

The following sūtras also provide for nitya affixes:

A 5.3.55: अतिशायने तमविष्ठनः। (atiśāyane
tamabīṣṭhanau)

A 5.3.56: तिरोवः। (tiroś ca)

A 5.3.57: द्विवचनविगच्छयोपपदे तरबीयसुनः।
(dvivacanavihajyopapade tarabīyasunau)

A 5.3.58: अजादी गुणवचनादेव। (ajādi guṇavacanādeva)

A 5.3.66: प्रशस्यां रूपः। (prasamsāyām rūpam)

A 5.3.67: इष्टवदमाप्तः कल्पवदेशस्येश्च।
(lṣadasamāptau kalpabdeśadeśyaraḥ)

A 5.3.68: विभाषा सुपो बहुचन पुरसतात्। (vibhāṣā supo
bahuc purastāt tu)

A 5.3.112: पूगल्ल्योऽग्रामणीपुर्वबर्त। (pūgān
ṛṇo graṃmaṇipūrvāt)

The first two of these rules let *tampa* and *iṣṭhan* follow not only a nominal pada but also one with a verb ending (*tīrṇaḥ*) on condition that excellence is to be conveyed (*atiśāyane*); e.g., *ādhyatama* 'exceedingly rich, most rich', *paṭiṣṭha* (<
paṭu-iṣṭha: A 6.4.155 (505) 'exceedingly, most sharp', pacati-
tamāṁ (〈pacati-tama-āṁ: A 5.4.11, 6.4.148 (357, 504)〉'cooks
exceedingly well, cooks best of all'. After padas of the types
covered by A 5.3.55-56, the sūtra A 5.3.57 provides for
introducing tarap, iyasun if the pada in question is related to
a cooccurring item denoting two things or something from
which another is distinguished (dvivacanavibhajyopadāpe), as
in āghyatara, paṭiyas, pacatitarāṁ. For example, in

(100) द्वाविमावादयौ अयमन्योरतिषयनेनाद्ययः
( dvāv imāv ādhyau/ ayam anayor atiṣayanēdhyaḥ)
'These two men are rich; of the two, this one is rich
to a greater degree (atiṣayena):'
the pada ādhyas(〉ādhyah) is related to anayoh (〈idam-os〉'of
these two', which refers to two men. Here, both anayos and
atiṣayena 'exceedingly' are used. The derivate āghyatara
conveys the meaning of a collocation like anayor
atiṣayanēdhyaḥ. ādhyatarāḥ in pāṭaliputrakebhya ādhyatarāḥ
'richer than the inhabitants of Pāṭaliputra' contains a derivate
formed to a term construed with an item referring to
something from which another is distinguished. According to
A 5.3.58, the vowel-initial (ajādi) affixes provided for by
preceding sūtras --- that is, iṣṭhan and iyasun --- occur only
after padas whose bases are guṇavacana terms (guṇavacanād
eva 'only after a guṇavacana' [see 273-275]). Thus, one has
both paṭiṣṭha, paṭiyas (with iṣṭhan, iyasun) and paṭutama,
paṭutara (with tamap, tarap) and the suffixes tamap, tarap
are allowed after padas with verb endings or padas formed
from terms such as kartr 'one who does, makes', pācaka 'one
who cooks', but iṣṭhan and iyasun are not used with items
such as these. A 5.3.66 provides for the suffix rūpap on
condition that praise is to be conveyed (prasāmsāyāṁ). On the
other hand, by A 5.3.67 the suffixes kalap, deśya, deśyār
occur if whatever a given pada signifies is qualified as lacking
(iṣadasamāptau 'being slightly incomplete'), being almost,
approximately something; and according to A 5.3.68, under the
same condition, bahuc is added optionally (vibāsā) to a nominal pada (supah); instead of following the pada, as do the affixes with which it alternates, however, bahuc precedes it (purastāt tu ). For example: vaiyākaranaṇāpā 'a true grammarian', paccatirūpam 'cooks well', patukalpa / pātudeśya / pātudeśiya 'fairly (but not fully) sharp, sharpish', paccatikalpam 'cooks pretty well', bahupati 'fairly sharp'. A 5.3.112 introduces āṇyā redundantly after a term denoting a gang (pūgāt) provided this does not contain as a prior element a word referring to a village head (agraṇāṇipūrvaī); e.g., lauhadhvajya 'red-flag' refers to one of a gang that has a red flag as its emblem.

Certain nitya taddhita affixes form derivates that belong to the avyaya class by A 1.1.37 (54). The suffixes dhā, krtvasuc, and suc (A 5.3.42, 5.4.17-19 [347]) are of this type, as is āmu, introduced by:

A 5.4.11: kīmettiñavyayaghād āmu adrayaprakarṣe

(kīmettiñavyayaghād āmu adrayaprakarṣe)

This rule lets āmu occur after a pada with a gha suffix (A 1.1.22 [73]) following kim (interrogative pronoun), a pada in -e, one with a verb ending, or an avyaya (kīmettiñavyayaghāt), provided the gha suffix is used to convey excellence in respect of something other than a substance (adrayaprakarṣe); e.g., paccatitamām 'cooks exceedingly well, most well', uccaistamām 'exceedingly high up, loudly', but uccaistama 'exceedingly high', used with reference to something like a tree (nom. sg. uccaiastamo virkṣāḥ).

yuvati 'young female' should be a prātipadika, so as to take nominal endings (A 4.1.1 [105]: yuvati, yuvati, yuvatayā, and so on. In addition, yuvati is clearly related to yuvan 'young one'. Therefore, as provided for in

A 4.1.77: yūnas tīḥ

the taddhita suffix tī is introduced after yuvan used in the feminine (strijām: A 4.1.3 [107]). yuvan−of yuvan-‐tī is a pada (A 1.4.17 [75]), so that its −n is deleted (A 8.2.7 [539]). Since
ti is a taddhita, moreover, the derivate yuvati is a derived nominal base (prātipadika: A 1.2.46 [48]), hence is followed by nominal endings.

Consider now the derivates āksadyūtika 'which has been brought about by gambling at dice' (āksadyūtikam = āksadyūtena nirvṛttam) and kṛtrima 'artificial', paktrima 'which has been made by cooking, baking'. The first is accounted for by a sūtra of the section that begins with A 4.4.1 (338):

A 4.4.19: निन्तृक्षःशृङ्खलारिभ्य: (तेन)
(nirvṛttekṣadyūtadibhyah [tena 2])

This rule lets āhaka optionally follow a pada in which a third-triplet ending follows a base of the set beginning with āksadyūta 'gambling with dice', in the sense 'brought about by ...' (nirvṛtte). A derivate such as paktrima has a comparable meaning: The base of the pada to which an affix is introduced to form this should be a nominal meaning 'cooking, baking', just as dyūta is a derivate meaning 'gambling'. Moreover, there are derivatives which contain a taddhita suffix of the shape ma, such as dyuma 'light' or druma 'tree'. These are accounted for by

A 5.2.108: चुदुभ्याम्: (dyudrubhyām maḥ)

which introduces ma after padas in which a first-triplet ending follows dyu 'sky' or dru 'wood'. Accordingly, paktrima can justifiably be analyzed as consisting of three segments: the verb pac 'cook, bake', an action-noun suffix tri, and a taddhita suffix ma. On the other hand, a derivate like paktri 'cooking, baking' simply does not have independent status. Hence, Pāṇini proceeds as follows. First, he introduces ktri after pac to form paktri (A 3.3.88 [291]), then, by

A 4.4.20: क्त्रेम्ममन्नित्यम् (तेन निन्तृते) (ktrer mam nityam [tena 2, nirvṛtte 19])

he lets ma obligatorily (nityam) follow a pada in which a third-triplet ending follows a base in -ktri.

Certain taddhita affixes are introduced, by sūtras of the section that begins with A 5.4.68 (111), as parts of compounds,
in order to account for alternants which occur as final constituents of compounds. For example, beside rājan 'king' (rāja, rājānau, rājānah, etc.), one has -rāja, as in angarāja 'king of the Āṅgas' (āngarājaḥ = āṅgānām rājā). A compound like angarāja is derived (A 2.2.8 [301]) from padas in an abstract string such as āṅga-āṁ rājan-s, whence is derived the string āṅgānām rājā, with which āṅgarājaḥ alternates, so that it is not possible simply to operate with an alternant base rāja. What Panini does, therefore, is to introduce certain affixes after constituents that enter into composition, thus making the affixes final parts of the compounds. A sample of sūtras introducing samāsānta suffixes will serve to illustrate the procedure.

The suffix a follows rc 'verse', pur 'city', ap 'water', dhur, pathin 'path', although the affix occurs with dhur only if this is used figuratively, of a load, not when it is used of something connected with an axle (anakṣe); and ac is introduced after varcas 'splendor' preceded by brahman 'Brahman' or hastin 'elephant':

A 5.4.74: ऋक्पूरबधुः पथामानक्षे।
(ṛkpūrabdhūḥpathām ānakṣe)

A 5.4.78: ब्रह्महस्तिभ्यां वर्चस: (अच्)
(brahmahastibhyāṁ varcasaḥ [ac 75])

For example: ardharca 'half an rc' (A 2.2.2 [309]), bahvṛca 'which contains many rc (the Rgveda)' (A 2.2.24 [317]), viśnu-pura 'city of Viṣṇu, vimalāpa 'which has clean, spotless water', rājadhurā 'king's burden' (but akṣadhur 'axle pole'), jala-patha 'water way', brahmavarcasa 'Brahman-splendor'.

The samāsānta tac follows rājan 'king', ahan 'day', sakhi 'friend', and go 'cow, ox', provided this last does not occur in a compound involving deletion of a taddhita, of the type dvigu 'bought for two cows':

A 5.4.91: राजाहस्सखिभ्यष्टिच्। (rājāhassakhibhyas tac)

A 5.4.92: गौरतद्भितलुकिज। (gor ataddhitaluki)
For example: ṛga'rāja 'king of the Ángas' (-rāja < -rājan-a: A
6.4.144 [504]), dvyāha 'two days' (A 2.1.51 [313]), rājasaka
friend of the king', pañcagava 'five cows forming a group' (A
2.1.51).

The compounds considered in 362 are tatpuruṣas. tac is
also introduced after constituents of dvandva compounds
(dvandvā: A 2.2.29 [318]), if these end in palatal stops (cu, d,
s, or h (cudāṣahāntāt), provided the compound denotes a con-
glomerate (samāhāre):

A 5.4.106. dvandvāc cudāṣahāntāt samāhāre (tac 91)

For example: vāktvaca 'voice (vāc') and skin (tvac'), sampad-
vipada 'good fortune (sampad) and bad fortune (vipad)',
grīṣmaprāvyāsa 'the hot season (grīṣma) and the rainy season
(prāvyāsa)', chatropānaha 'umbrella (chatra) and sandals
(upānaha).

Further, in an avyayibhāva (see 304-307]) tac occurs
after constituents of the group starting with śarad 'autumn'
(śaratprabhṛtibhyāḥ) as well as items that end in -an (anah),
but only optionally (anyatarasyām) if the item in -an is neuter
(napumsakāt):

A 5.4.107. avyayibhāve śaratprabhṛtibhyāḥ

A 5.4.108. anāś ca

A 5.4.109. napumsakād anyatarasyām

For example: upaśarada 'close to autumn', adhyātma 'with
respect to the self (ātman)', upacarman 'hear the
hide (carman)'.

In a bahuvrīhi compound (see 317), sakthi and aksi
(sakthyakṣṇoh) used in a constituent denoting a body part
(svāṅgāt) take the suffix sac, as in dirghasaktha 'one who has
long thighs':

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A 5.4.113: बहुव्रीहै सक्ष्यक्ष्णोऽस्वाभावकाः
(bahuvrīhau sakṣṭyakṣṇoḥ svāṅgāt śac)

In dirghasaktī used of a cart (śaṅkaṭa) which has a long sakthī (a wooden part that comes between the axle and the body), sakthī does not refer to a body part: here -sakthī occurs, not -saktha (< -sakthi-a: A 6.4.148 [504]).

Another samāsaṅtā element found in bahuvrīhī compounds is kap. According to

A 5.4.151: उरः प्रथृतिभयः कप् (uraḥ prabhūtibhyah kap)
A 5.4.152: हन: स्त्रियाम् (inaḥ striyām)
A 5.4.153: नायर्तस्य (nāyṛtaś ca)

this suffix occurs after members of the group that begins with uras 'chest' (uraḥ prabhūtibhyah ), items with -in (inaḥ ), provided the compound is used in the feminine (striyām ), as well as items of the nadi class (see 56) and those that end in -f (nāyṛtaḥ ). For example: vyūḍhoraska 'broad-chested', bahusvāmikā (as in bahusvāmikā nagari 'a town in which there are many masters'), bahukumārika '... in which there are many girls', bahukartika '... which has many doers'.

There is a remainder (śeṣa) with respect to bahuvrīhī compounds covered by such rules. The samāsaṅtā affix kap optionally (vibhāsā) occurs in a bahuvrīhī of this residual group (śeṣāt):

A 5.4.154: रेषादिभाषा (śeṣād vibhāsā)

For example: bahumāla (< bahumāla: A 1.2.48 [322]), bahumālāka 'one who has many garlands'. In particular instances, however, kap which would be introduced according to such rules has to be disallowed. For example, by

A 5.4.155: न संज्ञायाम् (na samjñayām)

kap does not (na) occur if the bahuvrīhī in question is used to name a particular individual (samjñayām); e.g., viśvadeva.

Samāsaṅtā affixes in general are not allowed to occur under particular conditions. It will suffice to consider two
relevant ṣūtras:

A 5.4.69: न पूजनात् (na pūjanāt)

A 5.4.71: नवस्ततपुरुषात् (nañas tatpuruṣāt)

If the first constituent of a compound is used to praise (pūjanāt), the item that follows does not take a samāsānta, which is also disallowed with a tatpurusa compound whose first constituent is nañ. For example: surājan (nom. sg. surājā) 'good king' (A 2.2.18 [315]), arājan 'non-king' (A 2.2.6 [311]), with -rājan instead of -rāja, consequent on introducing tac (see 362).

Remarks.

1. From the very wording of ṣūtras such as A 5.3.7 (349) it is clear that suffixes such as tasīl are introduced after padas, just as are affixes introduced to padas that are values of \( P_1 \), referred to in other rules (331-348). Moreover, A 6.3.17 (368) shows that tarap and tamap are introduced after padas, not to nominal bases. On the other hand, it is best to consider that in Pāṇini's system the feminine suffix ti of yuvati is introduced after the base yuvan (A 4.1.77 [358]).

2. Although the wording of A 5.4.68 (111) immediately accords with interpreting this ṣūtra as stating that taddhita affixes provided for by subsequent rules are introduced as final parts of compounds, there are details of derivational procedure which, according to Pāṇiniyās, require that samāsānta affixes (360-365) be introduced after padas of abstract strings which are then combined with related padas to form compounds. Thus, for example, tac is added to a pada such as rājan- of a string like aṅga-ām rājan-. These affixes are then called samāsānta because they will end up being final segments of compounds. My presentation is to be understood as based on the assumption that these affixes are indeed introduced as final parts of compounds, but at a derivational stage of the type aṅga-ām-rājan-; where padas
have been combined, but other operations have not yet applied. Full details concerning the problems at issue are dealt with in part V.2.3. Note also that the section headed by A 5.4.68 includes rules that provide for replacements instead of affixes.

2.4.2.4.3. Retention of endings in taddhita derivatives.

368 Although nominal endings included in constituents of derivates formed with taddhita affixes are generally deleted, they are retained in particular instances, just as some compounds retain endings (see 323). For example, one has not only pūrvāhanatana 'matitudinal' but also pūrvāhnetana, with the ending of pūrvānne 'in the morning' retained. Accordingly,

A 6.3.17: घकाळतनेशु कालनामः (विभाषा सप्तम्या:
अलुकः) (ghakālatanēsu kālanāmnah [vibhāsa 13, saptamāh 9, aluk 1])
provides that a seventh-triplet ending is optionally not dropped if it occurs with a time word (kālanāmnah) and is followed by a gha affix (A 1.1.22 [73]), kāla 'time' or the suffix tana.

2.4.2.4.4. Gender marking.

369 According to A 5.3.10 (349), any pada with a seventh-triplet ending and the appropriate pronominal base is optionally followed by tral. Thus, tatra is equivalent to a singular, dual, or plural locative form of any gender; e.g., tatra deśe (= tasmin deše) 'in that country', tatra nagare (= tasmin nagare) 'in that city', tatra nadyām (= tasyāṁ nadyām) 'in that river', tatra deśeṣu (= teṣu deśeṣu [loc. pl. masc.]), tatra nagareṣu (= teṣu nagareṣu [nt.]), tatra nadiṣu (= tāṣu nadiṣu [fem.]). Pronominal forms of the same number but different genders, such as tasmin and tasyām, derive from the
same abstract complexes, in this case *tad-i*, with the seventh-triplet ending *ni*: *tad-i > taa-i* (A 7.2.102 [476]) > *ta-i* (A 6.1.97 [531]) > *tasmin* (A 7.1.15 [492]), *tad-i > taa-i > ta-i > taā-i* (A 4.1.4 [271]) > *tā-i* (A 6.1.101 [532]) > *tā-ām* (A 7.3.116 [497]) > *ta-syāam* (A 7.3.114 [499]) > *tasyām* (A 6.1.101). In Pāṇini's derivational system, a vibhakti (A 1.4.104 [67]) such as *ni* conditions the substitution of *-a* for the *-d* of *tad*, and an affix like *tra* is assigned to the vibhakti class (A 5.3.1 [71]) to let it condition this replacement. Now, if *tad* is used in the feminine, once its final consonant has been replaced by *a* and the two vowels of *taa-* have both been replaced by a single *a*, one has a base in *-a*, subject to taking the feminine affix *ṭāp*. This should indeed be allowed in deriving *tasyām* but not for deriving *tatra*. To avoid having *ṭāp* in such instances, Pāṇini provides that bases of the type subject to A 6.3.34 (327) are treated as though masculine also before a group of taddhita affixes, starting with *tasīl* (*tasīlādiṣu* : A 5.3.7), through *kṛtvasuc* (*ā kṛtvasucā* : A 5.4.17 [347]):

\[ A\ 6.3.35:\ \text{तसीलादिप्रवकृत्वसुचः} (\text{tasīlādiṣv}
\text{ā kṛtvasucā}) \]
2.5. Syntactic doubling.

Sūstras of the section headed by A 8.1.1 (25) provide for doubling whole syntactic items under stated conditions. Such doubling may apply to padas in general or to particular padas. Thus, no padas are specified in

A 8.1.4: नित्यविप्सयोः। (nityavipsayoh)

which provides that an item is doubled when repetition of an action and pervasion of a thing by a property or an action are to be conveyed (nityavipsayoh), as in

(101) a. सा पचति पचति। (sā pacati pacati) 'That (woman) is constantly cooking.'

b. स जलपति जलपति। (sa jalpati jalpati) 'That (man) is constantly muttering.'

(102) a. ग्रामो ग्रामो रमणीयः। (grāmo grāmo ramanīyaḥ) 'Every single village is pleasant.'

b. पुरुषः पुरुषो निधनं गच्छति। (puruṣaḥ puruṣo nidhanam upaiti) 'All men die.' (lit. 'Every man goes unto death. ')

According to

A 8.1.5: परेवर्जने। (parer varjane)

on the other hand, pari is iterated when exclusion (varjane) is to be conveyed, as in

(103) परे परे त्रिगर्तेभ्यो व्रष्टो देवः। (pari pari

trigartebhyo vrṣto devah) 'It rained all around Trigarta (but not in it).'

Similarly, the sūtra

A 8.1.7: उपर्यध्यथस्म: सामीप्ये। (uparyadhyaḥdhasaṁ

sāmipyē)

provides for repeating upari 'above', adhi 'on, beneath', adhas 'below' when one wishes to convey proximity (sāmipyē) is conveyed, as in upary upari 'just above'.

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A 8.1.8: वाक्यादेरामन्त्रितस्यासूयासम्मतिकोपकुटसन-भक्तृनेषु (vākyāde rāmantritasyāsūyāsammati-kopakutsanabhartsanesu) provides that an utterance-initial (vākyāde) vocative form (āmantritasya: A 2.3.48 [66]) is doubled when the following are to be conveyed: jealousy (asūyā), honoring (sammati), anger (kopa), scorn (kutsana), threatening (bhartsana). For example:

(104) सुन्दर सुन्दर वृथा ते सौन्दर्यम् (sundara
sundara vyṛtha te saundaryam) ‘Handsome, your
beauty is in vain.’

(105) देव देव वन्योसि (deva deva vandyo’si) ‘Lord, you
are venerable.’

(106) दुर्विनित दुर्विनित इवानी भ्रास्यसि (durvinīta
durvinīta idānīṁ jñāsyasi) ‘Ill-mannered wretch,
you’ll soon learn.’

(107) धानुषक धानुषक वृथा ते धनुः (dhānuṣka dhānuṣka
vyṛtha te dhanuḥ) ‘Archer, your bow is useless.’

(108) चौर चौर घातियात्यामि त्वाम् (caura caura
ghātayāsyāmi tvām) ‘Thief, I’ll have you killed.’

The examples of repeated padas considered so far involve semantic conditions. This is not always required for a pada to be doubled, however. Thus,

A 8.1.6: प्रसमुपोदः पादपुराणे (prasamupodaḥ pādapūrāne) provide that pra, sam, upa, and ud are repeated metri causa, if this is necessary for filling out a verse section (pādapūrāne). That is, according to an interpretation which Pāṇini accepts, the preverbs given in A 8.1.6 are repeated merely because of metrical requirements in Vedic passages such as the following:

(109) प्राप्रायम् निर्थतस्य शृण्वे (pra praśam angnir
bharatasya śrṇve [RV 7.8.4a]) ‘This fire (Agni) of
Bharata enjoys widespread fame.’

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(110) सङ्गमिद्ध्वसेवत्सनन्त्वेविस्तार्यःपूर्यः आ (sāṁ sam id yuṣvase vrṣannāgne viśvāny aryā ā [RV 10.191.1ab])
‘Agni, you bull, you bring together here everything that is the Ari’s.’

Consider ekaikam and ekaikayā of

(111) एकैकमक्करम् पत्थति (ekaiyam akṣaram paṭhati)
‘He recites each and every syllable.’

(112) एकैकयाहृत्या जुहोति (ekaikayāhūtyā juhoti) ‘He performs each and every oblation (āhūtyā [instr. sg.]).’

These are used under the same meaning condition as are used grāmo grāmo and puruṣat puruṣat of (102) (370), but instead of ekam ekam, ekayaikayā, one has ekaikam and ekaikayā.

Accordingly,

A 8.1.9: एकमबहुव्रीहिविति (ekam bahuvrīhitā)

not only lets padas containing eka be doubled but also provides that the resulting sequence is treated like a bahuvrīhi (bahuvrīhitā). That is, nominal endings are deleted (A 2.4.71 [278]), and a feminine first constituent is given a masculine form (A 6.3.34 [327]). By virtue of being treated like a bahuvrīhi, items such as ekaika (< eka-am eka-am etc.) are nominal bases (prātipadika: A 1.2.46 [48]), followed by nominal endings (A 4.1.1 [105]). Although A 8.1.9 extends to doubled sequences with forms of eka operations that apply with respect to bahuvrīhi compounds, such sequences are nevertheless not true bahuvrīhis, so that -eka of ekaika is still a member of the sarvanāman class (A 1.1.27, 29 [53]); for example, the dative singular forms are ekaikasmāi (masc.-nt.) and ekaikasyai, not *ekaikāya and *ekaikāyai. By

A 8.1.10: आबाधे च (ābādhe ca)

an item is iterated and treated like a bahuvrīhi also (ca) when torment is to be conveyed (ābādhe). For example, one who is tormented by the absence of his beloved could say gatagatā
Particular sequences that result from doubling, on the other hand, are subject to operations that apply to karmadhāraya compounds: nominal endings are dropped, constituents are treated as masculine (A 6.3.42 [327]), and the final vowel of the sequence is high-pitched (A 6.1.223 [602]), contrary to A 8.1.3 (619). Sūtras providing for doubling with these properties follow.

A 8.1.11: कर्मधारयवद्त्तेषु (karmadhārayavad uttareṣu) according to which sequences resulting from doubling as provided for in subsequent rules (uttareṣu) are treated like karmadhārayas (karmadhārayavat). For example, by

A 8.1.12: प्रकारे गुणवचनस्या (prakāre guṇavacanasya) a guṇavacana element (see 273-275) is iterated if one wishes to convey that something possessing the property in question has it only to a certain extent (prakāre); e.g., paṭupaṭuḥ (fem. paṭupaṭvī) 'kind of sharp'.

'She is gone!'
2.6. Ekaśeṣa (single remainder).

One can combine padás such as plakṣa-s, nyagrodha-s, and khadira-s to form dvandva compounds (A 2.2.29 [318]), as in plakṣanyagrodhau (nom. du.) 'plakṣa and nyagrodha trees', plakṣanyagrodhakhadirāh (nom. pl.) 'plakṣa, nyagrodha, and khadira trees'. On the other hand, one cannot correctly say *vrkṣavrksāu or *vrkṣavrksavrksāḥ, although theoretically A 2.2.29 could allow these. Instead, one says vrkṣau, vrkṣāḥ, with one instance of the base vrkṣa in each form. To provide for this and comparable usages, Pāṇini states rules providing for the occurrence of a single one of a possible series of items (ekaśeṣa 'remainder of one').

According to

A 1.2.64: सरुपाणाम एकविभक्ताः (sarūpāṇām ekaśeṣa ekavibhaktau)
only one of a possible series of items having the same form (sarūpāṇām) occurs, as a single remainder (ekaśeṣaḥ), if a single ending is used (ekavibhaktau: A 1.4.104 [65, 67]). For example, one instance of the stem vrkṣa occurs in vrkṣau or vrkṣāḥ. In addition,

A 1.2.65: वृद्धो यूना तल्लक्षणस्चेदेव विशेषः (vrddho yūnā tallakṣaṇaḥ ced eva viśeṣaḥ)
provides that if a derivate denoting an elder representative of a lineage (vrddhāḥ), that is, a gotra descendant (cf. 78), is conjoined with one denoting a younger descendant (yūnā), the former alone remains, on condition (ced 'if') that the only difference (viśeṣaḥ) in meaning between the two items is only (eva) this (tallakṣaṇaḥ), namely, that the two denote descendants of the same ancestor, distinguished only by age. For example, corresponding to gārgyaś ca gārgyāyaṇaś ca, one has gārgyau. Moreover, if the gotra nominal denotes a female, it is treated as masculine (pumivat), that is, has the masculine form:
A 1.2.66: स्त्री पुंवच्या (stri pumivac ca)
Thus, corresponding to gārgī gārgyāyanaś ca, one has gārgyau.
Further, if two items have the same base meaning, differing only in that one denotes a male (pumān), the other a female (striyā [instr. sg.]), the former is used as a sole remainder:

A 1.2.67: पुमानिन्द्रया (pumān striyā)
For example, brāhmaṇau 'two Brāhmanas' can correspond to brāhmaṇas ca brāhmaṇī ca, in which one of the items, namely brāhmaṇī, signifies a female.

The examples considered in 374 concern items that not only have the same base meanings --- 'descendant of ...', 'Brāhmaṇa' --- but also share a nominal base. Provision has to be made also for items that are lexically distinct but denote male and female of the same type, sibling or child. By

A 1.2.68: भ्रातपुत्रो स्वस्त्रुदिहित्रभयां (bhrātraputrau svasṛduhitrabhyaṃ)
bhrāṭr 'brother' and putra 'son', respectively, are the single remainders of conjunction with svasṛ sister' and duḥitr 'daughter'; bhrātarau 'brother and sister (fretes) = bhrātā ca svasa ca, putrau 'son and daughter (filii) = putras ca duhita ca.

In certain comparable instances, dvandva compounds alternate with single terms, so that ekaśeṣa is provided for only optionally. Thus,

A 1.2.70: पितामात्रा (anvatarasyām) (pitā mātrā [anvatarasyām 69])

A 1.2.71: स्वाशर: स्वात्वा (svaśuraḥ svāśrva)
let pitṛ 'father' and svaśura 'father-in-law' optionally (anvatarasyām ) be single remainders of conjunction with mātr 'mother' and svaśrū 'mother-in-law': pitarau / mātā- pitarau 'mother and father, parents', svaśurau / svaśrū- svaśurau 'mother-in-law and father-in-law, in-laws (soceri).
A neuter (napumśakam) is made the single remainder if it is conjoined with a non-neuter (anapumśakenā) of the same base meaning; in addition, the single remainder is optionally (anyatarasyām) treated as singular (ekavat):

A 1.2.69: नपुर्सकमनपुर्सकेनैकवच्चास्यान्तरस्याम्

(napumśakam anapumśakenaīkavac
cāsyānyatarasyām)

E.g., Sukāni, Sukām 'white' = Suklaś ca Suklā ca Suklam ca.

On the other hand, if reference is made to a troop of domestic animals (grāmyapaśusaṅghesu [loc. pl.]) other than young ones (atarunēsu), the item denoting females is the single remainder, contrary to A 1.2.67 (374):

A 1.2.73: ग्राम्यपशुसंघस्वतरुणेषु स्त्री

(grāmyapaśusaṅghesv atarunēsu stri)

For example: ajāh 'goats (acc. pl.).'

If a pronoun of the group beginning with tyad (tyadādini: 205) is conjoined with any other nominal (sarvalīḥ 'all'), it is necessarily (nityam) the sole remainder:

A 1.2.72: त्यादादीनि सर्वान्नित्यम्

(tyadādini sarvair
nityam)

For example, tau 'those two' is used with reference to two persons, the pronominal tad serving as single remainder for tad and another nominal, such as devadatta, as in sa ca devadattaś ca 'that one and Devadatta'.
2.7. Rules of replacement, partial doubling, and augmenting.

2.7.0. Introduction.

Replacements are of two major kinds: unconditioned (anaimittika) and conditioned (naimittika). The latter is the norm. The only substitution rules that involve no conditioning factors whatever have to do with metalinguistic conventions: Markers are unconditionally deleted (A 1.3.9 [81]); initial s and \( n \) of verbs are replaced by \( s \) and \( \acute{n} \) (A 6.1.64-65 [135]). Conditioned substitution may apply to sounds or grammatical elements in right or left contexts (A 1.1.66-67 [90]), which can be sounds or grammatical units. Augments are also added to elements in particular contexts (see 17-18).

2.7.1. Grammatical elements.

2.7.1.1. Verb suppletion.

Sanskrit is similar to other ancient Indo-European languages in that certain verbs do not occur in all contexts and different bases are used suppletively in particular forms. For example, the verb as 'be' is used in present and imperfect indicative forms (asti āsīt [3sg.]) as well as in the optative (3sg. syāt) and the Vedic subjunctive (asat), but bhū is used elsewhere, as in abhūt (3sg. aor.), babhūva (3sg. pfc.), bhavīṣyati (3sg. fut.), bhūyāt (3sg. prec.), bhūta (past ptcple., nom. sg. m. bhūtaḥ), bhavītam (inf.). In a series of sūtras headed by

A 2.4.35: आर्धाधातुकेः (ārdhādhātuke)

Pāṇini provides for such suppletion by letting specified verbs occur in place of others when an ārdhādhātuka affix (A 3.4.114-117 [63]) is used.

The domain in which some verbs occur for others is any
ardhahātuka affix. Thus,

A 2.4.52: अस्तेभ्यः। (aster bhūḥ)
simply provides that bhū occurs instead of as (see 379).
Similarly, as provided for in

A 2.4.53: बुवो वचिः। (bruvo vaciḥ)
vaci(vaciḥ) is used instead of brū (bruvāḥ) 'say, speak' with
any ārdhahātuka: bravīti, abravīti, brūyāt, but avocat, uvāca,
vakṣyati, ucyāt, utka, vaktum.

In other instances, the domains for suppletion are more
restricted. For example, by

A 2.4.36: अदो जग्धिंच्यंति किति। (ado jagdhī
iyapti kitī)

A 2.4.37: लुइँसनोर्स्ल्। (luinsanor ghasī)
jagdh(jagdhīḥ) occurs for ad (adaḥ) 'eat' with iyap(A 7.1.37
[491]) or an affix that is marked with k (kiti/) and begins with
t (ti), but the suppletive base for ad with lūni [A 3.2.110
[233]] and san [A 3.1.7 [279]] is ghasī: atti, ādat, adyat,
vijagdhyā 'having eaten up', jagdha(suffix kta: A 3.2.102 [294]),
aghasat(3sg. aor.: A 3.1.55 [236]), jighatsa (jighatsati) 'wish
to eat'. ghasī also occurs for ad with the suffixes ghan and
ap (A 3. 3.18, 59 [111, 291]) as well as, optionally (anyataras-
syām), with /i/ (A 3.2.115 [233]):

A 2.4.38: घनपोष्या। (ghanapos ca)

A 2.4.40: लितयतन्तरस्याम्। (līṭy anyatarasyām)
E.g., ghāsa 'eating', praghāsa 'voracious eating', jaghāsa l āda
(3sg. pfct.).

As provided for in

A 2.4.42: हनो वध लिङ्क। (hano vadha līni)

A 2.4.43: लुइँ च। (luini ca)

A 2.4.44: आत्मनेपदेभवन्तयतस्याम्। (ātmanepadeśv
anyatarasyām)
vadha occurs for han 'strike, kill' with līni (A 3.3.173) or lūni,
optionally with āțmanepada endings replacing the latter: vadhyāt (3sg. prec.), avadhīt (3sg. aor. act.), āvadhīṣṭa / āhata (3sg. aor. mid. with preverb ā).

The following sūtras deal with suppletion in connection with the verbs in 'go' and in 'study, learn' (adhī-i):

A 2.4.45: इनो गा लुङि (ino gā lūni)
A 2.4.46: नौ गमिरबोधानो (nau gamir abodhane)
A 2.4.47: सनि चा (sanī ca)
A 2.4.48: इनस्त्वा (iṇaś ca)
A 2.4.49: गाँ लिटि (gān līti)
A 2.4.50: विखः लुङ्ङ्रूङ्कोः (vibhāsa lūnīrṇoḥ)
A 2.4.51: नौ च संस्थ्यहोः (nau ca samścāroḥ)

Instead of in, gā occurs with lūni, and gam is used with nī (A 3.1.26 [281]) except in the sense of perceiving (abodhane): agāt (3sg. aor.), gam-i (gamayati) 'cause to go'; but the causative connected with prati-i (praty eti) 'understand' is prati-i-i (pratyāyayati). gam is also suppletive with the desiderative suffix san, not only for in, with the restriction given in A 2.4.46, but also for in: jīgāṃsa (jīgāṃsatī) 'wish to go', prati-i-ṣa (pratiṣiṣati) 'wish to understand', adhi-jīgāṃsa (adhi jīgāṃsate) 'wish to learn'. On the other hand, gān substitutes for in with liṣ, lūn, and lṛṇ (A 3.3.139-140 [258]), optionally where the last two are concerned, and this is the case also with the derivate in -ni to this verb, when the causative takes the suffix san or caṇ (A 3.1.48 [286]): adhi jage (3sg. pftct.), adhy aģiṣṭa / adhy aiṣṭa (3sg. aor.), adhy aģisyata / adhy aiṣyata (3sg. cond.), adhi-jīgāpiṣṭa / adhy-āpiṣṭa (adhi jīgāpiṣati / adhy āpiṣati), adhy ajīgapatī / adhy āpipat (3sg. aor. caus.).

According to A 1.1.56 (100), gā which replaces in by A 2.4.48 (380) is treated as marked with ni, so that, in accordance with A 1.3.62 (140), adhi jīgāṃsa takes ātmane-
pada affixes. Similarly, in and gāñ---which is marked with ṅ to distinguish it from gā related to ṭ (A 1.2.1 [Sii])---agree in taking ātmanepada affixes in agentive forms. Not all verbs in suppletive relation, however, agree with respect to diathesis. Thus, cakṣin 'say, call, explain' is an ātmanepadīn verb (ā caṣte), but khyā, which is in suppletive relation to this verb, is ubhayapadīn:  ā khyāyatā, ākhyāṣyate. Hence, Pāṇini marks khyā with ṅ, to show that, contrary to what would obtain by virtue of this verb’s replacing cakṣin, it takes both ātmanepada and parasmaipada affixes (A 1.3.72, 78 [139, 142]). By

A 2.4.54: चक्षिकः: क्याह् (cakṣīnāḥ khyāḥ)

khyāḥ occurs instead of cakṣin with an ārdhadhātuka affix.

2.7.1.2. Partial doubling, operations on abhyāsa syllables.

Sūtras of the section beginning with A 6.1.1 (24) provide for doubling parts of verbs. Before an ending that derives from iti (iti: A 3.2.115 [233]), a syllable of a verb (dhātoḥ) is doubled, provided it is not an abhyāsa syllable (anabhyāṣasya: A 6.1.4 [52]):

A 6.1.8: लिटि धातोरनवायासस्या (iti dhātor anabhyāṣasya)
The following rules also let segments be iterated:

A 6.1.9: सन्यादोऽि (sanyādoḥ)

A 6.1.10: स्लौ (ślau)

A 6.1.11: चान (cañ)

Derived verbs with san and yañ (sanyānoḥ: A 3.1.7, 22-24 [279-280]) have their first or second syllables doubled. This applies also to a verb if the vikaraṇa sap following it is replaced by ślu (A 2.4.75 [158]) and before the suffix cañ (A 3.1.48 [286]). For example, doubling applies to pac—of pac-a,
in which the ending *pal derives from *liṭ (A 3.4.82 [397]), to
kir- of kir-sa (kir-sa < kṛ-sa: A 6.4.16, 7.1.100 [422-423]),
to yaj-of yaj-ya, to dā-of dā-ti (< dā-a-ti), and to kar-of
kar-a-t (< kār-t-(a-t: A 6.4.51, 7.4.1 [450, 286]): pac-pac-a,
kir-kir-sa, yaj-yaj-ya, dā-dā-ti, kar-kar-a-t.

The first syllable of sequences obtained by such doubling
is called abhyāśa (A 6.1.4 [52]), and particular operations apply
to abhyāśa syllables. A vowel (A 1.2.28 [96]) in such a syllable
is replaced by a short vowel (*hrasvaḥ):

A 7.4.59: हरस्वः (अभ्यासस्य) (*hrasvaḥ [abhyāsasya 58])
E.g., dā-dā-ti > da-da-ti 'gives'. In general, the first (*aḍīh)
consonant (*hal) of an abhyāśa syllable is alone allowed to stay
as a remainder (*sēṣaḥ); in syllables where voiceless stops
(khayāḥ) are preceded by voiceless spirants (*sarpūrvāḥ),
however, these stops are the sole remaining consonants:

A 7.4.60: हलादिः शेषः (halāḍiḥ sēṣaḥ)

A 7.4.61: शर्पूर्वः खयः (śarpūrvāḥ khayāḥ)
E.g., pac-pac-a > papaca 'cooked (lsg. pfct.); sthā-sthā-au >
tasthau 'stayed in place (3sg. pfct.)'. Moreover, velar stops and
h (kuhoḥ) in abhyāśa syllables are regularly replaced by
palatal stops (*cuḥ):

A 7.4.62: कुहोश्चुः (kuhoś cuḥ)
E.g., kir-kir-sa > ... cikirṣa 'wish to do, make', kar-kar-a-t > ...
acikarat 'caused to do, to make (3sg. aor.)'.

Elements in abhyāśa syllables of particular shapes or
belonging to specified stems are subject to special operations.
Thus, *iy and *uv (iyaṇuvaṇaū) respectively substitute for *i-
and *u-vowels (yvoḥ) of abhyāśa syllables followed by vowels
not homogeneous with them (asavarṇe [loc. sg.]):

A 6.4.78: अभ्यासस्यासवर्णः (आचि योरियुवाल्लाही)
(abhyāsasyāsavarne [acy yor iyānuvaṇaū 77])

According to

A 7.4.66: उरत (ur at)
PĀÑINI

A 7.4.67: युतिस्वाप्योऽ: सम्प्रसारणम् (dyutisvāpyoḥ samprasāraṇam)
a (at: A 1.1.70 [85]), automatically followed by r (A 1.1.51 [93]), substitutes for a r- vowel in an abhyāsa syllable, and samprasāraṇa substitution (A 1.1.45 [38]) applies to abhyāsa syllables formed from the bases dyut 'flash, lighten' and svāp-i 'make to sleep' (dyutisvāpyoḥ); e.g., va-vṛdh- (< var-vṛdh- < ... vṛdh-vṛdh- ), di-dyut- (< ... dyut-dyut ) in vavrdehe 'grew' (3sg. pfct.), vi didyute 'flashed, lightened' (3sg. pfct.).

Some operations apply to abhyāsa syllables of stems in particular grammatical contexts. For example,

A 7.4.69: दीर्घ स्व: किति (लिटि) (dirgha inaḥ kiti [liti 68]) provides that a long vowel (dirghaḥ) substitutes for the i of an abhyāsa syllable formed from the base in 'go' (inaḥ) followed by an ending that derives from iit (liti) and is marked with k(kiti); e.g., i-y-atus iyatus (3du pfct.). In forms with iit endings, long-vowel substitution also applies to initial a(ata ādeḥ), and the stem syllable that follows then takes the initial augment nuc (A 1.1.46 [17]) if the stem in question has two consonants (dvihalaḥ):

A 7.4.70: अत आदे: (ata ādeḥ)

A 7.4.71: तस्मान नु द्विहलः (tasmān nud dvihalaḥ)
E.g., āta (3sg. pfct. act.) 'wandered' < ā-at-a < at-a, ānāja 'smeared, anointed' < ... ā-anj-a < ... anj-a. Also in forms with iit endings, the vowel of an abhyāsa syllable from the base bhū 'be, become' (bhavateḥ) is replaced by a:

A 7.4.73: भवतेरः (bhavater aḥ)
E.g., babhūva (3sg. pfct.).
The substitution of slu for sap also entails special replacements for vowels of abhyāsa syllables.

A 7.4.75: निजां त्रयाणां गुण: श्रौः (nijāṁ trayāṇam)

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A 7.4.76: भृजामिति (bhrīm it)

concern such syllables from two sets of three verbs each, within the third major group of verbs (172). The vowels of the abhyāsa syllables gotten from the three (trayaṇām) verbs starting with nićīr-'wash' (nićīm) are replaced by guṇa vowels (A 1.1.2 [9]), and i(/i/) substitutes for the vowels in abhyāsa syllables of the three bases starting with gubhṛī 'maintain, nurture': nenekti(3sg. pres. act.), vevekti'segregates' (vićīr), veveśti 'surrounds, encompasses' (viśī); bibharti, mimite. 'measures' (mān), jihite'runs, flees' (ohān).

In addition, i substitutes for certain vowels in abhyāsa syllables formed from stems before the suffix san (sani: A 3.1.7 [279]). By

A 7.4.79: सन्यति (sany atāḥ)

A 7.4.80: ओऽ: पुयाण्ज्यपरो (ōḥ puyāṇjy apare)

this replacement applies to a (atah) in general and to u-vowels (ōḥ) before labials, semivowels or j (puyāṇjī) followed by a-vowels (a pare); e.g., pipakṣa (pipakṣati, pipakṣate) 'wish to cook', pipaviṣa (pipaviṣate) 'wish to purify, filter' (pu-pav-īsa).

Abhyāsa syllables of stems with the suffix yan under go a series of particular operations. According to

A 7.4.82: गुणो यद्दुकोऽ: (guna yanlukoh)

A 7.4.83: दीर्घोकिति (dirgho'kitaḥ)

guṇa substitution applies to final i-, u-, r- and Ṛ-vowels (A 1.1.3 [97]) not only if a stem is followed by yan but also if this suffix has been deleted (yanlukoh), and any other vowel is replaced by a long one (dirghaḥ) under the same conditions, provided the abhyāsa syllable in which it occurs is not marked with k (akitaḥ); e.g., cečiya (cečiyate) 'repeatedly pluck, gather, heap', ločiya (ločiyate) 'repeatedly cut', pāpacya (pāpacyate) 'repeatedly cook.' An abhyāsa syllable is said to be
marked with $k$ by virtue of receiving an augment with this marker. For example, if such a syllable ends with $a(ataḥ)$ and derives from a stem with a final nasal ($anunāsikāntasya$), it gets the final augment $nuk$:

A 7.4.85: नुगतोसनुनासिकांकान्तसया (nugato
'nuṇāsikāntasya')

E.g., $tantanya$ ($tantanyate$) 'repeatedly stretch' ($<ta.tan.ya$).

Derivates such as $ačikarat$ also involve special operations for vowels of abhyāsa syllables in particular contexts, as provided for in

A 7.4.93: सन्यत्सनिच्चस्परेंरम्ण्वपो (sanval laghuni
caṁpare'naglope)

A 7.4.94: दीर्घालघोः। (dirgho laghoḥ)

If the vowel in question occurs before a stem syllable with a light vowel ($laghuni$: A 1.4.10 [37]) and at a step in the derivation the stem occurs with $ni$ followed by $caṁ$ ($caṁpare$), provided a vowel $a\tilde{a}i\tilde{u}ōrś$ is not subject to deletion before $ni$ ($anaglope$), then the vowel of the abhyāsa syllable is subject to operations as apply in the case of derivates with $san$ ($sanvat$), and a light ($laghoḥ$) vowel of an abhyāsa syllable is replaced by a long vowel ($dirghaḥ$: A 1.2.27 [35]). That is, short $a$ and short or long $u$-vowels are replaced by $i$ (A 7.4.79-80 [385]), and the resulting vowel is replaced by a long one if the following syllable does not begin with a cluster. For example, $kārī-a-t > kār-a-t$ (A 6.4.51 [450]) $> kār-a-t$ (A 7.4.1 [286]) $> kaṁ-ka-r-a-t$ (A 6.1.11 [382]) $> akār-ka-r-a-t$ (A 6.4.71 [238]) $> akār-ka-r-a-t$ (A 7.4.60 [383]) $> ači-ka-r-a-t$ (A 7.4.62) $> ači-ka-r-a-t$ $> ačikarat$, but $aṭataksat$ 'caused to fashion', in which the $-a$ of the abhyāsa syllable precedes a stem segment with a heavy vowel ($-taks-a$).

2.7.1.3. Other operations on verbs and verbal affixes.

2.7.1.3.1. Rules outside the section headed by A 6.4.1.
Samprasāraṇa substitution (A 1.1.45 [38]) applies to certain verbs in given contexts. Before an affix marked with \( k \) (kiti), vac 'speak, say', svap 'sleep, dream', and verbs of the subgroup beginning with yaj (160) (vacisvapīyajādīnām) undergo this replacement, which applies also to grah 'seize, grasp, take', jyā 'become old, worn out', vay 'weave', vyadh 'pierce, strike', vaś 'desire', vyac 'deceive, cheat', vraśc 'cut, hew', prach 'ask', bhras 'fry' (grahijāvayivyadhivaṣṭi-vicātivṛṣcatipṛćchatībhṛjatīnām), not only before affixes marked with \( k \) but also before those marked with \( ri \) (niti ca):

A 6.1.15: वधिस्वच्छपियजादीनाखिति (सम्प्रसारणम्) (vacisvapīyajādīnān kiti [samprasāraṇam 13])

A 6.1.16: ग्रहह्यावविनय्यन्यधिपत्तिचित्तिकव्रूच्चिपृच्छितिः-भृजजलीनां खितिति च (grahijāvayivyadhivaṣṭi-vicātivṛṣcatipṛćchatībhṛjatīnāṁ niti ca)

For example: vac-ta (suffix kta: A 3.2.102 [294]) > uac-ta > uc-ta (A 6.1.108 [533]) > ukta (A 8.2.30 [544]) 'spoken, said', svap-ta > suap-ta > supta 'asleep', yaj-ta > iaj-ta > i j-ta > iṣ-ta (A 8.2.36 [544]) > iṣṭa (A 8.4.41 [574]) 'reverenced, offered, sacrificed', vac-ya-te (suffix yak: A 3.1.67 [156]) > ucyate (3sg. pass. pres.), svap-ya-te > ... supyate, yaj-ya-te > ... iyyate, grah-ya-te > ... grhyate, grah-nā-tī (suffix śnā: A 3.1.81, 1.2.4 [157, 513]) > grah-nā-ti > ghṛn-nā-ti > ghṛnātī (A 8.4.2 [570]).

Samprasāraṇa substitution also applies to a semivowel of an abhyāsa syllable (abhyāsasya: A 6.1.4 [52]) gotten from verbs of both (ubhayeśam) the groups referred to in A 6.1.15-16, when a liṭ ending follows (liṭi):

A 6.1.17: लिटयच्यासस्योभेेषाम् (liṭy abhyāsasyobhayeśam)

For example: voc-a (1sg. pfc.) > vac-vac-a > uc-vac-a > uvaca, vyadh-/tha (2sg. pfc.) > ... vivadh/tha.

In certain instances, samprasāraṇa substitution is optional. For example, the intensive of śvī 'swell', derived with
the suffix yan (A 3.1.22 [280]), is either šosūya (šosūyate) or šešviya (šešviyate), and in the perfect this verb has the forms šušāva | šiśvāya (3sg.), šušuvatuḥ | šiśvīyatuḥ (3du.), etc. Now, the past participle of śvi is śūna, so that this verb is included in the group that begins with yaj (A 6.1.15 [388]): śvi-ta > śui-ta > šu-ta > śū-ta (A 6.4.2 [421]) > śūna (A 8.2.45 [549]). In addition, endings that derive from 11ṭ and are not marked with p are treated as marked with k when they follow a verb that does not end in a consonant cluster (A 1.2.5 [514]), so that a form such as šušuvatuḥ is accounted for in terms of the operations provided for in A 6.1.15-16 (388). On the other hand, a form like šušuvatuḥ alternates with šiśvīyatuḥ, so that having samprasāraṇa substitution take effect by A 6.1.15 is not sufficient. Moreover, this rule does not provide for the replacement before elements not marked with k, such as the 11ṭ ending naḥ, although here too samprasāraṇa replacement should apply optionally. Hence,

A 6.1.30: विभाषा चेषः (लिङ्गन्दे:) (vibhāsā śvēḥ


There are verbs whose structure is such that they could possibly, though undesirably, undergo samprasāraṇa substitution twice. Consider, for example, vyadh ‘pierce’. The affixes kta, yak are directly marked with k, and šyan (A 3.1.69 [157]) has n̥-marking imposed on it (A 1.2.4 [513]), so that samprasāraṇa replacement applies to vyadh before these
items, as provided for in A 6.1.16 (388): vyadh-<i>ta</i> > viadh-<i>ta</i> >
vidh-<i>ta</i> > vidh-<i>dha</i> (A 8.2.40 [547]) > viddha (A 8.4.53
[577]), vyadh-ya-<i>te</i> > viadh-ya-<i>te</i> > vidhyate, vyadh-ya-<i>ti</i> > ...
vidhyati. Since <i>v</i>dha contains <i>v</i>; however, samprasārana sub-
stitution could apply again, which would result in undesired
forms: *uddha, *udhyate, *udhyati. To preclude such double
samprasārana substitution, Pāṇini specifies that this does not
apply (na) before a samprasārana vowel (samprasārane):

A 6.1.37: न सम्प्रसारणे सम्प्रसारणम् (na samprasārane
samprasāranaṃ)

Samprasārana replacement must also be precluded, in
particular contexts, for certain verbs. For example, <i>v</i>enā
'weave' is part of the group that begins with <i>y</i>aj, subject, by A
6.1.15 (388), to samprasārana substitution before affixes
marked with <i>k</i>, as in <i>uta</i> 'woven'. However, as provided for in

A 6.1.40: बेन: (लिटि न सम्प्रसारणम्) (venaḥ [liṭi 38,
na samprasāranaṃ 37]

A 6.1.41: ल्यापि चा (lyapī ca)
this does not (na) apply before an ending that derives from
liṭ as well as before lyap (lyapī: A 7.1.37 [491]): vā-<i>atus</i> (A
6.1.45 [392]) > <i>v</i>-<i>atus</i> (A 6.4.64 [451]) > vā-<i>v</i>-<i>atus</i>(A1.1.59 [101])
> vavatūs (A 7.4.59 [383]), praṛavya (pravātvā) 'after
weaving'.

A series of sūtras provides for replacing verb-final
vowels with -ā. According to

A 6.1.45: आदेच उपदेशे शिति (ād eca upadeśeśiti)
the final vowel of a verb that ends with <i>e o ai au</i> (ecaḥ)
before it undergoes any operation other than the dropping of
markers (upadeśe) is unconditionally replaced by ā (āt), but
this does not apply if an affix marked with <i>s</i> follows (asiti).
For example, <i>v</i>enā 'weave', gai 'sing' have -<i>ay</i>, -<i>āy</i> before <i>Śap</i>,
as in vayati (<i>ve</i>-<i>a</i>-<i>ti</i>: A 6.1.78 [524]) 'weaves', gāyatī (<i>gai</i>-<i>a</i>-<i>ti</i>) 'sings', but -<i>ā</i> in derivates such as vātūm (inf.),
gātum.

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Other verbs undergo this substitution in more restricted environments. For example, *kri 'buy', *in (adhī-i 'study, learn'), *jī 'conquer, be victorious' have -ā before the causative suffix *nic (A 3.1.26 [281]): krāp-i (< krā-i: A 7.3.36 [124]), adhi āp-i, jāp-i mi 'deceive, change, harm' (3sg. pres. mināti), mi 'set, build' (minoti), and di 'perish' (diyate) have -ā instead of -e in contexts which regularly condition the occurrence of guna vowels, as well as when these verbs are used with *lyap: *pramātum, dātum, pramāya, upadāya. The substitution of -ā for the final vowels of the verbs mentioned, under the conditions noted, is provided for in:

A 6.1.48: क्रिङ्जाना णौ (krīṅjināma nauss)

A 6.1.50: मीनतिमिनोतिदिङ्क ल्यपि चा (minātiminotidinām lyapi ca)

In the same contexts, the -r of if 'cling, adhere to' is optionally replaced by -ā:

A 6.1.51: विभाषा लीयते: (vibhāsā līyateḥ)

For example: *lātum / letum, *vīlāya / viliya 'after being absorbed into'.

The regular guna and vyādhi replacements for r are a and ā, automatically followed by r (A 1.1.51 [93]). Accordingly, one has derivates such as darś-i (darśayati) 'cause to see, show', darśana 'seeing, sight', sarjana 'loosing, creating', from *drś 'see, look' and *sṛj 'let loose, create'. On the other hand, the infinitives of these verbs are draśṭum, sraśṭum, not *darśṭum, *sarśṭum, and in the aorist one has adrāṣṭit, asrāṣṭit, and so on. Pāṇini therefore lets the augment am (A 1.1.47 [16-17]) follow the r of sṛj and drś (*sṛjdrśoḥ) when these verbs occur before an affix that begins with a consonant other than a semivowel or a nasal (*jhalī), provided the affix in question is not marked with k (*akiti):

A 6.1.58: सुजिह्रोश्चिंत्यमविकिता (sṛjdrśor jhalī am akiti)

Moreover, in order to account for alternants such as tarptum,
traptum 'please', Pāṇini provides, in

A 6.1.59: अनुवात्स्य चर्वुपधस्त्यान्यतरस्याम्

(anudāttasya cardupadhasyānyatarasyām)

that am is also (ca) optionally (anyatarasyām) introduced, in
the same contexts, to any verb that has penultimate r
(cardupadhasya) and is taught with a low-pitched base vowel
(anudāttasya).

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To account for derivates such as prasutya 'after pressing',
upacitya 'after heaping, gathering up' — where iyap replaces
ktvā (A 7.1.37 [491]) in compounds with the verbs su, ci ---
and somasut 'one who has pressed out Soma juice',
agnicit 'one who has set up a sacrificial fire', formed by affixing kvip to
ci, su (A 3.2.90–91 [295]), Pāṇini lets the final augment tuk (A
1.1.46 [17]) be introduced to a short vowel (hrasvasya) before a
kṛt suffix (kṛti) that is marked with p (piti).

A 6.1.71: हस्स्य पिति कृति तुकः (hrasvasya piti
kṛti tuk)

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Basic verb endings (A 3.4.78 [64, 232]) are subject to
particular operations, depending on the L-affixes they replace.
Parts of endings, as well as whole endings, are replaced, and
augments are added to segments of endings.

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The part of an ātmanepada ending (A 1.4.100 [64]) which
begins with its last vowel (ṭeh: A 1.1.64 [41]) is replaced by e
if the ending derives from an L-affix marked with t (ṭita
[lasya]):

A 3.4.79: तितआत्मनेपबाणांटेरे(लस्य) (ṭita
ātmanepadānāṁ ṭer e [lasya 77])

This is only the general rule, to which there are exceptions.
The entire ending thās (thāsaḥ: A 1.1.55 [95]) is replaced by se
if it derives from an L-affix marked with t; eś (A 1.1.55) and
irec respectively substitute for la, jha that derive from Ili:

A 3.4.80: धाससे (thāsas se)

A 3.4.81: लितस्तेजोरेसिरेच् (liṭas tajhayor eś irec)
For example: edhate (έ... edh-ta) 'thrives', edhase (2sg. έ... edh-thās), cakre (έ... kr-e έ... kr-ta) 'did, made' (3sg. pfct. mid.), cakrire (3pl.).

The nine basic parasmaipada endings are respectively replaced by ṇaḷ atus us thal athus a ṇaḷ va ma if they derive from liṅ:

A 3.4.82: परस्मैपवानां नलासुस्थलाथसनल्वमाः।
(parasmaipadānām ṇalāsusuthalathusanālvamāh)
The same substitutions apply, but only optionally (vā) to parasmaipada endings which replace laṭ (laṭaḥ) after vid 'know' (vidaḥ):

A 3.4.83: विदो लटो वा (vido laṭo vā)
E.g., cakāra (έ... kr-a έ... kr-ti), cakratuh, cakruḥ and veda vidatuḥ, viduh in addition to vetti, vittaḥ, vidanti. Moreover, as provided for in

A 3.4.84: ब्रुव: पञ्चानाहायत आहो ब्रुव:। (bruvah
pañcānām ādita āho bruvah)
the first five (pañcānām āditaḥ) parasmaipada endings are respectively replaced by ṇaḷ atus us thal athus if they derive from laṭ introduced after brū 'say, speak' (bruvah), and at the same time āḥ substitutes for brū (āho bruvah): āha, āhatuh, āhuḥ, āṭtha (έ... āḥ-tha: A 8.2.35, 8.4.55 [544, 578]), āhatuh in addition to bravita, brūtah, bruvanti, bravisī, brūthah, but only brūtha, bravimi, bruvah, brūmah.

In general, basic endings that replace loṭ (loṭaḥ) are treated in the same way as endings which derive from laṇ (laṇivat):

A 3.4.85: लोटो लइवत् (loṭo laṇivat)
For example pacatāṃ, pacatam, pacata, pacāva, pacāma have the endings tāṃ (3du.), tām (2du.), ta (2pl.), va (1du.), ma (1pl.) instead of tas, thas, tha, mīp, vas, mas (A 3.4.99-101 [400]). However, the -i (eḥ) of basic endings gotten from loṭ is generally replaced by u:
A 3.4.86: एरुः | (er up)
E.g., pacatu (3sg.). On the other hand, if sip derives from lot it is replaced by hi which is not marked with p(apit), and ni replaces mi derived from lot:

A 3.4.87: सेर्ह्य पिच्चा | (ser hy apic ca)

A 3.4.89: मेरिँ | (mer niḥ)
E.g., lunih/(2sg.)'cut!', adāni'let me eat'. The last-cited form has not merely ni but augmented āni, and the augment ā occurs in first-person forms of the dual and plural also: adāva, adāma.

By A 3.4.92: आह्दुतमस्य पिच्चा | (āḍ uttamasya pic ca)
an uttama ending (uttamasya) that replaces lot receives the initial augment āṭ and is marked with p.

Now, lot bears the marker ṇ, so that A 3.4.79-80 (396) apply to āṭmanepada endings which replace this L-affix. In addition,

A 3.4.90: आमेत | (ām etah)
provides that ām replaces e(etaḥ) gotten thereby, as in pacatāṁ (< ... pac-te < pac-ta), pacetāṁ (< ... pac-āte < pac-ātām). In order to account for forms of the type pacasva (2sg.), pacadhvam (2pl.), however, an exception to A 3.4.90 is necessary:

A 3.4.91: सवाभ्याय वामो | (savābhyaṁ vāmau)
provides that e of a lot ending is replaced by va and am (vāmau) after s and v (savābhyaṁ) respectively. In addition, ai substitutes for e of an uttama ending derived from lot:

A 3.4.93: एत ऐ (उत्तमस्य) | (eta ai [uttamasya 92])
E.g., karavai, karavāvahai, karavāmahai.

Endings that replace leṭ (A 3.4.7 [233]) are subject to operations given in

A 3.4.94: लेटोडातौ | (leṭo'dātau)
A 3.4.95: आत ऐ (āta ai)
A 3.4.96: चैतोन्यत्त्रा (vaito'nyatra)
A 3.4.97: इतस्च लोप: परस्मैपदेशु (itaś ca lopaḥ parasmaipadesu)
A 3.4.98: स उत्तमस्या (sa uttamasya)

By the first of these sūtras, a leś ending receives either of two initial augments, at, at; e.g., jōsiṣat (3sg. subj. < ... juṣ-ạt < juṣ-ṭ) 'will, should enjoy', patātī (< ... pat-āti < pat-ṭi) 'will, should fall'. The next two rules introduce ai as a replacement for parts of endings. This substitutes for ā (ātaḥ) of a leś ending, as in karavaite (3du. mid. < ... kr-aite < kr-āte < kr-ātām) 'will, should do', karavaithe (2du. < ... kr-aithe < kr-āthe < kr-āthām). It also replaces, optionally (vā), e in endings other than those where ai substitutes for ā by the previous rule (anyatra 'elsewhere'); e.g., lśai (1sg. mid. < ... lś-e < lś-ī) 'will, may have power over'. Also optionally, -i in parasmaipada endings (parasmaipadesu) is replaced by zero (lopaḥ); e.g., jōsiṣat has the ending t, but patātī has ti. In addition, the -s of anuttama ending is optionally dropped to account for forms with the endings vas / va, mas / ma, as in karavāṇaḥ, karava, karavāmaḥ, karavāma.

The -s of an uttama ending derived from an L-affix marked with ni (nītaḥ), on the other hand, is obligatorily (nityam) deleted:

A 3.4.99: नित्यं हितं। (nityam nītaḥ)

For example, apacāva, apacāma (1du., pl. Impfct.) 'cooked' have va and ma instead of vas and mas which replace laṅi. The -i (itaḥ) of an ending that replaces an L-affix marked with ni also is obligatorily dropped:

A 3.4.100: इतस्या (itaś ca)

For example, apacat (3sg. Impfct.), apacas (2sg.) have -t and -s instead of ti and si. On the other hand, the -i of mip is not subject to this deletion. For, by
A 3.4.101: तस्थस्थथिमिपांतत्तानामः (tasthasthamipāṁ tāntantāmaḥ)
the endings tas thas tha mip, respectively, are replaced by
tām tam ta am if they derive from an L-affix marked with ṅ, as in
apacatām (3du. impfct.), apacatam (2du.), apacata (2pl.),
apacam (1sg. < apaca-am).

A series of operations applies to endings that are
replacements for lin. All such endings are subject to
augmenting as provided for in:

A 3.4.102: लिनस्तीयुतः (liṅas slyuṭ)

A 3.4.103: यासुत् परस्मापदेशु वातो दिच्चा (yāsūt
parasmaipadesūdātto nīc ca)

A 3.4.104: किदासिषी (kid āṣiṣī)

By A 3.4.103-104, the initial augment yāṣuṭ occurs in para-
smālipada endings (parasmaipadesu), where this augment has a
high-pitched vowel (udāṭṭhā), and the ending is then marked
with ṅ (nīt) unless the L-affix is introduced on condition that
a wish is expressed (āṣiṣī), in which case the ending is marked
with k (kīt). By A 3.4.102, then, āṭmanepada endings that
substitute for lin (liṅah) receive the initial augment slyuṭ.
For example, syāṁ (1sg.) derives from as-mi, with mip
replacing lin. The ending mip is replaced by am (A 3.4.101 [400]),
which receives the augment yāṣuṭ. Moreover, the
augmented ending is marked with ṅ, so that the vowel of as is
deleted before it (A 6.4.111 [456]): as-mi > as-am > as-yāsam
> as-a-yāsam (A 3.1.68 [157]) > as-yāsam (A 2.4.72 [158]) >
as-yām (A 7.2.79 [442]) > as-yām (A 6.1.101 [532]) > syām;
similarly, vacyām, from the verb vac’speak, say’. To account
for precatives such as ucyaṁ, on the other hand, the augment-
ed ending is marked with k in order to let it condition sam-
prasārana substitution (A 6.1.15 [388]). pacevahi (1du. ml.) is
derived from pac-slyvahi with an augmented ending: pac-vahi
> pac-slyvahi > pac-a-slyvahi > pac-a-lyvahi > pac-a-ivaḥi (A
6.1.66 [522]) > pacevahi (A 6.1.87 [528]).
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In addition, particular īṇ endings are subject to operations as stated in:

A 3.4.105: जस्य रन् (jhasya ran)
A 3.4.106: इतोत् (ito'nt)
A 3.4.107: सुत तिथोः (sut tithoḥ)
A 3.4.108: जहेरुस् (jher jus)

The endings jha it jhi are replaced by ran a (at) jus, and the augment s (sut; see 18) is added to t th of īṇ endings. This augment appears in precative forms (e.g., 3sg. mid. paksista), but is deleted in other forms (A 7.2.79 [442]). For example:

pac-jha > pac-ran > pac-slyran > pac-a-slyran > pac-a-lyran
pac-a-iran > pac-iran > pac-slyra > pac-a-siya > pac-a-lya > paceya, pac-ta > pac-slysta > pac-a-slysta > pac-a-lyta > pac-a-ita > paceta, pac-ta > pac-slysta > pac-sista > pak-sista (A 8.2.30 [544]) > paksista (A 8.3.59 [563]) > paksista (A 8.4.41 [574]), as-jhi > as-us > as-yāsus > as-yāus > as-yus (A 6.1.96 [531]) > syus

The ending jhi derived from L-affixes marked with ī is also replaced by jus after sic (A 3.1.44 [236]), an abhyasta complex (A 6.1.5 [52]), and the verb vid 'know' (sijabhastavidbhyaḥ), as well as when it follows -ā(ātāḥ) after the deletion of sic:

A 3.4.109: सिजभयस्तविदभयश्च (sijabhystavidbhyaś ca)
A 3.4.110: आतः (ātāḥ)

For example: kṛ-īṇi > kṛ-jhi > ... kṛ-s-jhi > kār-s-jhi (A 7.2.1 [412]) > akār-s-jhi (A 6.4.71 [238]) > akār-s-us > akārṣus (A 8.3.59 [563]) 'they (have) made, did, have done', dā-īṇi > dā-jhi > dā-a-jhi > dā-jhi (A 2.4.75 [158]) > dā-dā-jhi (A 6.1.10 [382]) > adā-dā-jhi > ada-dā-jhi (A 7.4.59 [383]) > ada-dā-us > adadus (A 6.4.112 [456]) 'they gave', vid-īṇi > vid-jhi > vid-a-jhi > vid-jhi > avid-jhi > avidus 'they knew, learned', dā-īṇi > dā-jhi > ... dā-s-jhi >
adā-s-jhi > adā-jhi (A 2.4.77 [406]) > adā-us > adus (A 6.1.96 [531]) 'they gave, have given'.

There are two triplets of endings called prathamah (A 1.4.101 [64, figure A]). The three endings in each prathamah triplet (prathamasya) respectively undergo substitution by dā rau ras if they derive from lut (A 3.3.15 [233]):

A 2.4.85: लुटः प्रथमस्य हारोरसः। (lutah prathamasya dāraurasah)
For example: kṛ-lut > kṛ-ti > kṛ-ā > kṛ-tās-ā (A 3.1.33 [236]) > kar-tās-ā (A 7.3.84 [127]) > kartā (A 6.4.143 [503]), kṛ-lut > kṛ-tas > kṛ-rau > kṛ-tās-rau > kartārāu (A 7.4.51 [435]), kṛ-lut > kṛ-jhi > kṛ-ras > kṛ-tās-ras > kārtāras 'will do, make'.

By A 3.4.100 (400), the -t of tip and sip is dropped if these endings have replaced an L-affix marked with nī, such as ian. The resulting affixes t and s, moreover, are assigned the class name aprkta (A 1.2.41 [74]). According to

A 6.1.68: हल्ल्याध्व्यो दीर्घात्सुतिस्पृक्तं हल् (लोपः)
(haliyābbhyo dirghāt sutisy aprktaḥ hal [lopaḥ 66])
a consonant (hal) is deleted (lopaḥ) if it is an aprkta element su or one that derives from ti si, when such an affix follows a consonant or a feminine suffix ni, āp (haliyābbhyah) which has not been subject to shortening (dirghāt 'long vowel'); e.g., ahan (2-3sg. impfct.) 'struck, killed' < ahan-t, ahan-s.

The verbs kṛ 'buy' and muś 'steal' both take the suffix űnā (A 3.1.81 [157]): krīnāti, muṣnāti, krīnāsī, muṣnāsī contain űnā before the endings tip and sip. A vowel-final verb such as kṛ also occurs with űnā before ni that replaces sip derived from lut (A 3.4.87 [398]): kṛ-śi > kṛ-hi > kṛ-nā-hi > kṛ-nī-hi (A 6.4.113 [456]) > krinni (A 8.4.2 [570]). The comparable form of a consonant-final verb like muś, however, is muṣāna. Accordingly, in

A 3.1.83: हल्: Šn: शानज्ञ्ञी। (haliḥ Šnḥ Sānaj Jhau)
Pāṇini provides that śṇā is replaced by śānac if it follows a consonant (halaḥ) and is followed by hi(hau). He derives a form like muṣaṇa as follows: muṣ-si > muṣ-hi > muṣ-nā-hi > muṣ-āna-hi > muṣ-āna (A 6.4.105 [455]) > muṣaṇa.

There are certain verbs such that some of their aorist forms have a suffix s, and others do not. For example, from the verb dā, one has ādiṣi 'I took, have taken' but adāl'he gave, has given'. To account for this, Pāṇini allows sīc (A 3.1.44 [236]) to be introduced and then dropped:

A 2.4.77: गतिस्थाघुपाप्रभुष्य सिद्ध: परसमपदेश (लुक्)
   (gātisthāghupābhūbhyaḥ sicaḥ parasmaipadeṣu
   [ luk 58])

provides that after gā'go' (gāti), sthā'be in place', verbs of the ghu set (A 1.1.20 [51]), pā 'drink', and bhū 'be, become', sīc is replaced by zero (/uk) when parasmaipada suffixes follow (parasmaipadeṣu); e.g., agāt, asthāt, adāt, apāt, abhūt. dhet 'suck' belongs to the ghu class, but sīc is not obligatorily dropped after this verb with parasmaipada endings, contrary to A 2.4.77; e.g., adhāsit, adhāt. Another rule is obviously required.

A 2.4.78: विभाष घ्राघेस्त्रांच्चास:। (vibhāṣā ghrādheṣ- sācchāsaḥ)

lets sīc be deleted optionally (vibhāṣā) before parasmaipada endings after the verbs ghrā 'smell, sniff' (aghrāsīt, aghrāt), dhet, sā (< so: A 6.1.45 [392]) 'sharpen' (asāsīt, asāt), chā(< cho) 'cut' (acchāsīt, acchāt), sā (< so) 'conclude, terminate' (asāsīt, asāt).

A 2.4.79: तनादभ्यस्तथासौ:। (tanādibhyas tathāsoḥ)

serves to account for forms in which sīc does not appear before certain ātmanepada endings: This affix is optionally dropped after verbs of the group that begins with tan (tanādibhyah: 155, 177), if ta or thās follows (tathāsoḥ); e.g., ataniṣṭa/ata, ataniṣṭhaḥ/atathāḥ.

Certain Vedic aorist forms lack a suffix sīc or añ. For
example, aksan 'ate, have eaten', agman 'went, have gone' do not have ad, which occurs in aghasan and agaman, forms of the verbs ghasi' and gami' (A 3.1.55 [236]); hva(r (< hva-r-s) of mā hvaḥ 'do not totter', var(< var-t) of vi vah 'has uncovered', aprāti 'has filled', vahr(< varj-s) of mā paraḥ vahr 'do not turn away', akraṇ 'have made', ajñata 'have arisen' lack the suffix sic found in hvaṛṣiḥ, avarṣiṣam (1sg. [3sg. avarit]), aprāṣiṣam (3sg. aprāṣit), avarṣiṣam (2sg. neg. imper.: mā varṣiḥ), akāṛṣuḥ, ajanṣīṣata. Since not all the verbs in question take sic, it is of course not proper to introduce this suffix after them and then delete it. Nor is it acceptable to do this for the verbs which do take sic in non-Vedic usage. Accented forms with sic have high pitch optionally on their first vowels (A 6.1.187 [600]), and this applies even if sic is dropped, so that a form like dhātām (3du.) is allowed to have a high-pitched first or second vowel. This should not be allowed, however, for comparable forms of the verbs under consideration. Accordingly, by

A 2.4.80: मन्त्रे घसाहरणाः वर्धादवर्च्छ्कम्रमिनिभ्यो लोह:।
(mantre ghasahvaranāśavardahādvṛcckrami-
janibhyo leḥ)
Pāṇini provides that, in mantra usage (mantre), the abstract element li which is generally replaced by sic --- that is, cl — is deleted after ghas, hvar, naś, vṛ, dāh, verbs in -ā, vṛj, kr, gam, and jan; see 410.

The abstract suffix li that follows ām (āmaḥ: A 3.1.35 [286]), that is, /lī/, is also deleted:

A 2.4.81: आम:। (āmaḥ)

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As I have pointed out (295), items such as -su, -ci in somasut, agnicīt are derived in the same way as agent nouns like sotr and cēṭr; by introducing an agentive affix after verbs. The affix in question is kvip, which is always deleted. According to

A 6.1.67: वेरपृक्तस्य (लोप: ) (ver aprktasya ljopah 66)
an element \( vi \) (\( ve\)) which is apr\( kta \) (apr\( ktasya \): \( A \) 1.2.41 [74]) --- that is, one whose \( i \) is a nasalized vowel serving as a marker, hence deleted unconditionally --- is replaced by zero. After the affix has been dropped, an operation conditioned by a suffix marked with \( k \) nevertheless still applies (\( A \) 1.1.62 [103]): the final augment \( tuk \) is added (\( A \) 6.1.71 [394]) to the short vowels \( -u, -i \) of \( -su, -ci \).

**Remark.**

Details concerning forms accounted for by \( A \) 2.4.80 (407) and Vedic passages in which they occur are dealt with in part VII.1 of my work. In the present context, I need only comment briefly on two of the verbs with which the sūtra is concerned. The rule accounts for forms like \( prāṇaṅk \) in passages such as RV 1.18.3b, 7.94.8b, VS 3.30b: (\( mā nā ... \) \( dhūrti: \) प्रणाः मर्यास्या।. Western exegetes interpret \( prāṇaṅk \) as a root aorist form of \( naś \) 'reach', etymologically connected with \( aś \) : 'Let not' the crookedness of a ... mortal reach us.' This interpretation is also given by Indian commentators, who say \( prāṇaṅk \) derives from \( naś \) 'reach, encompass'. Thus, for example, Uvaṭa in his commentary on VS 3.30: पपुर्वस्य नशेत्यायथस्यैतद्युपमः. In addition, however, the form is said to derive from \( naś \) 'disappear, perish'. For example, the Kāśikā on \( A \) 2.4.80 quotes the Vedic passage given above and refers the form \( prāṇaṅk \) to this verb; in its comments, the Nyāsa explicitly says the verb in question is \( naś \) 'disappear' (II.322: \( pāṇaḥ \) अदर्श्ये). In his comments on VS 3.30, Mahādhara gives both alternatives. Moreover, under the interpretation that derives \( prāṇaṅk \) from \( naś \) 'disappear', he takes this form to have causative meaning, and paraphrases it with \( nāśayatu \) [\( mā pāṇaḥ \) पासक्य प्रकर्षं व्याप्नोते। नशेत्यायथस्यै। यदा नश अदर्श्ये। मा प्राणक्य प्रकर्षं मा नाशयतु।] \( A \) 2.4.80 also serves to account for
root aorist forms such as dhak (3sg. inj.), which Western
interpreters derive from dagh ‘reach’. It is patent, however,
that Pāṇini’s sūtra refers to dah. Pāṇiniyas and others also
derive dhak and such from dah, although they give contextually
appropriate glosses, not just ‘burn’. For example, in his
commentary on RV 6.61.14, Śāyaṇa glosses mā... ́ā dhak with
nābhidāha and then explains that this means ‘do not push away’.

[मा ... आ धक् नाभिदह न बाधस्वा] Commenting on the same
passage repeated in TBr. 2.4.3.1, Śāyaṇa glosses with mā
dhākṣī, then says this means ‘do not cause to disappear, to
perish’. [मा धक् मा धाशी: मा बिनाशया]

2.7.1.3.2. Rules headed by A 6.4.1.

411 Verbal stems take part in a number of operations,
including various replacements and the addition of augment,
provided for by sūtras in the section which A 6.4.1 (105) heads.
Some of these have already been considered in other contexts
(see 124, 126-127, 144-153, 383-387).

412 Vṛddhi vowels (A 1.1.1 [9]) replace vowels --- /i ū r/* /
unless otherwise specified (A 1.1.3 [97]) --- of particular verb
stems. The following sūtras provide for such replacement in
stems before sic (sic: A 3.1.44 [236]) followed by parasmai-
pada endings (parasmai padesu: A 1.4.99 [64]):

A 7.2.1: सिचि वृद्धि: परस्मैपदेशु (sic vṛddhi
parasmai padesu)

A 7.2.2: अतो लरान्तस्या (ato lāntasya)

A 7.2.3: वद्वरजहलन्तस्याचः (vadavrajahalantasyācaḥ)
According to A 7.2.1, vṛddhi substitution applies to the final
sound (A 1.1.52 [95]) of a stem that ends in an i-, u-, or r-
vowel; e.g., acaisi (3sg. act.) ‘has, gathered’ (< ... ci-s-it), anaishi(‘has) led’ (< ... ni-s-it), astraishi(‘has) heard’
(< śru-s-it), alāviti(‘has) cut’ (< ... lū-is-it), akārishi’did, has
done, (has) made' (< ... kr-s-it). By A 7.2.2, the vrddhi vowel ā (A 1.1.50 [92]) replaces a (atah) of a stem that ends with / or r (irāntasya), as in aksārtī (has) flowed' (< ... kṣar-is-it), avāvīltī (has) flamed' (< ... jval-is-it). A 7.2.3 provides that vrddhi substitution applies to the vowel (acaḥ) of vao 'speak, say', vraj 'go', as well as other stems that end in consonants (vadavrajahanantasya); e.g., avādlī, avājīlī, apākṣīltī (has) cooked' (< ... pac-s-it), acschālīsīltī (has) cut' (< ... cchīd-s-it), aruatsīltī (has) hemmed in' (< ... rudh-s-it); see 414.

Contrary to what A 7.2.3 (412) allows in general, however, vrddhi replacement does not (na) take place in a consonant-final stem followed by if (it), that is, by sic augmented with if:

A 7.2.4: netī (hantasya) (neti [halantasya 3])
For example: adevīltī (has) gambled' (< ... div-is-it), amosīltī 'stole, has stolen' (< ... mūs-is-it), in which guna replacement applies (A 7.3.86 [127]). In addition, by

A 7.2.5: māyantakṣana- śvasajāgrntīsvyeditāmī (hmyantaksanaśvasajāgrntīsvyeditām)
the following are not subject to vrddhi substitution before sic augmented with if: stems in -h-m-y (hmyanta); the verbs kṣapī' hurt, wound', śvas 'breath', jāgr 'awake'; derived verbs with ṇī; śvi 'swell'; and verbs marked with e (-editām). For example: agrahīltī (has) grasped, seized' (< ... grah-is-it), avamīltī (has) vomited' (< ... vam-is-it), avvyavīltī (has) spent' (< ... vyav-is-it), aksānīltī, aśvasīltī, ajāgarīltī, aunavīltī (has) diminished' (< ... ūn-i-is-it), aśvavīltī (< ... śvi-is-it), akakhīltī (has) laughed' (< ... kakh-is-it [kakhe]); see 414.

In addition, contrary to A 7.2.4 (413), by

A 7.2.7: ato halādērīgō: (vibhāṣa netī) (ato halāder
lagohī [vibhāṣā 6, netī 4])
vrddhi substitution is only optionally (vibhāṣā) precluded for a light vowel (lagohī) a (atah) of a stem that begins with a consonant (halādēh) when this is followed by augmented sic
and parasalpada endings; e.g., akaṇīti akāṇīt(‘has’) sounded.
This sūtra would allow vrddhi only optionally for vad, vraj;
hence, these verbs are specified in A 7.2.3 (412). A 7.2.7 would
also optionally allow vrddhi for verbs such as grah, so that
this is absolutely precluded for these verbs by A 7.2.5 (413).

The stem mrj- ‘wipe clean’ (mrjeh) undergoes vrddhi
substitution before all affixes except those that are marked
with ko r (A 1.1.5 [98]):

A 7.2.114: मृजेवृद्धिः (mrjer vrddhiḥ)
For example, māṛṣṭi (3sg. pres.), māṛṣṭum (inf.) have -ār:-
mṛj-ti > māṛj-ti > māṛṣ-ty (A 8.2.36 [544]) > māṛṣṭi (A 8.4.41
[574]), mṛj-tum > māṛj-tum > māṛṣ-tum > māṛṣṭum. But
mṛṣṭa (affix kta: A 3.2.102 [294]) ‘wiped clean’ has -r:

As provided for in

A 7.3.89: उतो वृद्धुर्लक्ष हलि (pita sārvadhātuke)
(uto vrddhir luki hall [ piti sārvadhātuke 87])
-utra (utraḥ) of a stem is replaced by the vrddhi vowel au if it is
followed by a consonant (hall) of a sārvadhātuka affix
(sārvadhātuke: A 3.4.113, 117 [63]) marked with p (piti), on
condition that an affix has been replaced by luku after the stem
in question. For example, the vikaraṇa sap is deleted after
stu ‘praise’, a verb of the second major group in the
dhātupāṭha (A 2.4.72 [158]); before an ending such as tip, the
-utra of stu- is then replaced by -au: staṭi (3sg. pres.).

Certain affixes are given particular markers to show
that they condition vrddhi replacement in stems. Thus,
according to

A 7.2.115: अचो विणित (vṛddhi) (aco ōṇiti [ vrddhi 114])
A 7.2.116: अतः उपधायाः (ata upadhāyāḥ)
final vowels (acah [gen. sg.]) and penultimate (upadhāyāḥ)
short a (ataḥ) of stems are replaced by vrddhi vowels before
affixes that are marked with ṅ or p (ōṇiti). For example,
ghaṇ (A 3.3.18-19 [111, 114]) is marked with ṅ, ṅvul (A 3.1.133
[248]) and ṇic (A 3.1.25-26 [281]) with ṇ: bhr-a > bhāra ‘load’,
pac-a > pāc-a > pāka (A 7.3.52 [431]) 'cooking', ni-vu > ni-aka (A 7.1.1 [509]) > nai-aka > nāyaka (A 6.1.78 [524]) 'leader, hero', ni-i > naj-i > nāy-i 'cause to lead', pac-i > pāc-i 'cause to cook'.

As a general rule, before sārvadhatu or ārdhadhatu affixes guṇa substitution applies to stem-final i- u- r- and j-vowels. The same replacement applies to these vowels if they are the penultimate sounds of stems, in which case they must be light vowels, except in stems that end with the augment puk (A 7.3.84, 86 [127]). In accordance with A 1.1.5 (98), guṇa replacement is excluded before an affix marked with k, g or r. The suffix śyā (A 3.1.69 [157]) and the ending jūsu (<jhi: A 3.4.108-110 [401-402]) are marked with ॉ (A 1.2.4 [513]). Hence, special rules are stated to allow guṇa substitution before these affixes:

A 7.3.82: निवेदत्वः (निवेदत्वः) (nivēdatvā [śiti 75])

A 7.3.83: जुसि चा (jusī ca)
The guṇa vowel e replaces the i of mid 'be moist, melt' before an affix marked with s (śiti), and guṇa substitution also applies before jūsu (jusī); e.g., mid-ya-ti > medyati (3sg. pres.), hu-jhi ... > ajhuru-us > ... ajhuru-us > ... ajhavus (A 6.1.78 [524]) 'offered oblations'.

Similarly, endings that replace २ष्ट and do not have the marker p, if they follow a verb that does not end in a cluster, are marked with k (A 1.2.5 [514]) to show that they do not regularly condition guṇa substitution. But verbs of the type svr 'sound', which end in r (ṛtaḥ) and begin with clusters (saṁyogadṛś), have forms with -ar; e.g., saṁvaraṭuḥ (3du. pfct.), saṁvaraḥ (3pl.). Hence,

A 7.4.10: अतत्वं संयोगदशेवर्णः (संयोगदशेवर्णः) (ṛtaḥ ca saṁyogadṛś ca gunaḥ [liṭī 9])

provides that a guṇa vowel substitutes for the final sound of such a verb stem before an ending that derives from २ष्ट. Further, according to
A 7.4.11: भ्र्वत्यतम् (ṛcchatyētām)
guna replacement applies to rṛcch‘go\', r‘move, set in motion’, and verbs with -a, also before endings that derive from **/A**
For example: rṛcch-a (3sg.) > arcch-a > arcch-arcch-a (A 6.1.8 [382]) > a-arcch-a (A 7.4.60 [383]) > a-arcch-a (A 7.4.70 [385]) > ānarccha (A 7.4.71), r-atus > ar-atus > r-ar-atus (A 1.1.59 [101]) > ar-ar-atus (A 7.4.66 [384]) > a-ar-atus > ā-ar-atus > āratus (A 6.1.101 [532]), kṛ-atus > kar-atus > kṛ-kar-atus > cṛ-kar-atus (A 7.4.62 [383]) > car-kar-atus > cakaratūs ‘strewed, scattered’. The vowel of rṛcch is not light, so that it is not subject to guna replacement by A 7.3.86.

The vikaraṇa aṁ (e.g., A 3.1.55-57 [236]) also conditions guna replacement for particular stems, those which end in r-vowels and the verb ṅṛs (ṛṛṣēr) ‘see, look’:

A 7.4.16: भ्र्वोधि गुणः (ṛṛṣēr ni gunah)
E.g., asarāt ‘went’ (<... sr-a-t), adarśat.

The verb śini ‘lie’ undergoes guna substitution before sārvadhātuka suffixes in general; before y- (y/) of affixes marked with k or ṇ (kṛ/ṇ), on the other hand, its vowel is replaced by āv (āyaṛ: A 1.1.53 [95]):

A 7.4.21: शीरः सार्वधातुके गुणः (śīrah
sārvadhātuke gunah)

A 7.4.22: अयाह यिकितिति (ayaḥ yi kṛ/ṇit)
E.g., ṣēte (3sg. pres.) < ṣī-te, ṣayyate < ṣī-ya-te (affix yak: A 3.1.67 [156]).

On the other hand, guna replacement has to be excluded in particular instances where it would otherwise apply by the general rules A 7.3.84, 86 (127). Thus, according to

A 7.3.87: नाभ्यस्तस्याचि पितिः सार्वधातुके (nābhyaśstasyāci piti sārvadhātuke)

A 7.3.88: भूसूवोरितिति (bhūsūvos tīni)
a light penultimate vowel is not subject to guna substitution if the stem in question is an abhyasta element (nābhyaśstasya: A
6.15 followed by a vowel \( (\text{aci}) \) that is the first sound of a sārvadhatu suffix marked with \( p \) (\text{piti sārvadhatuke} ), and guṇa replacement does not apply to the vowels of bhū 'be, become', sū 'give rise to, engender' before a sārvadhatu verb ending (\text{tini}). For example: nenijānī 'let me wash' (Isq. subj. < nenij-ānī < ... nīj-mī: A 7.4.75 (385)), anenijām (Isq. impfct.) abhūt (< abhū-s-t: A 2.4.77 (406)), suvai (< sū-ai: A 6.4.77 (452)) < ... sū-ā̄e: A 3.4.92-93 (398)).

A stem that ends in a samprāsāraṇa vowel preceded by a consonant (\text{halah}), has its final vowel replaced by a long one (\text{dirghaḥ}):

\[ \text{A 6.4.2: हल: (माप्रसारणस्य दीर्घः) (halah [samprāsāraṇasya 6.3.139, dirghaḥ 111])} \]

For example, śvi- undergoes samprāsāraṇa substitution before kta (A 6.1.15 (388)), and the samprāsāraṇa vowel -u thus gotten is replaced by -ū: śvi-ta > śui-ta > śu-ta > śū-ta > śūna (A 8.2.45 (549)).

The penultimate (upadhāyāh: A 1.1.65 (41)) vowel (A 1.2.28 (96)) of a stem that ends in a nasal (anunāṣikasya: A 1.1.8, 72 (39, 30)) is replaced by a long vowel before kvi or an affix that begins with a consonant other than a semivowel or nasal (kvijhāloḥ) and is marked with kor ni (kniti):

\[ \text{A 6.4.15: अनुनासिकस्य क्विज्हालो: किद्विति} \]

(\text{anunāsikasya kvijhāloḥ kniti} [upadhāyāh 7, dirghaḥ 6.3.111])

For example: šam-ta (affix kta: A 3.2.102 (294)) > šām-ta > šām-ta (A 8.3.24 (559)) > šānta (A 8.4.58 (580)) 'calmed, peaceful'.

In addition, before the suffix san (sani: A 3.1.7 (279)), the final vowel of a stem as well as the penultimate vowels of han 'strike, kill', gam 'go' (ajjhanagamām) are replaced by long vowels, and this substitution applies optionally (vibhāṣā) to tan 'stretch' (tanoteh) before the same suffix:

\[ \text{A 6.4.16: अज्जहनगमां सनि (ajjhanagamām sani)} \]
A 6.4.17: तनोतेर्विभाषाः (tanoter vibhaśa)

For example: kṛ-sa > kṝ-sa > kīr-sa (A 7.1.100 [423]) > kīr-kir-sa (A 6.1.9 [382]) > cīr-kir-sa (A 7.4.62 [383]) > cī-κīr-sa (A 7.4.60) > cī-κīr-sa (A 8.2.77 [552]) > cikīr̥sa (A 8.3.59 [563]), tan-sa > tān-sa > tān-tān-sa > tan-tān-sa (A 7.4.59 [383]) > ta-tān-sa > ti-tān-sa (A 7.4.79 [385]) > titāmsa (A 8.3.24), tan-sa > ... titāmsa

Some verbs are taught with primitive ٳ, and others have this vowel as a result of substitution before an affix. For example, kṝ 'strew, scatter' and kṝt 'praise' have primitive ٳ, but the vowel of kṝ in kṝ-sa 'wish to do, make' is a replacement for -ٳ (A 6.4.16 [422]). According to

A 7.1.100: ऋत्त इद्दातोः। (ṛṭa iḍ dhātoḥ)

-ٳ of a verb stem is replaced by -i (it), which is automatically followed by ṛ (A 1.1.51 [93]), and

A 7.1.101: उपधायास्चा (upadhāyas ca)

provides that this substitution applies also to penultimate (upadhāyaḥ) ٳ of a verb stem; e.g., kṝ-a-ti > kīrati (3sg. pres.), kṝ-sa > kīr-sa > ... cikīr̥sa, kṝt-i > kīrt-i > kīrt-i (A 8.2.78 [552], e.g., 3sg. pres. kīrtai). On the other hand, the substitute for ٳ preceded by a labial sound (oṣṭhyapūrvasya) is u (ut):

A 7.1.102: उदोष्ठयपूर्वस्या (udoṣṭhyapūrvasya)

For example: pṝ-ta > pur-ta > pūr-ta > pūr-na (A 8.2.42 [549]) > pūrna (A 8.4.1 [570]) 'full', mṛ-sa > mūr-sa > ... mumūrsa 'wish to die, be about to die'.

Before śyan (A 3.1.69 [157]), -o (otaḥ) of a stem is dropped:

A 7.3.71: ओत: श्यनि (लोप:;) (otaḥ śyani [ lopah 70])

E.g., cho-ya-ti > chyati 'cuts'. Also before śyan, the vowel of each of eight (aṣṭānām) verbs in the subgroup that begins with sām (sāmām: 163) is replaced by a long vowel, as in ˢāmyatī:

A 7.3.74: शारमास्तानां दीर्घ: श्यनि। (sāmām aṣṭānām
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dirghaḥ śyāni

Before any affix marked with ś (śiti), long-vowel substitution applies to the base vowels of śthīv 'split', klām 'languish', ā-cām 'sip', and the vowel of kram 'stride' is replaced by a long one if the stem is followed by a suffix marked with ś that in turn has parasmaipadeśu endings after it (parasmaipadeśu):

A 7.3.75: भिन्नुकल्म्याच्यामा शिति (śthivuklāmyācamāni śiti)

A 7.3.76: क्रम: परस्मैपदेशु (kramāḥ parasmaipadeśu)

E.g. śthivati, klāmati, klāmyati, ā cāmati, krāmati.

On the other hand, the vowels of verbs in the subgroup beginning with pū (pvādinām: 165) are replaced by short vowels (hṛsvaḥ) if an affix marked with ś follows, as in punāti:

A 7.3.80: पवदीनां हस्वः (pvādinām hṛsvaḥ)

The -a (ataḥ) of a stem is replaced by a long vowel (dirghaḥ) before a sārvadhātuka affix (A 3.4.113, 117 [63]) that begins with a sound of the group which the abbreviation yaḥ denotes (129):

A 7.3.101: अतो दीर्घो यशि (sārvādhātuke) (ato dirgho yaḥ/sārvādhātuke 95)

E.g., pacāmi (pac-a-mi) 'I am cooking', pacāvah (pac-a-vas) 'we two are cooking', pacāmaḥ (pac-a-mas) 'we all are cooking'.

A long vowel substitutes for the final vowel of a stem followed by y (yā) of an affix marked with k or n, provided the affix is not a kṛt or sārvadhātuka item (akṛtsārva-dhātukayoḥ: A 3.1.93, 3.4.113, 117 [66, 63]):

A 7.4.25: अकृत्सारवधातुकयोदीर्घे: (pi bhiḍita (akṛtsārva-dhātukayoḥ dirghaḥ [yī kṣiṭi 22])

For example: cīyate 'is gathered, heaped' (cī-ya-te, affix yak: A 3.1.67 [156], stu-yate 'is praised' (stu-ya-te); cecīya (cē...
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\( ci-ya, \text{ affix } yaṅ: \text{A} 3.1.22 [380]), toṣṭiya (\ldots \text{ stu-ya}). \)

By A 7.4.25, the \(-r\) of \(kr\) 'make, do' would be replaced by \(-r\) before \(yaṅ\) and \(yaṅ\), so that one would derive \(kriya\) (\(kriyate, cekriyate\)). However, \(kriya\) should be from \(kr\) 'strew, scatter'; the comparable derivates of \(kr\) should have \(kri\) (\(kriyate\), \(kri\) (\(cekriyate\)). Accordingly,

A 7.4.27: रीढ़ तात। (\(ri\) \(r\)\(a\)\(h\))

A 7.4.28: रीढ़ शयन्निहस्सु (\(ri\) \(s\)\(a\)\(v\)\(g\)\(l\)\(i\)\(n\)\(k\)\(s\)u)

provide that \(-r\) (\(r\)\(a\)\(h\)) of a stem is generally replaced by \(-r\) (\(r\)\(i\)\(n\): A 1.1.53 [95]) in the contexts covered by A 7.4.25 (and A 7.4.26 [405]) but that \(-r\) substitutes for \(-r\) in particular contexts: before \(sa\) (A 3.1.77 [157]), \(yaṅ\), and endings that derive from \(liṅ\). These sūtras account not only for examples such as \(kriyate, cekriyate\), but also for others such as \(d\)\(r\)\(i\)\(y\)\(a\) 'considers, respects' (\(\ldots d\)\(r\)\(a\)\(t\)\(e\), with suffix \(sa\)), \(kriy\̄\)\(ā\)t (3sg. prec. \(\ldots kr\)\(y\)\(as\)\(s\)t).

On the other hand, from \(r\) 'go, move' one has forms of the types \(aryate\) (\(r\)\(y\)\(a\)\(t\)\(e\)), \(ary\̄\)\(t\) (\(r\)\(y\)\(as\)\(s\)t), which are the norm for verbs in which \(-r\) follows an initial cluster, as in \(smarya\), \(smarya\), \(s\)\(m\)\(ary\)\(a\)\(te\) from \(sm\)\(r\) 'remember'.

Therefore, in

A 7.4.29: गुपोश्तिसंयोगावऽह। (\(gup\)\(o\)\(r\)\(ti\)\(s\)\(a\)\(m\)\(y\)\(a\)\(d\)\(y\)o\(h\))

A 7.4.30: यान्द च (\(ya\)\(n\)\(i\) ca)

Pāṇini lets a guna vowel replace \(r\) of the verb \(r\) and of verbs with initial clusters (\(a\)\(r\)\(t\)\(i\)\(s\)\(a\)\(m\)\(y\)\(a\)\(d\)\(y\)o\(h\)) if this vowel is followed by the \(y\) of \(yaṅ\) and endings deriving from \(liṅ\) as well as before the \(y\) of \(yaṅ\).

Before \(yaṅ\), the \(-a\) of \(ghrā\) 'smell, sniff' and \(dhmā\) 'blow' is replaced by \(l\), as provided for in

A 7.4.31: ई ध्राघोः। (\(g\)\(h\)r\)\(ā\)\(m\)h\(o\)h)

\(ghrā-ya \rightarrow ghrī-ya \rightarrow ghri-ghri-ya (A 6.1.9 [382]) \rightarrow ghre-\(g\)hrī-ya (A 7.4.82 [386]) \rightarrow ghe-ghri-ya (A 7.4.60 [383]) \rightarrow jhe-ghri-ya (A 7.4.62) \rightarrow jeghrīya (A 8.4.54 [577]), dhmā-ya \rightarrow
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... dedhmiya (3sg. pres. jeghrlyate, dedhmiyate).

429 Short \( it \) replaces the stem vowel \(-ā\) of \( dā 'cut' \( < do: \)
A 6.1.45 [392]), \( sā 'finish, terminate' \( < so \), \( mā 'measure\),
and \( sthā 'be in place' \) when these occur before \( t \) \( (ti) \) of an affix
marked with \( k \) \( (kiti) \), and the same substitution applies
optionally \( (anyatarasyām) \) in the same context to the \(-ā\) of
\( śā \) \( (so) 'sharpen, chā \) \( (cho) 'cut': \)

A 7.4.40: द्यातिस्यतिमार्थामास्यतिकिति\( \)
\( (dyatisyatimāsthām it ti kiti) \)

A 7.4.41: शाचोर्यन्तरस्याम्भ (śāchor anyatarasyām)
E.g.: \( dita, sita, mita, sthita, šita/śita, chita/chāta, with the
suffix \( kta \) \( (A 3.2.102 [294]) \).

The following sūtras provide for replacing parts of verb
stems not only before \( kvi \) or an affix that is marked with \( k, Ri\)
and begins with a consonant other than a semivowel or nasal \( (A \)
6.4.15 [422]) but also before a nasal \( (anunāsike ca): \)

A 6.4.19: चछ्वोः शूङ्गनासिके च (cchvoḥ śūd
\( anunāsike ca) \)

A 6.4.20: ज्वरत्वस्रिध्वविधवपूरुपधायाच्च (jvaratvarasrivyavimavāṃ upadhāyās ca)
By the first rule, \( ś \) and \( ūṭh \) respectively substitute for \(-tch
\( (< ch: \) \( A 6.1.73 [536]) \) and \(-v \) \( (cchvoḥ) \). For example: \( div-ta >
\( diū-ta > dyūta (A 6.1.77 [125]) 'gambled', pratch-na \( (A 3.3.90
[291]) > praśna 'question', akṣadiv->akṣadiū→ akṣadyū→ 'one
who gambles with dice'. The next sūtra provides for replacing
not only the \( v \) but also the penultimate sound \( (upadhāyās ca) \) of
the verbs \( jvar 'be warm, feverish', tvar 'rush, sriv 'dry', av
'help', mav 'bind'. For example: \( jvar-ti \) \( (affix kti: \) \( A 3.3.94
[114]) > jūr-ti > jūrti \( (A 6.1.108 [533]), tvar-ti > ... tūrti,
\( svr-ti > ... srūti, av-ti > ... ūti, mav-ti > ... mūti). \)

A series of sūtras provides for velar stops \( (ku: \) \( A 1.1.69
[84]) to replace certain sounds of stems in particular contexts.
Thus, according to
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A 7.3.52: चाजोः कु धिण्ण्यताः। (cajōh ku ghinnyatoḥ)
-०ć and -०ज (cajōh) of a verb stem are replaced by velar stops
before an affix marked with gh (ghīt) and before nyat (ghin-
nyatoḥ: A 3.1.124 [292]). For example: pac-ा-(affix ghaṁ: A
3.3.18 [111]) > pāc-ा (A 7.2.116 [417]) > pāka‘cooking’, pac-yā >
pāc-yā > pākṛya ‘to be cooked’.

The ०ह of han-‘strike, kill’ (ho hanteḥ) is replaced by the
 corresponding velar (gh) if this stem occurs before a suffix
that is marked with ० or ०, and if this followed by n(०nin-
nesu); this substitution applies also (ca) after an abhyāsa
syllable (abhyāsāt: A 6.1.4 [52]):

A 7.3.54: होहन्तेठिण्णनेषु (ho hanter ०ninnesu)

A 7.3.55: अभ्यासाच्या (abhyāsāc ca)
For example: han-ा-(affix ghaṁ) > ghan-ा > ghān-ा > ghāta
(A 7.3.32 [433]) ‘striking, killing’, han-jhi > han-anti(A 7.1.3
[509]) > ṣan-anti (A 6.4.98 [454]) > ghnanti ‘they strike, kill’,
han-ा > ... jaghāna (3sg. pftct.).

Velar replacement as provided in A 7.3.52 (431) does not
(ṇa) apply under particular conditions, both phonological and
semantic. Thus, by

A 7.3.59: न क्वादेः। (na kvādeḥ)
the substitution does not apply to a stem that begins with a
velar stop (kvādeḥ); e.g., kūja ‘cooing’, garja ‘roaring’.

A 7.3.65: यय आवस्यकेः (nya āvasyake)
disallows the substitution before nya in derivates with the
meaning ‘... necessarily (āvasyake)’, and by

A 7.3.67: वचोशब्दसंज्ञायाम् (vacośabdasanjñāyām)
velar substitution does not apply to the -० of vac‘speak, say’
before nya of a derivate other than one which is the name of a
speech unit (asabdasanjñāyām). For example, pākya ‘to be
cooked’ is opposed to pācyas ‘which must be cooked’, and vākya
‘utterance, sentence’ (see 227) contrasts with vācyas ‘which is
to be said, sayable’.

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The -n of han 'strike, kill' is replaced by -t(hanas taḥ) before affixes marked with ḫ, ṇ other than cīp and ṇal(A 3.1.66, 3.4.82 [236, 397]):

A 7.3.32: हनस्तोषचिंण्णलोऽ (hanas to’cinnhaloh)
E.g., han-a > ... ghāṭa (see 431), but aghāṇi (3sg. pass. aor.), jaghāṇa.

Suffixes marked with ś condition not only vowel replacements (see 424) but also a particular consonant substitution: The final consonants of īś'wish, desire', gam'go', yam 'extend' (iṣugāmyamām) are replaced by cha before such an affix:

A 7.3.77: इषुगिमयमां छः! (iṣugāmyamāṁ chaḥ)
For example: īś-a-ti (affix śa: A 3.1.77 [157]) > ich-a-ṭi > itch-a-ṭi (A 6.1.73 [536]) > icchati (A 8.4.40 [574]), gam-a-ṭi (affix śap: A 3.1.68) > ... gacchati, yam-a-ṭi (affix śap) > ... yacchati.

-s of verb stems is subject to particular replacements in certain contexts. As provided for in

A 7.4.49: स: स्यार्धधातुके (त:) (saḥ sy ardhadhātuke [taḥ 47])
-t substitutes for -s (saḥ) of a stem before s-(śi) of an ardhadhātuka affix (ārdhadhātuke: A 3.4.114-117 [63]), as in vatsyati(< vas-sya-ti) 'will remain'. Before s-, the -s of tāś (A 3.1.33 [236]) and as'be' (tāsastyoḥ) is replaced by zero (lopaḥ), and the same substitution applies also (ca) before r-(rī); but ḡ (haḥ) is the replacement before e-(eti):

A 7.4.50: तासस्योर्लोपः! (tāsastyor lopaḥ)

A 7.4.51: रि चा (rī ca)

A 7.4.52: ह एति (ha eti)
For example: kartās-si > kartāsi (2sg. fut.) 'you will do, make (at some time other than today)', as-si > asi 'you are', kartās-rau (A 2.4.85 [403]) > kartārau 'they two will do, make', kartās-e > kartāhe 'I shall do, make (for myself).
A group of sūtras concerns substitutions that apply to verb stems before s- of the desiderative suffix san (sani: A 3.1.7 [279]):

A 7.4.54: सनि धीमाघुरभलभशकपतपदामच इसु (sani mimāghurabhalaśakapatapadām aca is)

A 7.4.55: आप्नप्यरधामी (āpnāpyrdham it)

A 7.4.56: दम्भ इच्छा (dambha ic ca)

The vowel (acaḥ) of mī 'harm', set, mā 'measure', verbs of the ghu class (A 1.1.20 [51]), rabh 'take, begin', labh 'gain', ṣak 'be able', pat 'fall', 'fly', pad 'go, fall' is replaced by is; i (it) substitutes for the ā- of āp 'reach, obtain', the -a- of jñapī 'inform, ... ' (see 166, 200) and the r- of ṛdh 'thrive'; i (it) as well as i replaces the -a- of danbh 'deceive, harm'. Moreover, in all instances where these replacements apply, the abhyāsa syllable gotten by iterating a syllable of a stem in -san (A 6.1.9 [382]) is dropped (lopo bhāyāsasya):

A 7.4.58: अत्र लोपोब्यासस्या (atra lopo bhāyāsasya)

For example: mā-sa > mis-sa > mis-mis-sa > mis-sa > mitsa (A 7.4.49 [435]), dā-sa > dis-sa > ... ditsa, rabh-sa > ... risbh-sa > ribh-sa (A 8.2.29 [543]) > ripsa (A 8.4.55[578]), pad-sa > ... pisd-sa > pid-sa > pitsa, āp-sa > ... ippa, jñap-sa > ... jñipsa, ṛdh-sa > ... ērdh-sa (A 1.1.51 [93]) > ērta, danbh-sa > ... dînbh-sa > dîbh-sa (A 6.4.24 [446]) > dhîbh-sa (A 8.2.37 [545]) > dhîpsa, danbh-sa > ... dhîpsa.

Before a suffix marked with s, some verb stems are entirely replaced by others. As provided for in

A 7.3.78: पाघ्राध्मास्थाम्नादाण्डस्वर्तिंस्वर्तिंतस्यादाम पिब-जिग्राध्ममितिष्ठमनय्यचप्पस्यामवघौशीयसीवः।

(pāghraḍhmāsthāmnādāṇḍsvarṭisvarṭisadāsaṃ pibajighradhama tisṭhamanayaccha- paśyarccchadhausyāsādāh)
pib-, jighra-, dhama-, tisṭha-, mana-, yacha-, paśya-, rcha-, dhau-, śīya-, sīda-; respectively, substitute for pā- 'drink',

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A 7.3.79: जाजनोजी। (jñājanor jā)

jā- replaces both jñā- ‘know’ and jan- ‘be born’ before affixes marked with ś. For example: pibati (3sg. pres. < ... pā-a-ti, affix śap), jighrati, dhamati, tiṣṭhati, manati, yacchati, paśyati, rcchati, dhāvati, śiyate, śidati, jānati (jñā-nā-ti, affix śnā), jāyate (jan-ya-te, affix śyan).

In the right context of a suffix that begins with t and is marked with k (ti kiti: A 7.4.40 [429]), certain stems in -ā undergo particular substitutions, as provided for in

A 7.4.42: धातेही। (dadhāter hiḥ)

A 7.4.46: दो दद्दू घोः। (do dad ghoḥ)

dhā- ‘place, make’ (dadhāteḥ) is replaced by hi-, and dath- substitutes for dā- (daḥ) of the ghu class (A 1.1.20 [51]); e.g., dhā-ta (affix kta) > hita ‘placed, made’, dā-ta > dath-ta > datta (A 8.4.55 [578]) ‘given’. On the other hand, contrary to A 7.4.46, if dā- occurs after a preverb (upasargāt) that ends in a vowel (acaḥ), its -ā is replaced by t:

A 7.4.47: अच उपसर्गातः। (aca upasargāt taḥ)

E.g., pra-dā-ta > pra-dt-ta > pra-tt-ta (A 8.4.55) > pratta (A 8.4.65 [583]).

Verb stems are also subject to receiving augments. A series of sūtras provides for introducing the augment num (A 1.1.47 [16-17]) to certain stems. For example, by

A 7.1.58: इदितो नुम्धातोः। (idito num dhātoḥ)

num is added to a stem which is a verb (dhātoḥ) marked with i (iditāḥ), as in nindati ‘scorns, reviles’ (verb ṭuṇidī), and according to

A 7.1.59: शे मुचाचार्याम्। (še mucādinām)

this augment is introduced to verbs of the subgroup beginning with muc (mucādinām: 164) when these occur before śa.
Before the suffix \textit{ari}, stems with the verbs \textit{pat} 'fall' and \textit{vac} 'speak, say', respectively, receive the augments \textit{pum} and \textit{um}:

\textbf{A 7.4.19: पतः पुम् (अड़ि) } (pataḥ pum [ari 16])

\textbf{A 7.4.20: वच उम् } (vaca um)

E.g., apat-\textit{a-t} \to apaptat (3sg. aor.), avac-\textit{a-t} \to avauc-\textit{a-t} \to avocat (A 6.1.87 [528]).

The augment \textit{im} is added to the stem \textit{trnah-}, with the affix \textit{śnam} (A 3.1.78 [157]), before the consonant (\textit{hali}) of a sārvadhiṣṭāka affix marked with \textit{p} (piti sārvadhiṣṭāke):

\textbf{A 7.3.92: तृणह हम् (हलि पिति सार्वधातुके)} (trnaha im [hali 89, piti sārvadhiṣṭāke 87])

E.g., \textit{trnah-mi} \to \textit{trnah-mi} \to \textit{trnehmi} (A 6.1.87) 'I crush'.

Further, a stem \textit{in-\textit{a}} receives the final augment \textit{muk} (A 1.1.46 [17]) if it occurs before an affix \textit{āna}, as in pacamāna 'cooking for oneself' (< pacā-āna):

\textbf{A 7.2.82: आने मुक् } (āne muk [ataḥ 80])

The final augment \textit{yuk} is added to a stem \textit{in-\textit{a}} (ātaḥ) before \textit{cin} (A 3.1.66 [236]) and kṛt affixes (c inkṛtoḥ: A 3.1.93 [66]):

\textbf{A 7.3.33: आतो युक् चिंक्रक्: } (āto yuk cinkṛtoḥ)

For example: adhā-\textit{i-ta} \to adhāy-\textit{i-ta} \to adhāyī (A 6.4.104 [239]) 'has been put', dhā-vu \to dhā-aka (A 7.1.11 [509]) > dhāyaka 'one who places'.

Affixes may undergo replacement and augmenting after certain verb stems. Thus, the \textit{ā}-of \textit{-āna} - is replaced by \textit{i} after \textit{ās} (āsina < ās-āna'sitting'):

\textbf{A 7.2.83: ईवासा: (आने) } (īd āsā [āne 82])

As provided for in

\textbf{A 7.2.76: स्वादिभ्य: सार्वधातुके (इट) } (rudādibhyah sārvadhiṣṭāke [īt 66])

the Initial augment \textit{īt}(A 1.1.46 [17]) is added to a sārvadhiṣṭāka.
affix (sārvadhātuke : A 3.4.113, 117 [63]) beginning with a consonant other than y if it follows a verb of the group beginning with rud (rudādihyāḥ : 161). For example roditi, svapiti, śvasiti, anitī, jākṣiti have the augmented ending iti. According to

A 7.2.77: Ṛṣaḥ: se (Iṣaḥ se)

A 7.2.78: हजनोध्वे चा (Iḍajanor dhve ca)

If is added to se or its replacement used with the verb Iṣ 'have power, be able' (e.g., Iṣiṣe [2sg. pres.]), and the same augment is added not only to this ending but also to one with dhv-, when such endings are used with Iḍ 'invite, praise' (e.g., Iḍiṣe, Iḍidhvē [2pl. pres.]) and Iṇ 'be born' (Iṇiṣe, Iṇidhvē).

After the stem brū- 'speak, say' (bruvaḥ) the initial augment Iṛ is added to a consonant-initial sārvadhātuka affix marked with p, as in brāvīti (ending tip):

A 7.3.93: ब्रुव इट् (हलि पिति सार्वधातुके) (bruva Iṛ)

[ hali 89, piti sārvadhātuke 87]

A consonant-initial sārvadhātuka is optionally augmented with Iṛ after tu- 'be strong', ru- 'bellow, roar', stu- 'praise', šam- 'become calm', am- 'press towards:

A 7.3.95: तुरुत्साम्यमः सार्वधातुके (वा हलि)

(turustusamyamaḥ sārvadhātuke [vā 94, hali 89])

For example: taviti/tauti, raviiti/rauti, stavitī/stauti.

The augment Iṛ is also added to an aprkta (A 1.2.41 [74]) sārvadhātuka ending which follows as 'be' or a stem with -sic (astisicaḥ: A 3.1.44 [236]):

A 7.3.96: अर्तिसाप्पोष्पत्के (सार्वधातुके इट्)

(astisicoaprkte [sārvadhātuke 95, Iṛ 93])

For example: āṣit (3sg. impfct.) 'was' (< ... as-t), akāṣit 'did, has done, (has) made' (< ... kr-s-t). After the five (paṃcabhyāḥ) verbs of the group that begins with rud (rudāh: 161), an aprkta ending is augmented with Iṛ in most dialects, but, according to Gārgya and Gālava (gārgyagālavaḥ), the augment
A 7.3.98: सर्वसं परिप्रेक्ष्यः (rudaś ca pañcabhyah)

A 7.3.99: अद्गार्ज्जालवयोः (ad gāryagālavyah)

According to all grammarians (sarveśām), moreover, an aprkta sārvadātuka affix is augmented with aṭ after ad 'eat':

A 7.3.100: अदः सर्वेशाम् (adah sarveśām)

For example: aroditt (3sg. Impfct.), arodat, ādat.

Endings that substitute for certain basic verb endings by virtue of these deriving from particular L-affixes are themselves subject to replacement under given conditions. tip and mip are replaced by paḷ if they derive from liṭ (A 3.4.82 [397]). After a stem in -ā(ātaḥ), paḷ is replaced by au, as in dadau 'give' (< ... dā- au):

A 7.1.34: आत ओऽ गणः (āta au ṅalāḥ)

tātaṅ optionally (anyatārasyām) substitutes for tu or hi (< tip, sip: A 3.4.86-87 [398]) used on condition that a wish is to be expressed (āśiṣī):

A 7.1.35: तुह्योस्तातक्षित्वत्यतरस्याम् (tuhvos tātaṅ āśiṣy anyatārasyām)

For example, jivaṭāt 'long may he, you live' alternates with jivatu and jiva (< jiva-hi: A 6.4.105 [455]).

Endings that derive from liṅ are augmented with slyut, yāsūṭ, and suṭ (A 3.4.102, 103, 107 [401]). If the ending in question is a sārvadātuka affix (sārvadātuka: see A 3.4.113, 117 [63]), any non-final (anantyasya) s included in the ending is deleted (salopaṅ):

A 7.2.79: लिङ्गः सलोपान्त्यस्य (सार्वधातुके) (liṅah salopaṅnantyasya [sārvadātuke 76])

For example: ad-yāsst > adyāt (3sg. opt.) '... should eat', ad-yāsam > ad-yām > adyām (A 6.1.101 [532]) (1sg. opt.), but adyāsam (1sg. prec.), retains -s- in the ārdhādātuka ending yāsam. After a stem in -a (ataḥ), moreover, iy substitutes for yā of a sārvadātuka ending that derives from liṅ:

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A 7.2.80: अतो येिः (ato yeyah)
For example: bhava-yāst > ... bhava-iyt > bhava-it (A 6.1.66 [522]) > bhavet(A 6.1.87 [528]) 'should be', bhava-yaśam > ... bhava-iyam > bhaveyam (lsg. opt.).

The ār (ātāḥ) of a sārvadhātuka marked with ni (nītāḥ; A 1.2.4 [513]) is also replaced by iy after a stem in -a:

A 7.2.81: अतो हििः (ato hitāḥ)
For example: paca-āte > paca-iyte > paca-ite > pacate 'they two are cooking for themselves', paca-āthe > ... pacethe (2du).

A stem with the suffix ksa (ksasya: A 3.1.45 [236]) has its -a replaced by zero (lopaḥ) when it occurs before the initial vowel of an ending, and the whole affix ksa is optionally (vā) replaced by zero (luk) if it is used with duh'milk', dīh 'smear', ilh 'lick', guh 'hide' and followed by an ātmanepada ending (ātmanepada) that begins with a dental (dantye):

A 7.3.72: कस्सयाचि (lopaḥ) (ksasyāci / lopaḥ 70)

A 7.3.73: लुिः दुहविहलिििगुहामात्मनेपदे दन्त्येिः (lug vā duhadihalihaguhām ātmanepada dantye)
For example: aduh-sa-i > aduh-s-i > adugh-s-i (A 8.2.32 [544]) > adugh-s-i (A 8.2.37 [545]) > adugh-s-i (A 8.3.59 [563]) > adukśi(A 8.4.55 [578]) 'I (have) milked' (lsg. mid. aor.), aduh-sa-ta > aduh-ta > adugh-ta > adugh-dha(A 8.2.40 [547]) > adugdha(A 8.4.53 [577]), aduh-sa-ta > ... adukṣata (3sg.).

2.7.1.3.3. Rules headed by A 6.4.22.

A series of operations, whose results are treated as suspended (asiddhavar) with respect to each other, is stated in rules of the subsection headed by A 6.4.22 (111). In the present section, I shall simply consider a selection of these sūtras, according to the order in which Pāṇini gives them in the Astādhyāyī. See also 659-660.

A group of rules concerns the deletion of n (nalopaḥ). By
A 6.4.23: ्ञान्नलोपः (śnān nalopaḥ)
n of a stem is deleted if it follows śna (śnā), that is, the
affix śnam (A 3.1.78 [157]); e.g., anj-ti > ananj-ti > anaj-ti>
anag-ti (A 8.2.30 [544]) > anakti (A 8.4.55 [578]) 'smears,
anoints'. Penultimate (upadhāyāḥ) n of verbs not marked with
i (aniditām) is dropped if the stem of which it is a part ends
in a consonant (halaḥ) and precedes a suffix marked with k or
n (kriti):

A 6.4.24: अन्नितां हल उपघाया: विद्विता (aniditāṁ
hala upadhāyāḥ kṛiti)
For example: sṛṇs-ta (affix kta: A 3.2.102 [294]) > srasta
'fallen', dhvans-ta > dhvasta 'lost, perished'. The penultimate
n of dāṅś-'bite', sanj- 'attach', svaṅj- 'embrace' is deleted when
śap (A 3.1.68 [157]) follows:

A 6.4.25: दंशसाण्जस्वाण्जां शपी (damśasaṇjjasvaṅjāṁ
śapī)
E.g., dāṅś-a-ti > daśati, sanj-a-ti > sajati, svaṅj-a-te >
svajate. The penultimate n of ranj- 'dye, color' too (ca) is
dropped, not only before śap, but also in a stem followed by
ghañ introduced on condition that an action or an instrument
is to be signified (bhāvakaranaḥ: A 3.3.18-19 [111]):

A 6.4.26: रण्जेस्वा (rañjeś ca)

A 6.4.27: गहिः च भावकरणयोः (ghañī ca
bhāvakaranaḥ)
For example: ranj-a-ti > rajati, ranj-a > raj-a > rāj-a (A
7.2.116 [417]) > rāga (A 7.3.52 [431]) 'coloring, dye, passion'.
In particular instances, the penultimate n of a stem is
optionally (vibhāṣā) not (na) deleted. According to

A 6.4.32: जान्तनशां विभाषा (क्त्व न) (jāntanaśāṁ
vibhāṣā [ktvi 31, na 30])

A 6.4.33: बहान्जेस्वा चिनि (bañjeś ca cinn)
this holds before ktvā (ktvi: A 3.4.21 [259]) for stems that end
The penultimate sound of śās- 'command, instruct' is replaced by / (śāsa it) if the stem occurs before an (A 3.1.56 [236]) or the consonant (ārhāloḥ) of an affix marked with k or r:

A 6.4.34: सासिद्वहलो (उपधायाः किंकति) (śāsa it ārhāloḥ [upadhāyaḥ krīti 24])

For example: aśās-a-t > aśis-a-t > aśiṣat (A 8.3.60 [563]) 'Instructed' (3sg. aor.), śās-ta (affix kta. A 3.2.102 [294]) > śis-ta > śiṣ-ta > śiṣṭa (A 8.4.41 [574]) 'Instructed'. In addition, the entire stem śās- is replaced by śā- before the ending hi (hau. A 3.4.87 [398]):

A 6.4.35: शा हौ (śā hau)
śā-hi > śā-hi > śādi (A 6.4.101 [455]). Also before hi, ja-replaces han- 'strike, kill', thus accounting for jahi 'strike, kill':

A 6.4.36: हन्तीज (hanter jaḥ)

Before a consonant other than a semivowel or a nasal (jhall) of an affix marked with k or r (krīti), certain verbs have their final nasal consonants deleted (anunāṣikalopaḥ): verbs that are taught with low-pitched base vowels (anudāttapadesa), van 'gain', and bases of the group beginning with tān (155, 157):

A 6.4.37: अनुवातोपदेशवनितन्तनीतियादीनामनूनासिक-लोपो भासि किंकति (anudāttapadesa-
vanatitanotyādinām anunāṣikaloḥ jhall krīti)

For example: gam-ta (affix kta. A 3.2.102 [294]) > gata 'gone',
gam-ti (affix ktin. A 3.3.94 [114]) > gati 'going, under-
standing', van-ti > vati, tan-ta > tata, tan-ti > tat.

The -nof jan-'engender, be born', san-'win for someone', khan-'dig' (janasanakhanām) is replaced by ā (āt) before the s-of san(A 3.1.7 [279]) and consonants other than semivowels and nasals (sanjhaloh) of affixes marked with k or r:

A 6.4.42: जनसनक्षणांसवधालो: (आत्) (janasan-
khanām sanjhaloh [āt 41])
For example: san-sa > saā-sa > sā-sa (A 6.1.101 [532]) >
sāsā-sa(A 6.1.9 [382]) > sasā-sa(A 7.4.59 [383]) > sisā-sa(A 7.4.79 [385]) > siśāsa (A 8.3.59 [563]), jan-ta > jaā-ta > jāta 'born', khan-ta > khaā-ta > khāta 'dug'. The -n of these verbs is only optionally (vibhāśā) replaced by -ā before y- (ye) of an affix marked with k or r, and -ā optionally replaces the final nasal of tan- (tanoteh) before yak (A 3.1.67 [156]):

A 6.4.43: ये विभाषा (ye vibhāśā)

A 6.4.44: तनोतेर्पकि (tanoter yakr)
For example: jan-ya-te (affix yak : A 3.1.67) > jaā-ya-te >
jāyate (alternating with janyate), san-ya-te (affix yak) >
... sāyate (also sanyate), khan-ya-te > ... khāyate (khanyate),
tan-ya-te > ... tāyate (tanyate), jājāyate lājāyate ( ... <
jan-ya-, affix yak: A 3.1.22 [280]).

The section which A 6.4.22 heads also includes a subgroup of rules, headed by A 6.4.46 (111), which state operations relative to stems before ārdhadhātuka affixes. This subsection extends to A 6.4.71 (238).

The -a(atah) of a verb stem is replaced by zero before any ārdhadhātuka affix, as is the affix -ya (yasa) following a consonant (halah):

A 6.4.48: अतो लोपः (ato lopaḥ)

A 6.4.49: यस्य हलः (yasya halah)
For example, the desiderative infinitive cikīrṣitum 'to wish to make, do', has cikīrṣ- instead of cikīrṣa- before -itum, and the -ya of bebhidya- in bebhidya-itum is deleted: bebhiditum 'to
split intensely, repeatedly.

A suffix $n_i(\text{neē})$ is also deleted, before an ārdhadhātuka affix that is not augmented with $i_t(\text{aniṭi})$:

A 6.4.51: गैरनिटिः (per anīṭi)

For example: $k_r-i-ya-te > ...$ kāryate 'is made to be done'. On the other hand, $a_y$ substitutes for $n_i$ before certain affixes, as in kārayāṁ ($< ... k_r-i-ām-ll$: A 2.4.81 [408]) of kārayāṁ cakāra 'had ... make ..., had ... do' and in viracayya 'after composing'. According to

A 6.4.55: अयाम्नात्ताल्लायक्षयित्वाविनः (ay āmantālvāyyetvivaṃśu)

this substitution applies before the affixes ām, anta, ālu, āyya, itnu, and iṣṇu. By

A 6.4.56: ल्यापि काहुपुर्वतः (lyāpi laghpūrvat)

before $l_ya$ (lyāpi: A 7.1.37 [491]), $-a_y$ substitutes for $-n_i$ which follows a sound that is preceded by a light vowel (laghpūrvat), as in viracayya as opposed to prapāṭya 'after making ... fall', where $-n_i$ following $-pāt$-is dropped according to A 6.4.51.

Before the initial vowel of an ārdhadhātuka affix marked with $k$ or $n_i$ (aci nīti) and before $i_t (\text{iti ca}$, the $-a_e$ of a stem is deleted (āto lopaḥ):

A 6.4.64: आतो लोप इटि च (अचि किंकति) (āto lopa iti ca [aci nīti 63])

For example: pā-atus > p-atus > pā-p-atus (A 1.1.59 [101]) > papatus (2pl. pfct.) (A 7.4.59 [383]), pā-itha > p-itha > ... papitha (2sg. pfct.).

Before the affix yat (yat: A 3.1.97 [122]), the $-a_e$ of a stem is replaced by $t (t_i$:

A 6.4.65: ईदातिः (Idyat)

For example: dā-ya > dī-ya > deya (A 7.3.84 [127]) 'to be given'. The same substitution applies to the $-a_e$ of ghu verbs (A 1.1.20 [51]), mā 'measure', sthā 'be in place', gā 'sing', 'study, learn',

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pā 'drink', hā 'abandon', sā 'conclude, terminate' before the consonant (hali) of an ārdhādhātuka suffix that is marked with k or n:

A 6.4.66: ग्रुषास्तागापारापजाधातिसां हली (ghumāsthāgāpā- jahātisāṁ hali)

For example: dā-ya-te (suffix yak: A 3.1.67 [156]) > dīyate 'is given', dāya (suffix yaṅ: A 3.1.22 [280]) > dīya > didīya (A 6.1.9 [382]) > dedīya (A 7.4.82 [386]). Before an ārdhādhātuka that derives from liṅ (liṅi: A 3.4.116 [63]) and is marked with k or n, on the other hand, -ā of these stems is replaced by -e, and this substitution applies optionally (vā) to the -ā of a stem other (anyasya) than those specified in A 6.4.66, provided the verb begins with a cluster (samyogādeḥ):

A 6.4.67: एरीङ्गिना (er liṅi)

A 6.4.68: वान्यस्य संयोगादे (vānyasya samyogādeḥ)

For example: dā-yāsṛt >... deyāt 'may ... give', gleyāt / glāyāt 'may ... languish'. The replacements in question do not (na) take effect before iyap:

A 6.4.69: न ल्यापि (na iyapi)

Thus, one has pradāya, with dā instead of df. On the other hand, the -ā of mā- is optionally (anyatarasyām) replaced by l (it) before iyap, as in apamitya (< apami-ya: A 6.1.71 [394]), apamāya 'after giving, owing':

A 6.4.70: मयतेरिश्वयतरस्याम् (mayater id anyatarasyām)

A 6.1.77 (125) is the general rule of semivowel replacement. Under particular conditions, certain stem vowels undergo a different operation. As provided for in

A 6.4.77: आचि झुधात्तुभाव व्योरियुवर्तहो (acī
śnudhāṭubhravāṁ yvor iyanuvāṇau)

before a vowel (acī), iyāṇ and uyaṇ (iyāṇuvaṇau), respectively, replace final (A 1.1.53 [95]) i- and u-vowels (yvoh) of stems with the suffix śnu, stems that are verbal bases, and
bhrū 'brow' (śnudhātubhruvām). For example: āpnu-anti > āpnuvantī 'they reach, obtain', kśi-atus > kṣiy-atus > ... cikṣiyatūs 'they two dwelt (3du pfct.)', lū-atus > luv-atus > ... luluvatus 'they two cut', bhrū-āu > bhruvāu (nom.-acc. du.). iyaḥ and uvaḥ also substitute for i- and u-vowels of abhyāsa syllables when they are followed by heterogeneous vowels (A 6.4.78 [384]).

There are particular instances in which, contrary to what A 6.4.77 allows for, i- and u-vowels of stems are replaced by semivowels before vowels, so that additional rules are required. Thus, by

A 6.4.81: इर्नो यण् (inō yan)
a semivowel (yan), specifically y (A 1.1.50 [92]), substitutes for the /i/ of the verb in'go' (inah) before vowels of affixes, as in yanti 'they go' (< i-anti!), and according to

A 6.4.82: एरनेकाङ्कोसंयोगपूर्वस्याः (er
 anekāco saṇyogapūrvasya)
semivowel replacement applies to a final i- vowel (eḥ) not preceded by a consonant cluster (asaniyogapūrvasya) in a prevocalic stem that ends with a verb and has more than one vowel (anekācaḥ). For example: nini-atus > ninyatūs 'they two led'. Stems with final u-vowels, such as lulu- appear with -uv before vocalic verb endings, as in luluvatus, but verb-final u-vowels (aḥ) not preceded by clusters in stems of more than one syllable undergo semivowel substitution before nominal endings (supi):

A 6.4.83: ओ: सुपि (aḥ supi)
For example: śatasū-au > šatasvau (nom.-acc. du.) '... which generate hundreds'. Further, as provided for in

A 6.4.87: हुस्नुवो: सार्वधातुकेः (husnuvoḥ sārvadhātuke)
the -u of hu- 'offer oblations' and stems with śnu that is not preceded by a cluster is replaced by -v before a vowel-initial sārvadhātuka affix; e.g., juhvati (3pl pres. < ... hu-ati, see 647), sunvanti (< sunu-anti) 'they are pressing out juice'.
bhū-‘be, become’ receives the final augment *vuk* before vowels of endings that derive from *lūḥ* and *līt* (*lūhlīṭḥ*), as in *abhūvan* (3pl. aor.), *babhūva* (3sg. pfct.):

**A 6.4.88**: भुवोऽवुगःलिर्टोः। (*bhuvō vug lūhlīṭḥ*)

The penultimate sounds (*upadhāyāḥ*) of *gam-‘go’, han-‘strike, kill’, jan-‘be born’, khan-‘dig’, ghas-‘eat’ are replaced by zero (*lopaḥ*) in a stem that precedes a vowel-initial suffix marked with *k* or *r* (*krīṭi*), other than *anī* (*anānī*: see **A 3.1.55** [236]), and this deletion applies to *ghas* and *bhas* ‘devour’ also before a consonant (*hali ca*) of an affix marked with *k* or *r*:

**A 6.4.98**: गमहनजनकनघसांलोपः किन्तुत्यन्ति

(*upadhāya*) (*gamahanajanakhanaghascāṁ lopaḥ* *krīṭy anānī [upadhāyāḥ 89]*)

**A 6.4.100**: गसिभसोर्हिलि च। (*ghasibhāsors hali ca*)

For example: *gam-atus > gm-atus ... jagmātus* (3du. pfct.), *han-atus > ... jaghnātus, jan-e > jn-e > ... jajñe* (3sg. pfct. mid.), *khan-atus > ... cakhnātus, ghas-atus > ... jakṣātus, ghas-ti* (suffix *ktin*: **A 3.3.94** [114]) > *ghstī > ... gdhl, bhas-tām > bhs-tām* > *babdhām* (3du. imper.); see **A 1.1.59, 58 (101-102)*.

The ending *hi* (**A 3.4.87** [398]) is replaced by *dhl* after *hu* ‘offer oblations’ and stems that end with consonants other than semivowels or nasals (*huḥjalḥbyāḥ*):

**A 6.4.101**: हुःजल्ह्यो हेरि। (*huḥjalḥbyo her dhlḥ*)

After a stem in *-a* (*ataḥ*), as well as one that has a suffix in *-u* (*utaś ca pratyāyāt*) not preceded by a consonant cluster (*asamḥyogapūrvat*), however, zero (*luk*) replaces *hi*:

**A 6.4.105**: अतो हे। (*ātoḥ ḫ [luk 104]*)

**A 6.4.106**: उत्तरं प्रत्ययादसंयोगपूर्वांतः (*utaś ca pratyayād asamḥyogapūrvaḥ*)

Moreover, stem-final *-u* that does not follow a cluster is
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usually subject to optional (anyatarasyām) deletion before m and v (mvoḥ), but this deletion is obligatory (nityam) for -u affixed to kr (karoteḥ), before y as well as m, v:

A 6.4.107: लोपश्चास्यान्यतरस्यां म्वोः। (lopaś
cāsyānyatarasyāṃ mvoḥ)

A 6.4.108: नित्यप्रेरोते। (nityaṁ karoteḥ)

A 6.4.109: ये चा। (ye ca)

And the a(ataḥ) of kar-u- is replaced by u (ut) before a āsṛvadhātuka affix marked with k or n:

A 6.4.110: अत उत्सार्वधातुके (विद्वति)

(ata ut sārvadhātuke [kniti 98])

For example: juhudhi (≪ ... hu-hi), bhindhi 'split' (≪ ... bhi-na-d-hi), paca'cook' (≪ ... paca-hi), sunu'press some juice out' (≪ su-nu-hi), sunu-vas > sunvas / sunuvas (1du. pres.),
sunu-mas > sunmas / sunumas (1pl. pres.), kr-u-vas >
kur-u-vas (A 7.3.84 [127]) > kur-u-vas > kurvas, kr-u-mas > ... kurmas, kr-u-yāt (3sg. opt.) > ... kuryāt, kr-u-tas > ... kurutas (3du. pres. Ind.).

Before a sārvadhātuka marked with k or n, the a of śna (A 3.1.78 [157]) and as'be (śnasoh) is deleted (allopaḥ), as in rundhanti (3pl.≪ ... runadh-jhi), santi(≪ ... as-jhi):

A 6.4.111: स्नसोरल्पोः (सार्वधातुके विद्वति)

(śnasor allopaḥ [sārvadhātuke 110, kniti 98])

In the same general contexts, the -ā (ātaḥ) of a stem with śnā (A 3.1.81) or of an abhyasta stem (śnābhavyastayōḥ: A 6.1.5 [52]) is deleted. However, before a consonant (hali), -r substitutes for the -ā of such stems, excepting those formed from bases of the ghu class (aghōḥ: A 1.1.20 [51]):

A 6.4.112: स्नाभ्यस्तयोरारतः। (śnābhavyastyor ātaḥ)

A 6.4.113: ई हळयघोः। (ī haly aghōḥ)

For example: kṛ-ṇā-jha > kṛ-ṇā-jhe (A 3.4.79 [396]) >
kṛ-ṇā-ate (A 7.1.5 [509]) > kṛ-ṇ-ate > kṛṇate (A 8.4.2 [570])
they buy (3pl. mid.), mā-jha > mā-jhe > mā-a-jhe (A 3.1.68 [157]) > mā-jhe (A 2.4.75 [158]) > mā-mā-jhe (A 6.1.10 [382]) > mi-mā-jhe (A 7.4.76 [385]) > mi-mā-ate > mimate 'they measure', kri-nā-tas > kri-nil-tas > kriṅltas (3du. act.), mā-ta > mā-te, ... mimite (3sg.), dā-tas > dā-a-tas > dā-tas > dā-dā-tas > da-dā-tas (A 7.4.59 [383]) > da-dā-tas > dattas (A 8.4.55 [578]) 'they two give'.

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The final sounds of verbs that belong to the ghu class (A 1.1.20 [51]) and of as are replaced by e (et) before hi (hau: A 3.4.87 [398]); at the same time, an abhyāsa syllable (A 6.1.4 [52]) is replaced by zero (abhyaśalopaś ca):

A 6.4.1.19: ध्वसोरेद्रावभ्यासलोपस्या (ghvasor ed dhāv abhyaśalopaś ca)

For example: as-hi > ae-hi > e-hi (A 6.4.111 [456]) > edhi (A 6.4.101 [455]), dā-hi > ... dā-dā-hi > dehi.

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To account for forms of the type pecatup 'cooked' (3du. pfct.), pecup (3pl. pfct.), Pāṇini provides that -e-replaces -a- (atah) of certain verbs and that the abhyāsa syllable gotten from such bases followed by liṭi endings (liṭi) marked with k is deleted, on condition that -a- is flanked by single consonants (ekahalmadhye 'between one consonant [on either side]') and the initial consonant of the verb is such as does not undergo replacement in an abhyāsa syllable (anādesādeḥ):

A 6.4.1.20: अत एकहलिमध्येनाविदाचेलिंि (एत् अभ्यासलोपस्या) (ata ekahalmadhye'nādesāder liṭi [et abhyaśalopaś ca 119] )

By

A 6.4.1.21: थाली च सेटि (thali ca seti)

the same concurrent operations apply if such a verb occurs before thal (thali) augmented with initial īt (seti), as in pecitha. The substitution of e for a and deletion of an abhyāsa syllable apply optionally in the case of specific verbs. For example, by
A 6.4.125: फणांच सप्तानाम् (वा एत् अध्यासलोपच्)
(phañañ ca saptānām [vā 124, et abhyāsalopaś ca 119])
these apply to the subgroup of seven verbs starting with phan
(phañām: 160).

2.7.1.4. Operations on nominal bases, stems and endings.

2.7.1.4.1. Rules outside the section headed by A 6.4.1.

A short vowel (hrasvah) substitutes for the final vowel of a nominal base (pratīpadikasya) used in the neuter (napumśake).

A 1.2.47: हस्यो नपुंसके प्रतिपदिकस्य (hrasvo
napumśake pratīpadikasya)
For example: atiri'... which has transcended wealth' (< atirai: A 2.2.18 [315]). See also 322, 466 (A 1.2.48, 49).

Certain replacements apply to particular pronouns used anaphorically (anvādeśe 'in speaking of something subsequently'), as provided for in:

A 2.4.32: इदम् भवेदेर्शनुवदात्सृत्तियादौ
(idamo'nvādeśe's anudāttaś trītyādau)

A 2.4.33: एतदस्त्रात्सृत्तिसौ यानुदात्ताः
(etadas tratas tratasau cānudāttau)

A 2.4.34: द्वितीयाटास्वेनः (dvitīyāṭāussv enaḥ)
Low-pitched (anudāttah) as (A 1.1.55 [95]) substitutes for idam 'this' (idamaḥ) before endings of the third and following triplets (trītyādau). Low-pitched as also replaces etad 'this' (etadah) followed by tras or tas (tratasah: A 5.3.7, 10 [349]), and these affixes (tratasau) then also have low-pitched vowels (anudāttah). Low-pitched ena (enaḥ) substitutes for idam and etad before endings of the second triplet, the
third-triplet ending ū, and the sixth- and seventh-triplet endings os (laussu). For example: asmai ‘to this one (referred to before)’, atra ‘here’, enam ‘this one’.

Particular operations apply to some nominal bases that remain after the deletion of nominal endings in first members of compounds (A 2.4.71: see 278, 301, 323). For example, in a dvandva compound (dvandve: A 2.2.29 [318]) ānā (A 1.15.13 [95]) replaces -r (ṛtā) of a first component that refers to someone related by virtue of traditional knowledge or birth to the referent of the second component:

A 6.3.25: Ānā ṛtā dvandve (vidyāyonisambandhēryaḥ 23)

E.g.: hotṛ-potṛ > hotān-potṛ > hotā-potṛ (A 8.2.7 [539]) ‘Hotṛ and Potṛ priests’ (nom.-acc. du. hotāpotārau), mātṛ-pitṛ >... mātā-pitṛ ‘mother and father’ (mātāpitarau). ānā also replaces the last sound of the first member of a dvandva compound that consists of deity names (devatādvandve), as in īndrā-varuṇa (īndrāvaruṇau) ‘Indra and Varuṇa’, but ɪ substitutes for the -i of agni- in such a compound if soma or varuṇa follows, as in agnīṣomaυ ‘Agni and Soma’, agnīvaruṇau ‘Agni and Varuṇa’.

A 6.3.26: Devatādvandve ca (devatādvandve ca)

A 6.3.27: Īndmē: Somavaruṇayōḥ (Id agneḥ somavaruṇayōḥ)

The n of the negative particle naḥ (nāḥ) is deleted (nalopaḥ) before any second member of a compound, but if the latter begins with a vowel (aci), it receives the initial augment nuṭ after a resulting from the deletion (tasmāt):

A 6.3.73: Nalopaḥ naḥ (nalopaḥ nāḥ)

A 6.3.74: Tasmaṇnuḥca (tasmaṇ nuṭ aci)

For example: abrāhmaṇa (ṃ na-ābhmaṇa) ‘non-Brāhmaṇa’, anaśva (ṃ na-aśva) ‘an animal other than a horse’.

According to
A 6.3.43: घरुपकल्पचेलहब्रुवगोत्रमत्रहस्वनेकोनेकायो
हत्स्व: (भाष्टिपुर्णकात्) (gharūpakalpacelad-bruvagotramatrahateṣu niyo'nekaḥ hrasvaḥ [bhāṣita-purīṇskat 34])
a short vowel (hrasvaḥ) replaces -i of a component with a feminine affix नि (niḥ) that follows a nominal which, in the same basic meaning, has a masculine counterpart (bhāṣita-purīṇskat), if the item with नि has more than one vowel (anekaḥ) and occurs before a gha suffix (A 1.1.22 [73]), -rūpa, -kalpa (A 5.3.66-67 [356]), -celaḥ 'dressed as ...', -bruva 'who says ...' (with affix ac: A 3.1.134 [290]), -gotra 'lineage', -mata 'thought', -hata struck, killed; e.g., brāhmanitārā 'very much a Brāhmaṇa woman', brāhmanice 'a woman who dresses as a Brāhmaṇa woman', brāhmanibrūvā 'one who says she is a Brāhmaṇa woman', with brāhmanī- (<brāhmanī-). In the same right contexts, shortening applies optionally (anuyāsīm) to a nadi element (nadyāḥ: 56) that is residual (śeṣasya) with respect to those mentioned in A 6.3.43 --- that is, one that has नि but is monosyllabic or one that ends in -ū--- as well as to a nadi suffix introduced after an item marked with an u-, r-, or ā/- vowel (ugitāḥ):

A 6.3.44: नद्या: शेषस्यान्यतरस्याम् (nadyāḥ śeṣasyānyatarasyām)
A 6.3.45: उगितस्या (ugitasa)
For example: stritarā / stritarā 'quite a woman', brahmacandhutarā / brahmacandhutarā 'very much a Brāhmaṇa woman in name only', śreyasitarā / śreyasitarā 'quite the better one'.

The final sound of mahat-(mahataḥ) 'great' is replaced by ṛ(ṛt) before a coreferential constituent in a compound and before the affix jātiya (samānādhikaranajātiyaḥ):

A 6.3.46: आन्यत: समानाधिकरणजातीयोऽ।
(ān mahataḥ samānādhikaranajātiyaḥ)
For example: mahādeva (< ... mahat-deva ) 'great god, king',

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mahājātiya 'like a great one'. -ā substitutes also for the final sounds of ṅvī-'two' and aṣṭān-'eight' (dvayaṣṭanaḥ) before another number word (sāṅkhyaśām) except in a bahuvrihi compound and before asūṭi'eighty' (abahuviṃśasyātyoh).

A 6.3.47: द्वाष्टानः सद्धायामनहुँविभशस्योः। (dvayaṣṭanaḥ sāṅkhyaśām abahuviṃśasyātyoh)
In the same contexts, trva-(trayaḥ) replaces tri '-three' (treḥ); and before number words from catvārīṃśat 'forty' on (catvārīṃśatprabhṛtau), with the exception given in A 6.3.47, all (sarvesām) three number words are optionally (vibhāṣā) subject to the operations stated:

A 6.3.48: त्रेस्त्रष्यः। (tres trayaḥ)

A 6.3.49: विभषा चत्वारिन्तप्रभृति सर्वेषाम्। (vibhāṣā catvārīṃśatprabhṛtau sarvesām)
For example: dvāvīṃśati (< dvī-viṃśati) 'twenty-two', aṣṭāvīṃśati (< ... aṣṭān-) 'twenty-eight', trvāstraṃśat (< ... tri-) 'thirty-three', dvācatvārīṃśat / dvacatvārīṃśat 'forty-two', aṣṭācatvārīṃśat / aṣṭācatvārīṃśat 'forty-eight', trvāstra-catvārīṃśat / tricatvārīṃśat 'forty-three'.

Before the vowel-initial affixes iṣṭhan, iyasun (A 5.3.55, 57 [356]), both śra and jya alternately replace prāṣasya (prāṣasasya) 'praiseworthy', and jya also replaces vṛddha (vṛddhasya) 'old':

A 5.3.60: प्राशसप्रय श्रः। (prāṣasasya śrā)

A 5.3.61: ज्य चा। (jya ca)

A 5.3.62: व्रद्धसय चा। (vṛddhasya ca)
Thus: prāṣasya-īṣṭha > śra-īṣṭha > śreṣṭha-(A 6.1.87 [52a]), prāṣasya-īṣṭha > jya-īṣṭha > jyeṣṭha, vṛddha-īṣṭha > ... jyeṣṭha

Certain taddhita affixes are replaced by zero (luk) except in the feminine (astriyām), provided that reference is made to many (bahuṣu) of what they signify, and the plurality in question has to do only with such an affix meaning (tenaiva). According to
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A 2.4.62: तद्राजस्य बहुषु तेनावार्त्रित्रयाम् (लुक्)
(tadṛajasya bahuṣu tena-avāstriyām [luk 58])
a tadṛaja affix (tadṛajasya : 72) is deleted under these
conditions; e.g., pañcālāḥ 'Pañcālas', videhāḥ 'Videhas' (sg.
vaidehāḥ). Under the same conditions,

A 2.4.63: यस्कार्धित्यो गोत्रेः (yaskārdbhyo gotre)

A 2.4.64: यत्तोत्तथा (yaññatoṣ ca)
provide that, after items of the group beginning with yaska
(yaskārdbhyah), included in the group that begins with śiva (A
4.1.112 [333]), an affix signifying a descendant (gotre) is
replaced by zero, as are yaññ and aññ (yaññatoṣ). For example,
yāśkaḥ 'offspring of Yaska' contains the affix aṇ, but the
plural yāśkaḥ does not; similarly, gārgyāḥ 'descendant of
Garga', with the suffix yaññ (A 4.1.105), contrasts with gargaḥ.

Taddhita affixes are deleted under other conditions also.
Thus,

A 5.3.65: विन्मतोर्लुक् (vinmator luk)
provides for zero (luk) to replace vin and matup (A 5.2.94,
5.2.121 [346]) if īṣṭha or īyas follows (A 5.3.55, 57-58 [356]);
e.g., vasuvat-īṣṭha > vasu-īṣṭha > vasiṣṭha (A 6.4.155 [505])
'most wealthy'.

A derivate such as aindra 'dedicated to Indra' is formed
by introducing a taddhita affix after a pada that refers to a
deity (A 4.2.24 [333]). A dvigu compound like pañcendrāṇi 'five
Indrāṇis', formed by A 2.1.51 (see 313-314) can be the base of
a pada that is to be followed by a taddhita suffix to form a
derivate meaning 'dedicated to five Indrāṇis'. However, the
derivate to be accounted for is pañcendra. Accordingly,

A 4.1.88: द्विगद्गुणपत्येऽ (dvigor lug anapatye)
provides that if a taddhita suffix introduced by a rule of the
section which A 4.1.83 (335) heads is linked to a dvigu
compound (dvigor), it is replaced by zero (luk), except for an
affix introduced to signify an offspring (anapatye). In
addition, the feminine affix of a term like indrāni (→ indrāṇi) is replaced by zero (ruk) if a taddhita affix is deleted by A 4.2.88 (taddhitaluki):

A 1.2.49. लुक्तः तद्दितलुकिः (luk taddhitaluki)
This accounts for a derivate like pañcendra, in which the component -indrā lacks the feminine affix निः and the augment अनुक (A 4.1.49 [271]).

A 6.1.68 (404) lets zero replace the ending su after consonants and feminine suffixes निः, अप्र. In addition, to account for vocative singular forms of the types rame 'Ramā', agne 'Agni', vāyo 'Vāyu', deva 'god, lord', ambā 'mother',

A 6.1.69. एद्विस्मात्समधुः (eihrasvāt sambuddheḥ)
provides for deleting the sambuddhi ending su (sambuddheḥ: A 2.3.49 [68]) after e, o or a short vowel (eihrasvāt): ramā-s > rame-s (A 7.3.106 [483]) > rame, agni-s > agne-s (A 7.3.108 [484]) > agne, vāyu-s > vāyo-s > vāyo, deva-s > deva, ambā-s > ambā (A 7.3.107 [483]) > ambā.

2.7.1.4.2. Rules headed by A 6.4.1.

The final vowel (A 1.1.52, 1.2.28 [95-96]) of a stem is replaced by a long vowel (dirghaḥ) before -nāṁ (nāmi), that is, the augmented ending -ām (A 7.1.54 [498]):

A 6.4.3. नामिः (दीर्घः) (nāmi [dirghaḥ 6.3.111])
For example: devānām (< deva-nām) 'gods', agnīnām (< agni-nām) 'fires', vāyu-nām (< vāyu-nām) 'winds', kartṛ-nām (< kartṛ-nām) 'doers, makers'. However, tīṣṛ- 'three' and cataśr- 'four' (A 7.2.99 [486]) do not (na) have their final vowel thus replaced (tīṣṛnām, cataśrṇām).

A 6.4.4. न नित्सृपत्तश्र (na tīṣrcataśr)
On the other hand, the penultimate vowel of a stem in -n (nopadhāyāḥ) is lengthened before nāṁ:

A 6.4.7. नोपधायाः (nopadhāyāḥ)
For example: pañcan-am > pañcahn-nām (A 7.1.55 [498]) > pañcān-nām > pancānām (A 8.2.7 [539]).

The penultimate vowel of a stem in -n also is replaced by a long vowel if a sarvanāmasthāna ending other than a sambuddhi (sarvanāmasthāne ... asambuddhau: A 1.1.42-43, 2.3.49 [69, 68]) follows the stem:

A 6.4.8: सर्वनामस्त्वः चासम्बुद्धः (sarvanāmasthāne cāsambuddhau)

In the same contexts, the vowel preceding penultimate -n- of a stem that ends with -s and of mahat- 'great' (sāntamahātāḥ) is replaced by a long vowel when the stem has a final cluster (sāmyogasya) -ns, -nt:

A 6.4.10: सान्तमहतः संयोगस्या (sāntamahātāḥ sāmyogasya)

Further, the penultimate vowels of ap- 'water'; of stems with trn (A 3.2.135 [290]), trc (A 3.1.133 [248]); and of svasph- 'sister', naptr- 'offspring, grandchild', nestṛ- 'a ritual officiant', tvāṣṭṛ- 'Tvāṣṭṛ', kṣattr- 'cutter', ṛṭ-, potṛ-; praśāṣṭṛ- 'ritual officiants' are replaced by long vowels if a sarvanāmasthāna ending other than a sambuddhi follows the stem:

A 6.4.11: अप्तानुसारस्वानप्तनेष्टुव्याप्तदुःखोत्तूपोत्तुपोत्तुपोत्तुपोत्-प्रशास्तुनाम (apṭrantrcsvasnāpatṛnestṛ- tvāṣṭṛkṣattrhotṛpotṛpraśāṣṭṛnām)

For example: rājan-s > rājan (A 6.1.68 [404]) > rājān > rājā (A 8.2.7 [539]) 'king (nom. sg.)', rājan-av > rājānau (nom.-acc. du.), rājan-as > rājan-as (nom. pl.), chandās-i > chandāns-i (A 7.1.72 [488]) > chandāns-i > chandānmsi (A 8.3.24 [559]) 'meters' (nom.-acc. pl.), mahat-av > mahānt-av (A 7.1.70 [488]) > mahāntau, ap-as > āpaś 'waters', kartṛ-av > kartar-av (A 7.3.110 [484]) > kartārau 'doers, makers'.

The penultimate vowels of stems with -in as well as of -han- 'slayer', pūṣan- 'Pūṣan', and aryaman- 'Aryaman' are lengthened if the stems occur before Śi (śau: A 7.1.20 [493]).
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This also applies before su (sau) that is not classed as sambuddhi; and in this context the penultimate -a- of a stem with final -atu or -as (atvasantasya), provided it is not a verb (adhātoḥ), also is lengthened:

A 6.4.12: इन्हन्यूषार्यम्भ्यं म (inhanpūṣāryamāṃ sau)

A 6.4.13: सौ च (sau ca)

A 6.4.14: आत्मसान्तस्य चाहातोऽ (atvasantasya caḥātoḥ)

For example: bahudāṇḍī > bahudāṇḍīni 'which have many staffs', vrtrahan-s > vrtrahan (A 6.1.68 [404]) > vrtrahān > vrtrāṇā (A 8.2.7 [539]) 'slayer of Vṛtra', pūṣān-s > ... pūṣā, gomat-s (affix matup: A 5.2.94 [346]) > gomat > gomāt > gomānt (A 7.1.70) > gomāṇ (A 8.2.23 [542]) 'one who has many cows', suyaśas-s > suyaśas > suyaśās 'one who has good fame'.

To account for forms like asthnā (instr. sg.) 'bone', the -i of asthi—'bone', dadhī—'curds', sakthī—'thigh', akṣī—'eye' is replaced by anāni (A 1.1.53 [95]), with a high-pitched vowel (udāttāḥ), before vowel-initial endings of triplets starting with the third:

A 7.1.75: अस्थिद्धधिसक्षध्यानन्धुवात्: (आचि वि-भक्तौ तृतीयविद्यु) (asthidadhishakthakṣāṇāṁ anāni udāttaḥ [aci vibhaktau 73, tṛṭiyādiṣu 74])

E.g.: asthi-ā > asthan-ā > asthnā (A 6.4.134 [502]), dadhi-ā > ... dadhnā

Before su, the -v of div—'heaven' is replaced by au (aut):

A 7.1.84: दिवांत् (सौ) (diva aut [sau 82])

div-s > divau-s > dyaus (A 6.1.77 [125]). Also before su, provided this is not classed as sambuddhi, anāni replaces the final sounds of sakthi—'friend', of stems in -r, and of usanās—'Uṣanas', purudāṃs—'much-skilled', anehas—'sinless':

A 7.1.93: अनन्त सौ (सर्वयुसम्बुद्धौ) (anāni sau [sakhyur asambuddhau 92])

A 7.1.94: अद्वृष्णयुस्पुरुसंसोनेनेसान्तच ( [ 365 ] )
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(rduśanaspurudamonehasāñ ca)

For example: sakhi-s > sakhan-s > sakhan > sakhā, pitr-s > pitan-s > ... pitā ‘father’; cf. rājā < ... rājan-s (469).

The stems pathin- ‘way’, mathin- ‘churning utensil’, ṛbhukṣin- ‘Rbhukṣin’ are subject to certain replacements before sarvanāmasthāna endings, as provided for in

A 7.1.85: पथिमध्य्यृभुक्षामत् (sou) (pathimathryṛbhukṣām āt [sau 82])

A 7.1.86: इतोत्स्वर्णामस्थाने (ito ‘t sarvanāmasthāne)

A 7.1.87: थो’न्तहः (tho’nthah)

Before any sarvanāmasthāna ending, -ā-(at) substitutes for -i-(iṭah), and -nth-(nthah) replaces -th-(thah) of these stems; e.g., pathin-au > panthin-au > panthan-au > panthānau (A 6.4.8 [469]). In addition, before su (sau) in particular, ā (āt) replaces the -n of the stems; e.g., pathin-s > pathiā-s > ... panthās. On the other hand, when these stems precede vowel-initial endings, so that they are classed as bha (bhasya: A 1.4.18 [75]), that segment which begins with their last vowels (ṭeh: A 1.1.64 [41]) is replaced by zero (lopaḥ):

A 7.1.88: भस्य टेलीयः (bhasya ‘ṭer lopaḥ)

E.g., pathin-ā > pathā (instr. sg.).

The -s of pums- ‘man, male’ is replaced by asuri (A 1.1.53 [95]) when a sarvanāmasthāna ending follows:

A 7.1.89: पुमसौ.square root (saru) (sarvanāmasthāne 86])

E.g., pums-au > pumas-au > pumans-au (A 7.1.70 [488]) > pumāns-au (A 6.4.10 [469]) > pumānsau (A 8.3.24 [559]).

Before an ending (vibhaktau: A 1.4.104 [65, 67]), the -n of aṣṭan- ‘eight’ (aṣṭanaḥ) is replaced by ā, which also substitutes for the -ai of rai- ‘wealth’ (rāyaḥ) before the consonant (haḷ) of an ending:

A 7.2.84: अष्टान आ विभक्ताः (aṣṭana ā vibhaktau)
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A 7.2.85: रायो हलि (rāyo hali)

For example: अष्टान्त-भिः > अष्टाभिः > अष्टभिः (A 6.1.101 [532]), राय-भ्याम > रायभ्याम.

A 7.3.110 (484) lets guna replacement apply to stem-final -र before a sarvanāmsthāna ending. The nominative plurals tisrās 'three' and caturas 'four', however, have -र instead of -अ. Accordingly, Pāṇini provides that the -र (ṛtaḥ) of tisr- 'three', caturas- 'four' (A 7.2.99 [486]) is replaced by -र (ṛaḥ) before the vowel (acī) of an ending:

A 7.2.100: अचि रत्न: (तिस्रृचतस्य) (acī raṛtaḥ [tisrcastras 99])

The set of items that begins with sarva (sarvāḍinī) and whose members are given the class name sarvanāman (A 1.1.27 [53]), includes a subset that begins with tyad 'that'. Before any ending, the final sounds of these stems (tyadāḍinām) are generally replaced by -अ (aḥ), and before su (sau), non-final (anantyayoh) t and d (tadōḥ) of these items are replaced by s (saḥ):

A 7.2.102: त्यादाडिनाम: (tyadāḍinām aḥ)

A 7.2.106: तदोः स: सावनन्त्ययोः (tadōḥ saḥ sāv anantyayoh)

For example: tyad-s > syad-s > syaa-s > syas (A 6.1.97 [531]), tad-s > ... sas 'that one', tyad-am > tyaa-am > tyam (A 6.1.107 [533]).

Particular rules are required to account for forms of other pronominals in the group that begins with tyad. One of these sūtras concerns adas- 'that':

A 7.2.107: अदस ओऽ सुलोपस्या (adas aśa sulopaśa)

If adas- occurs before su, its -s is replaced by aśa and the ending suś is concomittantly deleted (sulopaḥ): adas-s >谀a (A 7.2.106 [476]) > asau (A 6.1.88 [529]) 'that one' (nom. sg. m.).

A group of rules concerns idam- 'this':

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A 7.2.108: इदमो मः। (idamo maḥ)
A 7.2.109: दश्चः (daś ca)
A 7.2.110: यः सौ। (yaḥ sau)
A 7.2.111: इदोःयः पुम्सि। (ido'y puṃsi)
A 7.2.112: अनात्यकः। (an āpy akah)
A 7.2.113: हलि लोपः। (hali lopaḥ)

To preclude the substitution of -a for the -m of this stem (A 7.2.102 [476]), A 7.2.108 lets -m itself be a replacement for -m when idam- occurs before su -m- also substitutes for the -d- (daḥ) of idam- before endings in general, but before su in particular, this sound is replaced by y(yaḥ). On the other hand, if idam- used in the masculine (puṃsi) occurs with su, its segment id (idaḥ) is replaced by ay. The segment id of idam- is subject to two other substitutions, provided the pronominal stem does not contain a k by virtue of having the affix ak (akah: A 5.3.71 [354]): Before endings from ā (instr. sg.) through sup (āpi: see figure B [67]), an replaces this segment, and id is deleted before a consonant (hali) of an ending. For example: idam-s > idam (A 6.1.68 [404]) > ... iyam 'this one' (nom. sg. fem.), idam-s > idam > ... ayam (nom. sg. masc.), idam-au > imam-au > imaa-au (A 7.2.102 [476]) > imaa-au (A 6.1.97 [531]) > imau (A 6.1.88 [529]) 'these two' (nom. du. masc.), idam-ā > anam-ā > anaa-ā > an-ā > an-ina (A 7.1.12 [492]) > anena (A 6.1.87 [528]) 'this one' (instr. sg. masc.-nt.), idam-bhyām > am-bhyām > aa-bhyām > a-bhyām > ābhyām (A 7.3.102 [482]) 'these two' (in-struct.-dat.-abl. du. masc.-nt.)

Two other members of the group that begins with tyad, the second- and first-person pronoun stems yuṣmād-, asmād- (yuṣmadasmādoh), are subject to particular substitutions before endings which do not themselves undergo replacement (anādeṣe). By
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A 7.2.86: युष्मदसम्वदद्वनदे(आ विभक्तो हलि)  
(yuṣmadasmador anādeṣe [ā vibhaktau 84,  
hały 85])

A 7.2.89: योड़िच्छ (yoḍicca)

-d of these stems is replaced by -ā before consonant-initial  
endings, by -y before the vowel (acy) of an ending; e.g.,  
yuṣmad-bhiṣu > yuṣmaā-bhiṣu > yuṣmābhiṣu (A 6.1.101 [532]),  
asma-ḍhiṣu > ... asmābhiṣu, yuṣmad-ā > tvad-ā (A 7.2.97 [see  
below]) > tvad-ā (A 6.1.97 [531]) > tvāyā, anad-ā > ... mayā. In  
addition, as provided for by

A 7.2.87: द्वितीयायाण्याच (dvitīyāyāncā)

A 7.2.88: प्रथमायाच्च द्विवचने भाषायामव (prathamāyāś  
ca dvivacane bhāṣāyām)

-ā replaces -d before endings of particular triplets, even if  
the endings undergo substitution: second-triplet endings  
(dvitīyāyām), the dvivacana ending (dvivacane: A 1.4.103 [57]),  
of the first triplet (prathamāyān), in the non-Vedic language  
(bhāṣāyām). For example: yuṣmad-am > tvad-am (A 7.2.97) >  
tvad-am (A 6.1.97) > tvā-ām > tvā-am (A 6.1.101) > tvām (A  
6.1.107 [533]), asmad-am > maad-am (A 7.2.97) > ... mām,  
yuṣmad-auṭ > yuṣmad-am (A 7.1.28 [495]) > yuva-ad-am (A  
7.2.92 [see below]) > yuvad-am > yuvā-ām > ... yuvām,  
asmad-auṭ > asmad-am > āva-ad-am (A 7.2.92) > āvad-am >  
āva-ām > ... āvām, yuṣmad-au > yuṣmad-am > yuva-ad-am >  
yuvad-am > yuvā-ām > ... yuvām (Vedic nom. du. yuvām).

In contexts which constitute a remainder (ṣeṣe) with  
respect to those covered by prior sūtras --- that is, where  
substitution by neither -ā nor -y has been provided for ---  
zero (lopaḥ) replaces the -d of yuṣmad- and asmad-:

A 7.2.90: शेषे लोपः (ṣeṣe lopaḥ)

For example: yuṣmad-s > yuṣmad-am (A 7.1.28) > ahaad-am  
(A 7.2.94 [see below]) > ahad-am (A 6.1.97) > aha-am > ahām  
(A 6.1.107), yuṣmad-s > yuṣmad-am > tvad-am > ... tvām.
In certain contexts, the part of *yuṣmād-* or *asmād-* that ends with -m (maparyantasya) is replaced. The sūtras which let such substitution take effect, stated under the heading of

A 7.2.91: *maparyantasya* (maparyantasya)

are as follows:

A 7.2.92: *yuvaivau dvivacane* (yuvaivau dvivacane)

A 7.2.93: *yuvaivau jasi* (yuvaivau jasi)

A 7.2.94: *tvāhaivau sau* (tvāhaivau sau)

A 7.2.95: *tubhyamahayau nayi* (tubhyamahayau nayi)

A 7.2.96: *tavamamaau nasi* (tavamamaau nasi)

A 7.2.97: *tvāmāv ekacacane* (tvāmāv ekacacane)

A 7.2.98: *pratyayottarpadaradayośca* (pratyayottarpadaradayośca)

In the dual (dvivacane), the segments *yuṣm-*; *asm-* are respectively replaced by *yuva-*; *āva*(yuvaivau). Before *jas* (*jasi*), *yūya-* and *vaya-* (yūyavayau) substitute for *yuṣm-* and *asm-*; *tva-* and *aha-* (tvānau) replace *yuṣm-* and *asm-* of the stems if *su* follows (sau). Before *nī* (nayi) the replacements are *tubhya-*; *mahya-* (tubhyamahau); and *tava-*; *mama-* occur as substitutes if the stems precede *nās* (*nasi*). Thus: *yuṣmād-au* > ... *yuvām*, *asmād-au* > ... *āvām*; *yuṣmād-as* > *yuṣmād-am* (A 7.1.28) > *yūya-ad-am* > *yūyad-am* (A 6.1.97) > *yūya-am* (A 7.2.90) > *yūyam* (A 6.1.107), *asmād-as* > *asmād-am* > *vaya-ad-am* > ... *vayam*; *yuṣmād-s* > *yuṣmād-am* > *tvaad-am* > ... *tvām*; *asmād-s* > ... *aham*; *yuṣmād-e* > *yuṣmād-am* (A 7.1.28) > *tubhya-ad-am* > *tubhyad-am* (A 6.1.97) > *tubhya-am*(A 7.2.90) > ... *tubhyam*, *asmād-e* > *asmād-am* > ... *mahya*; *yuṣmād-as* > *yuṣmād-a* (A 7.1.27) > *tavaad-a* > *tavad-a*(A 6.1.97) > *tava-a* > *tava*; *asmād-as* > *asmād-a* > *mamaad-a* > ... *mama* In singular (ekacacane) forms other than those for which particular replacements are stated, *tva-* and *ma-* (tvamau) respectively substitute for *yuṣm-* and *asm-*; e.g., *yuṣmād-am* > *tvaad-am* > ... *tvām*, *asmād-am* > ... *mām*.
Moreover, such replacement in the singular applies also to yuṣmad-; asmad- before an affix other than a vibhakti and before a subsequent member of a compound (pratayottarapadayoh); e.g., yuṣmad-īya- (A 4.2.114, 1.1.74 [343, 61]) > tvaaḍ-īya- tvadiya-‘pertaining to you’, asmad-īya > ... madyā-‘pertaining to me’, yuṣmad-putra (A 2.2.8 [301]) > ... tvatputra-‘your son’, asmad-putra > ... matputra-‘my son’.

The final vowel of a stem is replaced by a vṛddhi vowel before an affix marked with n or ṇ (A 7.2.115 [417]); e.g., go-s > gaus (A 7.1.90 [511]) ‘cow, ox’. Taddhita affixes (A 4.1.76 [70]) with such markers condition particular operations on their stems. The first vowel (acām ādeḥ) of a stem is replaced by a vṛddhi vowel (vṛddhiḥ: A 1.1.1 [9]) before a taddhita affix that is marked not only with n or ṇ, but also with k (kiti ca):

A 7.2.117: taddhīteṣv acām ādeḥ [vṛddhiḥ 114, ṇniti 115]

A 7.2.118: kiti ca (kiti ca)


A 7.2.117-118 are only general rules, and others are needed to account for particular derivates. For example, if vṛddhi substitution by A 7.2.117 were allowed to take effect in vyākaraṇa-a, svāśva-a (affix ap: A 4.2.59, 4.1.112 [337, 335]), one would derive *vyākaraṇa and *svāśva instead of the required derivates vaiyākaraṇa, sauvāśva. Accordingly.

A 7.3.3: n yvābhyaṁ padāṅtābhyaṁ purva tu tābhyaṁ aic (na yvābhyaṁ padāṅtābhyaṁ pūrvau tu tābhyaṁ aic) provides, contrary to A 7.2.117-118, that vṛddhi substitution does not (na ) apply to vowels that follow pada-final (padāṅtābhyaṁ) y and v (yvābhyaṁ'; instead (tu 'but'), the vowels ai and au (aic), respectively, are introduced before
(pūrvau) $y$ and $k$.

In addition, some sūtras provide that the first vowel of a subsequent member of a compound (uttarapadasya: A 7.3.10 [111]) is replaced by a vrddhi vowel if the stem to which the compound member belongs occurs before a taddhita marked with $h$, $g$, or $k$. For example, according to A 7.3.11: अवयवाहतोऽ (avayavād rtōḥ)

this substitution applies to a season name (rtōḥ) that follows a term denoting a part (avayavāt); e.g., pūrvavarśā-ika (affix ṭhak: A 4.3.18 [344]) > ... pūrvavarṣika ‘born during the first part of the rain season’.

481 A vowel a(ataḥ) that precedes (pūrvasya) k of an affix (pratyayasthāt kāt) is replaced by i (i) if a feminine suffix āp (āpi) follows, provided the feminine affix was introduced after a nominal base and not after a term that originally contained a nominal ending (asupaḥ):

A 7.3.44: प्रत्ययस्थातपूववर्षातवावष्पसुपः (pratyayasthāt kāt pūrvasyāta id āpy asupaḥ)

For example: kār-akā (suffixes nyul, āp: A 3.1.133, 4.1.4 [240, 271]) > kārikā.

482 -a of a stem is replaced by a long vowel -ā not only under the conditions given in A 7.3.101 (425) but also (ca) before a nominal ending (supi) that begins with one of the sounds denoted by the abbreviation yaff:

A 7.3.102: सुपि चा (supi ca)

If, however, the ending that follows the stem in -a is one of the bahuvacana set (bahuvacane: A 1.4.103 [67]) and it begins with a sound denoted by jhal (jhalli), then -e (et) replaces the stem-final vowel :

A 7.3.103: बहुवचनेः ज्ञानेत् (bahuvacane jhaly et)

For example: deva-ya > devāya ‘god, lord’ (dat. sg.), deva-bhyām > devābhyām (instr.-dat.-abl. du.), deva-bhyas > devebhyas (dat.-abl. pl.), deva-su > deve-su > deveṣu (loc.pl.: A 8.3.59 [563]).

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In addition, -a of a stem is replaced by -e before the genitive dual ending os (os/) and the homophonous locative dual ending, as in devayos: deva-os > deve-os > devayos (A 6.1.78 [524]):

A 7.3.104: ओसि चा (osi ca)

The -a of a stem with a feminine affix āp (āpaḥ) also undergoes substitution by -e, before the instrumental singular ending ā (āni: see 86):

A 7.3.105: आङि चापः (āni cāpaḥ)

For example: khatvā-ā > khatve-ā > khatvayā 'bed'. Moreover, this replacement applies before the sambuddhi ending su (sambuddhau: A 2.3.49 [68]):

A 7.3.106: सम्बुध्रो चा (sambuddhau ca)

For example: ramā-s > rame-s > rame (A 6.1.69 [467]) 'Ramā'.

On the other hand, the final long vowels of terms with the meaning of ambā 'mother' and stems with nādi elements (ambārthaniyoḥ: 56) are replaced by short vowels (hrasvaḥ) before the sambuddhi ending:

A 7.3.107: अम्बारथनाः (ambārthaniyoḥ hrasvaḥ)

For example: ambā-s > amba-s > amba (A 6.1.69), kumārī-s > ... kumārī 'malden'.

Final vowels of stems are replaced by guṇa vowels (A 1.1.2 [9]) in particular contexts. According to

A 7.3.108: ह्रस्वस्य गुणः (sambuddhau)

A 7.3.109: जसि चा (jasi ca)

guṇa substitution applies to stems with a final short vowel (hrasvasya) / or u, not only before the sambuddhi ending su but also (ca) before jas (jasī). For example: agni-s > agne-s > agne (A 6.1.69 [467]), vāyu-s > vāyo-s > vāyo, agni-as > agne-as > agnayas (A 6.1.78 [524]), vāyu-as > vāyo-as > vāyavas. A stem in -ṛ (ṛtaḥ) undergoes guṇa replacement in more contexts, before ni and sarvanāma-sthāna
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endings (nisarvanāmasthānayoh: A 1.1.42-43 [59]):

A 7.3.110: रक्तो द्विस्वर्णानमस्थानयो:। (rto nisarvanāmasthānayoh)

Further, guṇa substitution applies to stems of the ghi class (gheḥ: A 1.4.7 [57]) before endings marked with ni (niti):

A 7.3.111: चर्क्षित। (gher niti)

For example: pitṛ-i > pitarī, pitṛ-āu > pitarau, pitṛ-ās (ending jas) > pitaras, pitṛ-ām > pitaram, agni-ē (ending ūe) > agne-ē > agnye (A 6.1.78), agni-ās (näś, nāś) > agne-ās > agnes (A 6.1.110 [533]).

The final vowel of a stem is replaced by a long vowel (dirghaḥ) before cvi (A 5.4.50 [347]), and a stem-final a-vowel (asya) is replaced by -i before cvi and kyac (A 5.4.50, 3.1.8, 10 [347, 283]):

A 7.4.26: चौर (चीर्षः:) (cvi ca [dirghaḥ 25])

A 7.4.32: अस्य चौर (ई:) (asya cvau [i 31])

A 7.4.33: क्यचि चा (kyaci ca)

For example: pātu-वः > pātu (A 6.1.67 [409]) > pātū (pātu karoti 'makes sharp'), śukla-वः ... śukli, putra-ya > putriyla.

The stems tri- 'three' and catu- 'four' (tricaturōḥ) are replaced (A 1.1.55 [95]) by tisṛ- and catasṛ- in the feminine (strijām):

A 7.2.99: त्रिचतुरोः स्त्रियांस्तिसृष्टिसह (tricaturōḥ strijām tisṛcatasṛ)

For example: tri-as > tisṛ-as > tisras (A 7.2.100 [475]), catu-r-as > catasṛ-as > catasras.

traya- (trayaḥ) substitutes for the entire stem tri- 'three' (treḥ) before -ām (āmi):

A 7.1.53: त्रेस्त्रयः (आयि) (tres trayah [āmi 52])

tri-ām > traya-ām > traya-nām (A 7.1.54 [498]) > trayā-nām (A 6.4.3 [468]) > trayānām (A 8.4.2 [570]). In the feminine, however, replacement by tisṛ- takes effect: tisṛnām (A 6.4.4
ka- (kah) substitutes for kim- (kimah) before vibhaktis in general, but before a t- or h- (thiho) of a vibhakti, kim is replaced by ku-, and before the particular suffix at (ati: A 5.3.12 [349]) the substitute for kim-is kva-:

A 7.2.103: किम्: कः। (kimah kah)
A 7.2.104: कु तिहः। (ku thiho)
A 7.2.105: क्वाति। (kvati)

For example: kim-s > ka-s (nom. sg. masc.), kim-tra (affix, tra: A 5.3.10) > kutra, kim-a > kva-a > kva (A 6.4.148 [504]).

A non-verbal stem (adhato) marked with an u-, r-, or l-vowel as well as a stem in -aç- (ugidaçam) receives the augment num (A 1.1.47 [16-17]) when it is followed by a sarvanāmassthāna affix (A 1.1.42-43 [69]):

A 7.1.70: उगिदासबर्वनामस्थाने। (num 58)
(ugidaçaṁ sarvanāmassthānē dhato) For example: bhavat-am (base bhavatu 'you') > bhavantam (acc. sg. masc.), pacat-am (stem pacat with suffix sat: A 3.2.124, 126 [262]) > pacantam yuj- 'one who yokes' (yujha) receives the same augment in the same contexts, provided it does not occur in a compound (asamāse):

A 7.1.71: युजरसमासे। (yujer asamāse)
E.g.: yujāu, yuṣjas, but aṣvayujau, aṣvayujas 'ones who yoke horses'.

A neuter (napuṁsaṣakaṣya) stem that ends in vowel or a consonant other than a nasal or semivowel (jhalacaḥ) receives the augment num before sarvanāmassthāna endings (A 1.1.42-43 [69]), and a neuter stem that ends in i-, u-, r-, or l-vowels (ikah) gets this augment before any vowel-initial ending (aci vibhaktau):

A 7.1.72: नपुंसकस्य झालच्। (sarvanāmassthāne)
(napuṁsaṣakaṣya jhalacaḥ sarvanāmassthāna 70)
A 7.1.73: इकोस्चि विभक्तिः (i ko'ci vibhaktau)
For example: chandas-i > chandans-i > chandāns-t (A 6.4.10 [469]) > chandānsi (A 8.3.24 [559]) 'meters (nom.-acc. pl.)', phala-i > phalan-i > phalāni (A 6.4.8 [469]) 'fruits', vāri-e (dat. sg.) > vārin-e > vārīne (A 8.4.2 [570]) 'water'.

If a stem ends in सत्र (satru) following an abhyasta element (abhyastāt: A 6.1.5 [52]), it generally does not (na) receive the augment num, contrary to A 7.1.70, 72 (488):

A 7.1.78: नाभ्यस्ताच्छेतुः (nābhystāc chatuḥ)
However, the augment is optionally (vā) added if the stem in question is neuter (napumṣakasya) or has सत्र following a stem in -a, -ā and followed by Śi (A 7.1.19 [493]) or a nadi (56) element (śīnadyoḥ):

A 7.1.79: वा नपुम्सकस्या (vā napumṣakasya)

A 7.1.80: आच्छीनद्योन्म् (āc chinadyor num)
Under the conditions given in A 7.1.80, num is obligatorily (nityam) added to a stem with satr if this affix is used with stems that contain śap or śyan (śapśyanōḥ: A 3.1.68-69 [157]):

A 7.1.81: शप्यनोर्नित्यम् (śapśyanor nityam)

The stems catur- 'four' and anaduḥ- 'ox, bullock' (caturanaduḥoh) receive the augment ām, which is high-pitched (udāṭṭaḥ), when there follows a sarvanāmasthāna ending other than the sambuddhi ending su, before which these stems get the augment am. In addition, num is added to anaduḥ- when su follows:

A 7.1.98: चतुरान्दुहोरामुवातः (sarpaṃnāstānena)
(caturanāduhor ām udāṭṭaḥ [sarvanāmasthāne 86])
A 7.1.99: अस्मानन्दऽ (am sambuddhau)

A 7.1.82: सावनहुः (नुम) (sāv anāguhaḥ [num 80])
For example: catur-as (nom. pl. masc.) > catuār-as > catvāras (A 6.1.77 [125]), anāguh-s (voc.sg.) > anāguh (A 6.1.68 [404]) > anāguh > anāguhān > anāguvan > anāguvan (A 8.2.23 [542]), anāguh-s (nom. sg.) > anāguh > anāguh > anāguhān > anāgvan, anāguh-au > anāgvan-au > anāgvanah.

The suffix kvā (ktvā: A 3.4.21 [259]) is replaced by lyap in a compound (samāse) other than one in which the prior constituent is naḥ (anaṣpurve):

A 7.1.37: समासेन प्रक्रियाक्षयम् (samāse naṣpurve kvā lyap)
For example: prakṛtvā (A 2.2.18 [315]) > prakṛtya > prakṛtya (A 6.1.71 [394]) 'after setting ... forth', but akṛtvā 'after not doing'.

The following sūtras state replacements for nominal endings after stems in -a (ataḥ):

A 7.1.9: अतो भिस ऐस | (ato bhisa ais)
A 7.1.12: टांगैसामिनात्स्याः (ṭānasānasāṃ inātyān)
A 7.1.13: हेयः (her yaḥ)
A 7.1.14: सर्वनामः स्मै (sarvanāmnaḥ smai)
A 7.1.15: रसिन्द्योः स्पानिनी (niśinyoḥ smātsminau)
A 7.1.16: पूर्वादिभ्यो नवभ्यो वा (pūrvādibhyo navabhyyo va)
A 7.1.17: जासाः शी (jasaḥ ši)

The first three rules concern -a-stems in general. After these, ais replaces bhis; ina, āt, and sya, respectively, substitute for ṭā, ṇasi, has; and ne is replaced by ya; e.g.: deva-bhis > deva-ais > devais (A 6.1.88 [529]), deva-ā > deva-ina > devena (A 6.1.87 [528]), deva-as > deva-āt > devāt (A 6.1.101 [532]), deva-as > devasya, deva-e > deva-ya >
devāya (A 7.3.102 [482]). The next four sūtras deal with substitutes for endings that follow pronominal (sarvanāmAḥ: 53) stems in -a. After such stems, smai replaces he; smāt and smin respectively substitute for niśi and ni, but only optionally (va) after the nine (navabhyāh) items of the subgroup that begins with pūrva’prior, eastern’ (pūrvādiḥbhyaḥ: see 205); and jas is replaced by śi. For example: sarva-e > sarvasmaī (dat. sg. masc.-nt.), sarva-as > sarvasmāt (abl. sg. masc.-nt.), sarva-i > sarvasmin, pūrva-as > ... pūrvāt / pūrvasmāt, pūrva-i > ... pūrve / pūrvasmin, sarva-as > sarva-i > sarve (A 6.1.87).

Following a stem that ends with a feminine suffix āp (āpaḥ), the dual endings au (auṇāḥ: see 86) are replaced by śi. The same replacement applies also (ca) after a neuter (napūṁśakāt) stem, following which śi substitutes for jas and šas:

A 7.1.18: औषध आप: (षी) (auṇā āpāḥ [ṣi 17])

A 7.1.19: नपूर्णसकच्चा (napūṁśakāc ca)

A 7.1.20: जस्सास: षिः (jaśśasoh śiṁ)

For example: khaṭvā-au > khaṭvā-ī > khaṭve (A 6.1.87 [528]) ‘beds’, phala-au > phala-ī > phalaie ‘fruits’, dadhi-au > dadhi-ī > dadhīni (A 7.1.73 [488]) ‘two portions of curds’, phala-as > phala-ī > phalan-ī (A 7.1.72) > phalanī (A 6.4.8 [469]).

The endings jas, šas are replaced by auś (A 1.1.55 [95]) after aṣṭā- (< aṣṭan-: A 7.2.84 [474]), by zero (luk) after stems of the aṣa class (ṣadhbyāḥ: A 1.1.24-25 [60]):

A 7.1.21: अष्टाभ्य औषध् (jāṣṭābhya auś) [jaśśasoh 20])

A 7.1.22: शश्यो लुक् (ṣadbhyo luk)

For example: aṣṭā-as > aṣṭā-au > aṣṭau (A 6.1.88 [529]), paṇcan-as > paṇcan > paṇica (A 8.2.7 [539]) ‘five’.

Endings other than au jas šas (A 7.1.19-20 [493]) also are subject to substitution after neuter stems, as provided for in
A 7.1.23: स्वाम्यन्यंसकात् (लुक्) (svamorynapumśakāt [luk 22])

A 7.1.24: अतोम् (atōm)

A 7.1.25: अद्वहंतरादिभ्य: पञ्चभयः (adphatardabhyah pāñcabhyah)
Zero (luk) replaces su and am (svamoh) after a neuter stem (napumśakāt) in general. If the stem ends in -a (atah), however, these endings are replaced by am. And adph substitutes for su and am after five (pañcabhyah) groups of stems, starting with those that contain the affix datara (datarādbhyah), included in the set that begins with sarva (A 1.1.27 [53]). For example: dadhi-s > dadhi'curds', madhu-s > madhu 'honey', phala-s > phala-am > phalam (A 6.1.107 [533]) 'fruit', katara-s > katara-ad > katara (A 6.4.143 [503]) 'which of two?'.

Special substitutions apply to endings after the personal pronouns yuśmad- and asmad- (yuśmadasmadbhyaṁ), which themselves are subject to particular replacements (see 478):

A 7.1.27: युस्मदसम्बिध्यं इतोसस् (yuśmadasmadbhyaṁ ītoso's)

A 7.1.28: नीप्रथमयोरम् (nīprathamayor am)

A 7.1.29: शासो ना (śašona na)

A 7.1.30: भ्यसो भ्यम् (bhyaśo bhyaṁ)

A 7.1.31: पञ्चम्या अति (pañcamyā at)

A 7.1.32: एकवचनस्य चा (ekavacanasya ca)

A 7.1.33: साम आकम् (sāma ākam)

let the following replacements take effect: aś (A 1.1.55 [95]) for ńas (ńasaḥ), am for ńe and endings of the first two triplets (nīprathamayoh), n for the a- of ńas (śasaḥ: A 1.1.54), bhyaṁ for bhyaś of the fourth triplet, at for bhyaś of the fifth triplet (pañcamyāḥ) as well as for the ekavacana
ending (ekavacanasya) ī as of this triplet, and ākam for sām (sāmā). For example: yuṣmad-as > yuṣmad-a > ... tava, yuṣmad-e > yuṣmad-am > ... tubhyam, yuṣmad-s > yuṣmad-am > ... tvam, yuṣmad-as > yuṣmaa-as > yuṣmā-as (A 6.1.101 [522]) > yuṣmā-ns > yuṣmān (A 8.2.23 [542]), yuṣmad-bhyas > yuṣmad-bhyam > yuṣmadbhym, yuṣmad-bhyas > yuṣmad-at > yuṣma-at > yuṣmat (A 6.1.97 [531]), yuṣmad-as > yuṣmad-at > ... tvat, yuṣmad-ām > yuṣmāa-ām > yuṣma-ām (A 6.1.97) yuṣma-sām (A 7.1.52 [498]) > yuṣma-ākam > yuṣmākam (A 6.1.101).

The ending ī undergoes replacements after particular stems, as provided for in

A 7.3.116: हेराम्यामोऽधमोऽमी (ñer ām nadyāmnibhyaḥ)
A 7.3.117: इदुध्वयाम् (idudbhyyām)
A 7.3.118: औत् (aut)
A 7.3.119: अच्छ घेअ (ac ca gheḥ)
A 7.3.120: आठो नास्त्रियाम् (āno nāstriyām)

After stems of the nadi class (55), including those with short -i -u (idudbhyyām), stems with feminine suffixes āp, and stems with -nī 'leader' (nadyāmnibhyaḥ), ām occurs instead of ī(ñeḥ), which is replaced by au (aut) after other stems with -i -u. In addition, if the stem belongs to the ghi class (gheḥ: 57), the substitution of au for ī is accompanied by the replacement of the stem-final vowel by a (at). For example: kumārī-i > kumārī-ām > kumārī-ām (A 7.3.112 [499]) > kumārī-ām (A 6.1.90 [529]) > kumāryām (A 6.1.77 [125]) 'maiden', khaṭvā-i > khaṭvā-ām > khaṭvāyām (A 7.3.113 [499]) > khaṭvāyām (A 6.1.101 [532]) 'bed', kṛti-i > kṛti-ām > kṛti-ām > ... kṛtyām 'doing, deed', dhenu-i > dhenu-ām > ... dhenvām 'cow', pati-i > pati-āu > patyau 'husband, master', agni-i > agna-āu > agnau (A 6.1.88 [529]) 'fire, Agni', vāyu-i > vāya-āu > vāyau 'wind, Vāyu', kṛti-i > kṛta-āu > kṛtau, dhenu-i > dhena-āu > dhenu. Moreover, after a stem of the ghi class,
the instrumental singular ending ā (āṇah: see 86) is replaced by nā except in feminine (aḍrīyāṁ 'non-feminine') forms; e.g., agni-ā ā agnīnā, vāyu-ā ā vāyunā.

498 The ending ām(āmi) receives the initial augment sut (A 1.1.46 [17]) after a pronominal (sarvanāṁnaḥ: 53) that ends in an a-vowel:

A 7.1.52: आमि सर्वानामः सुत् (आत्)

(āmi sarvanāṁnaḥ sut [āt 50])

After non-pronominal stems that end with a short vowel, stems of the nadi class (56), and stems with feminine affixes āp (hrasvanāḍyāpaḥ), as also after members of the śaś group (60) and catur- 'four' (śaṭcaturbhyäh), the initial augment nut is added to ām:

A 7.1.54: हस्वनधापो नुत् (hrasvaṇḍyāpo nutā)

A 7.1.55: छट्चतुर्भयस्च (śaṭcaturbhyāś ca)

For example: sarva-ām (gen. pl.) ā sarva-sām ā sarve-sām (A 7.3.103 [482]) ā sarveśām (A 8.3.59 [563]), deva-ām ā deva-nām ā devānām (A 6.4.3 [468]), agni-ām ā agni-nām ā agnīnām, vāyu-ām ā vāyu-nām ā vāyunām, pitr-ām ā pitr-nām ā pītṛ-ṇām ā pītṛṇām (A 8.4.1 [570]) 'fathers, ancestors', kumārī-ām ā kumārī-nām ā kumārīṇām (A 8.4.2), khaṭvā-ām ā khaṭvānām, pañcan-ām ā pañcan-nām ā pañcān-nām (A 6.4.7 [468]) ā pañcānām (A 8.2.7 [539]) 'five', catur-ām ā catur-nām ā caturṇām.

499 Endings marked with ri receive the initial augment āt after a stem of the nadi group (nadyāḥ), yāt after one that ends with a feminine affix ā (āpaḥ). However, if the stem with such a feminine affix is pronominal (sarvanāṁnaḥ), two operations apply simultaneously: The ending is augmented with syāt and the final vowel of the stem is replaced by a short one (hrasvaḥ). These operations apply optionally (vibhaśā) after dvitiya- 'second' and tṛtiya- 'third' (dvitiyāṭrītyābhyaḥām):

A 7.3.112: आप्नाया: (क्ति) (ān nadyāḥ [niti 111])
As I did earlier (Section 2.7.1.3.3) in connection with operations relative to verbal stems, I shall consider here also, in connection with operations relative to nominal stems, a selection of sūtras, stated in the section which A 6.4.22 heads, whose operations are treated as suspended with respect to each other.

Most of the operations in question concern bha stems and are accordingly stated under the heading of A 6.4.129 (111), but the following do not have to do with such stems:

A 6.4.79: स्त्रिया: (अचि इयः) (striyāḥ [aci iyā 77])

A 6.4.80: बामशाहोऽः (vāmśaśoh)

These have to do with stri- 'woman, female' (striyāḥ) before vowel-initial affixes. The -i of this stem is replaced by iyā before a vowel-initial suffix, though only optionally (vā) before the endings am and īas. For example: stri-au > striyau (nom.-acc. du.), stri-am > striyam (acc. sg.), stri-am > strim (A 6.1.107 [533]), stri-as > striyas (acc. pl.), stri-as > stris (A 6.1.102 [532]).

Certain bha stems are subject to samprasārana substitution (A 1.1.45 [38]), as provided for in:
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A 6.4.131: वसोः सम्प्रसारणम् (vasoḥ samprasarāṇam)

A 6.4.132: वाह उठः (vāha utha)

A 6.4.133: स्वयुवमघनामतद्विते (śvayuvamaghonām ataddhite)

This replacement applies to a stem with a suffix vasu (vasoḥ); one with -vāh, in which case the samprasāraṇa substitute is utha; śvan- 'dog', yuvan- 'young person', maghavan- 'Indra' (śvayuvamaghonām), provided the affix which follows is not a taddhita (ataddhite). For example: sedvas-as (acc. pl., abl.-gen. sg.; affix kvasu: A 3.2.108 [232]) > seduas-as > sedus-as (A 6.1.108 [533]) > seduṣas (A 8.3.59 [563]), viśvavāh-as > viśvaūaḥ-as > viśvaūhin > viśvauhas (A 6.1.89 [529]) 'all-transporting', śvan-as > śuan-as > śunas, yuvan-as > yuuan-as > yuun-as > yūnas (A 6.1.101 [532]), maghavan-as > maghauan-as > maghaun-as > maghonas (A 6.1.87 [528]).

The -a of a bha stem in -an (anaḥ) is generally deleted (allopaḥ).

A 6.4.134: अल्लोपोनाः (allopaṇaḥ)

However, this deletion takes place only optionally (vibhāṣā) if the stem is followed by ni or si (niṣyoḥ), and it does not (na) apply if -an follows a cluster (samīyogāt) that ends with n or m (vamantāt).

A 6.4.136: विभाषा हिस्योः (vibhāṣā niṣyoḥ)

A 6.4.137: न संयोगाद्वमन्तात् (na samīyogād vamantāt)

For example: rājan-as (endings ūṣas, ūnsi, ūnas) > rājn-as > rājñas (A 8.4.40 [574]) 'king' (acc. pl., abl.-gen. sg.), rājan-ī > (optionally) rājn-ī > rājñī, sāman-ī (A 7.1.19 [493]) > (optionally) sāmnī 'two sāmans', parvan-ā > parvanā (A 8.4.2 [570]) 'joint, section, chapter', carman-ā > carmanā 'skin, hide'.

The -a (ātāḥ) of a bha stem is deleted, if this sound is part of a verb (dhātoḥ).
A 6.4.140: आतो घातो: (लोपः) (ātō dhātoḥ [lopaḥ 134])
For example: viśvapā-as > viśvapas 'all protecting'. Further, that part of a bha that begins with its last vowel (teh: A 1.1.64 [41]) is dropped before an affix marked with g' (diti):

A 6.4.143: टे: (हिति लोपः) (teh [diti 142, lopaḥ 134])
For example: katara-ad (A 7.1.25 [495]) > katarad.

Particular substitutions apply to bha stems before taddhita affixes. Thus, according to

A 6.4.144: नस्तद्विते (टे: लोपः) nas taddhite

[teh 143, lopaḥ 134]

a bha stem in -n (naḥ) has that part of it which begins with its last vowel (teh: A 1.1.64 [41]) dropped before a taddhita affix (taddhite), as in ādhyātma :-ātman-a (affix ṭac: A 5.4.108 [363]) > ātma. On the other hand, a bha stem that ends in -u (up) regularly has its final vowel replaced by theguna vowel (guṇaḥ) before a taddhita affix:

A 6.4.146: ओर्गुण: (or guṇaḥ)
For example: upagū-a (affix ap: A 4.1.83 [331, 335]) > upago-a > aupago-a (A 7.2.117 [479]) > aupagava (A 6.1.78 [524]).

A final i- or a-vowel (yasya) of a bha stem is deleted not only before a taddhita suffix but also (ca) when i follows (iti):

A 6.4.148: यस्येतिच (लोपः) (yasyeti ca [lopaḥ 147])
For example: dakṣa-ī (affix ili: A 4.1.95 [332]) > daks-ī > daksi, gaura-ī (affix niṣ: A 4.1.41 [271]) > gaurī.

The taddhita affixes īṣṭha, īmaṇic, and īyasun (īṣṭhe-meyassu: A 5.1.122, 5.3.55-58 [348, 356]) in particular are contexts for a series of operations. Before these suffixes, that part of a bha stem that begins with its last vowel (teh: A 1.1.64 [41]) is deleted, as in ēghīṣṭha 'exceedingly light, brief' (< ēghu-īṣṭha), ēghīman 'lightness, brevity' (< ēghu-īman), ēghīyas 'lighter, briefer' (< ēghu-īyas):

A 6.4.155: टे: (इष्टेम्यास्सु लोपः) (teh
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As provided for in

A 6.4.156: स्थलदूरयुवहस्वक्ष्प्रकृतानां यणादिपरम्पूर्वस्य
च गुणः। (sthūladūrayuvahrasvakṣipra-kśudrānāṁ yanaḥimpam pūrvasya ca guṇah)
when sthūla-‘thick, stout’, dūra-‘far’, yuvan-‘young’, hrasva-‘short’, kṣipra-‘quick’, kṣudra-‘small’ are followed by these affixes, that part of the stem that begins with its last semivowel (yanaḥimpam) is deleted, and a guṇa vowel (guṇah) substitutes for the vowel that precedes (pūrvasya); e.g.,
sthūla-īṣṭha > stho-īṣṭha > sthaviṣṭha (A 6.1.78 [524]),
dūra-īṣṭha > do-īṣṭha > daviṣṭha, yuvan-īṣṭha > yo-īṣṭha >
yaviṣṭha, hrasva-īṣṭha > hrasiṣṭha, kṣipra-īṣṭha > kṣepiṣṭha, kṣudra-īṣṭha > kṣodiṣṭha. In addition, pra-, stha-, spa-, var-, bāṃhi-, gar-, varṣi-, trap-, drāghi-, and vṛnda-, respectively, replace priya- ‘dear’ (e.g., priya-īṣṭha > pra-īṣṭha > preṣṭha:
A 6.1.87 [528]), sthira- ‘stable, firm’ (stheṣṭha), spihra-
‘abundant’ (spheṣṭha), uru- ‘broad’ (varṣṭha), bahula-
‘multiple’ (baṃhiṣṭha), guru- ‘weighty, heavy’ (gariṣṭha),
vrddha- ‘grown, aged’ (varṣiṣṭha), trpra- ‘pleased’ (trapiṣṭha),
dirgha- ‘long’ (drāghiṣṭha), vṛndāraka- ‘great, eminent’
(vṛndiṣṭha) before iṣṭha, iman, and iyas:

A 6.4.157: प्रियस्थिरस्फरोच्चहलगुरुवृद्धतुजवर्तीवृद्धवृन्दारकानाव्रम्परम्परवर्षिन्द्रवृन्दारकानाम प्रस्थास्फरवर्षि

tpradīrghavṛndārakānāṁ prasthasphavar-baṃhiṣṭarvṛṣiṭrabṛāghivṛndāṇaḥ
In the same contexts, r replaces ṛ (ṛṭaḥ) of a stem that begins with a consonant (ḥalādeḥ), provided ṛ is a light vowel (laghoḥ).

A 6.4.161: र ऋतो हलादेलियोः। (ra ṛto halāder laghoḥ)
For example: prthu-īṣṭha > prathu-īṣṭha > pratiṣṭha (A 6.4.155) ‘exceedingly broad, broadest’, prthu-īman > ... prathi-
man 'breadth'. On the other hand, as provided for in

A 6.4.163: प्रकृत्यायकाच् (prakṛtyaikāc)
a monosyllabic item (ekāc) retains its original form
(prakṛtyā 'in the original') before ṛṣṭha, iman, iyas. For
example, sraṣṭha(< sraṣ-vin-ṛṣṭha: A 5.3.65 [466]) does not
undergo deletion by A 6.4.155 to give *sṛṣṭha.

The suffixes ṛṣṭha, iman, and iyas themselves undergo
certain operations after particular stems, according to

A 6.4.158: बहोलोऽपो भू च बहोऽ (bahrlo pa bhū ca
bahoḥ)
A 6.4.159: इष्ठस्य यि च (ṛṣṭhasya yī ca)
A 6.4.160: ज्यादादीयसः (jyād ād īyasāḥ)

After bahu-(bahoḥ) 'much, many', the initial sounds (A 1.1.54
[95]) of iman, iyas are replaced by zero, with concurrent
substitution of bhū- for bahu-(bhū ca bahoso); bhū- also
replaces bahu- before ṛṣṭha, which receives the initial
augment y (yī) after the stem; and the ṛ-of iyas is replaced
by ā(ā) after jya-(< praṣasya-, vṛddha-: A 5.3.61-62 [464]):
bahu-iyas > bhūyas, bahu-iman > bhūman, bahu-ṛṣṭha >
bhūṛṣṭha, jya-iyas > jyā-āyas > jyāyas (A 6.1.101 [532]).

2.7.1.5. Replacement of entire padas.

A group of sūtras provides for replacing forms of the
second- and first-person pronouns yuṣmad, asmad (yuṣmad-
asmadoḥ) with terms that are wholly low-pitched (anudāttam
sarvam: A 8.1.18 [615]):

A 8.1.20: युष्मदस्मदोऽषष्ठीचतुर्थ्यितीयस्थयोवैर्यावा (yuṣmadasmadoḥ ṣaṣṭhīcaturtīvītiyāsthhair varīṁnāvau)
A 8.1.21: बहुवचनस्य वस्नसः (bahuvacanasya vasnasau)
A 8.1.22: तेमयावेकवचनस्य (temayāv ekavacanasya)
A 8.1.23: त्वामौ द्वितीयायायः (tvāmau dvitiyāyāh)

The rules concern yuṣmad and asmad together with endings of the sixth, fourth, and second triplets (saṣṭhīcaturtiḥdvitiyā-sthayoh). If the endings in the padas are those of the bahuvacana set (bahuvacanasya), then the padas are replaced by vas and nas (vasnasau); if the endings are those of the ekavacana set, the substitutes are te and me (te mayau); but tvā, mā replace padas in which yuṣmad, asmad are followed in particular by ekavacana endings of the second triplet (dvitiyāyāh). Otherwise, vas (2du.) and nas (1du.) substitute for padas consisting of yuṣmad, asmad and the endings noted.

A 8.1.20-23 concern padas that follow other padas (A 8.1.16-17 [105, 111]). If the padas that contain yuṣmad, asmad are syntactically connected (-yukte) with certain items, the replacements provided for do not (na) apply. For example, according to

A 8.1.24: न चवाहाहैवयुक्तो (na cavāhāhaivayukte)

these substitutions do not take effect for padas connected with ca'and, also' vā'or', ha 'indeed (implying possible censure or command)', aha 'indeed (implying possible censure, praise or command)', eva 'only' (also emphatic). For example,

(113) ग्रामस्तव च स्वम् (grāmas tava ca svam) 'The village is also your possession.'

(114) ग्रामस्त्थप्यः दीयते (grāmas tuḥyaḥ ca diyate)

'The village is given to you also.'

contain the padas tava (< ... yuṣmad-as: 478, 496), tuḥyam (< ... yuṣmad-e), and te is not allowed in place of these. On the other hand, replacement by one of the substitutes noted is optional (vibhāṣā) for padas that follow a term with a first-triplet ending (prathamāyāḥ), if this has another pada before it (saprūvāyāh):

A 8.1.26: सपूर्वाया: प्रथमाया विभाषा (saprūvāyāḥ prathamāyā vibhāṣā)
For example:

(115) ग्रामे कम्बलस्ते दीयतो (grāme kambalas te dīyatē)

'A blanket is being given to you in the village.'
where tubhyam can alternate with te.

2.7.1.6. Replacement of cover symbols.

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The basic verb endings jhi, jha (A 3.4.78 [232, 64]) contain a segment jh, which does not occur in any actual ending; instead, one has -anti, -ati, -anta, -ata, and so on. Similarly, yu and vu of affixes like lyu (A 3.1.134 [290]), lyu (A 3.3.115 [291]), pvyu (A 3.1.133 [248]), svyn (A 3.1.145 [290]) are not found in actual usage, where one has instead -ana- and -aka-. As can be seen from these examples, these segments are like markers used with various items (see ee), except that, instead of being deleted, they are replaced by other elements. The following sūtras serve to replace segments of affixes after their stems (A 6.4.1 [105]):

A 7.1.1: युवोरनाकाँ (yuvor anākau)

A 7.1.2: आपनेयीनियियऽपठखङ्गऽधऽपऽत्यऽधऽञ्जऽनाम (āvaneyiniyiyā phaṛkhakhacchaghāṁ pratyayādīnāṁ)

A 7.1.3: ज्योत्नात् (jhotāntaḥ)

A 7.1.4: अवभ्यस्तात् (ad abhyastāt)

A 7.1.5: आत्मनेपदेवज्ञात् (ātmanepadeśv anataḥ)

A 7.3.50: ठस्येकाः (thsyekeḥ)

A 7.3.51: इसुसुक्तान्तात्कः (isusuktāntat kāḥ)

According to A 7.1.1, ana and aka (anākau), respectively, substitute for yu and vu (yuvoh). A 7.1.2 provides that affix-initial (pratyayādīnāṁ) ph ḍh kh ch gh are respectively replaced by āvane in ḍh; e.g., pha (as in phak: A 4.1.99 [335]) > āvana, ḍha (as in ḍhak: A 4.2.33 [336]) > eya, kha (A
4.2.93 [344]) > lna, cha (A 5.1.1 [338]) > lya, gha (A 4.2.93) > iya. The next three sūtras concern jh(jhaḥ) of verb endings. In general, this is replaced by ant(aṅtah), but at substitutes for jh after an abhyasta stem (abhyastāt: A 6.1.5-6 [52]) and in āṭmanepada endings (āṭmanepadaśu), except after a stem in -a (aṅtah). For example, bhavanti 'they are' (< ... bhū-jhi), adanti 'they are eating' (< ... ad-jhi), divyanti 'they are gambling' (< ... div-jhi), sunvantī 'they are pressing juice out' (< ... su-jhi), rundhanti 'they are hemming in' (< ... rudh-jhi), tanvantī 'they are stretching' (< ... tan-jhi), kriṇanti 'they are buying' (< ... kri-jhi) have -anti instead of -jhi, and aidhanta 'they thrived' (< ... edh-jha), apacanta 'they cooked' (< ... pac-jha) have -anta instead of -jha, but juhvati 'they are offering oblations' (< ... hu-jhi) has -ati for -jhi, and āṣata 'they sat' (< ... āṣ-jha), akrināta 'they bought' (< ... kri-jha) have -ati and -ata for -jhi and -jha. According to A 7.3.50-51, th(thasya) is replaced by ik(ikāḥ) unless the stem preceding it ends with is, us, a vowel denoted by the abbreviation uk (129), or t (isusuktāntat). For example, lāksika 'dyed with lac' (< ... laksā-thak: A 4.2.2 [336]) has -ika, but sārpiska 'one who sells butter' (< ... sarpiṣ-thak: A 4.4.52 [339]) has -ka.

According to A 7.1.5, -at replaces jh in -jhe(< -jha: A 3.4.79 [396]) after śi-; but the actual form to be accounted for is šērate 'they are lying down, sleeping'; similarly, one has ašerata (3pl. impfct.). Hence, A 7.1.6: शीढ़ो रुत् (śīhu ruṭ)
provides that the initial augment ruṭ is added to -at gotten from -jh if the ending in question follows śīn (śīnaḥ).

2.7.1.7. Imposition of markings.

None of the sarvanāmasthāna endings su au jas am auṭ is marked with ŋ or ŋ, so that, without something else being done, these endings could not be contexts for vṛddhi substitution according to A 7.2.115 (417). There are, however,
forms such as gauḥ (nom. sg.), gāvau (nom.-acc. du.), gāvah (nom. pl.), from bases in -o (go’cow, ox’). Accordingly, Pāṇini provides, by

A 7.1.90: ओतो णित् (otoṇit, see 521)

that a sarvanāmasthāna ending (sarvanāmasthāne: A 7.1.86 [472]) is marked with n (ṇit) if it follows a stem that ends with -o (otah). The endings so marked condition vrddhi substitution in their stems: go-s > gau-s, go-au > gau-au > gāvau (A 6.1.78 [524]), go-as > gau-as > gāvas. Similarly,

A 7.1.92: सख्युरसम्बुद्धौ (sakhyur asambuddau)

lets a sarvanāmasthāna ending be marked with n if it follows the stem sakhi- (sakhyuḥ) ‘friend’, unless this is used in addressing a friend, that is, unless su is a sambuddhi ending (asambuddhau: A 2.3.49 [68]): sakhi-au > sakhai-au > sakhāyau, sakhi-as > sakhai-as > sakhāyas, sakhi-am > ... sakhāyam (but voc. sg. sakhe).

Conversely, although the uttama ending nāl (< nip : A 3.4.82 [397]) is marked with n, it does not obligatorily condition vrddhi replacement by A 7.2.115-116: first-person forms such as cakāra ‘made, did’, papāca ‘cooked’ alternate with cakara, papaca. Therefore,

A 7.1.91: पलउत्तमो वा (nāl uttamo vā)

provides that the uttama ending (uttamah) nāl is optionally (vā) marked with n.

There is another series of sūtras which let certain verbal affixes that are not regularly marked with n or k be so marked and provide that some affixes regularly marked with k are not so marked under stated conditions. The effect of such rules is to allow or disallow guna- and vrddhi-vowel replacements (A 1.1.5 [98]) for elements which precede the affixes in question and to allow other operations conditioned by suffixes marked with n, k.

The following rules provide that particular affixes are marked with n (ṇit):
By A 1.2.1, an affix not marked with BUFF or BUFF (arr nit) is marked with BUFF if it follows gau (A 2.4.49-51 [380]) and verbs of the subgroup that begins with kutal (garkutadibhyan; see 154). For example, adhyagista's studied, learned (BUFF g-a-s-ta) has -gi- instead of -gau-; accounted for by imposing the marker BUFF on sic, thereby letting -i replace the -a of gau before this suffix (A 6.4.66 [451]). kuti tium contains the verb stem form kut-, without guata-vowel replacement (A 7.3.86 [127]) conditioned by the suffix tumun (augmented itum); although the affix is not originally marked with BUFF, this marking is imposed on it to preclude guana replacement in kut- and so on.

A 1.2.2-3 concern affixes that are not marked with BUFF or BUFF but are augmented with initial it. Such an affix is marked with BUFF after vij's shake, fear', and has this marking optionally (vibhasa) after urnu'cover'; e.g., udvijitum (inf.), urnavitr (BUFF urno-itr: affix tucA 3.1.133 [248]), urnavitr (BUFF urnu-itr: A 6.4.77 [452]).

A 1.2.4 provides that a sarvadhatuka (sarvadhatukam: 63) not marked with 4BUFF (apit) is marked with 4BUFF. For example, the suffixes snu, sa, sina (A 3.1.73, 77, 81 [157]) are marked with 4BUFF to show that they belong to the sarvadhatuka class. They are not marked with 4BUFF, so that, by A 1.2.4, 4BUFF marking is imposed on them. This accounts for their not conditioning guana-vowel substitution (A 7.3.84, 86) in their stems: sunoti, tudati, kriñati. The endings tas, anti (BUFF jhi: A 7.1.3 [509]) also have marking with 4BUFF imposed on them, so that they too do not condition guana replacement: sunutas, sunvantat (BUFF sunu-anti: A 6.4.87 [452]), tudatas, tudanti (BUFF tuda-anti: A 6.1.97 [531]). In addition, tas, anti are marked with 4BUFF to show that they con-
dition replacement of -ā by -ī and zero (A 6.4.112-113 [456]): krīñitas, krīñantī. Since they are marked with n, the endings tas and anti also do not condition vṛddhi replacement in mṛj- (A 7.2.114 [415]): mṛṣṭāḥ(< ... mṛj-tas), mṛjanti.

According to

A 1.2.5: असांयोगाल्लित् कित् (अपित्) (asānyogāl lit kit [apit 4])

a lit ending (A 3.4.81-82 [396-397]) not marked with p is marked with k (kit) when it follows an item that does not end with a consonant cluster (asānyogāt). For example, the endings nal thal nal replace tip sip mip, which are marked with p, so that they too have this marking (A 1.1.56 [100]), hence are not marked with k. These endings thereby are contexts for vṛddhi substitution --- optional in the case of the uttama ending nal(A 7.1.91 [511]) --- and substitution by guna vowels, as in cakāra, cakartha, cakāra l cakara 'made, did', bibheda, bibhēditha, bibheda 'split'. Other lit endings, however, substitute for basic endings that are not marked with p. These endings have marking with k imposed on them, so that they do not condition guna-vowel substitution: bibhīdatus, bibhīdus, bibhīde, bibhīdēte, bibhīdēre. In addition, they are contexts for samaprasāraṇa substitution in particular stems (A 6.1.15-17 [388]); e.g., yaj-atus> ... > ij-atus > ijj-ij-atus (A 6.1.8 [382]) > ijj-atus (A 7.4.60 [383]) > ijjatus (A 6.1.101 [532]) 'they two performed a rite'.

The verb indh'kindle' ends with a cluster, yet has forms such as idhe (3sg. pfct.). This is accounted for by deleting the penultimate n of the base, an operation that applies to stems followed by affixes marked with k or n (A 6.4.24 [446]). In addition, although bhū 'be' become' does not end in a cluster, it has perfect forms babhūva, babhūvītha, babhūva (A 6.4.88 [453]). Hence,

A 1.2.6: इन्दिभवतिभ्याच (indibhavatibhyāca)

provides that a lit ending is marked with k also after indh and bhū (indibhavatibhyām).
According to

A 1.2.9: इको ज्ञल (सन्कित:) (*iko jhal [san 8, kit 5]*)

A 1.2.10: हलन्ताच्या (halantāc ca)

**san** (A 3.1.7 [279]) is marked with $k$ provided it begins with $s$ (*jhal*) --- that is, if it does not take the initial augment *i* --- and follows a base that either ends with an *i*; *u*; *r*; or *r*-vowel (*ikaḥ*) or has a final consonant (*halantā*) preceded by such a vowel. For example: *cicīṣa* (< ... *ci*-sa: A 6.4.16 [422]) 'wish to heap up', *tuṣṭūṣa* (< ... *stu*-sa) 'wish to praise', *cikīrṣa* (< ... *kr*-sa) 'wish to make, to do', *bibhīṣa* (< ... *bhid*-sa-) 'wish to split', *bubhūṣa* (< ... *budh*-sa-) 'wish to perceive'.

After verbs with the forms covered by A 1.2.10 and verbs with final *r*-vowels (*ur*), ātmanepada endings that derive from *liṇḍi* as well as the suffix *slc* (*liṇśicau*) followed by ātmanepada endings are marked with $k$ if they are not augmented with *i*, and after *gam* these affixes are optionally (*vā*) so marked under the same conditions:

A 1.2.11: लिण्डिसिचाअत्मनेपदेषु (liṇśicāv ātmanepadeṣu)

A 1.2.12: उष्चा (uṣ ca)

A 1.2.13: वागमः (vā gamaḥ)

For example: *bhūṣiṣṭa* (3sg. prec. ml.), *bhūd-slyssta: A 3.4.102, 107, 6.1.66, 8.2.29, 8.3.59, 8.4.41 [401, 522, 543, 563, 574]), *bhūṣiṣṭa* (< ... *budd-slyssta*), *abhitta* (3sg. aor. ml., *abhid-s-ta: A 8.2.26 [543]), *krśiṣṭa* (< ... *kr-slyssta*), *akṛṭa* (< *akṛ*-s-ta: A 8.2.27), *sam gamśiṣṭa* (< ... *gam-slyssta*), *sam gasiṣṭa* (A 6.4.37 [448]) 'may ... come together (with ...)'; *sam agaṁstā / sam agaṣṭa* 'came together (with ...)'. Parasmanipada endings that derive from *liṇ* are marked with $k$, *ni* by A 3.4.103-104 (401).

 Unaugmented *slc* preceding ātmanepada endings is marked with $k$ also after *han* 'strike, kill' (*hanaḥ*) and *yam* used in the sense 'reveal someone's secret' (*gandhane*); this marking is
also provided, optionally (*vibhāsā*), for *sic* if this is followed
by ātmanepada endings after *yam* in the sense 'marry'
(upayamane):

A 1.2.14: हनं सिच (hanaḥ *sic*)

A 1.2.15: यमो गन्धने (yamo gandhane)

A 1.2.16: विभाषोपययमने (vibhāṣopayamane)

For example: ā aha-s-ta (3sg. aor. with preverb ā) > ā aha-s-ta (A 6.4.37 [448]) > ā ahata (A 8.2.27 [543]) > āhata (A 6.1.101 [532]), ud āyata (< ... ut ā ayam-s-ta), up āyata(< ... upa ā ayam-s-ta) . Not only is *sic* which precedes ātmanepada endings marked with *k* if it follows sthā 'be in place' or a verb of the ghu class (A 1.1.20 [51]), but the -ā of these bases (stāghvoh) is then replaced by -i(< it):

A 1.2.17: स्थावोरिच्छ (stāghvor ic ca)

For example: up āsthita (< ... upa ā asthā-s-ta) 'approached, attended', adīta (< ... adā-s-ta).

Some affixes that are marked with *k* to begin with are denied this marking under particular conditions. In general, *ktvā* (A 3.4.21 [259]) is not (na) marked with *k* if it has the initial augment *i* (set):

A 1.2.18: न क्त्वा सेत (na *ktvā* set)

For example, the unaugmented suffix *tvā* of *jītvā* 'after winning', *stutvā* 'after praising', *kṛtvā* 'after making, doing', *dhvastvā* 'after disappearing, perishing' (A 7.2.56 [151]) is marked with *k* to show that it does not condition guna substitution and is a context for the deletion of penultimate -n- (A 1.1.5, 6.4.24 [98, 446]). On the other hand, *itvā*, as in *devitvā* 'after gambling', *dhvamsitvā*, does condition guna substitution in a stem and is not a context in which penultimate -n- of a stem is dropped, so that the augmented suffix is said not to be marked with *k*.

The suffixes *kta* and *ktavatu* (*niṣṭhā*: A 1.1.26 [56]) are denied *k* marking if they have the initial augment *i* and occur
after the following verbs: śīḥ 'lie, sleep' (śayita, śayitavat), svid 'sweat' (prasvedita, prasveditavat), mid 'be moist, melt' (pramedita, prameditavat), kṣvid 'exhude, sweat' (prakṣvedita, prakṣveditavat), dhṛṣ 'be daring, bold' (pradharṣita, pradharṣitavat); mṛṣ (mṛṣah) used in the sense 'forebear' (tītikṣāyām: mārṣita, mārṣitavat, but aparāmṛṣa 'unclear');

A 1.2.19: निष्ठा शिशविद्विदिदियादः।
(niṣṭhā śīnśvidvimāpamādāh)

A 1.2.20: मृष्टिततिक्षायाम् (mṛṣas tītikṣāyām)

After a verb with penultimate short -u- (udapadhāt), augmented kta is optionally (anyatarasyām) not marked with k, provided it is introduced on condition that an action or the beginning of an act is signified (bhāvādikarmaṇaḥ: A 3.4.70-72 [248]):

A 1.2.21: उदुपधाविककर्मणोरन्यतरस्यायम्
(udapadhād bhāvādikarmaṇaḥ anyatarasyām)

For example, dyūtītā dyotītā 'gown light, shone', pradyūtātī pradyotītā 'begun to shine', from the verb dyut. After pūñ 'become purified', not only kta and ktavā with the augment īt but also (ca) ktvā with this augment are denied k marking (pavita, pavitavat, pavitvā):

A 1.2.22: पूनः क्तवा च। (pūnāḥ ktvā ca)

ktvā augmented with īt also is optionally (vā) not marked with k. If it follows a verb with penultimate -n- (nopadhāt) and final th or ph(thaphāntāt), as well as vanc' go, deceive', lunc 'pluck, tear away', īt 'have differences, abhor, hate' (vañcilūncyrtah):

A 1.2.23: नोवधात्वकान्ताद। (nopadhāt thaphāntād vā)

A 1.2.24: वानिलुचियुतस्या (vañcilūncyrtas ca)

E.g., grathitvā / granthitvā (granth 'bind, knot'), guphitvā / gumphitvā (gunph 'tie together'), vacitvā / vañcitvā, lucitvā / luñcitvā, artitvā / rtitvā. Moreover, according to Kāśyapa (kāśyapasya), augmented ktvā is optionally not marked with
k following ḍṛṣṭe dry, thirst (ṛṣitvā/ṛṣitvā), mṛṣ 'bear, forebear' (mṛṣitvā/mṛṣitvā), krś 'become slender' (krśitvā/krśitvā).

A 1.2.25: तृषिमृषिक्रे: काश्यपस्य (tṛṣimṛṣikṛśe kāśyapasya)
In dialects other than the one Kāśyapa observes, one has only tṛṣitvā, mṛṣitvā, kṛṣitvā, as provided for in A 1.2.18 (517).

After a verb that begins with a consonant (halādeḥ), ends in consonants other than y or v (rālāḥ), and has u- or i-vowels as penultimate sounds (vyupadhāt), not only ktvā augmented with ḍḥ but also san (samś ca: A 3.1.7 [279]) so augmented is optionally marked with k:

A 1.2.26: रलो व्युपाधादलादे: संस्था (ralo vyupadhād dhalādeḥ samś ca)
For example: dyutitvā/ dyotitvā, didyutiṣa/ didyotisa (dyut 'lighten, shine'), likhitvā/ lekhitvā, lilikhīṣa/ lilekhiṣa (likh 'write').

There are instances where augmented ktvā and san which, by A 1.2.18, 26 (517, 519), would either not be marked with k or only optionally be so marked must, for operations relative to subgroups of verbs covered by these rules, have this marking. There are also instances where unaugmented san is to be marked with k: The following sūtras provide for such marking:

A 1.2.7: उद्धमण्डगुडःकृष्णकिलिशवदवसि: कत्वाः (mrṣdamrda- gudhakuṣakliṣavadavasaḥ ktvā [kit 5])

A 1.2.8: रुदविद्युपग्रहिस्विपिप्रच: संस्था (rudavidamuṣa- grahisvapipracchaḥ samś ca)
After mrṣ 'be gracious', mṛṣ 'rub, press, crush', guḍh 'cover', 'be angry', kus 'draw', kliṣ 'suffer, cause to suffer' vad 'say, speak', and vas 'dwell, remain', ktvā is marked with k. Both this suffix and san are so marked after rud 'cry, weep', vid 'know', muṣ 'steal', graha 'grasp, seize', svap 'sleep, dream', prach 'ask': mrṣitvā, mṛṣitvā, guḍhitvā, kuṣitvā, kliṣitvā,
uditvā, usitvā; ruditvā, rurudīṣa, viditvā, vividiṣa, muṣitvā, mumuṣiṣa, grhitvā, jighṛkṣa, suptvā, suṣupta, prṣṭvā, pipṛcchīṣa

Remark.

The reading I have given for A 7.1.90 (511) is known to Pāṇinīyās. Thus, in its comments on the sūtra, the Kāśikā notes (II.794: केचिददतो गिदिति पठन्ति) that some accept this reading. The reading generally accepted and known from the time of Kātyāyana, however, is गोतो गित्, with gotaḥ instead of otaḥ. This will account only for forms of go, not also for forms of odo 'day' Moreover, A 6.1.93: औतोक्षसोऽऽ (530), which has to account for gām, gāṇ (acc. sg., pl.), provides that a replaces o (otaḥ) and a following vowel of the endings am, śas. As formulated, this sūtra accounts also for a form such as dyām. Consequently, I accept the conclusion, reached by some modern scholars, that the usual reading of A 7.1.90 results from an early development in oral transmission: a transitional g was inserted between the -r of asūrī in A 7.1.89 (473) and the o- of the next sūtra. For another change in oral transmission of a sūtra (A 8.3.4 [555]), see 585.

2.7.2. Other sound replacements and augments.

2.7.2.1. Rules outside the tripāḍi.

2.7.2.1.1. Rules outside the section headed by A 6.1.72.

522 ν and y (vyah) are replaced by zero (lopaḥ) before a consonant other than y (vahi):

A 6.1.66: लोपो न्योर्विलिः (lopo vyor vahi)

For example: didiv-vas (affix kvasu: A 3.2.107 [232]) > di-divas '(one who) gambled', paca-lyvahi > paca-ivahi > pace-
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\( \text{dh} \) is deleted before another \( \text{dh} \), and \( r \) is deleted before \( r \) (A 8.3.13-14 [556]). Once the deletion of \( \text{dh} \) and \( r \) has taken effect (\( \text{dhralope} \)), a vowel \( a / u \) (\( \text{anah} \)) that precedes (\( \text{pūrvasya} \)) the original sound dropped is then replaced by a corresponding long vowel (\( \text{dirgha} \)):

A 6.3.111: दृलोप्य पूर्वस्य दीर्घोऽणः। (\( \text{dhralope pūrvasya dirgho'ṇaḥ} \))

For example: \( \text{lih-ta} \) (affix \( \text{kta} \): A 3.2.102 [294]) \( \rightarrow \) \( \text{lih-ta} \) (A 8.2.31 [544]) \( \rightarrow \) \( \text{lih-dha} \) (A 8.2.40 [547]) \( \rightarrow \) \( \text{lih-dha} \) (A 8.4.41 [574]) \( \rightarrow \) \( \text{li-dha} \) \( \rightarrow \) \( \text{lihā'licked', guh-ta' \rightarrow guh-ta'} \) \( \rightarrow \) \( \text{gu-dha' \rightarrow gūdha' 'hidden', punar raktam' \rightarrow puna raktam' \rightarrow punā raktam' 'colored anew'}. \)

2.7.2.1.2. Rules of the section headed by A 6.1.72.

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A series of sūtras, headed by A 6.1.72 (107), provides for operations that take effect when items are pronounced in close junction, without any intervening pause. The general rule of semivowel substitution (A 6.1.77 [125]) is one of the sūtras of this group. In addition, as provided for in

A 6.1.78: एकोष्यवायावः। (\( \text{eco'ya'vāyāv} \))

\( \text{ay av āv, respectively, substitute for e o a i au followed by a vowel, as in agnaye ('agn-e': A 7.3.111 [484]), vāyave ('vāy-o-e'), nāy-i'have ... guide, lead' ('nai-i': A 7.2.115 [417]), lāv-i'have ... cut' ('lau-i').} \)

Moreover, a substitute that ends with \( v \) (\( \text{vāntā} \)) occurs in place of \( o, \) \( au \) before \( y- \) of an affix (\( \text{yi prataye} \)), but, if \( -o \) or \( -au \) belongs to a verb (\( \text{dhātoḥ} \)), this substitution applies only to such a sound as is conditioned by the affix that follows (\( \text{tannimittasyaiva} \)):

A 6.1.79: चान्तो यि प्रत्यये। (\( \text{vānto yi prataye} \))

A 6.1.80: धातोस्तन्निमित्तस्यैव। (\( \text{dhātos tannimittasyaiva} \))

The first of these rules accounts for examples such as
māṇḍavya (affix yaṇ: A 4.1.105 [335]) 'descendant of Maṇḍu', the
derivation of which involves replacing -u of the stem with the
guṇa vowel -o (A 6.4.146 [504]). A derivate like ceya contains
the affix yat (A 3.1.97 [122]), which conditions guṇa-vowel
substitution (A 7.3.84 [127]): ci-ya > ce-yā. The same affix is
introduced to derive lāvyā 'which is to be cut', and again the
affix conditions the replacement of the base-final vowel by a
guṇa vowel, here -o in place of -ū. The -o of lo- is then
replaced by -av according to A 6.1.80.

In particular instances, one also has -ay instead of -e
before -y, as in kṣayya 'which can be destroyed', jayya 'which
can be conquered'. Special rules account for these. Thus,

A 6.1.81: क्षय्यजय्यां शक्यायथे (kṣayyajayaṃ āśaka-yāthe)
provides that kṣayya and jayya (kṣayyajayaṃ āśaka-yāthe) occur in the
meaning 'which can ...' (āśaka-yāthe). These contrast with
kṣeya 'which is to be destroyed, should be destroyed', jeya
'which is to be conquered, should be conquered'.

According to

A 6.1.113: अतो रोरप्पुतातादप्पुतेः (āto roṛ
aplūtād aplute [ati 109, ut 111])

A 6.1.114: हसि का (haśi ka)
u (ut) replaces R (roṛ: A 8.2.66 [551]) if this occurs after
unprolated (aplūtā) a (atāḥ) and is followed by unprolated a
(aplute ati) or a voiced consonant (haśi). For example: kaR
atra > kaū atra > ko atra (A 6.1.87 [528]) > kotrā (A 6.1.109
[533]) 'who is here?'. devadattaḥ hasati > devadattaḥ hasati >
devadatto hasati 'Devadatta is laughing'.

The ending su is replaced by zero (sulopaḥ) if it is linked
to etad 'this', tad 'that' (etattadoḥ) and is followed by a
consonant (haḷi), on condition that the pronouns etad, tad do
not have k of the affix ak (akoh: A 5.3.71 [354]) and are not
part of a negative compound (anaṁsāme):

A 6.1.132: एतत्तदोः सुलोपोकोरन्नसमासे‌हलि (etattadoḥ sulopa'kor anaṁsāme haḷi)
For example: _tad-s gacchati_ > _... sa-s gacchati_ (see 476) > _sa gacchati_ 'that one is going'.

A group of sūtras, headed by

A 6.1.135: सुत्कात्पूर्वः। (sūt kāt pūrvaḥ)

give conditions under which the augment _sūt_ is added, preceding the _k- (kāt pūrvaḥ)_ of particular verbs used with given preverbs. For example, by

A 6.1.137: सम्परिभ्यां रोतौ भूषण। (samparībhyaṁ karotau bhūṣane, see 537)

A 6.1.138: समवाये चा। (samavāye ca)

_sūt_ is added to _kr_ (karotau) after the preverbs _sam, pari_ when the complex of preverb and verb is used in the meaning 'adorn' (bhūṣane), 'form a group' (samavāye), as in _sam skaroti_ (3sg. pres. < _sam skaroti_: A 8.3.23 [559]).

The section A 6.1.72 (107) heads contains a subsection headed by A 6.1.84 (106). Sūtras of this section provide that one sound occurs in place of both a preceding and a following sound. For example, according to

A 6.1.87: आद्गुणः। (ād guṇah [aci 77])

an _a_-vowel and a following vowel are both replaced by a guṇa vowel (guṇah: A 1.1.2 [9]), as in _tavedam_ (< _tava ṭadam_) 'this is yours', _khatvehal_ (< _khatvā iha_) 'the bed is here', where the guṇa vowel _e_ substitutes for _a+ i_ and _a+ i_. The contiguous elements subject to replacement are referred to by ablative and locative forms like _āt_ 'an _a_-vowel', _aci_ 'a vowel', respectively ablative singular of _a_ and locative singular of _ac_. Recall that, according to A 1.1.66-67 (90), locative and ablative forms not unambiguously interpretable in a given context are interpreted respectively as referring to elements which serve as contexts for operations on what precedes and follows. The ablative _āt_ of A 6.1.87 and the locative _aci_ understood to recur in this sūtra are to be interpreted by means of these metarules. Yet, in accordance with A 6.1.84, they also refer to substituends. In effect, instead of formulating uncontextualized rules of the
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type \( a + b > c \), Pāṇini formulates rules in which the substituends are treated as their own contexts.

According to:

A 6.1.88: वृद्धिरेचि (आत्) \( (vṛddhir eci [āt 87]) \)

A 6.1.89: एत्येघत्युठ्सु \( (etyedhatyūthsu) \)

A 6.1.90: आटश्चा \( (ātaś ca) \)

A 6.1.91: उपसर्गाहिति धातौ \( (upasargād rti dhātau) \)

A 6.1.92: वा सुप्पायापिशलेः \( (vā supy āpiśaleḥ) \)

A 6.1.94: वर्द्धिः \( (vṛddhiḥ: A 1.11 [9]) \) is the single replacement for two contiguous sounds as follows:

A 6.1.88: an \( a \)-vowel and a following vowel \( e o a i a u \) \( (eci) \); e.g., kanyā eti > kanyaiti 'the girl is going', devadattena odanah > devadattenaudanah (see (20b) [230, 244]), atra aitikāyenah > atraitikāyenah 'here is a descendant of Itika', atra aupagavah > atraupagavah 'here is a descendant of Upagu'.

A 6.1.89: an \( a \)-vowel and the \( e \)-of the verbs 'go' (eti), edh 'thrive' (edhati), as well as ůth (A 6.4.132 [501]); e.g., upa eti > upaiti 'approaches', pra edhate > praidhate 'is thriving' (cf. A 6.1.94 [531]), viśvaūhas > viśvauhas.

A 6.1.90: āt and a following vowel; e.g., āiksata (A 6.4.72 [238]) > āiksata 'looked', auroh sat 'covered' (<... auru-t).

A 6.1.91-92: -a of a preverb (upasargāt) and -r- (rti) of a following verb (dhātau); according to Āpiśali (āpiśaleḥ), this is optional (vā) if the verb is denominative (supi [see 287]); e.g., upa rccati > upārccchati 'approaches', pra rṣabhiyati > prāṛṣabhiyati 'wishes for a bull' (also prarṣabhiyati, with guna vowel substitution by A 6.1.87 [528], in the dialect observed by Āpiśali).

The single replacement for \( o \) (otāḥ) and the vowel of \am, šas (amśasoh)\ is ā.

A 6.1.93: औतोम्सासोः \( (autoṁśasoh) \)

For example: go-am > gām (acc. sg.), go-as > gās (acc. pl.) 'cow(s), bull(s)'.

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The -a of a preverb and a following vowel e or o (eni) are both replaced by the second vowel (pararūpam ‘subsequent form’), as in preṣaṇā (pra eṣaṇā) ‘command’, pra oṣati > proṣati ‘burns’:

A 6.1.94: एङ्ग पररूपम् (आत् उपसार्गत् धातू) (eni pararūpam [āt 87, upasargat dhātau 91])

The following sūtras also provide that an a-vowel and a following vowel are replaced by the second one alone:

A 6.1.95: ओमाङ्गोप्या (omāṅgoṣa)

A 6.1.96: उस्परपदान्तात् (usy apadāntāt)

A 6.1.97: अतो गुणो (atō gune)

The first of these rules concerns sequences where the second vowel is that of om (a sacred and auspicious syllable also used to convey assent) or the preverb āni (omāriḥ); e.g., adya aūḍhā > adya ogdhā (A 6.1.87 [528]) > adyogdha ‘has been brought (as a bride) today’. The next two rules have to do with sequences in which the first vowel is not pada-final (apadāntāt) and the second is the vowel of us (usi) or a guna vowel (gune); e.g., adā-us > adus (see 402), pac-a-anti > pacanti ‘they are cooking’, pac-a-e > pace ‘I am cooking for myself’.

The single substitute for a sequence in which the first vowel is one of the set denoted by ak (akah: 129-130) and the second vowel is homogeneous with it (savarṇe: A 1.1.9-10 [33-34]) is a long vowel (dirghaḥ):

A 6.1.101: अक: सवर्णे दीर्घ: (akah savarṇe dirghaḥ)

For example: daṇḍa-agra > daṇḍagra ‘tip of a staff’, kanyāatra > kanyātra ‘the girl is here’, dadhi iha > dadhiha ‘there are curds here’, madhu-udaka > madhūdaka ‘honey and water’.

If a vowel of the set denoted by ak is followed by a vowel of an ending in the first two triplets of nominal endings (prathamayoh), the single replacement is generally a long vowel homogeneous with the first (pūrvasavarṇaḥ):
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A 6.1.102: प्रथमयोऽः पूर्वसवर्णः (prathamayoh pūrvasavarṇaḥ)
For example: agni-au > agni (nom.-acc. du.) 'fires', vāyu-au > vāyu-'winds', vrksa-as > vrksaḥ (nom. pl.) 'trees', kumār-ī-as > kumārīs 'maidens' (acc. pl.), mātṛ-as > mātṛs 'mothers'. After such long vowel gotten by this substitution (tasmāt), moreover, the -s of śaś (śasaḥ) is replaced by n (naḥ) in the masculine (pūṁśi):

A 6.1.103: तस्माच्चसो न्: पुंसी (tasmāc chaso naḥ pūṁśi)
For example: vrksa-as > vrksaḥ > vrksaḥ (acc. pl.), agni-as > ... agniḥ, vāyu-as > ... vāyuḥ, karta-ī-as > ... kartaḥ 'makers, doers, agents'.

Replacement by a single long vowel does not (na) apply, contrary to A 6.1.102, if the first element of a sequence is an a-vowel (āt) and the second is a vowel denoted by ic (ici); nor does this replacement apply if the first element is a long vowel (dirghāt) and the second is a vowel of the set denoted by ic or the vowel of jas (jasi):

A 6.1.104: नावीचिः (nād ica)

A 6.1.105: दीर्घाजसिः च (dirghāj jasi ca

Since there are Vedic forms like devī (nom.-acc. du.), devīḥ (nom. pl.) 'goddesses', in addition to forms with -yau and -yas,

A 6.1.106: वा छन्वसिः (vā chandasi)
provides that the replacements disallowed by the preceding two rules are only optionally (vā) disallowed with respect to usage in sacred literature (chandasi).

In some instances, it is simply the first (pūrvaḥ 'prior') of two contiguous vowels that is made the single replacement for
both. By

A 6.1.107: अमि पूर्वः (ami pūrvaḥ)

A 6.1.108: सम्प्रसारणाच्या (samprasaṭaṇāc ca)

this substitution takes effect if the second vowel is the one in
am (ami) and if it follows a samprasaṭaṇa vowel (sam-
prasaṭaṇāt: A 1.1.45 [38]); e.g., vṛkṣa-am > vṛkṣam (acc. sg.),
kanyā-am > kanyām, agnī-am > agnim, vāyu-am > vāyum,
vac-ta > uac-ta (A 6.1.15 [388]) > uc-ta > ukta (A 8.2.30 [544]).

In addition, the first of two vowels is the sole substitute
for both in sequences where pada-final (padāntāt) e or o
(eṇaḥ) is followed by a-(aṭi) and where pada-interior e or o
occurs before either of the endings īnasi, īnas (īnasiṇasoh):

A 6.1.109: एडः पदान्तावति (enaḥ padāntād aṭi)

A 6.1.110: रसिनासोऽच्च (rasiṇasosō ca)

For example: sarve atra (see 492) > sarvetra 'all are here', ko
atra > kotra (see 525), agne-as (A 7.3.111 [484]) > agnes,
vāyo-as > vāyos.

On the other hand, u(ut), automatically followed by r
(A 1.1.51 [93]), is the single replacement for r (ṛtaḥ) and the
a-of īnasi, īnas:

A 6.1.111: ऋत उतः (ṛta ut)

For example: pītra-as > pīturs > pītur (A 8.2.24 [542]) 'father'.
The same replacement u substitutes for the a- of īnasi or
īnas following (parasya) khy or ty (khyatyaṭ):

A 6.1.112: क्यत्यात्परसया (khyatyaṭ parasya)
sakhi-as > sakhy-as (A 6.1.77 [125]) > sakhy-urs > sakhyur
'friend', pati-as > ... patyur 'master, husband'.

Pluta vowels (A 1.2.27 [35]) and the final vowels of
pragṛhya elements (76) are not subject to sound replacements.
For example, the -a3 of devadatta3 (A 8.2.83-84 [621]) is not
subject to the replacement that generally applies when a vowel
is contiguous to a homogeneous vowel (A 6.1.101 [532]) such as
the a-of atra 'here'. Nor is the -i of agni subject to this
replacement before the i- of iha 'here': agni iha, not *agniha; the -i of such a dual form also is not subject to semivowel replacement (A 6.1.77 [125]) before a vowel such as the a-of atra: agri atra. The -e of ubhe 'both' and the -a of an item such as abhyast am are not both replaced by -e- (A 6.1.109 [533]): ubhe abhyast am (A 6.1.5 [52]). Accordingly,

A 6.1.125: पुलप्रप्यः ऑधि नित्यम् (प्रकृत्या)
(plutapragrhyā aci nityam [prakṛtyā 115])
provides that pluta vowels and praghyā elements (plutapragrhyā) necessarily (nityam) remain in their original forms (prakṛtyā) before vowels (aci).

536 Sounds are also subject to augmenting when they are in close junction with others. By

A 6.1.73: चे (हस्वस्य तुक्) (che ca [hrasvasya tuk 71])
a short vowel (hrasvasya) gets the final augment tuk if ch follows (che) in close junction; e.g., ich-a-ti (A 7.3.77 [434]) > itch-a-ti > icchati (A 8.4.40 [574]) The same augment is added to a long vowel (dirghāt) followed by ch, but only optionally (vā) if the vowel is pada-final (padāntāt):

A 6.1.75: दीर्घात् (dirghāt)

A 6.1.76: पदांतात् (padāntād vā)
For example: hṛich-a-ti > hṛitch-a-ti > hṛicchati 'is ashamed, bashful', kuṭi-chāyā > (optionally) kuṭit-chāyā > kuṭicchāyā 'shade of a cottage'. On the other hand, āñ and māñ (ārīmāñḥ) are augmented obligatorily with tuk when ch follows across a pada boundary:

A 6.1.74: आिमानोर्स्स (ārīmānos ca)
For example: ā chādayati > āt chādayati > ācchādayati 'covers', mā chaitsit > māt chaitsit > mācchaitsit 'let him not cut'.

Remark
I have cited A 6.1.137, 6.1.125 (527, 535) as they were known to earliest Pāṇiniyas, in accordance with evidence in the Mahābhāṣya (Bh. III.93.13 [on A 6.1.135], III.216.1 [on A 6.4.110], III.87.24 [on A 6.1.125]). The Kāśikā reads samparvapīhā instead of samparbiḥyām in A 6.1.137 and plutoṣpragyā aci in A 6.1.125, taking nityam as part of the preceding sūtra. In addition, the Kāśikā has a sūtra *6.1.136: अहःप्रयासस्यायायेष्पि (aḍabhyāsavyāvaye'pi) following A 6.1.135 (527). According to this rule, sut is added even if the k- in question is separated from a preceding element by the augment at or an abhyāsa syllable. What the Kāśikā has incorporated as part of the Aṣṭāṅgaśāstra reflects additions suggested in Kātyāyana’s fifth and sixth vārttikas on A 6.1.135 (अहःप्रयास उपस्सङ्क्षानम् अहःप्रयासस्यायायेचि). Details will be discussed under these rules in part VI.5 of my work.

2.7.2.2. Rules in the tripāti.

A sūtra of the tripāti, headed by A 8.2.1(109) is generally suspended (asiddham) with respect to any sūtra that precedes (pūrvatra), but there are exceptions to this. Thus, A 8.3.13-14 (556), whereby gh and r are deleted, are not suspended with respect to A 6.3.111 (523). This is obviously so, given that A 6.3.111 specifically depends for its application on the deletion of gh and r, which it refers to. Similarly, A 8.2.66 (551), which lets -R substitute for -s is not suspended in relation to A 6.1.113-114 (525). In addition,

A 8.2.2: नलोपः सुप्स्वरसम्बाहितमिडिधिषु कृति (naloṇaṃ
supsvarasamjñātugvidhisu kṛti)

provides that A 8.2.7 (539), which serves to delete -n (naloṇaṇa), is suspended only with respect to particular rules, namely those that provide operations connected with nominal endings (sup), those which let particular accents (svara) or class names (samjñā) take effect, and the sūtra that lets the

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final augment tuk occur (supsvarasamjñätugvidhiṣu) before a kṛt affix (kṛti: A 6.1.71 [394]). Further, by

A 8.2.3: न मु ने (na mu ne)
the rule whereby mu occurs in forms of adas (A 8.2.60 [553]) is not (na) suspended in respect of the sūtra which lets nā replace aṇi (ne: A 7.3.120 [497]). See 655-657.

-n of a pada (padasya: A 8.1.16 [105]) which is also a prātipadika (prātipadikāntasya: 48) is generally deleted (na-lopaḥ), but not (na) in Vedic locative forms, which originally have the ending ni in their derivation, or in vocative forms, which originally have the sambuddhi ending su (niisambuddhyoḥ: A 2.3.49 [68]):

A 8.2.7: नलोप: प्रातिपिदिकान्तसया (nalopaḥ prātipadikāntasya)

A 8.2.8: न दिसन्मुद्दयोः (na niisambuddhyoḥ)
For example, the ending su of rājan-s is dropped (A 6.1.68 [404]). In accordance with A 1.1.62 (103), long-vowel replacement (A 6.4.8 [469]) applies: rājan > rājān. By the same metarule, rājān is a pada (A 1.4.14 [49]) even after the ending su has been deleted. Consequently, rājān is a nominal base (prātipadika) and a pada at once. A 8.2.7 serves to delete the -n of this item. The rule also provides for deleting the -n of rājan- in forms such as rāja-bhyām (A 1.4.17 [75]): rājān > rājā (nom. sg.), rājan-bhyām > rājabhdyām (instr.-dat.-abl. du.). On the other hand, the -n of rājan (< rājan-s), originally with the sambuddhi ending su, is not dropped; nor is the -n of a Vedic locative form such as carman (< carman-i) on the hide subject to deletion.

The initial sound (A 1.1.54 [95]) of matup (matoh: A 5.2.94 [346]) is replaced by v (vah) following final or penultimate (upadāyaś ca) m, a(māt), except where these are parts of items of the type in the group that begins with yava 'barley' (ayavādibhyah); the substitution also applies after non-nasal stops (jhayah):
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A 8.2.9: मातुपधायायात्म सतोर्जियवाविभ्यः (mād upadhāyāś ca mātṛ vavāvādibhyāḥ)

A 8.2.10: ज्ञयः (jhayāḥ)

For example: śamīvat 'which has many Śami trees on it', vrksavat 'which has many trees', yavamati 'rich in barley', vidyutvat 'which has lightening in it'.

According to

A 8.2.18: कृपो रो लः (kripo ro laḥ)

( laḥ) substitutes for r (raḥ) --- whether this is a separate sound or included in r --- of the verb kṛp (kṛpaḥ) 'be fit, arrange'; e.g., kalp-ṛ 'one who arranges' (< karp-ṛ < kṛp-ṛ), kṛpta 'arranged' (< kṛp-ta).

Other sūtras provide for / to replace the r of preverbs in particular contexts. Thus, by

A 8.2.19: उपसर्गस्यवायतः (upasargasyāyatau)

the r of a preverb (upasargasya: A 1.4.59 [55]) is replaced by / before the verb ay (ayatau), as in palāyate (< ... parā ayate) 'flees'.

The final sound (A 1.1.52 [95]) of a pada (padasya: A 8.1.16 [105]) that ends with a consonant cluster (sanyogāntasya) is replaced by zero (lopaḥ), as in gomān (< gomānt [see 469]):

A 8.2.23: संयोगान्तस्य लोपः (sanyogāntasya lopaḥ)

Not all pada-final clusters, however, are thus simplified by deletion. Clusters in which r precedes a consonant other than s are allowed. For example, from amṛj-t, one should derive amāṛt (3sg. impct.) 'wiped, cleaned': amṛj-t > amṛj (A 6.1.68 [404]) > amṛj (A 7.2.114 [415]) > amṛṣ (A 8.2.36 [544]) > amāṛ (A 8.2.39 [546]) (optionally) amāṛt (A 8.4.56 [578]). A 8.2.23 should not apply to delete the -j of amāṛj. On the other hand, -rs should be simplified to -r, as in pitur (< piturs: A 6.1.111 [534]). Consequently, in

A 8.2.24: रात्स्या (rāt sasya)

Panini provides for the deletion of -s (sasya) after r (rāt) in
a pada-final cluster. Since, in the absence of this sūtra, the
general rule A 8.2.23 would allow dropping the \(-s\) of \(-rs\), A
8.2.24 is in effect a restrictive rule, whereby in a pada with a
final cluster including \(-r-\) only \(-s\) is dropped after \(-r-\), so
that forms like \(\text{amārt}\) are accounted for.

Pada-interior \(-s\)- is also subject to deletion as follows:
before \(\text{dh} (\text{dhi})\); when a consonant other than a semivowel or a
nasal both precedes (\(\text{jhalā}\) and follows it (\(\text{jhalī}\)); after a
stem (\(\text{āṅgāt}\) ) that ends in a short vowel (\(\text{hrasvāt}\)); when it
follows \(\text{īt} (\text{īta})\) and precedes \(\text{īt}(\text{īti})\):

A 8.2.25: \(\text{dhi ca}\) (\(\text{dhi ca}\))
A 8.2.26: \(\text{jhalo jhalī}\) (\(\text{jhalo jhalī}\))
A 8.2.27: \(\text{hrasvaḥjāt}\) (\(\text{hrasvād āṅgāt}\))
A 8.2.28: \(\text{īt īti}\) (\(\text{īta īti}\))

For example: \(\text{alav-īs-dhvam (\(-is\)}: \(\text{A 3.1.44, 7.2.35 [236, 145]}\) > \(\text{alavidhvam (2pl. aor. mid.) ‘you cut’, abhīd-s-ta > abhīd-ta >}
\text{abhītta (A 8.4.55 [578]) ‘... split’ (3sg. aor. mid.), akṛ-s-ta >}
\text{akṛta ‘... made’, adev-īs-īt (\(-it\) : \(\text{A 7.3.96 [440]}\) > adevīt >}
\text{adēvīt (A 6.1.101 [532]) ‘gambled’.)

Moreover, cluster-initial (\(\text{saṃyogādyoh}\) \(s\) and \(k(\text{skoh})\)
are deleted both in the interior of a pada, when a consonant
other than a nasal or a semivowel follows (\(\text{jhalī}\), and when
the clusters to which they belong occur at the end of a pada
([\(\text{padasya: A 8.1.16}\) ante ca]):

A 8.2.29: \(\text{skoh: saṃyogādyor ante ca [jhalī 26]}\)

For example: \(\text{lasj-ta > laj-ta > laq-ta (A 8.2.30 [544]) > lagna}
(A 8.2.45 [549]) ‘ashamed, bashful’, \(\text{takṣ-ta > taṣ-ta > taṣṭa (A}
8.4.41 [574]) ‘fashioned’.

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Before a consonant other than a nasal or a semivowel
(\(\text{jhalī}\) ) and in pada-final position, a series of other sound
replacements apply. Velar stops (\(\text{koh}\) ) occur instead of
palatals (\(\text{coḥ}\) ).
A 8.2.30: चोः कुः। (coḥ kuḥ)
For example: vac-tum > vaktum 'to speak, say', vac-sya-ti > vaksya-ti (A 8.3.59 [563]) 'will speak, say', vac-s (nom. sg.) > vāc (A 6.1.68 [404]) > vāk > vāg (A 8.2.39 [546]) > (optionally) vāk (A 8.4.56 [578]) 'voice, speech'.

-ḥ is generally replaced (haḥ) by gh (dhaḥ); however, gh (ghaḥ) substitutes for -ḥ of a verb (dhaṭop) that begins with d (dādeḥ):

A 8.2.31: हो ढः। (ho dhaḥ)

A 8.2.32: वादेधांतोर्चः। (dāder dhātorn ghaḥ)
In addition, the -ḥ of druh 'wish ill, wish to harm', muḥ 'be confused', śnuḥ 'throw up, vomit', and ānuḥ 'be moist' (druhmuḥaṃśuḥaṃśiḥāṃ) is optionally (vā) replaced by -gh, and dh replaces the -ḥ of nah 'bind' (nahaḥ):

A 8.2.33: वा दृष्टमुह्युषिंहरिष्यामि। (vā druhamuḥaṃśuḥaṃśiḥāṃ)

A 8.2.34: नाहो धः। (naha dhaḥ)
For example: līh-ta > līgh-ta > ... līgha (see 523), doh-tum > dogh-tum > dogh-dhum (A 8.2.40 [547]) > dogdhum (A 8.4.53 [577]) 'to milk', droh-tum > drogh-tum > ... drodhum, droh-tum > drogh-tum > ... drodhum, nah-tum > nahdhum > naddhum. Further, th (thaḥ) replaces the -ḥ of āḥ (āhaḥ):

A 8.2.35: आहस्थः। (āhas thā)
āḥ occurs only followed by five endings (A 3.4.84 [397]), of which only thā begins with a consonant: āḥ-tha > āṭh-tha > āṭtha (A 8.4.55 [578]).

Finally, -ṣ (ṣaḥ) substitutes for the final consonants of vrasc 'cut, hew', bhrasj'fry', sṛj'let loose, create', mrj'wipe, clean', yaj 'venerate, perform a sacrificial rite', rāj 'shine', bhrāj 'shine', and items that end with ch or ś:

A 8.2.36: ब्रस्यांशस्त्रूजप्रज्ञाज्ञानावस्थांष।
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(vraścabhrasjasrjamarajayarjabhṛaja-
cchaśām śaḥ)

For example: vraṣc-tum > vrac-tum (A 8.2.29 [543]) > vṛaṣ-tum > vṛaṣṭum (A 8.4.41 [574]), bhrasj-tum > ... bṛaṣṭum, srj-tum > sṛaj-tum (A 6.1.56 [393]) > sraj-tum (A 6.1.77 [125]) > sraṣ-tum > sraṣṭum, mārj-tum (A 7.2.114 [415]) > māṛṣ-tum > māṛṣṭum, yaj-tum > ... yāṣṭum, rāj-tum > ... rāṣṭum, bhrāj-tum > ... bhrāṣṭum, prach-tum > prāṣ-tum > prāṣṭum- 'to ask', viṣ-tum > veś-tum (A 7.3.86 [127]) > veś-tum > véṣṭum 'to enter'.

Voiced aspirated bh gh dh dh (bhas) replace b g d (baṣāh) of a syllable (ekācaḥ) that ends in a voiced aspirated stop (jhasantasya), if it is followed by s, dhv (sdhvoh) or occurs at a pada boundary:

A 8.2.37: एकाचो बशो भष्ठ ज्ञानस्य सङ्कोः (अन्ते च)

(ekāco baśo bhas jhasantasya sdhvoh
[ante ca 29])

For example: bodhi-sya-te (A 7.3.86 [127]) > bhodhi-sya-te > bhotsyate (A 8.4.55 [578]) 'will awaken, perceive (3sg. fut.)', gōh-sya-ti > goḍh-sya-ti (A 8.2.31 [544]) > ghodh-sya-ti > ghok-sya-ti (A 8.2.41 [548]) > ghokṣyati (A 8.3.59 [563]) 'will hide', doḥ-sya-ti > doṅg-sya-ti (A 8.2.32 [544]) > dhoghsya-ti > dhogh-sya-ti > dhokṣyati (A 8.4.55) 'will milk (3sg. fut.)', abudh-s-dhvam (2pl. aor. mid.) > abudh-dhvam (A 8.2.26 [543]) > abudh-dhvam > abhuddhvam (A 8.4.53 [577]), -budh-s > -budh (A 6.1.68 [404]) > -budh > -bhud (A 8.2.39 [546]) > (optionally) -bhut (A 8.4.56 [578]) 'one who awakens' (e.g., uṣarbhut 'who awakens at dawn'), adoh-t > adoh > adogh > adhogh > adhog (A 8.2.39) > (optionally) adhok (A 8.4.56) 'milked (3sg. impfct.)'.

The d- of dadh (dadhāḥ) 'put' is replaced by the corresponding aspirate not only before s, dhv but also before l, th (tathoṣ ca):

A 8.2.38: दधस्तथोऽचा (dadhas tathoṣ ca)

For example: dhā-se (2sg. pres. mid.) > ... dhā-dhā-se (A 6.1.10

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Consonants other than semivowels and nasal stops (jhalam) are replaced by voiced unaspirated stops (jaśaḥ) in pada-final position:

**A 8.2.39: Jhalam jasaṃnte (jhalam jaśaṃnte)**

For example: vāk (A 8.2.30 [544]) > vāg, -bhud (A 8.2.37 [545]) > -bud, amārś (see 542) > amārd.

**A 8.2.40: Jhaṣṭaṃ dhoṭhāḥ (jhaṣṭaṃ tathor dhoṭhāḥ)**

For example: labh-tum > labh-dhum > labdhum (A 8.4.53 [577]) 'to gain', dogh-tum (A 8.2.32 [544]) > dogh-dhum > doghbum.

**A 8.2.41: Kaḥ saḥ (kaḥ saḥ)**

For example: dvēś-si (A 7.3.86 [127]) > dvek-si > dvek-și (A 8.3.59 [563]) 'you hate', goḥ-sya-ti > goḥ-sya-ti (A 8.2.31 [544]) > ghok-sya-ti (A 8.2.37 [545]) > ghok-sya-ti > ghokṣyati.

The t- of niṣṭhā affixes (niṣṭhātaḥ: A 1.1.26 [66]) is subject to replacement under various conditions. According to

**A 8.2.42: Radābhyaṃ niṣṭhāto naḥ pūrvasya ca daḥ**

(radābhyaṃ niṣṭhāto naḥ pūrvasya ca daḥ)

**A 8.2.43: Saṃyogadārato dhātaryṇvattāḥ (saṃyogāder āto dhātor yaṇvataḥ)**

after r and d (radābhyaṃ), t- is replaced by n-(naḥ), which also substitutes for a d (daḥ) that precedes (pūrvasya) the original t-; and the replacement of t- by n-takes effect after a verb (dhatoḥ) in -āl (ātaḥ), if the verb begins with a cluster
(samyogādeḥ) and contains a semivowel (yanvatah). In addition, the substitution applies after verbs of the subgroup that begins with lō (ivādibhyāḥ 165) as well as verbs marked with o (oditaḥ [abl. sg.]).

A 8.2.44: ल्वाविभः। (ivādibhyāḥ)

A 8.2.45: आदितस्त्वा (oditaś ca)

For example: stīr-ta > stir-ta (A 7.1.100 [423]) > stir-na > stir-na (A 8.2.77 [552]) > stīra (A 8.4.1 [570]) 'strewn', bhid-ta > bhīna'split', glā-ta > glāna'grown tired', lū-ta > lūna 'cut', svi-ta (base tuōśvi 'swell') > śui-ta (A 6.1.15 [383]) > śu-ta (A 6.1.108 [533]) > sū-ta (A 6.4.2 [421]) > sūna

Whether or not the t- of a niśṭā suffix is replaced by n-can also be connected with semantic differences. For example, dyūta'gambling' (A 3.3.114 [291]) has -ta, but paridyūna 'played out, wasted away, grief stricken' has -na. Accordingly,

A 8.2.49: दिवोधविजिगीशयायम् (divośvijīgīśāyam)

provides that the substitution applies after div (divaḥ) used in a meaning other than wishing to win (avijīgīśāyam).

Moreover, particular verbs are followed by suffixes with k-, v-, m- instead of t-, as in śuska 'dry', pakva 'cooked', kṣāma 'thin, emaciated'. According to

A 8.2.51: शृषः कः। (śushaḥ kaḥ)

A 8.2.52: पचो वः। (pacho vah)

A 8.2.53: क्षायो मः। (ksāyo maḥ)

the t- of a niśṭā affix is replaced by k after śus(śusah), by v after pac (pacah), and by m after kṣai (ksāyah).

The following sūtras state substitutions in pada-final position for consonants of verbal bases:

A 8.2.62: किवन्न्न्न्न्न्न्न्यायस्य कुः। (kvinpratyayasya kuḥ)

A 8.2.64: मो नो धातोः (पदस्य)। (mo no dhātoḥ [padasya 8.1.16])

The final consonant of a derivate with kvin (kvinpratyayasya:

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A 3.2.58-59 [295]) is replaced by a velar stop (kuḥ) and -m (maḥ) of a verb (dhātoḥ) is replaced by na(naḥ). For example: ghṛtasprṣ > ghṛtasprk 'one who touches ghee', praśam-s > praśam (A 6.1.68 [404]) > praśān (A 6.4.15 [422]) > praśān 'calm'. The substitution of -n for -m of a verb also applies before m- and v- (mvaḥ) of suffixes, as in aganma (Vedic ipl. aor.) 'we have gone' (< agam-ma), aganva (Idu. < agam-va):

A 8.2.65: स्मोङ्खा (mvoś ca)

r marked with u (ruḥ) --- represented here by R --- generally substitutes for the final sound of a pada that ends with s and for the -s of sajuṣ 'associated with, companion' in pada-final position:

A 8.2.66: ससजुषो रुḥ: (sasajuṣo ruḥ)

On the other hand, in pada-final position d replaces the -s of the affix vasu (A 3.2.107-108 [232]) and of the verbs srans 'fall', dhvans 'disappear, perish', as well as the -n of anaduḥ 'ox':

A 8.2.72: वसुस्राण्वत्वस्वनह्वा द: (vasusrāṇsvaṇaṇaḥghāṃ daḥ)

In addition, d replaces the final s of a verbal pada where this sound originally is followed by tip (tipi), unless the verb is as 'be' (anasteḥ); and where the ending in question is sip (sipi), R (ruḥ) and d optionally (vā) replace not only -s but also -d (daḥ) of a verb (dhātoḥ):

A 8.2.73: तिप्यनस्ते: (tipy anasteḥ)

A 8.2.74: सिपि धातो स्वर्जी (sipi dhāto rur vā)

A 8.2.75: दास्मा (daś ca)

For example: agnis > agnir (as in agnir atra 'there is fire here'), vāyuḥ > vāyur 'wind, Vāyu', sajuṣ-s > sajuṣ (A 6.1.68 [404]) > sajur, sedivas-bhyām (A 1.4.17 [75]) > sedivadbhyām, anaduḥ-bhyām > anadudbhhyām, aṣās-t > aṣās > aṣād > (optionally) aṣāt (A 8.4.56 [57a]) 'instructed, commanded (3sg. Impfct.)', aṣās-s > aṣās > aṣād > aṣāt, aṣās-s >... aṣār : aṣāt

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tvam, aśās tvam (A 8.4.55, 8.3.15, 34 [578, 557, 561]) 'you instructed, commanded', abhinad-s > abhinad > abhinad
l abhinar.

A long vowel (dirghāḥ) replaces penultimate (upadhāyāḥ)
-ī-, -u-, -r-, and -ī- (īkāḥ) of a verb (dhātoḥ) that ends with
-r or -v (rvoh) in pada-final position and, in the interior of a
pada, if -r or -v is followed by a consonant (hali):

A 8.2.76: वृषस्पधाया दीर्घ हकः! (rvor upadhāyā
dirgha ikāḥ [dhātoḥ 74 padasya 8.1.16])

A 8.2.77: हलि चा (hali ca)

Long-vowel replacement also applies to i u r / followed by r
or v in penultimate position (upadhāyāṃ) before a consonant
within a verb:

A 8.2.78: उपधायाब्या (upadhāyāṇ ca)

For example: gir-s > gir (A 6.1.68 [404]) > gir 'voice, speech',
dhur-s > dhur > dhūr 'yoke', stīr-na (A 8.2.42 [549]) > stīr-na
> stīrna, div-ya-ti > divya-ti 'gambles', kirt-i (A 7.1.101 [423])
> kirt-i 'praising, relating', murch-a-ti > murchati 'is
becoming senseless'.

In dhūrya (A 4.4.77 [340]), kuryāt (3sg. opt. < kuru-yā-t:
A 6.4.109-110 [455]), churyāt (3sg. prec. of chur 'cut'), the
conditions are met for lengthening by A 8.2.77, but this should
not take effect. Hence,

A 8.2.79: न भकुर्चरासः (na bhakurchurām)

provides that long-vowel substitution does not (na) apply to a
vowel of a bha element (A 1.4.18 [75]) or to the vowel of kur;
chur.

At the stage where adas'that' (adasah) does not end in s
(aseḥ), the vowel that follows its -d- (dāt) is replaced by an
u-vowel (u), and m (mah) replaces d (dah). In addition, t
(tt) substitutes for e (etah) following d in the plural (bahu-
vacane) of this pronominal:

A 8.2.80: अदसोसेद्वां दो मः! (adaso'ser dād u do mah)
A 8.2.81: एत इद्भुववचनो (eta 1d bahuvacane)

For example: adas-au > adaa-au (A 7.2.102 [476]) > ada-au (A 6.1.97 [531]) > adau (A 6.1.88 [529]) > amū (nom.-acc. du.), adas-as > adaa-as > ada-as > ada-i (A 7.1.17 [492]) > ade (A 6.1.87 [526]) > amī (nom. pl. masc.), adas-am > adaa-am > ada-am > adam (A 6.1.107 [533]) > amum (acc. sg. masc.), adas-as > adaa-as > ada-as > adās (A 6.1.102 [532]) > adān (A 6.1.103) > amūn (acc. pl. masc.), adas-ā > adaa-ā > ada-ā > amu-ā > amunā (instr. sg. masc.-nt.: A 7.3.120, 8.2.3 [497, 538]).

Vocative singular forms such as goman, sedivan, from bases with matup and vasu (A 5.2.94, 3.2.107-108 [346, 232]), are derived from gomat-s, sedivas-s, with deletion of the ending su (A 6.1.68 [404]): gomat-s > gomat > gomant (A 7.1.70 [488]) > goman (A 8.2.23 [542]), sedivas-s > sedivas > sedivans > sedivan. In order to account for vocative forms like marutva (before a vowel such as the i- of iha 'here'), marutvah 'Indra' accompanied by the Maruts', didivah, didivo 'shining, flaming (Agni)' in Vedic usage (chandasi), Panini lets -R (ru) replace the -n of a pada that contains matup or vasu (matuvasah) originally followed by a sambuddhi ending su (sambuddha: A 2.3.49 [68]):

A 8.3.1: मतुवसो रु सम्बुध्वौ छन्दसि (matuvaso ru sambuddhau chandasi)

marutvan > marutvaR > marutvay (A 8.3.17[557]) > marutva (A 8.3.19 [558]), marutvan > marutvaR > marutvah (A 8.3.15 [557]), didivan > didivaR > didivah, didivan > didivaR > didivaü (A 6.1.113 [525]) > didivo (A 6.1.87 [526]).

A series of other sūtras let -R replace the final sound of a pada when it is in close junction (samhitāyām: A 1.4.109 [42]) with a following pada. Concurrently, the vowel that precedes (pūrvasya) the final consonant is subject to operations as provided for in:

A 8.3.2: अत्रानुनासिक: पूर्वस्य तु वा (atranunasikah pūrvasya tu vā)

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A 8.3.3: आऽोटिनित्यम् (ātoṭi nityam)

A 8.3.4: आ[न]नुनासिकात्यपरोऽनुस्वारः (a[na]-
nunāsikāt para'nuṣvāraḥ, see 585)

According to the first two sūtras, when R-substitution takes place as stated in following rules (atra 'here'), a nasalized vowel (anunāsikāḥ: A 1.18 [39]) replaces the preceding (pūrvasya) vowel, optionally (vā) in all instances except where the vowel in question is ā (ātāḥ) and the original final consonant occurs before a vowel, ʰ, or a semivowel other than ʰ (aṭi), in which case ā is obligatorily (nityam) replaced by its nasal counterpart. If the penultimate vowel is not replaced by its nasalized counterpart, the nasal offglide called anusvāra (anusvāraḥ: m) follows (parah) the unnasalized vowel (anunāsikāt). The following are some of the sūtras of the section which A 8.3.2-4 head:

A 8.3.5: सम: सुटि (sāṃhitāyam)
(samaḥ suṭi [sāmhitāyam 8.2.108])

A 8.3.7: नास्त्रपश्चान् (अःपरे) (naś chavy apraśān
[ampare 6])

A 8.3.8: उभयथर्क्षु (ubhayatharkṣu)

A 8.3.9: दीर्घावदि समानपादे (dirghāṭi aṭi samānapāde)

Before the augment suṭi(suṭi), the -m of sam is replaced by -R, which also substitutes for the -n of a pada other than praśān 'calm' (apraśān) before ch ṭh ṭh c ṭc (chavi), if these are followed by a vowel, ʰ, a semivowel, or a nasal (ampare). In the contexts covered by A 8.3.7, one has both -n and -R (ubhayathā 'both ways') in Vedic ṛc's (ṛksu), where -R optionally replaces -n after a long vowel (dirghāṭ), if there follows a vowel, ʰ, or a semivowel other than ʰ (aṭi) in the same verse section (samānapāde). For example: sam skarot (A 6.1.137-138 [527]) > saṁR skarot (with nasalized a[ṇ]) > saṁṣ skarot (A 8.3.15 [557]) > saṁns skarot (A 8.3.34 [561]), sam skarot > saṁR skarot (with anusvāra [m] after a) >...
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sams skaroti; bhavāṅ cinoti > bhavāṅR l bhavāṁR cinoti > bhavāṅ l bhavāṁ cinoti > bhavāṅs l bhavāṁs cinoti > bhavāṁs l bhavāṁs cinoti (A 8.4.40 [574]) 'you are heaping up, gathering'; asmān ca > asmāṅ ca (A 8.4.40), tāṅ ca > tāṅR ca > tāṁ ca > tāṁs ca > tāṁs ca (see (126) [616]), raśmīn iva > raśmīṅ iva 'like reins', adhvarāṅ upa > adhvarāṅR upa > adhvarāṁy upa > adhvarāṁ upa '... sacrificial rites' (RV 8.35.21a; रस्मीं रिवं यच्छतमधवर्धो उपां [raśmīṅ iva yacchātam adhvarāṁ upā] 'Aśvins), draw up the sacrificial rites as (a charioteer does) the reins').

A 8.3.13: दो दे लोपः। (dho dhe lopah)

A 8.3.14: रे रिः (ro ri)

let zero (lopaḥ) replace dh (dhaḥ) followed by dh (dhe) and r (rasah) followed by r (ri); see 523, 538.

Pada-final -r (rasah), whether it is an original -r or -R which has substituted for another consonant (A 8.2.66, 74-75, 8.3.5-9 [551, 555]), is replaced by ṇ (visarjanīyaḥ) before voiceless consonants (khar ) and in prepause position (kharavāsanayoh: A 1.4.110 [42]):

A 8.3.15: खरवसानयोर्विर्वसर्जनीयः (रः पदस्य)

(kharavāsanayor visarjanīyaḥ [raḥ 14, padasya 8.1.16])

When followed by voiceless consonants, -ṅ is subject to additional replacements; see 561. Contrary to what A 8.3.15 allows in general,

A 8.3.16: रोः सुपि (roḥ supi)

restricts where -ṅ may occur as a replacement at a pada boundary before a nominal ending (supi: A 1.4.17 [75]): only -R (roḥ) is replaced by -ṅ in this context. For example, yaṣas-su > yaṣaR-su > yaṣaṅsu (loc.pl.) 'fames', but gir-su > gir-su (A 8.2.76 [552]) > girṣu (A 8.3.59 [563]), dhur-su > dhūṛ-su > dhūṛṣu, with -ṛ-

Before a voiced segment (aṣi), on the other hand, -R is
replaced by -y (yah) if it is preceded by bho, bhago ('sir'), agho ('sinful one') --- all parts of terms of address --- or is preceded by an a-vowel (bhobhagoaghopurvasya):

A 8.3.17: bhobhagoaghopurvasya yo'si
For example: bhor > bhoj, bhagor > bhagoy, aghor > aghoy, purushar > puruṣay 'man (nom. sg.), puruṣār > puruṣāy (nom. pl.). A 6.1.113-114 (525) apply to let -u substitute for -R preceded by short a and followed by short a or a voiced consonant, so that, except for the vocatives bhor and so on, -y replaces -R by A 8.3.17 after -a-

Pada-final -v and -y (vyoh) are subject to various operations before voiced segments (asi), depending on the dialect in question. According to Śakṭāyana (śakṭāyanasya [matena]), each of these sounds is replaced by one that has a slighter articulatory effort (laghuprayatnatarāṇ), that is, by an attenuated glide:

A 8.3.18: vyor

laghuprayatnatarāṇ śakṭāyanasya [asi 17])
Thus, in the dialect described by Śakṭāyana, one has the attenuated glides -y-v instead of -y-v found elsewhere. In the dialect of Śakalya (śakalyasya), on the other hand, -y-v are deleted (lopaḥ), and according to Gārgya (gārgyasya), -y is dropped after -o- (otaḥ):

A 8.3.19: lopaḥ śakalyasya

A 8.3.20: oto gārgyasya
Such variation holds when vowels follow, since, as provided for in

A 8.3.22: hali sarvesām
all (sarvesām [matena]) agree that -y and -v are deleted before a consonant (hali). For example, there are dialectal variants kay, ka'y, and ka (nom. sg. masc.) 'who?' followed by āste 'is seated': kas āste > kaR āste (A 8.2.66 [551]) > kay
äste (A 8.3.17 [557]); kay äste > ka* äste, ka äste. Similarly, one has amätyāv, amätyā", and amätyā 'two ministers' before atra 'here': amätyau atra > amätyāv atra (A 6.1.78 [524]); amätyāv atra > amätyā" atra, amätyā atra. And there are variants bhoy(< bhoh: A 8.3.17), bho", bho before vowels. But before consonants, one does not have such variation; e.g., puruṣā gacchanti 'the men are going': puruṣás > puruṣāR > puruṣāy > puruṣā.

A pada in -m (mah [padasya: A 8.1.16]) has its final sound replaced by the nasal off-glide -m (anusvārah), which also substitutes for either m or n (naś ca) that is not pada-final (apadāntasya), provided a consonant other than a semivowel or a nasal follows (jhalī):

A 8.3.23: मोनस्वारां (mo'nsvārah)

A 8.3.24: नस्त्रापदान्तस्य झळिल (naś cāpadāntasya jhalī)

For example: odanam > odanam (odanam pacati: (19b) [230, 244]), chandānsi- (A 7.1.72, 6.4.10 [488, 469]) > chandānsi.

Before h-(he) followed by m (mapare) and n (napare), -m shows optional assimilation to m and n, as in katham (katham) hmalayati 'how does ... shake?', kin(kin) hmute'what is ... hiding?'. This is provided for by letting m (mah) and n (nah) optionally (vā) occur in place of m in these contexts:

A 8.3.26: हेमपरे वा (m:) (he mapare vā [mah 25])

A 8.3.27: नपरे न: (napare nah)

In particular contexts, certain transitional sounds occur optionally (vā). According to

A 8.3.28: झोनो: कुक् टुक् झरि (vipoh kuk tuk śari [vā 26])

A 8.3.29: ह: सि धुट (daḥ si dhuṭ)

A 8.3.30: नस्त्रा (naś ca)

A 8.3.31: शि तुक (śi tuk)

the final augments kuk, tuk (A 1.1.46 [17]) are respectively
added to padas in -ṇa and -ṇ(ṇaḥ) before a voiceless spirant (śari); the initial augment dhut is added to s-after a pada in -ṇ and also after one that ends with -n (naḥ), which takes the final augment tuk before s(śi). For example, k is optionally added to praṇi 'facing east', t to sugan 'one who counts well', before s-(e.g., šete 'is lying'), s-(saṣṭhaḥ 'sixth one'), s-(sidati 'sits down'): praṇi šete > praṇi šete > praṇi chete (A 8.4.63 [502]), praṇi saṣṭhaḥ > praṇi saṣṭhaḥ, praṇi sidati > praṇi sidati, sugan šete > suganšaṣṭhaḥ chete, sugan saṣṭhaḥ > suganšaṣṭhaḥ, sugan sidati > suganšaṣṭhaḥ. After amārd (< omārj-t: 542, 546), sāye 'in the evening' optionally takes the initial augment dhut: amārd sāye > amārd dhsāye > amārd tsāye (A 8.4.55 [578]). sidatu (3sg. imper.) 'please sit' optionally takes the same augment after bhavān 'you': bhavān sidatu > bhavān dhsidatu > bhavān tsidatu. And tuk is optionally added to bhavān before šete: bhavān šete > bhavānt šete > bhavānt chete.

Some transitional segments are obligatory. Thus, according to

A 8.3.32: डमो हस्वादि डमुणित्यम् (nimo hrasvād aci namun nityam)
ni n n are obligatorily (nityam) added as initial augments (namun) to padas that begin with a vowel (aci) if these follow padas that end with ni n (namuḥ) preceded by a short vowel (hrasvāt). For example: pratyān āste > pratyān ānāste 'is seated facing west', tasmin itti > tasmin niti (A 1.1.66 [90]).

Visarjaniya (visarjaniyasya: A 8.3.15 [557]) in close conjunction with a voiceless consonant is generally replaced by s (saḥ):

A 8.3.34: विसर्जनीयस्य सः (visarjaniyasya saḥ)
This s is then subject to assimilatory substitutions before palatals and retroflex sounds (A 8.4.40-41 [574]). For example, the -sof devadattas(< devadattaḥ) remains before a dental such as the t- of tatra 'there' but is replaced by -s before a palatal such as the c- of cinoti 'is gathering, heaping

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Contrary to what A. 8.3.34 allows, -ḥ is retained before a voiceless consonant that is followed by a spirant, as in vāṣaḥ kṣaumam 'the garment is silken'. This is accounted for by providing, in

A 8.3.35: शर्पे वसिर्जनीयः (śarpe visarjaniyāḥ)
that visarjaniya itself substitutes for visarjaniya before a voiceless consonant followed by a voiceless spirant (śarpe). In addition, -ḥ optionally (vā) occurs, again as a substitute for -ḥ, before a voiceless spirant, as in devadattāḥ śete, devadattas (ṣ devadattas) śete:

A 8.3.36: वा शारिः (vā śari)

Further, before velar and labial stops (kupvoh), respectively, the velar and labial spirants ṣk, ṣp (ṣk ṣpau) occur as well as (ca) visarjaniya:

A 8.3.37: कुप्वोः ०क-पौ चा (kupvoh ṣk-pau ca)
For example: devadattāṣk / devadattāḥ kroṣati 'Devadatta is crying out', devadattāṣp / devadattāḥ pacati 'Devadatta is cooking'.

There are instances where, contrary to A 8.3.37, -ṣ and -ṣ occur before velar or labial stops. For example, yaśaṣ-kalpa 'near fame, something less than fame, something like fame', sarpiṣkalpa 'near butter, something less than butter, something like butter', yaṣṣkalpa 'something less than a yajus, something like a yajus' (affix kalpā: A. 5.3.67 [356]) have yaśaṣ-, sarpiṣ-, and yajus-, as opposed to yaṣaḥ and so on in examples such as yaṣaḥ / yaṣṣk karoti 'produces fame'. Accordingly,

A 8.3.38: सोपदादौ (विसर्जनीयस्य कुप्वो:) (so'padādau
[visarjaniyasya 34, kupvoh 37])

A 8.3.39: इन: ष: (inah ṣah)
let -ṣ(saḥ) replace -ḥ(visarjaniyasya) before a velar or a labial stop unless -ḥ follows an i- u- or r-vowel (inah), in
which case the substitute is -ṣ (ṣah), provided that the
c consonant which follows -ṇ is not the initial of a pada
(apadādau).

A series of additional rules accounts for cases where -ṣ
or -ṣ occurs before a velar or labial stop instead of -ṇ. By

A 8.3.40: नमस्पुरसोर्गतियोऽः (namaspurasar gatyoh)

-ṇ that has substituted for the -ṣ of gati elements namas,
puras (A 1.4.67, 74 [55]) is replaced by -s, as in namas
kartum 'to do obeisance, honor', puras kartum 'to put at the
fore'. According to

A 8.3.41: इदुदुपधम्याचापत्यस्याः (idudupadhasya
cāpratyayasya)

replacement by -ṣ applies also to non-affixal (apratyayasya)
-ṇ preceded by -i- or -u- (idudupadhasya); e.g., āviśkṛta
'made clear, evident', duśkṛta 'ill done, ill deed'.

On the other hand, provided there is a direct
syntactic-semantic link (sāmarthya) between a pada with an
initial velar or labial and one that ends with -iṇ or -uṇ from
-is, -us (isusoh), the -ṇ of the latter is optionally
(anyatarasyām) replaced by -ṣ:

A 8.3.44: इसुसोः सामर्थ्ये (अन्यतरस्याम)

(isusoh sāmarthye [antyatarasyām 42])

For example: sarpiṣ/ sarpiḥ karoti '... is making butter', yauṣ
/yauṣ karoti '... produces a yaus'.

Sūtras of the section headed by A 8.3.55 (105) provide for
a retroflex consonant to replace s that is not the final sound
of a pada, and A 8.3.57 (107) states the major left contexts in
which this substitution applies. Moreover, as provided for in

A 8.3.58: नुम्बिसर्जनीयशर्यवायेपि

(numvisarjaniyaśarvyavāye'pi)
retroflex replacement applies even if the conditioning sounds
and s are separated (-vyavāye'pi) by a substitute for num, by
ḥ, or by ṣṣṣ (ṣar).
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A 8.3.59: आदेशप्रत्यययोः (ādeśapratyayayoh)

lets retroflex শ substitute for s which is a replacement for verb-initial श- (A 6.1.64 [135]) and for s of an affix (ādeśapratyayayoh). The -s- of su-svāp-a (3sg. pfct.) 'slept' and agni-su (loc. pl.) 'fires', vāyu-su 'winds', kārtr-su 'doers, agents', vāg-su 'voices, speeches' directly follow the sounds that condition retroflex substitution to give suṣvāpa, agniṣu, vāyuṣu, kāṛṣṭu, vāṭ-su (vākṣu). The -s- of sarpins-i (nom.-acc. pl. < sarpins-i: A 8.3.24 [559]) 'butters', yajūṁs-i 'yajus formulae', sarpins-su (loc. pl.: A 8.3.16, 36 [557, 561]), yajuh-su, sarpins-su, yajussu is separated from the conditioning sounds by m, n, and s, but retroflexion still applies: sarpins-i > sarpins, yajūṁs-i > yajūṁs, sarpins-su > sarpinsu, yajuh-su > yajuṣsu, sarpins-su > sarpins-su (A 8.4.41 [574]), yajus-su > yajus-su > yajussu.

Although -s-in sīs-ta (< sās-ta: A 6.4.34 [447]), us-itā (< ... vas-itā: A 6.1.15 [388]) 'one who has remained', gha-ghs-atus (< ... ghas-atus: A 2.4.40, 6.4.98 [380, 454]) 'they two ate' is neither a substitute for s nor part of an affix, so that A 8.3.59 cannot apply to replace it with শ, retroflex substitution should indeed apply here: sīṣta, usīta, jakṣatūḥ. Accordingly,

A 8.3.60: शासिसवसिसवसीनवन्न (śāsivasīgasīnasānca)

lets s also replace the s of sās, vas, and ghas when it occurs after a sound of the set specified in A 8.3.57: sīs-ta > sīṣ-ta > sīṣta (A 8.4.41), us-itā > usīta, gha-ghs-atus > jha-ghs-atus (A 7.4.62 [383]) > jha-ghs-atus > ja-ghs-atus (A 8.4.54 [577]) > jakṣatū (A 8.4.55 [578]).

On the other hand, A 8.3.59 would allow retroflex substitution in some instances where this should not apply. For example sīn 'blind', suñ 'press juice out of something', are taught with s- to show that they are subject to retroflex replacement, as in sīṣāya, susāva (3sg. pfct.), but the desideratives of these verbs are sisiṣa and susiṣa, not
*siśiṣa* and *susūṣa*. Indeed, of verbs with forms that contain vowels of the set alluded to in A 8.3.57, only *ṣuṣṭi* 'praise' and derived verbs in -ṇi regularly have -ṣ- following an abhyāsa syllable in desideratives with -ṣa-; e.g., *tuṣṭiṣa* 'wish to praise', *ṣiṣecayiṣa* 'wish to have ... irrigate'. Hence,

**A 8.3.61:** स्तौतिण्योरेव बण्यव्यासात् (stautinyor eva
ṣaṇy abhyāsāt)

provides that the -ṣ- of *stu* and derived verbs in -ṇi (stautinyoh) alone (eva) is replaced by -ṣ- after an abhyāsa syllable (abhyanāt: A 6.1.4 [52]) in forms where ṣa (ṣaṇi), with -ṣ-, follows the verb. This sūtras specifies that the desiderative suffix have the shape -ṣa-, so that it does not exclude retroflexion in derivates such as *susupṣa* 'wish to sleep'.

The replacement of ṣ- by ṣ- in some verbs is conditioned by a preceding preverb (*upasargāt: A 1.4.59 [55]). For example, according to

**A 8.3.65:** उपसर्गातिसुनोतिसुनवत्स्त्वत्सत्सस्त्वतस्त्वस्तः
स्थासनयसेद्धसिचर्चसक्क्र्याजाम्
(*upasargāt sunotisuvatisyatistautistobhati-
sthāsenayasedhasicasaṅjasvaṅjām*)

**A 8.3.66:** सदिरप्रतेषः (sadir aprateḥ)

retroflex substitution applies to the ṣ-of *su*(sunoti) 'press juice out of something', *sū*(suvaṭi) 'impel', *so*(syati) 'finish, terminate, conclude', *stu*(stauti) 'praise', *stubh*(stobhati) 'praise', 'stop', *sthā* 'be in place', *seni* (senaya-) 'march with an army', *sedh* 'repel', *sic* 'pour, irrigate', *sanj* 'stick', *svanj* 'embrace' after a preverb that ends in a vowel of the set specified in A 8.3.57 (107), and to *sad* 'sit' after any such preverb except *prati* (aprateḥ). For example: *pari sunoti > pari sunoti > pari sunoti* (A 8.4.2 [570]) 'presses round', *abhī suvaṭi > abhī suvaṭi 'impels against', *abhī sthāsyati > abhī sthāsyati > abhī sthāsyati 'will stand against, defeat', *ni sidati > ni śidati 'sits down'. By
A 8.3.67: स्तंभे (stambheḥ)

A 8.3.68: अवाच्चालम्बनाविदूर्ययोः (avāc
cālambanāvidūryayoḥ)
ṣ- substitutes for the s- of stambh not only after a preverb that meets the phonological conditions given earlier but also (ca) after ava, if the verb is used in the sense of 'support' or 'being set not far off' (ālambanāvidūryayoḥ); e.g., vi stābhnați > vi stābhnați > vi stābhnați (A 8.4.41) 'props apart', avastābdaḥa 'supported on, resting on, nearby'. And

A 8.3.70: परिनिविध्य: सेवसितसपिसिवसहसुस्
स्तुस्वन्जामि (parinivibhyah sevasita-
sayasivasahasūṣṭusvasānjām)
provides that retroflex replacement applies after the preverbs pari, ni, vi (parinivibhyah) to the initial consonants of sīv 'serve', sīta 'bound', sāya 'binding', sīv 'sew', sah 'bear', the augment suṭ (see A 6.1.135-137 [527]), and the s- of stu 'praise', svana 'embrace'; e.g., pari sevate 'serves', viśita 'unbound', pari śkaroti 'prepares fully'.

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It is necessary to account not only for sequences such as pari ṣuṇot, abhi śthāsyati, in which ṣ- substitutes for s- immediately following the -i of the preverbs pari and abhi, but also for sequences like pary aṣuṇot (3sg. impfct.), abhi taṣṭhau (3sg. pfct.) where the initial augment at (A 6.4.71 [238]) and an abhyāsa syllable come between the conditioning sounds and s-. Moreover, despite the restriction formulated in A 8.3.61 (563), one must account for desideratives like pari ṣiṣıkṣati, with -ṣ- following the abhyāsa syllable, as opposed to sisıkṣati, both from sīc (ṣica). Accordingly,

A 8.3.63: प्राक्षितादह्म्यमवशेषपि (prāk sitād
adhyaśvāyeṣpi)

A 8.3.64: स्थाविष्भवासेिन चाभ्यासस्य (sthādiṣv
abhyaśena cābhyaśasya)
provide that: retroflex substitution as formulated in
subsequent sūtras applies, for items given before -sita-
(prāk sitāt) in A 8.3.70 (564), even if the s- in question and
the con-ditoning context are separated by at (ādhyavāyeśpi); retro-
flexion replacement in items starting with sthā (sthādisu)
of A 8.3.65 applies even if s- and the conditioning context are
separated also by an abhyāsa syllable (abhyāsena); and retro-
flexion applies also to s of such a syllable (abhyāsasya).
Further, according to

A 8.3.71: सिवादीनां वाह्यवायेशपि (sivādīnām
vādhyavāyeśpi)

the s- of siv and following items (sivādīnām), given in A
8.3.70 optionally (vā) undergo retroflex substitution even if
the augment at comes between such an item and the condi-
tioning context, as in pary āsīvyat, pary āsīvyat.

Retroflex substitution applies also to dh in certain verb
endings. By

A 8.3.78: इण: श्रैधवलुल्लितां धोष्क्रातः (iṇah
śrīdhavalullitāṁ dhōṣkrāt)

A 8.3.79: विभाषेतः (vibhāṣetah)

the retroflex sound (mūrdhanyāḥ: A 8.3.55 [105]) dh (A 1.1.50
[92]) replaces dh (dhaḥ) of -śidvam and endings that derive
from luṇi and liṭ (śidvamluṇiliṭām) after a stem (āṅgāt: A
1.4.13 [46]) that ends with a sound denoted by ip (iṇah: see 129-
130), and this substitution is optional (vibhāṣā) if all other
stated conditions are met and śidvh or dh follows the initial
augment it (iṭāḥ). For example: cyu-sīdhvam (2pl. prec.: A
3.3.173, 3.4.78, 102 [233, 232, 401]) > cyu-sīdhvam (A 6.1.66
[522]) > cyo-sīdhvam (A 7.3.84 [127]) > cyo-sīdhvam (A 8.3.59
[563]) > cyoṣīdhvam 'may you move', acyo-s-dhīvam (2pl. aor.: A
3.2.110, 3.4.78, 3.1.44, 7.3.84, 6.4.71 [233, 232, 236, 127, 238])
> acyo-dhīvam (A 8.2.25 [543]) > acyoṣīdhvam 'you (have) moved',
kr-dhve (2pl. pfct. mid.: A 3.2.115, 3.4.78-79 [233, 232, 396])
> kr-kr-dhve (A 6.1.8 [382]) > cr-kr-dhve (A 7.4.62 [383])
> car-kr-dhve (A 7.4.66 [384]) > ca-kr-dhve (A 7.4.60)
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cakṛdhvṛ 'you made for yourselves', lū-isālydhvam > ...
lavīśidhvam / lavīśidhwam 'may you all cut', lū-is-dhvam > ...
alavīdhvam / alavīdhvam, lū-dhvam > ... luluvidhvēl luluvidhvē.

The s- of certain members of compounds also is subject to replacement by s-. For example, according to

A 8.3.80: समासेः हुगुः सङ्कः। (samāse-hugule saṅgaḥ)
A 8.3.83: ज्योतिरायुषः स्तोमः। (jyotirāyuṣaḥ stomaḥ)
A 8.3.84: मात्रपित्य्र्यायः स्वसाः। (mātrapitrohyām svasa)
saṅga 'coming together, adherence' undergoes this substitution in a compound (samāse) after aṅgu- 'finger' (aṅguli-saṅga 'which sticks to the fingers'); stoma has its s-replaced by s- when it follows jyoti- or āyuś-in a compound (jyotiśtoma 'Jyotiṣtoma rite', āyuśtoma 'a rite to gain long life'); and following mātr- 'mother' or pīṭr- 'father' in a compound, the s- of svasa 'sister' is subject to retroflex substitution (mātr- svasa 'mother's sister', pīṭr-svasa 'father's sister').

The general heading A 8.3.55 (ios) specifies that replacement by a retroflex consonant applies to a sound that is not pada-final (apadāntasya). Thus, although the -s of aṅgu-s (< aṅgu-h < aṅgu-R: A 8.3.15, 34 [557, 561]) of a string such as aṅguś tatra 'there is fire there' is an affixal sound, A 8.3.59 (563) does not apply to replace it with s-. By the same token, the -s of saṁpīsa 'butter' or yajas 'yajus formula' would not be subject to replacement by s- before tva (A 5.1.119 [348]). However, it is necessary to allow this substitution in such instances in order to account for derivates such as saṁpiśva 'being butter', yajusṭva 'being a Yajus'. Hence,

A 8.3.101: ह्रस्वात् तादाव taddhīte। (hrasvāt tādau taddhīte)
provides that retroflex substitution applies to s after a short vowel (hrasvāt), if it occurs before a taddhīta affix that begins with t( tādau taddhīte).

Moreover, Vedic usage reflects a stage of the language at which the replacement of s by s was purely phonological, so that it did indeed apply to pada-final -s, as in RV 10.2.4c:
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अभिष्ट्विष्ट्रमापृणाति... (agniṣ tād viśvam ā prṇāti...) 'Agni... will fulfill all that.' Panini therefore states a series of rules relative to special cases of retroflexion in Vedic. One of these, which accounts for the example given, is

A 8.3.103: युष्मत्तत्ततक्षुष्वः च्वन्ति: पादम् (yuṣmattattatataksuṣv antahpādam)
according to which retroflex replacement applies to -s followed by forms of the pronouns yuṣmad (2pers.), tād 'that' or by tataksuṣh 'they fashioned' within the same verse section (antahpādam).

It is also necessary, under given conditions, to disallow retroflex replacement that would obtain by A 8.3.59 (563). Thus, although the verb sic (sicaḥ) 'pour, irrigate' has an s-that is subject to retroflex substitution, as in sīṣeca, this does not apply where a verbal pada containing sic is preceded by a pada such as dadhi 'curds' or madhu 'honey': dadhi sīṅcati, madhu sīṅcati. Nor does retroflex substitution apply in derivates such as agnisāt, with the affix sāt (A 5.4.52 [347]). Therefore,

A 8.3.111: सात्पदाद्योऽ (न) (sātpadādyoḥ [na 110])
provides that replacement by a retroflex does not (na) apply to the s-of sāt or to s-of a pada (sātpadādyoḥ).

In turn, A 8.3.111 would disallow replacing s-with ś-in instances such as pari śuṇoti, so that more specific sūtras like A 8.3.65 (564) are required, in order to let this substitution take effect in the contexts specified. On the other hand, there are even more narrow domains, in which, contrary to such rules, retroflex replacement has to be disallowed. For example, as provided for in

A 8.3.112: सिचो यहि (sico yari)
the s-of sic (sicaḥ) is not replaced by ś-if the verb occurs followed by the affix yari (yari: A 3.1.22 [280]), as in pari sesicyate 'repeatedly pours around'.

Another type of retroflex substitution involves replacing
n with \( n \). According to

**A 8.4.1:** रशाभ्यां नो प: समानपदे (rasābhyaṁ no \( nāh \) samānapade)

\( n (nāh) \) occurs in place of \( n (nāh) \) which follows \( r \) (including \( r \) that is a component of \( ṛ \)) or \( s (raṣābhyaṁ) \) in the same pada (samānapade). The conditioning sounds and \( n \) may be contiguous. For example, in stīr-na (\(<\) stīr-na: A 8.2.77 [552]), muṣ-nā-ti, one has \(-n- \) immediately following \(-r- \) and \(-s-\):

\[ stīr-na \rightarrow stīrṇa, muṣ-nā-ti \rightarrow muṣṇāti. \]

But this is not the case in kar-ana, giri-nā, guru-nā, arkena, murkhenā, gargena, arghena, darpena, rephena, garbhena, carmanā, paryānādh-dha, bṛṇh-ana (\(<\) bṛṇh-ana: A 7.1.58, 8.3.24 439, 559).

Yet retroflexion should apply in all these instances to account for karāṇa 'doing', 'instrument', giriṇā (instr. sg.) 'mountain', gurunā 'weighty', arkena (Instr. sg.) 'ray', murkhenā 'fool', gargena 'Garga', arghena 'value, price', darpena 'pride, haughtiness', rephena 'r', garbhena 'womb, foetus', carmanā (instr. sg.) 'hide', paryānaddha 'girded round', bṛṇhaṇa 'growth, strengthening'. Accordingly, retroflexion is said to occur also if \( n \) is separated (\(-vyavāye\) \( \prime \) \( n \)) from the conditioning \( r \) or \( s \) by a vowel or a semivowel other than \( l(\acute{a}t) \), by a velar (\( ku \)) or a labial (\( pu \)), by the preverb \( ānî \), or by the augment \( num \).

**A 8.4.2:** अटकुप्रवाहनम्यवायकेष्पि (āṭkupvāhnumvyavāyeṣpi)

See also A 8.4.38 (573).

The substitution of \( n \) for \( n \) also takes effect across pada boundaries in certain instances. The following sūtras provide for this retroflexion after a first component of a compound (pūrvapadāt):

**A 8.4.3:** पूर्वपदातसंज्ञायामगः (pūrvapadāt samjñāyām agah)

**A 8.4.7:** अह्नोदन्तात् (ahno'vantāt)

**A 8.4.9:** पानं देशो (pāṇam deśe)
Following a component with \( r \) or \( s \) in a compound used with reference to a particular individual person or thing (\( sam\ṁ\nāyām \)), \( n \) of a second component is replaced by \( n \) unless the first member in question ends with \( g \) (\( agaḥ \)); e.g., \( śūrpaṇakhā \) (\( śūrpa-ṇakhaḥ \)) 'Śūrpaṇakhā' refers to a particular individual, thus called because her nails resemble a winnowing basket, but carmanāsika can be used of any individual whose nose is like hide; \( ṛgayaṇa \) signifies a particular thing, the Rksamāṁti, but it does not show retroflexion. A 8.4.7 deals with the \(-n- \) of \(-aḥna \): This is replaced by \(-n- \) after a component in \(-a \) (\( a\nd\n\nt\n\nt \)), as in \( aparāḥna \) 'afternoon'. The next two rules concern compounds in which the second member is \( pāna \). If the compound is used with reference to a particular area (\( deśe \), \(-pāna \) is subject to retroflex substitution, which is optional (\( vā \)) if this term denotes an action or instrument (\( bhāvakaraṇaḥ \): A 3.3.114, 115, 117 \([291, 293]\)). For example, \( kṣīrāpāṇāḥ \) (nom. pl. masc.) refers to a place whose inhabitants habitually take milk as their drink, \( surāpāṇāḥ \) to a place where liquor is drunk; either \( kṣīrāpāṇa \) or \( kṣīrāpāṇa \) is used with reference to the drinking of milk or a utensil used to drink milk. A 8.4.11 lets \( n \) optionally replace \( n \) which occurs as the final sound in a nominal base (\( prātipadikānta \)), \( n \) introduced as the augment \( num \), and \( n \) which occurs as part of an ending (\( vibhakti \)); e.g., \( māsavāpin-au \) > \( māsavāpinau \) (nom.-acc. du. masc.) 'men who sow māsa beans', \( māsavāpān-\) (A 7.1.72 \([488]\)) > \( māsavāpāṇi \) (nom.-acc. nt.) 'māsa bean sowers', \( māsavāpēna \) > \( māsavāpēna \) (instr. sg.) 'māsa sowing', which alternate with \( māsavāpīnau \), \( māsavāpāni \), \( māsavāpēna \).

After a preverb (\( upasargāt \)) with a sound that conditions retroflexion, the \( n- \) of a verb with basic \( n- \) (\( nopadeśasya \): A 6.1.65 \([135]\)) and linked to the preverb is replaced by \( n- \); whether the preverb and verb occur in a compound or not
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(asamāse'pi 'also elsewhere than in a compound'):

A 8.4.14: उपसर्गादसमासाःपि गोपदेशस्या (upasargād asamāse'pi nopadeśasya)

For example, nam'bend, bow' is taught with original n-(namā); the verb appears with n- after pra in a compound such as pranata 'one who has bowed' and in sequences such as pra namati 'bows'. The stems hinu-, minā- also are subject to retroflexion after appropriate preverbs, as is the lot ending āni (A 3.4.89, 92 [398]):

A 8.4.15: हिनुमीनाः (hinuminā)

A 8.4.16: आनि लोट् (āni lot)

For example: pra hiṅoti 'sends forth', pra mināti 'harms, destroys', pra vapaṇī 'let me sow'.

The n- of the preverb ni (neh) also is replaced by n- after a preverb with n-, if it is followed by one of the following verbs: gad 'say, speak', nad 'sound', pat'fly, fall', pad 'go, fall', verbs of the ghu class (A 1.1.20 [51]), mā 'measure', so 'finish, conclude, terminate', han 'strike, kill', ya 'go, travel', vā 'blow', drā 'run', psā 'eat', vap 'strew, sow', vah 'transport', šam 'become tired, calmed', ci 'heap up, gather', dih 'heap up:

A 8.4.17: नेतर्युदयपतपदगुमायतिहस्तितिबितिविति- प्सातिपितचित्तितिचित्रोनित्योद्भिषठ चा (ner gadanadapatapadaghumāyasatihantyātvāti- drātipatavipatavahatisāmyatīcinotidegushi ca)

For example: pra ni gadati, pra ni nadati

Further, -n- in a kṛt affix (kṛti: A 3.1.93 [66]) is subject to retroflexion if it follows a vowel (acaḥ) and the derivative of which it is a part occurs after an appropriate preverb, as in pariyāna 'going around' (< pari-yāna):

A 8.4.29: कृत्यचः। (kṛty acaḥ)

573 n is not (na) replaced by n in particular instances where the conditions for this substitution hold. Retroflexion under the conditions given in A 8.4.29 does not apply if the kṛt affix
occurs with bhā 'shine, appear', bhū 'be, become', pu 'become pure', kam 'desire', gam 'go', pyāy 'become full, grow', veṇ 'tremble'; nor does this apply in an item that follows pada-final (padāntāt) -s:

A 8.4.34: न भाभुपुक्रिगमिन्यायीवेपाम् (na bhābhūpūkakramagamipyāyivepām)

A 8.4.35: शातप्ता (śāt padāntāt)
For example: prabhāna'shining', prabhavana'arising', nispāna(< nis-pāna: A 8.3.41 [562]) 'drinking up'.

Replacement by n is disallowed for -n that is pada-final (padāntasya) and when another pada intervenes (padavyāvāye pi) between the item with the conditioning sound and the item with n:

A 8.4.37: पदात्सत्य (padāntasya)

A 8.4.38: पदन्यत्तयेपिया (padavyāvāye'piyā)
For example, the -n- of giri-na, guru-nā, māsavāpena are subject to retroflexion (A 8.4.2, 11 [570-571]), but the -n of girin (acc. pl.), gurūn, and the -n- of māṣakumbhavāpena 'one who puts down māṣa beans and pots', where -kumbha- comes between māṣa- and the derivate with -n-, are not subject to replacement by n. On the other hand, although the pada ā comes between pary- and -nadāhna, retroflexion does apply to account for paryānaddha (< paryānaddha: A 8.4.53 [571]). Hence, A 8.4.2 specifically allows the replacement of n by n if ān comes between the conditioning sound and an item with n.

Another group of assimilations is accounted for by

A 8.4.40: स्तोस्तुना सुचु: (stoś ścūnā ścuḥ)

A 8.4.41: ष्टुना ष्टु: (ṣṭunā ṣṭuḥ)
ś and dental stops (stoph) in contact with ś or a palatal stop (ścunā) are replaced by ś and palatal stops (ṣcuḥ); the same sounds are replaced by ś and retroflex stops (ṣṭuḥ) when they come in contact with ś or a retroflex stop (ṣṭunā). For example: kaRcid > kahcid (A 8.3.15 [557]) > kas cid (A 8.3.34
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[561]) > kaś cid (nom. sg. masc.) 'some one', prātar ca > ... prātas ca > prātaś ca 'also in the morning', yatiR carati > ... yatis carati > yatiś carati 'an ascetic wanders about', agnicit sete > agnicid sete(A 8.2.39 [546]) > agnicij sete > agnicic sete(A 8.4.55 [578]) > agnicic chete(A 8.4.63 [582]) 'the one who has set up a sacrificial fire is lying down', agnicit jayati > agnicid jayati > agnicij jayati 'is victorious', rājn-as > rājñas (gen. sg.) 'king', sraś-tum (A 8.2.36 [544]) > sraṣṭum, īt-te > ītte 'invokes, praises', īdṛṣ-dha (see 523) > īdṛṣ-dha > ... īdṛṣha

Contrary to what the general rules A 8.4.40-41 allow, assimilation does not take effect in particular cases, as provided for in

A 8.4.42: नपदान्तत्तोरनाम् (na padāntāt tor anām)

A 8.4.43: तोः (toḥ śi)

A 8.4.44: शात् (śat)

After a pada-final (padāntat) retroflex stop (toḥ), s and dental stops, with the exception of the n in -nām(anām), are not (na) replaced by ś and retroflex stops; e.g., sugaṅt sidati (A 8.3.28 [560]), saṅ sidanti > saṅ sidanti (A 8.2.39 [546]) > ... saṅ sidanti(A 8.4.55 [578]) 'six are sitting down', saṅ sidanti > saṅ dhsidanti(A 8.3.29 [560]) > ... saṅ tsidanti, saṅ-nām (A 7.1.55 [498]) > saṅ-nām > saṅ-nām > saṅnām (A 8.4.45 [575]) 'six (gen. pl.). A dental stop (toḥ) is not replaced by a retroflex before ś (śi) or by a palatal after ś (śat); e.g., bhavān saṅṭhaḥ 'you are the sixth', pratcch-na > praś-na (A 6.4.19 [430]) 'question'.

A pada-final consonant of the set referred to by yar (yaraḥ: 129) is optionally (vā) replaced by the corresponding nasal (anunāsikaḥ) before a nasal (anunāsike):

A 8.4.45: यरोनुनासिकेयनुनासिकोवाः

(yaro'nuṇāsike'nuṇāsiko vā)

For example: vāg me > vān me 'my voice', saṅ-nām (A 8.4.42 [574]) > saṅnām. vāg and saṅ- are padas according to A 1.4.14,
17 (49, 75), respectively.

Semivowels, stops, and voiceless spirants (yaraḥ) are subject to doubling in certain contexts and dialects. According to

A 8.4.46: अचो रहाभ्यांढे (यर: वा) (aco rahābhyaṁ
dve [yaraḥ vā 45])

A 8.4.47: अनचि चा (anaci ca)

these sounds are optionally (vā) doubled (dve 'two') if they follow r or h (rahābhyaṁ) preceded by a vowel (acaḥ) and if they follow a vowel and a vowel does not follow them (anaci).

For example: arka > arkka'ray', brahma > brahmma 'Brahman',
madhya > maddhvya > maddhya (A 8.4.53 [577]) 'middle'.

Such doubling does not (na) apply, however, to a voiceless spirant (saraḥ) when a vowel follows (aci), as in adarṣi (3sg. aor. pass.) 'has been seen', karsatī 'draws':

A 8.4.49: शरोस्चि (न) (saroc'i [na 48])

Nor, according to Śakaṭāyana (śakaṭāyanasya), does such doubling apply where there are three or more consonants (triprabhṛṭiṣu):

A 8.4.50: त्रिप्रभृतिषु शाकटायनस्या (triprabhṛṭiṣu
śakaṭāyanasya)

Further, according to Śakalya (śakalyasya), such doubling is disallowed in all instances (sarvatra 'everywhere'), and teachers in general (ācāryanām) say this is disallowed where a consonant subject to doubling follows a long vowel (dirghāt):

A 8.4.51: सर्वत्र शाकल्यस्या (sarvatra śakalyasya)

A 8.4.52: दीर्घादाचार्याणाय (dirghād ācāryānām)

Thus, in Śakaṭāyana's dialect the -n- of indra 'Indra' is not doubled, but the -k- of arka is subject to doubling, as is the dental of madhya, but in Śakalya's dialect no such doubling is allowed, and there is general agreement in not allowing consonants to be doubled after long vowels, as in dātra 'sickle', sūtra 'thread', sūtra.
Before a voiced non-nasal stop (jhaši), a consonant other than a nasal or a semivowel (jhalām) is replaced by a voiced unaspirated stop (jaš):

A 8.4.53: ज्ञात जाश ज्ञास (jhalām jaš jhaši)

For example: labh-dhum (A 8.2.40 [547]) → labdhum, dogh-dhum → dogdhum. Similarly, deaspiration applies in an abhyāsa syllable (abhyaśe: A 6.1.4 [52]), where not only unaspirated voiced stops but also unaspirated voiceless stops (car ca) substitute for consonants:

A 8.4.54: अभ्यासे चरी (abhyaśe car ca)

That is, voiced and voiceless stops occur respectively in place of voiced and voiceless consonants (A 1.1.50 [92]); for example, chakhāna (3sg. pfct.) → cakhāna 'dug', chiccheda → ciccheda 'cut', jhaghāna → jaghāna 'struck, slew', dhībhedā → dhībhed 'split'.

A voiceless unaspirated stop (car) substitutes for a consonant other than a nasal or semivowel also before a voiceless consonant (khari ca), and this replacement is optional (vā) before a pause (avasāne: A 1.4.110 [42]):

A 8.4.55: खरि चा (khari ca)

A 8.4.56: वावसाने (vāvasāne)

For example, in bhettum (bheda-tum) 'to split', yuyutsa (yuyudh-sa) 'wish to fight', -t- obligatorily occurs, instead of -d- and -dh-, before -t-, -s-, but one can have either vāg or vāk 'speech, voice' followed by a pause.

In pre-pause position also, an a-, i-, or u-vowel (āṇah) that is not pragṛhya (aprgrhyasya: 76) is optionally replaced by its nasalized (anuṇāsikāḥ) equivalent:

A 8.4.57: अणोप्रग्रह्यायानुनासिकं (vāvasāne)

For example: dadhi / dadhīṃ (nom.-acc. sg.) 'curds', kumāri / kumāriṃ (nom. sg.) 'girl', madhu / madhūṃ 'honey', but the final vowels of agni (nom.-acc. du.) 'fires', vāyū 'winds' are not
subject to nasalization.

The nasal offglide \( m ( \text{anusvāraḥ} ) \) is replaced by a sound homogeneous with the following one (\( \text{parasavāraḥ} \): A 1.1.9-10 [33-34]) when it occurs before a semivowel or stop (\( \text{yay}i \)), but this substitution applies only optionally (\( \text{vā} \)) to pada-final (\( \text{padāntasya} \) \( m \)).

A 8.4.58: अनुस्वारस्य यथि परसर्वर्णः (\( \text{anusvārasya yay}i \ \text{parasavāraḥ} \))

A 8.4.59: वा पदान्तस्याः (\( \text{vā padāntasya} \))

For example: \( \text{Śaṅk}-(\text{base Śaṅkī}: \ A 7.1.58 [439]) \rightarrow \text{Śaṅk}-(A 8.3.24 [559]) \rightarrow \text{Śaṅk}-(3\text{sg. pres. Śaṅkate}) 'doubt, suspect', \( u\text{c}h-(\text{ùc}h) \rightarrow \text{un}ch- \rightarrow \text{un}ch-(\text{ùn}chati) 'glean', \( n\text{id}-(\text{ùn}idī) \rightarrow \text{id}- \rightarrow \text{id}-(\text{id}nati) 'revile, scorn', \text{kāt}ām \text{karoti} \rightarrow \text{kāt}ām \text{karoti} \rightarrow \text{ optionally } \text{kāt}ām \text{karoti} '... is making a mat', \text{phāla}m \text{cinoti} \rightarrow \text{phāla}m \text{cinoti} \rightarrow \text{ optionally } \text{phāla}n \text{cinoti} '... is picking a fruit', \text{ōdanam} \text{pacati} \rightarrow \text{ōdanam} \text{pacati} \rightarrow \text{ optionally } \text{ōdanam} \text{pacati} '... is cooking rice'.

In addition, before \( \text{I}/(\text{Ii}) \), a dental stop is replaced by a sound homogeneous with the following one, that is, by an \( \text{I} \):

A 8.4.60: तोर्लिः (\( \text{tor Ii} \))

For example, \( \text{-I} \) replaces the \( -d \) of \( \text{dad} '\text{that}' \) before the \( I \)-of \( \text{lunāt}i '\text{cuts}' \), and, as provided for by A 1.1.50 (92), nasalized \( \text{I} \) (\( \text{Ii} \)) substitutes for the \( -n \) of \( \text{bhavān} \) (nom. sg. masc.) 'you' before \( I \) : \( \text{tal} \text{lunāt}i, \text{bhavālī} \text{lunāt}i \).

In certain contexts, a sound is replaced by one homogeneous with the sound that precedes it (\( \text{pūrvasya} \)). Thus, according to

A 8.4.61: उद: स्थास्त्म्भोऽ पूर्वस्य (\( \text{uda} \text{ḥ sthāstambhoḥ pūrvasya} \))

the initial consonant (A 1.1.54 [95]) of \( \text{sth}a, \text{stambh} \) is replaced by a sound homogeneous with the preceding consonant when these follow \( \text{ud} \) (\( \text{ud} \)): \( \text{ud} \text{stham} \rightarrow \text{ut stham} \) (A 8.4.55 [578]) \( \rightarrow \text{ut stham} \) (A 1.1.50 [92]) \( \rightarrow \text{ut thā} \) (A 8.4.65 [583]) 'rise, exert oneself', \( \text{ut stamb} \rightarrow \text{ut tamb} '\text{prop up}', \) as in \( \text{utthātum} \),
582

\( h \) (nah) is optionally \( \text{anyatarasyam} \) replaced by a sound homogeneous with a preceding non-nasal stop (jhaya):

A 8.4.62: जयो हो सन्यतरस्यामः \( (jhayo ho'nyatarasayam) \)

"For example, dh optionally substitutes for the \( h \)- of the particle hi 'because, for' following tad 'that': tad dhi.

Following a non-nasal stop, \( s(\text{sa}) \) is optionally replaced by \( ch \) provided it occurs before a vowel or a semivowel other than \( l \) (a\( ti \)), as in tac chaknoti \( (\text{tac šaknoti}) \) 'can do that':

A 8.4.63: शम्भोति (\( šaś \) cho’ti [\( jhayaḥ \) anyatarasayam 62])

583

The following sūtras serve optionally to delete consonants in given contexts:

A 8.4.64: हलो यमां यमि लोपः \( (\text{halo} \ yamāṃ \ yami \ lopah} \) \( \text{anyatarasayam} 62) \)

A 8.4.65: ज्हरो ज्हारि सवर्णः \( (\text{jaro jhari savarne}) \)

By the first of these rules, zero \( (\text{lopah}) \) optionally replaces a semivowel or nasal \( (\text{yamām}) \) which occurs after a consonant \( (\text{halah}) \) and is followed by a semivowel or nasal \( (\text{yami}) \); e.g., \( \text{ṣayā} \) \( \rightarrow \text{ṣayyā} \) (A 8.4.47 [576]) \( \rightarrow \text{ṣayū} \) 'bed'. The next sūtra lets deletion apply to a non-nasal stop or a voiceless spirant \( (\text{jharah}) \) which follows a consonant and occurs before a homogeneous \( (\text{savarne}) \) non-nasal stop or voiceless spirant \( (\text{jhari}) \); e.g., pra-\text{dt}-ta (A 7.4.47 [438]) \( \rightarrow \text{prat-t-ta} \) (A 8.4.55 [578]) \( \rightarrow \text{pratta} \) 'presented'.

584

To derive \( \text{kanyātro} \) 'the girl is here' from \( \text{kanyāatra} \) by means of A 6.1.101 (532) presupposes that \( ā \) and \( a \) are homogeneous sounds. But they do not meet the conditions set forth in A 1.1.9 (33), since they differ with respect to articulatory effort: \( ā \) is an open vowel, but \( a \) is a close vowel. In accordance with its phonological behavior, however, Pāṇini treats \( a \) as thought it were indeed homogeneous with \( ā \), differing from this only with respect to duration. The last sūtra of the grammar:
A 8.4.68: अ आ (a a)
then reinstates a in its true value of a close vowel. Since this rule is suspended with respect to every rule that precedes (A 8.2.1 [109]), moreover, it does nothing more than this, and has no effect on the phonological operations provided for in preceding sūtras.

Remark.

I have cited A 8.4.68 (584) as it is given in the Mahābhāṣya. The Kāśikā reads the sūtra with /ṭṭ/ (अ अ इति). As far as can be seen from Pāñinīyas' texts, A 8.3.4 (555) has been handed down with anunāsikāt instead of anununāsikāt. This makes no sense as such, so that commentators have gone to considerable ends in order to interpret the rule. It is justifiable to consider that the version known from commentators is the result of haplological shortening (anununāsikāt > anunāsikāt); for evidence and a discussion, see 'On the formulation of Aṣṭādhyāyi 8.3.4: anunāsikāt paro' nusvāraḥ', in Surabhi (E. R. Shreekrishna Sarma felicitation volume, edited by M. S. Narayana Murti), pp. 199-205.
2.8. Accentual rules.

2.8.0. Introduction.

Accentual rules are not essentially separable from rules which provide replacements for vowels and items containing them. It is convenient and useful, nevertheless, to treat these sūtras separately. Two general groups of accentual rules are distinguished: those which provide for the accentual features of individual padas (A 1.4.14 [49]) and those which concern the features of contiguous padas in utterances as well as whole utterances.

Accentual properties are stated by rules for verbal bases (dhātu: A 1.3.1, 3.1.32 [47]), derived nominal bases (prātipadika: A 1.2.46 [48]), and affixes (pratyaya: A 3.1.1 [15]). The accents of primitive bases such as gō 'cow', bull', ox' and āśva 'horse' are not provided for by rules of the Aṣṭādhyāyī. They are taken as given. Presumably, items included in sets of the gānapāṭha (Section 1.4) were pronounced with their proper accentuation, just as verbs listed in the dhātupāṭha were characterized by their metalinguistic accentual features (Section 1.3.1). Vowels of augments (āgama) are low-pitched unless otherwise indicated, as in A 6.4.71 (238). See also A 3.1.3 (592).

At each stage of derivation, an accentual adjustment is made such that, in general, the accentuation proper to the unit introduced at this stage cancels a previously existing accentuation (see 590). An exception to this general procedure is made in accordance with the bracketing of stems and affixes (46, 212): The accentuation of an ending such as tas following a complex stem such as ((su- )nu- ) is not superseded by the accentuation proper to the vikarana Šnu (A 3.1.73 [157]), although, in the sequence of derivation, Šnu is introduced after an L-affix has been replaced by a sārvadhatuca affix such as tas; see 594. The result of this entire procedure is that, except as otherwise provided for explicitly, a pada contains no
high pitched vowel (anudåttam) save one (ekavajram). This is stated in

A 6.1.158: अनूदात्तम पदं मेकवर्जैम् (anudåttam padam ekavajram)

the general metarule that governs accentual operations.

Remarks.

1. There is a set of rules, attributed to Šāntanava, which attempt to account for the accentual properties of nominal bases — called phis in this treatise — on the basis of their shapes and meanings. For example, the first rule (फिखोसन्त उदात्तः [phisoṇta udåttap]) states that the last (antaḥ) vowel of a nominal base (phisaḥ) is high-pitched (udåttap); e.g. uccais 'high up, loudly'. The third sūtra (गेहार्थानाम अस्त्रियाम् [gehårthånåm astriyåm]) provides that bases meaning ‘house’ (gehårthånåm), provided they are not used in the feminine (astriyåm), also have high pitch on their last vowel; e.g., gehå.

Såla Rule 2.3: नविषयस्यानि सन्तस्य (आदि:) (nabvisaya- syānisantasya[ädiḥ]) states that the first (ädiḥ) vowel of a base which is always used in the neuter (nabvisayasya) is high-pitched, unless the base ends with -is(änisantasya); e.g., vana ‘forest’, sarpis ‘butter’. These rules, called phisusūtråni, are generally included among the ancillary treatises associated with the Aṣṭådhyåyî, but they cannot reasonably be attributed to Pāṇini himself.

2. Pāṇiniyås recognize that an accentuation newly taught supersedes one which was previously in effect (e.g., vt. 9 on A 6.1.158 [588]): सतिष्ठस्वरबल्यस्वर(ca) (satiśåstitasvarabalyastvañ ca). Details on what commentators have to say concerning this procedure — referred to as the satiśåstitasvåra (accent taught when there is a previous pitch on another vowel) principle — are dealt with in part VI.6 of
my work. For the present, it is sufficient to note that, although Pāṇini does not formulate this explicitly in the Aṣṭādhyāyī, there can be no doubt he operates with the procedure in question. Thus, he has to specify upādeśe in A 7.2.10 (146) in order that the augment \( \& \) is disallowed only after verbs which have low-pitched vowels when they are first introduced, not because of subsequent operations. For example, \( ṇūri \) ‘cut’ is taught with a high-pitched base vowel as a marking to show that an ardhaḥtākua affix following it regularly takes the initial augment \( \& j \) (A 7.2.35 [145]). In addition, by A 6.1.162 (592), \( ṇū \) has an udātta vowel in derivations. By the sāti-śisṭasvara principle, however, the affix accentuation (A 3.1.3) proper to syā (A 3.1.33 [236]) cancels the base accent, so that, if A 7.2.10 provided merely that \( \& \) is not added to an affix following a stem with a low-pitched vowel, the augment would not be added to syā at the stage ṇū-syā-ṭi with the result that one would allow ṇ autāya instead of laviṣyaṭi.

3. As a qualifier construed with padam, the term anudāttam in A 6.1.158 (588) can be interpreted in either of two ways: (1) anudāttam ‘which contains low-pitched vowels (anudātta: A 1.2.30 [36]), (2) an-udāttam ‘which does not have a high-pitched vowel (udātta: A 1.2.29). Both possibilities are considered in the Mahābhāṣya (III.97.4–5, 98.25–26), but commentators generally adopt (1). Nevertheless, this interpretation, under which a pada is allowed to have only low-pitched vowels except for one vowel, leads to problems, so that I have adopted (2). I shall discuss details in part VI.6.

2.8.1. Accents of bases, affixes, and individual padas.

The last (antaḥ) vowel of a verb (dhātoḥ) is high-pitched (udāttaḥ):

A 6.1.162: धातो: (अन्त्य उदात्त: ) (dhātoḥ

[ anta udāttaḥ 159])

By A 1.1.21 (99), if a verbal base has only one vowel, this

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has high pitch in accordance with A 6.1.162. According to

A 3.1.3: आद्युदात्तस् (ādyudāttaś ca)
an item that gets the class name pratyaya (A 3.1.1 [15]) not only regularly follows the element to which it is introduced (A 3.1.2), it also has high pitch on its first vowel (ādyudāttaḥ) when it is introduced. This holds for affixes in general, but nominal endings regularly have low-pitched vowels, as do other affixes if they are marked with p (suppitaḥ).

A 3.1.4: अनुदात्त तौ सुप्पितौ (anudāttau suppitau)
For example, the verb ending tip has a low-pitched vowel to begin with, as do the nominal endings am, jas: āśti (< āś-ti: A 8.4.66 [622]) ‘is’, sunōti ‘presses juice’, runāddhi ‘hems in’, tanōti ‘stretches’, kriṇāti ‘buys’, vācām (< vāc-am) ‘speech, voice (acc. sg.)’, vācās (nom. pl.), āśvās ‘horses’. Each of these padas has only one high-pitched vowel, as provided for in A 6.1.158 (588). By the satiśiṣṭasvara principle (590), the vowels of the affixes śnu, śnam, u, and śnā are high-pitched, but in āsti the base accent remains, as it does in bhāvāti ‘is, becomes’, pācāti ‘cooks’, with two low-pitched suffixes, sap and tip. On the other hand, the ending tas of stās (3du.) ‘are’, sunutās, and so on has a high-pitched vowel, hence is not marked with p.

Consider again the form laviśyāti ‘will cut’. By A 7.2.135 (145), the affix sya takes the initial augment it when it follows a stem (A 6.4.1 [105]) such as ī- (cf. 590). Suppose now that the accent of the suffix also were allowed to take effect at this stage. One would then possibly allow *laviśyati instead of laviśyāti. For the augment it is introduced as the initial element of the affix (A 1.1.46 [17]), so that letting the affix have high pitch on its initial vowel allows for -isya with high-pitched i. Consequently, Pāṇini provides, by A 3.1.3 (592), for an affix to have high pitch on its first vowel at the moment it is introduced and gets the class name pratyaya, before it undergoes any operation such as augmenting. By the same token, the ending jhi is accented as shown at the moment it is
introduced. The jn̄ of jhī is subsequently replaced by ant(A
7.1.3 [509]). This does not mean, however, that one has an
ending -antI For, in accordance with A 1.1.56 (100), this ending
should have the same accentual property as its substituend,
namely high pitch on its first vowel: ānti, as in sunvānti,
kriṇānti.

Following the procedure outlined in 588 correctly results
in forms such as the third singular present tudāti 'shoves',
with the vikarana śa and the ending tip, but this would also
allow incorrect forms such as *tudatās (3du.) instead of
tudātas. Similarly, the third singular middle ending ta (< ta: A
3.4.79 [396]) is not marked with p, so that this procedure by
itself would allow forms such as *kartārau 'they two will do,
make', *āstu 'is seated', *sete 'is lying, sleeping'. Since
Pāṇini does indeed operate with the procedure in question, a
special rule of the Astādhyāyī provides for such forms.
According to

A 6.1.186: tasyanudāttenidadupad-
esāllasārvadhātukam anudāttam ahṅvīṇoḥ
a sārvadhātuka affix (A 3.4.113,117 [63]) that replaces an L-
affix (lasārvadhātukam: A 3.4.77-78, 3.2.124, 126 [232, 262])
has a low-pitched vowel or vowels (anudāttam) if it follows
tāst (A 3.1.33 [236]), a verb with a low-pitched vowel marker
(anudāttet), one marked with ri(ri) ---excluding hniṅ 'hide'
and in (adhi i) 'study, learn' (ahṅvīṇoḥ) --- or a unit with -a
at the stage when no grammatical or phonological operations
have applied (adupadesāt): kartārau (see 403), āste (base āsa),
śete śiṅ, tudātas. The affix śap does not end with -a at the
moment it is taught, but once its markers have been dropped
unconditionally (A 1.3.9 [81]) and before any true grammatical
or phonological operations take effect, this does consists of a,
so that A 6.1.186 accounts also for examples such as pācataṣa

Another special rule is required to derive forms of the
type dādati 'they give'. Under the general procedure followed
in the Aṣṭādhyāyī, one would otherwise derive *dadāti, with an accented ending *-ātī (-jhi: A 7.1.4 [509], cf. 593), as in dattās (3du). To preclude this,

A 6.1.189: अभ्यस्तानामादिः (अच्यन्तिः)  
(abhyastānām ādīh [acy anīṣṭi 188])
provides that the first (ādīḥ) vowel of abhyasta elements (abhyastānām: A 6.1.5 [52]) is high-pitched if there follows a replacement of an L-affix that is a sārvadhātuka and begins with a vowel other than the augment iṣ (acy anīṣṭi). The first vowel of items like dādāti, jāksati 'they eat' (3du. jāksitās) is thereby high-pitched. In order to have the same accentuation apply to derive forms like dādāti, and not *dadāti (A 6.1.162 [592]), moreover,

A 6.1.190: अनुदत्ते चा (anudātte ca)
lets the accentuation provided for in the preceding sūtra apply also (ca) if abhyasta element is followed by an affix that does not have a high-pitched vowel (anudātte). The ending tip of dādāti not only derives from the L-affix lāt, it also has a low-pitched vowel (A 3.1.4 [592]).

Now, jūhvati 'they offer oblations' conforms to the accentual pattern which A 6.1.189 allows, but jūhōti goes counter to what A 6.1.190 allows; similarly, bhīrēti 'is afraid', jihrēti 'is ashamed', bhīhrāti 'bears, supports, nourishes', mamātti 'gives joy', jajānat 'created', dadhānat 'supported' (see 512), daridrātī 'is poor, wretched', jāgrātī 'is awake'. Accordingly,

A 6.1.192: भीह्रभ्रुहमदनादनाधशाजगरामप्रत्ययात्  
पूर्विपिनि (bhīhr bhīhrhumadaladhanadana-  
daridrājāgarām pratyayāt pūrvam piti)
provides that, if the substitute for an L-affix is a sārvadhātuka suffix marked with p (piti) and this follows an abhyasta element derived from bhī, hrī, bhṛ, hu, mad, jan, dhan, or the abhyasta items daridrā, jāgr, then the vowel that precedes the affix (pratyayāt pūrvam) is high-pitched.
There are also instances of variation, such that either the base vowel or a vowel of an ending is high pitched. Thus, according to

A 6.1.188: स्वपादिहिंसामच्चयनिट (आदि: अन्यतरस्यायः) (svapādihīmsāṁ acy anīti [ādiḥ anyatarasyām 187])

before a vowel (ac), except for the initial augment iṣ (anīṭi), of a sārvadhatuka element replacing an L-affix, the first vowel (ādiḥ) of verbs in the subgroup beginning with svap (svapādi: 161) and of hims ‘harm’ is optionally (anyatarasyaṁ) high-pitched; e.g., svāpantī / svapāntī ‘they are sleeping’, himsantī / himsāntī. Verbs of the subgroup beginning with jaks, included in the group that begins with svap, are subject to A 6.1.189-190 instead of this sūtra.

A 3.1.3 (592) fails to account for the accentuation of certain derivates with kṛt suffixes. For example, ksāya ‘dwelling’, jāya ‘(a horse or such) with which one gains victory’ are accented as shown and contrast with ksayā ‘destroying’, jayā ‘victory’, with a high-pitched affix (ac: A 3.3.56 [291]). Accordingly,

A 6.1.201: क्षयो निवासे (आदि:) (ksayo nivāse [ādiḥ 197])

A 6.1.202: जय: करणम् (jayaḥ karānam) provides that ksāya in the sense of a place where people dwell (nivāse) and jāya denoting a means (karānam) have high pitch on their first vowels. Similarly, to account for derivates such as vṛṣa ‘male’ (affix ka: A 3.1.135 [290])

A 6.1.203: वृषादीनाम् (vṛṣādināṁ ca) provides that the first vowel of vṛṣa and similar derivates (vṛṣādinām) also is high-pitched.

By A 3.1.4 (592), nominal endings in general have low-pitched vowels. There are also exceptions to this. Thus, as provided for in

A 6.1.168: सादेकाचस्तूतियादिविविभक्तिः (उदात्त:) (sāv [446])
PĀNI

ekācas ṣṛtīyādir vibhaktiḥ (udāṭṭaḥ 159))
an ending (vibhaktiḥ: A 1.4.104 [65, 67]) of a triplet from the
third on (ṣṛtīyādiḥ) has a high-pitched vowel if it follows a
nominal that is monosyllabic (ekācaḥ) before the ending sup
(sau); e.g., vācā (instr. sg.) 'voice, speech', vāgbhyām
(instr.-dat.-abl. du.), vāgbhis (instr. pl.), vāksū (loc. pl.), but
rājīna, rājabhyām (< rājan-bhyām), rājabhis, rājasu from
rājan 'king'. Endings of the triplets in question optionally
(avyatarasyām) have high-pitched vowels if they follow a
monosyllabic second component of a compound (uttarapadāt),
provided this has a vowel that is high-pitched by virtue of
being the last vowel in a compound (antodāṭṭaḥ: A 6.1.223
[502]) and that this component is part of a compound other than
an obligatory one (anityasamāse) derived by rules starting
with A 2.2.17 (315):

A 6.1.169: अन्तोदात्तात्रूतात्तरपदाद्वात्तरस्थायानित्यसमासेः

(antodāṭṭaḥ uttarapadād anyatarasyām
anityasamāse)

For example, puruṣāvācā 'voice of a man' alternates with
puruṣavācā, with high pitch on the ending or on the vowel of
-vāc, but from agnicīt (A 3.2.91, 2.2.19 [295, 315]) one has only
agnicitā

According to

A 6.1.173: सतुर्जुमो नायजार्डी (अन्तोदात्तात्
असर्वनामस्थायनम्) (śatur anumo nadyajādī
(antodāṭṭaḥ 169, asarvanāmāstathānam 170))
after an item that ends in satr (śatuḥ: A 3.2.124, 126 [262])
with high pitch on its last vowel (antodāṭṭaḥ), a nadi element
(see 56) as well as vowel-initial endings (nadyajādī) other
than those of the sarvanāmasthāna set (asarvanāmāstathānam: A
1.1.42-43 [69]) have high pitch, provided the item with satr
does not have the augment num (anumāñ). By A 3.1.3 (592),
satr has a high-pitched -a- when it is first introduced. A
stem such as tudāt- (< tuda-āt: A 6.1.97, 8.2.5 [531, 510])

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optionally gets the augment *num* if a nadi element follows (A 7.1.80 [489]). If the augment does not occur, the nadi element is high-pitched, as in *tudati*, but if *num* is added, the suffix retains its accentuation: *tudánti*. In a form such as *lunata* (<lÚ-ná-at-á: A 5.4.112 [456]), where the augment is not allowed even optionally, the vocalic ending *á* has high pitch. On the other hand, the ending *śI* of *dádatI* is not so accented, since *dádat* has high pitch on its first vowel (A 6.1.189 [594]).

In addition, by

A 6.1.179: छत्रिकार्यायो हलादि: (saṭtricaturbhyo halādiḥ)

A 6.1.180: ज्वलयुपोतस्मात् (jhalay upottamam)

a consonant-initial (*halādiḥ*) ending has a high-pitched vowel after nominals of the śaś class (A 1.1.24–25 [60]), *trI* 'three', and *catur* *four*, but the penultimate vowel of a polysyllabic pada (*upottamam*) is high-pitched if it consists of these nominals followed by an ending that begins with a consonant other than a semivowel or nasal (*jhalI*); e.g., *saṭbhīs* (Instr. pl.) *six*, *paṇcānām* (Gen. pl.) *five*, *paṇcābhīs*.

The affix *matup* (A 5.2.94 [346]) has a high-pitched vowel if it follows an item that originally ends in a high-pitched short vowel or occurs after the augment *nuṭ* (*hrasvanudbhyaṁ*):

A 6.1.176: हस्त्रनुह्म्याम्मतुप् (Antrāśāyāt)

(*hrasvanudbhyaṁ matup [antodāttAt 169]*)

For example, the affix of *agnimāt* is added to a pada containing *agnI* 'fire', a base that ends with a short high-pitched vowel, but the affix of *vāsumat, gómāt* is added to padas with *vāsu* 'treasure' and *gō* 'cow', neither of which ends in such a vowel. *matup* is marked with *p*, so that, by the general rule A 3.1.4 (592), the suffix of *vāsumat* and *gómāt* has a low pitched vowel.

Some affixes are polysyllabic and have a final high-pitched vowel, others have a vowel with a combination of
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high and low pitches (svarita: A 1.2.31 [36]). Such affixes are given special markers to indicate their accentuation:

A 6.1.163: चितः (अन्त उदात्तः) (citaḥ [anta udāttaḥ 159])

A 6.1.164: तद्धितस्या (taddhitasya)

A 6.1.165: कितः (kitaḥ)

A 6.1.185: तित्स्वरितम् (tit svaritam)

By A 6.1.163, the last vowel of an affix marked with c (citaḥ) is high-pitched; e.g., śānacp, irec (A 3.2,124, 3.4.81 [262, 396]), as in: kurvāyā 'making', cakrīrē. The next two rules concern taddhita affixes. The final vowel of a taddhita marked with c or k (kitaḥ) is high-pitched. For example, dakṣinatās, āksikā contain the suffixes atasuc and thak (A 5.3.28, 4.4.1-2 [349, 338-339]). Since thak is thus deemed to have a final high-pitched vowel, once th is replaced by ik (A 7.3.50 [509]), one has ikā (cf. 593). According to A 6.1.185, an affix marked with t (tit) has a svarita vowel (see 611); e.g., kartavyā, ceyā, kāryā have the suffixes tavyat, yat, nyat (A 3.1.96, 97, 124 [121-122, 292]).

Such markings account for the general accentual features of the affixes in question, and there are exceptions to what the sūtras cited provide. For example, śāyāna 'lying' (base śīn), pācamāna 'cooking', dāthāna 'putting' contain śānac, but their accentuation is covered by A 6.1.186,189 (594). Similarly, contrary to what A 6.1.185 allows for in general, by

A 6.1.214: ईहवन्दवृश्चसद्वृंश्च प्यत्: (आदि:)

(Īdavandavṛścaśadadvṝca nyataḥ [ādīḥ 197])

provides that the first vowel of a derivate ending with nyat (nyataḥ) is high-pitched if the suffix is attached to īd 'praise, invoke', vand 'honor, praise', vr 'choose', śans 'declare, praise', duh 'milk'; e.g., īḍya 'to be praised, invoked'.

As can be seen from the last sūtra considered, some rules provide which vowel is high-pitched in derivates containing
certain affixes, which can have particular markings. Thus, in a
derivate with an affix marked by /it/, the vowel preceding
the affix (pratyayāt pūrvam) is high-pitched:

A 6.1.193: लिति (प्रत्ययात्पूर्वम्) (litī [pratyayāt pūrvam
192])
The first vowel (ādīḥ) of a derivate that has an affix marked
with न or न (ānīti) is high-pitched:

A 6.1.197: निन्द्याविनिन्त्यम् (ānity ādir nityam)
And in a polysyllabic term which contains an affix marked with
र (rīti), the penultimate vowel (upottamam) has high pitch:

A 6.1.217: उपोत्तमं रिति (upottamam rīti)
For example: कारका (affix pūvā: A 3.1.133 [248]), पपाचा (प्नि:
A 3.4.82 [397]), गर्ग्या (यान: A 4.1.105 [335]), क्ति (ktīn: A
3.3.94 [114]), कार्ति (trn: A 3.2.135 [290]), कराण्या (ान्य: A
3.1.96 [121]), पातुदेश्या (A 5.3.67 [356]).

According to

A 6.1.187: आदिः सिवोधन्तत्ततस्याम् (ādīḥ
sico'nyatarasyām)
the first (ādīḥ) vowel of an item ending with the affix sīc
(sicaḥ : A 3.1.44 [236]) is optionally (anyatarasyām )
high-pitched; e.g., कार्तम / kārṭām (3du. aor.), lāviśṭām /
lāviśṭām. In the first pair, the high pitch goes with the vowel
of the verb (kār- < kr- 'do, make') or with the vowel of the
ending tām. In the second pair, however, this pitch
characterizes either the base vowel (lāv- < lū- 'cut') or the
initial augment /t/. Now, A 3.1.3 (A 592) lets the first vowel of
an affix be high-pitched at the moment the item to which the
class name pratyaya applies is introduced and gets this label.
Moreover, an augment, such as the initial i of -isyā- in
lāviśyāti, regularly does not take high pitch (593). In order,
then, to allow for the accentuation of a form like lāviśṭām,
with high pitch on the augment of -is-, Pāṇini marks the affix
sīc with c This marking is clearly not meant to provide, by A
6.1.163 (599), for a high-pitched vowel of simple s, since this
has no vowel. The marking is intended to let the vowel of the augmented affix *is*-be high-pitched, contrary to what is usual.

There are instances where, contrary to A 6.1.158 (588), a single pada may have more than one high-pitched vowel. Such is the case with Vedic infinitives of the type hartávai 'to take'. By

A 6.1.200: अन्तःक्ष्य तवै युगपति (antaś ca tavai yugapat)
not only the first vowel of the affix tavai but also, and simultaneously (yugapat), the last (antaś ca) vowel of a deri-
vate with tavai is high-pitched.

Special rules are formulated to account for the accentuation of compounds (Section 2.4.2.3). The most general of these sūtras,

A 6.1.223: समासस्य (अन्तः) (samāsasya [antaḥ 220])
provides that the last (antaḥ) vowel of a compound (samā-
sasya) is high-pitched; e.g., rājapuruśā (< rājan-as pūrusa-s:
A 2.2.8 [301]) 'king's man'; indraśatrū (< indra-as śātṛu-s)
'enemy, destroyer of Indra'. Other rules provide for special accentual properties of particular compounds.

In some compounds, a prior component (pūrvapadām )
retains its original accent (prakṛtyā ). This is the general
pattern in a bahuvrihi compound (bahuvriha: 317):

A 6.2.1: भहुव्रीहि प्रकृत्या पूर्वपदाम (bahuvriha prakṛtyā
pūrvapadām)
For example, in the bahuvrihi indraśatrū 'one whose enemy,
destroyer is Indra', the first component retains its original
accentuation, but in the tatpuruṣa indraśatrū the final vowel
is high-pitched (A 6.1.223 [602]).

Certain tatpuruṣa compounds also retain the original
accentuation of prior components. The following is a selection
of sūstras that provide for this pattern:

A 6.2.43: चतुर्थी तवर्थी (caturthi tadarthe)
A 6.2.45: कते चा (kte ca)
A 6.2.46: कर्मधारयेशनिष्ठा (karmadhārayenīṣṭhā)

A 6.2.48: तृतीया कर्मणि (tr̥ṭīyā karmanī)

A 6.2.49: गतिरनन्तरः (gatir anantarah)

A pada with a fourth-triplet ending (caturthi) retains its original accent before a pada that denotes something intended for what the first component signifies (tadarthe) and before a pada that ends with kta(kte); e.g., yūpadāru (< yūpa-e dāru-s: A 2.1.36 [308]), gōhīta(< gō-bhyas hitā-s). In a karmadhāraya compound (karmadhāraye : A 1.2.42 [314]) with a second component in -kta, a prior pada other than one ending in a niṣṭhā suffix (aniṣṭhā : A 1.1.26 [66]) retains its original accentuation, as in śrēṇikṛta (< śrēni-as kṛṭa-as : A 2.1.59 [313]). A component pada with a third-triplet ending (tr̥ṭīyā) keeps its original accent before a component with -kta signifying an object (karmanī), and a gati (gatiḥ : A 1.4.60-74 [55]) that immediately precedes (anantarā) such a component also retains its accentuation; e.g., ahihata, ahihata ‘killed by a snake’ (< ahi-ā hatā-s, ahi-ā hatā-s : A 2.1.32 [308]), prākṛta ‘set forth’ (< prā-s kṛṭa-s : A 2.2.18 [315]).

A group of rules headed by

A 6.2.64: आविर्यालः (ādir udāṭtaḥ)

provide that the first (ādir) vowel of a prior component in a compound is high-pitched. Thus, according to

A 6.2.75: अणि नियुक्तेऽ (ani niyukte)

this accentuation holds for a first component followed by a derivate with an (ani) in a compound that refers to someone who has been set at a job by a person in authority (niyukte); e.g., chātraṇāra ‘umbrella bearer’, with -dhāra (A 3.2.1, 2.2.19 [295, 315]). By

A 6.2.76: शिल्पिनि चाक्र्य: (śilpini cākrṇāh)

the same accentual pattern obtains in a compound denoting an artisan (śilpini), if the second component contains an after a verb other than kṛ (akṛṇaḥ); e.g., tāntuvaya(A 3.2.2 [295]), but
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kumbhakārā (A 3.2.1), with the accent proper to -kārā (A 6.2.139 [606]).

The conditions for accentual patterning may involve the meaning of a particular component also. For example,

A 6.2.84: ग्रामेन्विवसन्ताः (grāmeṇivasantāḥ)

provides that the first vowel of the prior member of a compound is high-pitched if the component occurs before grāma (grāme), on condition also that the first component does not refer to people actually dwelling in a village in question (anivasantaḥ), that is, provided that -grāma does not refer to a place where the people in question live; e.g., vānigrāma 'group of merchants, dāksigrāma 'village where descendants of Dakṣa live'.

Other rules, headed by

A 6.2.92: अन्तः (antaḥ)

account for compounds in which the last (antaḥ) vowel of the prior component is high-pitched. For example, by

A 6.2.97: द्विगौ क्राटाः (dvigau kratau)

this accentuation applies to a constituent followed by a dvigu compound (dvigau: A 2.1.52 [314]) used with reference to a rite (kratau); e.g., gargātrirātra 'three-night sacrificial rite of the Gargas'. According to

A 6.2.102: कुसूलकुपकुम्भशालम्बिले (kusūlakūpakumbhaśālam bile)

the last vowel of kusūla 'grain storage pot, granary', kūpa 'well', kumbha 'pot', śalā 'room, house' is high-pitched before the second component bila 'opening', as in kusūlabila 'opening of a grain storage pot', kūpābila 'well opening'.

The derivate viśvadeva, used of any one who has the group of gods called 'all gods' (viśve devāḥ, viśvādevāḥ) on his side, conforms to the general accentual pattern for bahuvrīhi compounds (A 6.2.1 [603]); similarly, one has viśvayaśas 'all-fame'. But derivatives such as viśvādeva 'Viśvadeva', viśvayaśas 'Viśvayaśas' do not conform to this pattern.
Accordingly,

A 6.2.106: बहुव्रीहौ विस्वं संज्ञायाम् (bahuṃvṛhau 

viśvam samjñāyām)

provides that viśva (viśvam) has high pitch on its last vowel when it is a first component in a bahuṃvṛhau used as a name (samjñāyām). By

A 6.2.107: उदराश्वेषु (udaraśvēṣu)

the last vowel of any prior member is high-pitched before -udara 'belly', -aśva 'horse', -iṣu 'arrow' in a bahuṃvṛhau compound used as a name: vṛkodara (vṛkā-udara: A 8.2.5 [610]) 'wolf-belly', haryāśva (hari-aśva: A 8.2.4) 'tawny-horse'. mahēṣu (mahā-iṣu) 'great-arrow'.

The accent of the second component (uttarapada) is retained in certain tatpurṣa compounds. By

A 6.2.139: गतिकारकोपपादाकृत् (प्रकृत्यात्तपुरुषे)

(gatikārkopapadā kṛt [prakṛtyā 137, 

tatpurūse 123])

a second member (uttarapadam [contextually modified from uttarapada-(A 6.2.111)]) in a tatpurūsā (tatpurūse) retains its original accent if it is a derivate ending in a kṛt affix (kṛt: A 3.1.93 [66]) and follows a gati, a term denoting a kāraka, or an upapada (gatikārkopapadāt). For example, in prahāraka 'one who strikes', the derivate nāraka, with the kṛt affix āvul (A 3.1.133 [248]), retains its original accent, on the vowel that precedes the suffix (A 6.1.193 [600]). Similarly, pravrāścana 'instrument for cutting', with the affix īyut (A 3.3.117 [293]), retains the accent proper to vrāścana in the compound idhmapravrāścana 'instrument for cutting fire wood'. In sukāra (A 3.3.126 [295]), the original accent of the derivate kāra, with the affix kha, is retained.

The compound avabhrthā 'final bath taken at the end of a rite' contains the derivate bhṛtha (affix kthan: see 613), and āvasathā 'house' contains the derivate vasāṭha (affix atha: 613). By A 6.2.139 (606), the derivates with these kṛt affixes
would be allowed to retain their original accentuation. The same rule would allow, contrary to what is required, derivates such as bhédha (affix ghañ: A.3.3.18-19, 6.1.197 [111, 600]), ksáya ‘dwelling’ (A.6.1.201 [595]), láva ‘cutting’ (affix ap: A.3.3.57, 3.1.4 [291, 592]), khanitrā ‘spade’ (affix itra: A.3.2.184, 3.1.3 [293, 592]), viṣa (A.6.1.203 [595]) to keep their accentuation in compounds like kāsthahēdā ‘splitting of wood’, prakṣayā ‘outstanding dwelling’, pralava ‘great cutting’, prakhanitrā ‘outstanding spade’, pravrśā ‘exceedingly male’. In addition, provision must be made for the accentuation of a compound like puruṣṭutā ‘praised in many places’. Therefore,

A.6.2.144: धाथधार्मकंताजजिब्रत्राकारानाम् (अन्त:)

(thāthahaghnaṅkājājitrākārāṁ [antaḥ 143]) provides that the last vowel (antaḥ) of derivates with tha, atha, ghañ, kta, aj, ap, itra, and ka is high-pitched if the derivates follow a gati, a term denoting a kāraka, or an upapada.

The purpose of accentual rules such as those considered in 602-607 is to account for the single vowels that bear high pitch in derived nominal bases which are compounds. There are some compounds, however, in which the separately accented vowels of the padas that enter into composition are retained. Special accentual rules are of course required for such compounds. Thus,

A.6.2.140: उभे वनस्पत्याद्विषु युगपत् (प्रकृत्या) (ubhe

vanaspatyādiṣu yugapati [prakṛtyā 137]) accounts for compounds in a set that begins with vānaspati ‘tree’ and includes derivates such as bṛhaspati ‘Bṛhaspati’. Both (ubhe) padas in these items (vanaspatyādiṣu) simultaneously (yugapati) retain their original accentuations. The same is true in general also for a dvandva compound (A.2.2.29 [318]) composed of divinity names (devatādvandve) such as īndrāvarṇau (<... indrāvarṇau: A.6.3.26 [461]).

A.6.2.141: देवताद्वन्दवेचा (devatādvandve ca)
This does not apply (na), however, in a dvandva where the first vowel of the second component is low-pitched (uttarapade'nuḍāṭādau), unless this component is prthivī 'Earth', rudrā 'Rudra', pūṣān 'Pūṣan', manthin 'Manthin':

A 6.2.142: nottarapade'nuḍāṭādāv aprthivirudrapuṣa-
manthiṣu

( nottarapade'nuḍāṭādāv aprthivirudrapuṣa-
manthiṣu)

Thus, one has dyāväprthivyau (dyāväprthivāu: A 8.2.4 [610])
'Heaven and Earth', sōmārudrāu (sōmārudrāu: A 8.2.5)
'Soma and Rudra', īndrāpuṣānau 'Indra and Pūṣān', śukrā-
manthiṇau 'Śukra and Manthin', but īndrāgni (indrāgni-au).

A vocative form (āmantritisya : A 2.3.48 [68]) has high
pitch on its first vowel, as in āgne 'Agni' (base agni):

A 6.1.198: Āmāntritisya ca (ābhi 197, udāttaḥ 159)

(āmantritisya ca [ādiḥ 197, udāttaḥ 159])

Certain accentual rules are connected with rules that
provide for replacing vowels. Consider the derivate kumārī,
gotten from kumārā-ī (A 6.4.148 [504]), with the feminine
suffix nip (A 4.1.20, 3.1.4 [271, 592]). According to

A 6.1.161: Anuudāṭasa ca yatrodāṭalopaḥ (udāttaḥ 159)
a high-pitched vowel (udāttaḥ) occurs instead of a low-pitched
vowel (anuudāṭasa) before which (yatra) a high-pitched
vowel is deleted (udāṭalopaḥ): kumārā-ī > kumārī. Similarly,
endings such as śas and ṭā, although they generally have
low-pitched vowels (A 3.1.4 [592]), are high-pitched after
path-(pathin: A 7.1.88 [472]): pathās, pathā.

Now, a vowel / i is subject to replacement by y before a
disimilar vowel (A 6.1.77 [125]). If the vowel that gets
replaced by a semivowel is high-pitched or svarita
(udāṭasvarityoh), a low-pitched vowel (anuudāṭasa) which
follows such a semivowel (yaṇah) is replaced by a svarita
vowel (svaritah):

A 8.2.4: Udāṭasvarityoṣṇaḥ: Svaritodesnuḍāṭasa
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(udâttasvaritayor yânaḥ svarito'udâttasya)
For example: kumârî- as > kumâryâs (nom. pl.), harî-âsya (A 6.2.107 [505]) > haryâsya. Further, the vowels that are high-pitched by A 6.1.173 (597) also are high-pitched if they follow a semivowel which has replaced a high-pitched vowel (udâttayanâḥ), provided this is preceded by a consonant (halpûrvât):

A 6.1.174: उदात्तयणो हल्पूर्वात् (udâttayaṇo halpûrvât)
For example, the vowel of trc (A 3.1.133 [248]) is high-pitched (see 511); its ō is subject to semivowel replacement before the ending ō and the feminine affix ā (A 4.1.5 [271]), which also is replaced by a semivowel before ō: kartf-ā > kartrâ, kar-tf-ī-ā > kart-rī-ā > kartryā. This accentuation does not apply (na), however, if the semivowel in question replaces the feminine suffix ō (A 4.1.66, 3.1.3 [271, 592]) or -ō of a verb (ūndhâtvoh):

A 6.1.175: नोर्द्धात्वोः (norndhâtvoh)
For example: brahmabandhû-ā > brahmabandhvâ 'pseudo-Brähmaṇa woman', khalâpū-ā > khalâpvâ 'one who cleans a threshing floor'.

The feminine stem brahmabandhû derives from brahmabandhu-ū, with ō replacing the two contiguous vowels (A 6.1.101 [532]). According to

A 8.2.5: एकादेश उदात्तेनोवातः (ekādesa udâttenedâttah)
If there is a single replacement (ekādesë) of two vowels and one of the vowels is high-pitched (udâttena), the replacement too is a high-pitched vowel (udâttah). This accounts also for instances such as agnî (agni-a: A 6.1.102), devaiś (devā-ais: A 6.1.88 [529]), vṛkōdara (vṛkā-udara: A 6.2.107, 6.1.87 [605, 528]).

Remarks.

1. The affixes trc, ac (A 3.1.133,134, 3.3.56 [248, 290, 291]

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are monosyllabic, so that they do not require being marked with \( c \) in accordance with \( \text{A 6.1.163 [599]} \), although, once they have been marked thus, this rule does indeed apply to them. The marker for \( trc \) serves to allow the use of \( tr \) as a common symbol referring to this and to \( trn \) (A 3.2.135 [290]): If there were simply an affix \( tr \), without any marker, a term \( tr \) (gen. sg. tuh), as in A 6.4.154: तुरिष्ठेमेयस्सु (tu इथेमेयस्सु) --- which provides for dropping -\( tr \) of a stem before \( इथान, \) \( इमानिक, \) and \( इयसुन \) --- would refer to this and not also to \( trn \). Consequently, A 6.4.154 would not provide for deleting the -\( tr \) of a term like \( हानीत्र \), so that it would not account for a Vedic derivate like \( हानिष्ठा \) 'who strikes, kills exceedingly, who most strikes, kills'. \( ac \) is given the marker \( c \) in order to distinguish it from \( a \) (A 3.3.102 [291]): -\( ac- \) in A 6.2.144 (607) refers only to \( ac \). See also 82. It is taken for granted, though not specifically noted in most commentaries, that the last vowel of an affix marked with \( t \) is a svarita vowel (A 6.1.185 [599]). Additional details are considered in part VI.6 of my work.

2. Commentators generally agree that \( jajānat, \) \( dadhānat, \) the accent of which is accounted for by A 6.1.192 (594), are Vedic forms, and they generally derive these forms starting with \( \text{let} \) (A 3.4.7 [233]). In the Nyāsa on Kāśikā 7.4.77, Jinendrabuddhi remarks that all verbs of the subgroup which follows the group beginning with \( \text{nij}r \) (see 172 B-C) are restricted to Vedic usage, and Kṣirasvāmin explicitly notes that the twelve verbs starting with \( ghr \) are Vedic. [Nyāsa VI.193: ये च निजादिभ्यः परे ते सर्व एव छान्दसाः, KṣT p. 196: जिघर्यादयो द्रावश छान्दसाः, similarly, MDhV pp. 397, 399 (on III.24, 37)] However, the Dhātupradipa records some difference of opinion. Maitreya first notes that \( चन्दसी \) at the end of the third major group in the dhātupāṭha is meant to indicate that \( \text{jan} \) and \( gā \) are Vedic, then goes on to remark that according to some this term is linked to all the verbs
from ghr onwards. [DhPr p. 88: छन्दसीति। इभो जनगाधातुः
छन्दसावित्यथः। हृपभूतयोस्पि छन्दसीत्यनेन सम्बद्धयन्त इति
केचित्।] The issue is not of major importance in the present
context. Note only that western interpreters generally take
dadhānat in RV 10.73.1d: माता यद्दीरं वृजनन्दनिष्ठाः
( mātā yād
virān dadhānad
dhāniṣṭhā) as a form meaning 'let run' or such,
but Indian commentators take this to be a form of dhan
meaning 'produce fruit' (dhānye), and Sāyaṇa glosses dadhānat
with adhārayat 'supported, maintained' in his commentary on
the passage.

3. The affixes tha and atha referred to in A 6.2.144 (607)
are upādi suffixes (cf. 296). The derivatives given as illus-
trations are accounted for by introducing kthan after bhr
construed with the preverb ava and atha after vas used with a
preverb. [US 2.3: अवेभूिः (कथन), 3.114: उपसर्गादसेः (अथः)
(ave bhrñāḥ (kthan 2), upasarga vaseḥ (athaḥ 113))

2.8.2. Accents of connected padas.

A single vocative form has high pitch on its first vowel
according to A 6.1.198 (609). There are, however, larger
sequences that are treated accentually as though they were a
single vocative. For example, the padas of the sequence
śubhās pāti 'you two lords of brilliance' are not treated as indepen-
dent padas, each with its own accent: śubhās
according to A 6.1.168 (596) and pāti. Accordingly,

A 2.1.2: सुबामनित्रितेपरांत्वत्स्वरोः (sub āmantrite
parāṅgavat svare)
provides that if a pada with a nominal ending (sup) is followed
by a vocative form (āmantrite) with which it is syntactically
and semantically connected, the first pada is treated, with
respect to accent (svare), as though it were part of the
following item (parāṅgavat). That is, such a sequence is
treated as a single pada for accentual purposes, so that, by A 6.1.198, the first vowel of the first pada is high-pitched and, by A 6.1.158 (588), this is the only udātta element of the complex.

There are contexts in which an entire pada (sarvam [padam] 'whole [pada]') has no high-pitched vowel (anudāttam). Rules which provide for this come under the heading

A 8.1.18: अनुवात्तं सर्वमपादादृश् (anudāttam sarvam apādaādu)

which is part of the section headed by A 8.1.16-17 (105, 111). Each of these rules concerns a pada (padasya) that occurs after another pada (padāti), and A 8.1.18 provides that an entire pada, to be specified in subsequent sūtras, lacks a high-pitched vowel if it follows another pada, under conditions also to be specified, unless it occurs at the beginning of a verse section (apādaādu). Thus, contrary to what A 6.1.198 (609) provides, a vocative form (āmantritasya) regularly has no high-pitched vowel if it follows another pada:

A 8.1.19: आमन्त्रितस्य चा (āmantritasya ca)

In addition, a pada with a verb ending (tīri) generally has no high-pitched vowel if it follows a pada that does not terminate in a verb ending (atīnāḥ):

A 8.1.28: तिह्न तिह्न (tīnati̯nāḥ)

For example, in

(116) किछु रोषि देवदत्त (kīśu kārośi devadatta) 'What are you doing, Devadatta?'

the finite verb form kārośi(< kārośi: A 8.4.66 [622]) following the nominal pada kiṃ lacks an udātta vowel, as does the vocative devadatta in

(117) हृद्म में गड्ढे यमुने सरस्वति शुतुद्रि स्तोमं सचतां...

(Imāṁ mē gadh̄e yamunे sarasvatī śutūḍrī stōmāṁ sacatā... [RV 10.75.5ab] 'Gahgā, Yamunā, Sarasvatī, Śutuḍrī, accompany this my chant of praise...'

the vocatives gahgā, yamunā, sarasvatī have no udātta vowel,
but śūtūdri at the beginning of a verse section (pāda), is accented according to A 6.1.198, and the verb form sacatā (2pl. imper.) lacks a high-pitched vowel.

As provided for in

A 8.1.70: गतिर्गतः (gatir gatau)

a gati (A 1.4.60-74 [55]) has no high-pitched vowel if it occurs before another gati (gatau), as in abhyuddhārati (< abhi ud harati) ‘fetches out’.

Under particular circumstances, verb forms that follow non-verbal forms have high-pitched vowels, contrary to the general rule A 8.1.28 (615), so that a series of exceptions to this sūtra is formulated, providing that a pada does not (na) lack an udātta vowel. Four such rules are:

A 8.1.29: न लुट् (na luṭ)

A 8.1.30: निपातैर्यद्यदिह्नतकुविन्नेचतचत्तक्क्कच्चद्ययुक्तम् (nipātair yadyadvahantakuvinnecceccan-kaccidyatrayuktam)

A 8.1.34: हि चा (hi ca)

A 8.1.66: यद्वृत्तानिन्यम (yadvṛttān nityam)

A verb form with an ending that replaces /uṭ (A 3.3.15, 3.1.33, 2.4.85 [233, 236, 403]) has a high-pitched vowel, as in śvāh kartā ‘... will do it tomorrow’, śvāh kartārau, śvāh kartārah. A pada that terminates in a verb ending has an udātta vowel if it is syntactically linked (yuktam) with any of a set of particles (nipātaiḥ: 55): yat ‘that’, if, yadi ‘if’, hanta ‘oh, well’, kuvit ‘perhaps (and interrogatory)’, net ‘if not, lest’, cet, caṇ, ‘if’, kaccit ‘would that (utinam)’, yatra ‘where, in which’, hi ‘because, for’. A finite verb form also obligatorily (nityam) has a high-pitched vowel if it is construed with a preceding form of the relative pronoun yad (yadvṛttāt [padāt]). For example:

(118) यदमे विविष्जा अस्यपर्सुजा वा...।तन्व्वा'}
गीर्भिः वामहेः। (yād āgne divijā āsy āpsujā vā ... tān tvā girbhir nāvāmahe [RV 8.43.28]) 'Agni, we call on you with our chants, whether you are (āsī) born in heaven or in the water.'

(119) पूर्वीनिन्द्र्यस्य रात्यो न वि दर्शन्यत्यूत्यः। यदि
वांजस्य गोमंत: स्त्रोत्वभयो महते मूघम्। (pūrvarindrasya ratayo nā vi dasyanty utāyah/ yād vājasya gomataḥ stotribhyyo māhāte maghām [RV 1.11.3])
'The gifts Indra has given earlier, his help, do not run out If he grants [māhāte] his gift of booty rich in cattle to those who chant his praises.'

(120) ते होऽुर्धन्तेमाण पृथ्वीवा वि भृजामहें ... (te hocyr
hanandam prthiviṃ vi bhajāmahai [ŚBr. 1.2.5.2])
'They (the Asuras) said, "Well, let us divide (vi bhajāmahai) this earth among ourselves ..."'

(121) कूविन्नो अभिवच्छर्ष्यवीरसदु ... कूविद्विसुधि:
कार्ममाज्जरत् (kuvina nā agnī ucāthāsya vir āṣad ...
kuvīd vāsūbhīś kāmām āvārāt [RV 1.143.6ab])
'Will Agni be (āṣat) a seeker after our hymn ..., will he accomplish (āvārāt) our wish with treasure?'

(122) अन्वेर्म तिरी गोभिवर्धयस्व ...। नेत्यां ... विंत्यमनि
पर्य्यं याति॥ (agnir vārmā pārī gōbhir vyayasya ...
nēt tvā ... vi dhakṣyān pārī ankhāyāte [RV10.16.7])
'Wrap yourself in these parts of the sacrificial cow as an armor against the fire ... lest it envelop (pārī ankhāyāte) you ... to burn you throughout.'

(123) अर्थिनो यान्ति चेवर्षयं च ज्ञानिदूषो रातिम्
(arthino yānti cēd ārthānī gācchān id dadūsō rātim [RV 8.79.5ab]) 'If, seeking their end, they go (yānti) about their purpose, they will indeed attain (gācchān id) the gift of the giver.'
(124) tvāni soma no vásō jivātun nā mārāmahe [RV 1.91.6ab] 'Soma, if you wish (vāsāh) us to live, we will not die.'

(125) satam in nū śarādo ānti devā yatrā naś cakrā jarāsān tanūnāmī putrāsō yatrā pitāro bhāvānti [RV 1.89.9a-c] 'Gods, here are one hundred autumns before us, in which you decreed (cakrā 'made') for us the aging of our bodies, in which sons become (bhāvānti) fathers.'

(126) asmāni ca tāṁś ca prā hi nēsi vāsyā ā [RV 2.1.16c] (Agni), lead (prā hi nēsi) both us and them to the greater treasure.'

(127) ... yass tōtābhya hānyo ārī ... ( ... yās stotfrbhyo nāvyo āsti ... [RV 1.33.2d]) '... (Indra,) who is (āsti) one to be called upon by singers of praise ...'

A gati lacks a high-pitched vowel not only if it is followed by another gati (A 8.1.70 [615]) but also before a finite verb form (tīnī) that contains an udātta vowel (udātavati):

A 8.1.71: tīnī chodātavatī (tīnī codātavatī)
For example, the gati elements ā and pari of ā vārāt and pāry ārīḥyāte in (121)-(122) (616) lack high pitch.

Consider now the sequences āmū ṣadhū vartṛn mitrā dēvā: ... (āgna Indra vārūna mitra dēvān ... [RV 5.46.2al] 'Agni, Indra, Varūna, Mitra, gods', ṣāyōḥ yāhī ... (vāyō yāhī ... [RV 8.26.23a]) 'Vāyu, go ...', āmū tāb śravō ... (āgna tāva śravō ... [RV 10.140.1a]) 'Agni, your fame ...', īdūr tābhūp ... (Indra tūbhīyam ... [RV 1.80.7a]) 'Indra, for you ...'. Each of these contains a
verse-initial vocative form, accented in accordance with A 6.1.198 (509). Contrary to A 8.1.19, 28 (615), however, the vocatives indra, mitra, varuna, and devaḥ have high-pitched vowels, as does the verb form yāhi, and contrary to A 8.1.22 (507), the low-pitched pronominal form te does not occur instead of tāva and tūbhyam after the padas āgne, indra. In accordance with these facts,

A 8.1.72: आमन्त्रितपुर्वमविद्यामानवत् (āmantritam pūrvam avidyāmānavat)

provides that a vocative pada (āmantritam) that precedes (pūrvam) another pada behaves as though it were not present (vidyāmānavat). In all the examples given here, then, the verse-initial vocative is treated as though it were absent, so that the following padas are not subject to accentual rules and replacements that depend on the presence of a preceding pada. In (117) (615), even if each of the vocatives gāṇe and so on is treated as nonexistent, this does not result in any of them having an udātta vowel, since the pada me still precedes.

Now, A 8.1.72 would allow the second vocative in an example like अमें गृहपते ... (āgne grhapate ... [TS 2.4.5.2]) 'Agni, (you in your guise of) master of the house ...' to have a high-pitched vowel. Consequently,

A 8.1.73: नामान्त्रितेः समानाधिकरणे सामान्यवचनम्

(nāmantrite samānādikaraṇaṃ sāmānyavacanam) denies, under particular circumstances, what is provided for by the previous sūtra: A vocative pada is not (na) treated as nonexistent if it is followed by a coreferential (samānādikaraṇa) vocative pada (āmantrite), provided the first term has a general signification (sāmānyavacanam) related to that of the second.

The second item gotten through syntactic doubling (see 370) is not only given the class name āmreditam (A 8.1.2 [50]), it also generally lacks any high-pitched vowel (anudāttam):

A 8.1.3: अनुदात्तत्वम् (anudāttaḥ ca)
For example, the second pada in (102a) and (102b) has no udātta vowel: grāmō grāmo, pūrūṣaḥ puroṣo. See also A 8.2.95 (621).

A 8.2.5 (510) lets a single replacement for two vowels, one of which is high-pitched, necessarily be high-pitched only if the second segment in question is not a pada-initial (padādau) anudātta vowel (anudātte). For according to

A 8.2.6: स्वारितो वानुवाते पदावौ (svarito vānudātte padādau)
a svarita vowel optionally (vā) is the single substitute for a high-pitched vowel and a pada-initial low-pitched one. For example, the udātta vowel of tē (nom. pl. masc.) 'they' derives from high-pitched ā and low-pitched / (A 3.1.4 [592]): tād-ās > tāa-as(A 7.2.102 [476]) > tā-ās(A 6.1.97 [531]) > tā-ī (A 7.1.17 [492]) > tē (A 6.1.87 [528]). By A 8.2.5, the single vowel that replaces -ā-ā- and -ā-ī is high-pitched. In accordance with A 8.1.28 (615), the verb form avardhanta (3pl. Impfct.) 'they grew' has no high-pitched vowel if it follows tē, and according to A 8.2.6, the single vowel -ē that substitutes for both -ē and a- (A 6.1.109 [533]) is either a svarita or a high pitched vowel: tēvardhanta / tēvardhanta (RV 1.85.7, where the traditional text has a svarita vowel).

An utterance used in calling someone from afar (dūrāt-sambuddhau) is characterized by its general lack of pitch variations, a single continuous pitch level (ekaśrutī [vākyam] 'monotone') approximating a high pitch:

A 1.2.33: एकश्रुति दूरात्सम्बुधाः (ekaśrutī dūrātsambuddhau)
This does not hold for all the vowels of such an utterance, however, since the last vowel is protracted and made high-pitched. A series of sūtras, headed by

A 8.2.82: वाक्यस्य ते: पुत्र उवाचः (vākyasya tēḥ pluta udāttah)
gives conditions under which the vowel of the tē (tēḥ: A 1.1.64 [41]) of an utterance (vākyasya) is replaced by a high-pitched
vowel \textit{(udāttaḥ)} that is extra-long \textit{(plutaḥ; A 1.2.27 [35])}. Two sūtras of this section are:

\textbf{A 8.2.83:} प्रत्याभिवादेःशूद्रे\(\) (\textit{pratyabhivādeśūdre})

\textbf{A 8.2.84:} दूराघुटे चा\(\) (\textit{dūrādhūte ca})

which provide for this vowel protraction and accentuation in an utterance used to return a greeting \textit{(pratyabhivāde)} to someone other than a Śūdra \textit{(aśūdre)} or used in calling someone from afar \textit{(dūrādhūte)}. For example, the final vowels of

(128) आयुष्मानेदिवदास्तत्त्वा\(\) \textit{(āyusmānedhi devadattā)}

'Be long-lived, Devadatta.'

(129) आ गच्छ देववत्तत्त्वा\(\) \textit{(ā gaccha devadattā)} 'Come here, Devadatta.'

are protracted and high-pitched. In (128), moreover, one also has the regular pitch variation associated with padas in utterances, which is not the case for (129). \textbf{A 1.2.33} first lets the vowels of this utterance be pronounced at a level relatively close to that of high-pitched vowels but without variation; then \textbf{A 8.2.84} applies to replace the final vowel with a trimoric high-pitched segment.

The following rule, also in the section headed by \textbf{A 8.2.82}, concerns āmredita elements:

\textbf{A 8.2.95:} आङ्ग्रेज़ीः हिंदूस्तानी: \textit{(āmreḍitam bhartsane)}

If syntactic doubling occurs under the condition that a threat is expressed \textit{(bhartsane)}, the last vowel of the āmredita element is protracted and high-pitched; e.g., \textit{caurāj} in (108) (370).

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Once accentual adjustments have been made as described, so that each pada of an utterance generally contains no more than one high-pitched vowel, though some may have none, another replacement applies. As provided for in

\textbf{A 8.4.66:} उवात्तावनुवात्तस्यस्वरित: \textit{(udāttād anudāttasya svarītaḥ)}
a svarita vowel (svaritah) replaces a low-pitched vowel (anuddattasya) after a vowel with high pitch (udattar). For example, āgne of (118) (616) starts off with a low-pitched initial vowel, which is replaced by a svarita vowel after yād: yād āgne.

In connection with this, as in the case of several other accentual processes, there is dialectal variation. Thus, according to

A 8.4.67: नोवात्तस्वारितोदयमगार्यकाश्यपगालवानाम्
(nodattasvaritodayam agāryakāsyapagālavānām)

contrary to A 8.4.66, an anudatta vowel is not (na) subject to replacement by a svarita if it is followed by an udatta or svarita vowel (udattasvaritodayam), except in the opinion of Gārgya, Kāśyapa, and Gālava (agāryakāsyapagālavānām). For example, gārgya, a derivate with the taddhita suffix yafi (A 4.1.105 [335]), has high-pitch on its first vowel (A 6.1.197 [600]), so that a pada like gārgya-s has a low-pitched affixal vowel. The derivate tātra, with the taddhita affix tra (A 5.3.10 [349]), has high pitch on the presuffixal vowel (A 6.1.193 [600]), and the derivate kvā (affix at: A 5.3.12, 7.2.105 [349, 487]) contains a svarita vowel (A 6.1.185 [599]). Before the padas tātra, kvā, then, gārgyas keeps its low-pitched suffix vowel, except in the dialects accounted for by Gārgya, Kāśyapa, and Gālava: gārgyas tātra, gārgyāḥ kvā, and gārgyas tātra, gārgyāḥ kvā.

Moreover, an anudatta vowel in such contexts is not simply low-pitched. As provided for in

A 1.2.39: स्वारितसम्हितायामुद्वातात्तानाम् (एकशृङ्खि)
(svaritāt samhitāyām anudattānām [ekasṛuti 33])

A 1.2.40: उद्वात्तस्वारितपरसप्रयस्नन्तरः
(udattasvaritaparasasya sannataraḥ)
anudatta vowels (anudattānām) that follow a svarita vowel (svaritāt) in an uninterrupted sequence with close junction (samhitāyām: A 1.4.109 [42]) are pronounced monontone, at a
level close to that of high-pitched vowel, but if an anudātta vowel is followed by a high-pitched or svarita vowel (udāttasvaritaparasya), one has instead a vowel pronounced lower (sannatarah) than a mere anudātta. Thus, the vowels of gārge and so on in (117) (515) are pronounced in a monotone, up to the -i of sarasvati, which is more depressed, since a high-pitched vowel follows in śūtūḍri, and the anudātta element of gārgyas in gārgyas tātra, gārgyaḥ kva also is pronounced at a level relatively lower than a mere anudātta, since the next vowels are high-pitched and svarita vowels.
3. GENERAL PRINCIPLES OBSERVED IN THE GRAMMAR

3.0. Introduction.

623 Pāṇini adheres to certain general principles in his grammar. These principles are not explicitly set forth in the Aṣṭādhyāyī, although Pāṇinian commentators, starting with Kātyāyana, do state them. Nevertheless, it is patent from the sūtras of the Aṣṭādhyāyī that Pāṇini does indeed observe the principles in question. In part II of my work I consider in some detail relations that obtain among rules in the Aṣṭādhyāyī and the principles Pāṇini observed in formulating these rule, so that it will suffice at present to summarize the principles to which Pāṇini adheres and to illustrate them with a few examples of sūtras already dealt with.

624 The very basis of Pāṇini’s grammar is generalization. The sūtras he formulates constitute a set of statements meant to account for facts of usage by capturing what is common (sāmānya) to groups of entities and what is particular (vīśeṣa) to subgroups of these. In this vein, Pāṇini formulates general rules (utsarga) and related exceptions (apavāda) to them. A general rule has a broad domain (vīṣaya) that includes the whole domain of a related exception or part of it. An apavāda takes precedence over a related utsarga, so that it applies preferentially in its own domain. Once the domains of all possible exceptions to a general rule have been set aside, the remaining domain is the one in which the utsarga takes effect. Moreover, once an exception has taken effect, thus capturing its domain so that it is not vacuous, the general rule whose application it blocked in the first place can take effect if the conditions for its application are met. In certain instances, moreover, items that would require overly particular operations are given as ready made elements.

The principle that an exception blocks (bādhate) a related general rule does not hold in general for classificatory samjñāsūtras (see 32). The norm observed here is concurrent
application of two or more class names (ṣaṃjñāsamāveśa), thus accounting for classes and subclasses. Where it is necessary to have disjunct classes, then, the sūtras in question are stated in the section headed by A 1.4.1 (109).

In accordance with the division of utterances into constituent padas and of padas into stems and affixes (see 46, 212), a principle associated with bracketing is observed: An internally conditioned operation (antarāṅgam kāryam) takes precedence over one which is externally conditioned (bahirāṅgam). Thus, operations that apply within a single pada are carried out before one proceeds to operations that take effect across syntactic pada boundaries. And in padas with complex stems, of the type shown in (13), one works outwardly from interior brackets, so that an operation on B' conditioned by A' takes precedence over an operation on [[B'], (A')], conditioned by an ending.

Given a context such that the operation provided for by either of two rules R₁, R₂ could possibly apply, one operation is said to apply necessarily (nityam 'obligatory'), the other not necessarily (anityam) if the following conditions are met: Once the operation given in R₁ has taken effect, the operation provided for by R₂ can no longer take effect, because the conditions required for this have been eliminated; even after R₂ has come into play, R₁ can still apply, since its conditions have not been eliminated. A nitya operation provided by such a rule R₁ takes precedence over an anitya operation by a rule R₂.

If two operations are incompatible but the domain of one is not included in the domain of another, so that one is not an exception to the other (624), the norm is that both apply, alternately. For example, A 3.1.133 (248) allows both āvul and τrc to follow a verb, but only one affix can occur immediately after a base at one time. The sūtra allows both of the affixes to occur, alternately. There are instances, however, where only one of two conflicting operations should
apply. In such cases, the rules in question are formulated in a particular order and made subject to A 1.4.2 (110): What is provided for by a later rule takes precedence over the provision made in an earlier rule. Since A 1.4.2 is valid with respect to the rules headed by A 1.4.1 (109), only one of two conflicting operations is allowed to apply to any given entity.

Another set of sūtras that calls for extrinsic ordering is the group that makes up the tripādi. A rule R +1 is regularly suspended with respect to any preceding sūtra (A 8.2.1 [109]). Rule suspension also applies in other instances, as provided for in A 6.1.86 (110). There are, in addition, cases where an operation applies preferentially with respect to another because of a general principle, yet the effect (kārya 'what is to be done') produced thereby has to be suspended in order to preclude the application of another rule. Rules concerning such cases are given in the section headed by A 6.4.22 (111).

Obviously, sūtras that must be subject to a heading have of necessity to be stated in the same section of the grammar, under the heading in question. On the other hand, related general rules and exceptions need not be put together. The very relation between their domains that makes one a general rule and the other its exception serves to bring such rules together. In Pāṇinīya parlance, an utsarga and related apavādas come together to form a single context (ekavākya 'one utterance', ekavākyatā 'being one utterance'). Now, headings such as A 4.1.1, 6.4.1 (105) also come together with other sūtras to form single contexts. Indeed such headings are actually incorporated with subsequent sūtras to constitute single sentences (padaikavākyatā 'being a single utterance of constituent padas'), so much so that the form of a heading is contextually modified in accordance with the syntax of other sūtras (see 121-127).

Ancillary sūtras that are not headings also are brought together with rules they serve to interpret. Thus, depending on the sūtra with which A 1.1.45 (38) is brought together, this samjñāsūtra is understood to provide that the replacement of
semivowels by vowels is called sanprasārana (e.g., A 6.1.15 [388]) or that the vowels gotten by such substitution have this class name (e.g., A 6.1.108 [533]). Further, metarules come together with sūtras for the interpretation of which they are required. For example, A 1.1.3, 5 (97–98) are brought together with A 7.3.84, 86 (127). Thus, A 1.1.5 does not provide that guna and vṛddhi vowels may not substitute for i-, u-, r-, or l-vowels if any item marked with k or ṛ follows. Indeed, such an interpretation of A 1.1.5 conflicts directly with what Pāṇini does in deriving forms such as kuruṣas (see 644). Together with operational rules like A 7.3.84, 86, this metarule provides that guna substitution does not apply if the affix taken as a possible condition for the replacement in a stem is marked with k, g, or ṛ.


A 6.1.77 (125) is the general rule of semivowel substitution: y u r l, respectively, substitute for i u r l and vowels homogeneous with these before another vowel. A 6.4.77 (452) is an exception to this general rule: final i- and u-vowels of certain stems are replaced by iyānī and uvaṇī before vowels of suffixes. Since an exception blocks the application of a related general rule, then, A 6.4.77 would apply instead of A 6.1.77 to the stem i- of i-anti. The desired form yanti cannot be gotten by applying the general rule, so that a still more specific sūtra, an exception to A 6.4.77, is formulated: A 6.4.81 lets y replace the i- of the verb in before a vowel of an affix. That Pāṇini is required to include the rule A 6.4.81 within the Aṣṭadhyāyī in order to derive a form like yanti shows that he does indeed operate with the general principle that exceptions take precedence over and block the application of related general rules.

A 3.2.1–3 (295) provide for kṛt affixes to follow verbs construed with nominals denoting objects. The first sūtra lets an follow any verb under these conditions, but A 3.2.3 applies
with respect to particular verbs, those that end in -ā, on condition that they not occur with preverbs. This exception to the general rule blocks the latter, which can therefore not apply to introduce ṁa after ṛva, vā, or mā. In order to allow for derivates like svargahvāya, then, a still more specific rule, which allows ṁa after these particular verbs, is required.

A 3.1.96 (121) allows the kṣāya suffixes tavya, tavyat, and aniyar to occur with any verb. A 3.1.97 (122), on the other hand, introduces yat after a subset of verbs, those that end in vowels, so that this sūtra is an exception to the general rule A 3.1.96. Since an exception blocks the application of a related general rule, then, special provision must be made to allow not only yat but also tavya, tavyat, and aniyar after verbs that end in vowels: A 3.1.94 (110, 123) lets affixes introduced by general rules and their exceptions alternate, provided they are not homophonic.

A 7.1.13 (492) lets ya substitute for the ending Ṛe after any nominal stem in -a. A 7.1.14 is an exception to this rule: If the stem in -a is a pronominal, Ṛe is replaced by smāi instead of yā.

A 7.3.103 (482) is an exception to A 7.3.102: Before a bahuvacana ending that begins with bh, the -a of a nominal stem is replaced by -e instead of -a. A 6.4.3 and 7.1.9 (468, 492) also are exceptions to A 7.3.103. This last sūtra allows -ā to replace -a of a stem before an ending that begins with any sound denoted by yāṅ, including rānd bh. However, A 6.4.3 provides that a long vowel replaces a final stem vowel before the ending nām in particular, and A 7.1.9 lets ais substitute for bhis after a stem in -a.

A 6.4.71-72 (238) both introduce initial augments to stems followed by endings that derive from lūṅ, lāṅ, lṝṅ. The first is a general rule, which allows the augment aṭ for any of the stems in question. The second sūtra is an exception to this: If the stem begins with a vowel, it receives the augment aṭ instead of aṭ.

A 1.1.62 (103) is a general metarule concerning affix
deletion: When any affix is dropped, the operation it would condition if present still takes effect. A 1.1.63 is an exception to this: If the zero replacement for an affix is one denoted by a term with /u/, an operation conditioned by that affix for its stem does not then take effect.

Obviously, an exception to a general rule can be a negative rule. Nor is this limited to metarules. For example, A 8.2.79 (552) disallows a sound replacement tentatively allowed by the more general rule A 8.2.77. There are more complex instances, such that a negative rule is an exception to a sūtra that is itself an exception to a still more general rule, which is then allowed to apply because its exception has been disallowed. For example, consider again A 6.1.102, 104-105 (532). According to the first of these sūtras, given two contiguous vowels such that the second belongs to a nominal ending of the first or second triplet, both are replaced by a long vowel homogeneous with the first one. This replacement applies in cases like agni-au and vāyu-au. In such instances, A 6.1.102 is an exception to the general rules A 6.1.77 (125), whereby /y/ and /u/ would replace /i/ and /u/ before /au/. By the same token, A 6.1.102 would not allow semivowel replacement in instances such as kumāri-au and kumāri-as. A 6.1.102 would also block A 6.1.87-88 (528-529), not allowing guna and vṛddhi vowels as the single substitutes for contiguous vowels in cases such as phala-i and vṛkṣa-au. The negative rules A 6.1.104-105, which are exceptions to A 6.1.102, prevent this sūtra from blocking the still more general rules in question.

In some cases, the domain of an exception is totally included in the domain of a related general rule, so that in every instance where the exception is to apply the general rule could also apply and would indeed take effect in the absence of its exception. For example, the verb /p/ is merely one possible stem with /-/ before a vocalic ending, so that the domain of A 6.4.81 is completely included in the domain of A 6.4.77 (see 630). Similarly, the domain covered by A 6.1.77 totally includes the domain of A 6.4.77. Again, any verb in /n/ is
indeed a verb, so that the domain of the general rule A 3.2.1 completely includes the domain of the exception A 3.2.3 (see 631), and all pronominals (sarvanāman) belong to the class of nominal bases (prātipadika), so that the domain of A 7.1.14 is included fully in the domain of A 7.1.13 (see 632).

On the other hand, an included domain may be part of a larger domain where two sūtras which also have independent domains of their own overlap. Here too the rule concerning the narrower part of the overlapping domain blocks the other by what I call partial or limited blocking. Consider again A 6.1.77 (125) and A 6.1.101 (532). Let us reword the sūtras as follows:

6.1.77a: इको यणसवर्णःचि (iko yan asavarne‘ci)

6.1.101a: आत्सवर्णः दीर्घः! (āt savarne dirghah)

6.1.101b: इकः सवर्णः दीर्घः! (ikah savarne dirghah)

These are complementary rules with separate domains. 6.1.77a lets an /-u-/*- or */-vowel be replaced by the corresponding semivowel before a vowel that is not homogeneous with it (asavarne). By 6.1.101a, a or ā and a following vowel that is homogeneous with it are both replaced by a single long vowel. Finally, according to 6.1.101b, an /-u-/*- or */-vowel and a following vowel homogeneous with it are both replaced by a single long vowel. The domains of 6.1.77a, 6.1.101a are the same as the independent domains which are exclusive to A 6.1.77, 6.1.101: D:\ /-u-/*-+/ + V, D:\: a ā + a ā The remaining domain, covered by 6.1.101b, is the overlapping domain common to A 6.1.77, 101: D:\ /-u-/*- */-vowels + */- */- */-vowels. There is indeed overlap, because, unlike 6.1.77a, A 6.1.77 does not specify that the right context must be a dissimilar vowel. However, since A 6.1.101 does specify that the two contiguous vowels subject to replacement must be homogeneous, it is the more particular rule. It captures the domain D:\, leaving D:\ as the domain in which the general rule A 6.1.77 applies.

The relation between A 7.3.102 and A 7.3.103 (see 632) is comparable. The first rule provides that the -a of a stem is
replaced by the long vowel -ā before a nominal ending beginning with a sound of the group denoted by yaṅī. The sounds that come into question are y and bh of the endings ya, bhyām, bhyas. A 7.3.103 lets -e replace -a of a stem before a bahuvacana ending that begins with a sound denoted by jhal. The endings that come into question are bhyas and sup. Thus, each rule has a domain in which the other cannot possibly apply: -a followed by ya or bhyām for A 7.3.102 and -a followed by sup for A 7.3.103. The two sūtras also share an overlapping domain, since bh is included in the referents of both the abbreviations yaṅī and jhal. However, the bahuvacana ending bhyas is only one of the possible nominal endings that begin with bh, so that within the overlapping domain, there is a specific one, in which A 7.3.103 applies, blocking A 7.3.102.

Similarly, consider again A 7.3.111 and A 7.1.73 (484, 488). Each of these rules has an independent domain. The first applies to let guṇa substitution apply to non-neuter ghi stems before endings marked with ri; the second rule introduces the augment num to neuter stems in -i -u -r before endings other than those marked with ri. The domains of the two sūtras overlap where a neuter stem in -i or -u is followed by an ending marked with ri. Since, however, A 7.1.73 concerns neuter stems in particular, its domain is the more specific, so that it takes precedence.

From the examples considered, it is clear that the Aṣṭādhyāyī contains whole networks of related sūtras. Thus, A 6.1.87 (528) is formulated as a general phonological rule: a or ā and a following vowel are both replaced by a single guṇa vowel. This is blocked by a more specific phonological rule, A 6.1.88 (529): a ṛddhi vowel is the single replacement for a or ā and a following e o a l au. On the other hand, if an a-vowel occurs before a vowel homogeneous with it, that is, before another a-vowel, then the single substitute for both is a long vowel ā, according to A 6.1.101 (532), another exception to A 6.1.87. However, if the first of two contiguous vowels is short a in the interior of a pada and this is followed by a guṇa

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vowel, according to A 6.1.97 (531), the single replacement for both is the latter, so that \(-a-\) is the substitute for \(-a-a-\), as in \(\text{pacanti} \text{they are cooking} (\langle \text{pac}-\text{a}-\text{anti} \rangle)\). In a still more specific collocation, such that pada-interior \(-a-\) occurs before \(a-\) of the endings \(\text{jas, sas} \), A 6.1.102 applies to replace the two contiguous vowels with a single long one homogeneous with the first: \(\text{vrkṣa-as} \rightarrow \text{vrkṣās, vrkṣa-as} \rightarrow \text{vrkṣās} \rightarrow \text{vrkṣān} \) (A 6.1.103). And if pada-interior \(-a-\) occurs before the \(a-\) of \(-am\), it is the single replacement for both contiguous vowels, by A 6.1.107 (533). Moreover, the \(-a-\) of a stem is deleted before the vowel of an ārdhadhātuka affix (A 6.4.48 [450]), as in cikir-\(\text{saka} \langle \ldots \text{-sa-aka} \rangle\), and \(-a-\) or \(-ā-\) is dropped before a taddhita affix or a feminine suffix ḷ (A 6.4.148 [504]), as in dākṣī(\(\ldots\) dākṣa-ī), gaurī(\(\ldots\) gau-ra-ī).

In view of what has been said, it is also patent that in cases where more than one rule could be used to obtain the required result, the more specific rule alone applies. For example, given \(\text{ta-}a-\text{am} (\langle \text{tad-am} \rangle)\), letting A 6.1.87 (528) apply to substitute the guṇa vowel \(a\) for the contiguous vowels of \(\text{ta-}a-\) or having A 6.1.97 (531) apply to replace both these vowels with the second one alone would give the results required in the derivation. The more specific sūtra A 6.1.97 alone applies. Similarly, A 6.1.87, 6.1.97 or 6.1.107 (533) would all give the desired result \(\text{tam}\) from \(\text{ta-am}\), but only the last rule applies here.

As I pointed out in 624, once a particular rule has applied, blocking a general rule to which it is an exception, the general rule can then apply if its conditions are met. Consider the first stage in the derivation of the desiderative stems \(\text{fījīśa}'\text{wish to conquer}'\) and \(\text{tusṭūśa}'\text{wish to praise}'\). Since \(\text{san}\) is an ārdhadhātuka suffix, A 7.3.84 (127) comes under consideration as well as A 6.4.16 (422). Clearly, however, the latter is an exception to the former: A 7.3.84 provides for guṇa vowels to replace stem-final \(\sim u-\sim r-\) and \(\sim r-\) vowels before any sārva-dhātuka or ārdhadhātuka affix, but A 6.4.16 lets a long vowel substitute for a final stem vowel before a particular
ārdhadhātuka affix, san. Thus, this sūtra alone applies, to give jl-sa-, stū-sa-. Of course, A 7.3.84 could now apply to je-sa and sto-sa. If it did, one would derive *jījesa, *tuṣṭoṣa instead of jījaṁ and tuṣṭuṣa. This is precluded, however, since A 1.2.9 (515) assigns the marker k to san in such contexts, so that this affix now does not condition guṇa substitution in its stem.

Moreover, there are instances where a general rule has indeed to apply after being blocked. In this connection, let us consider the derivation of khaṭvāyām 'on the bed'. Given khaṭvā-ī, two sūtras come under consideration: A 7.3.116, 113 (497, 499). By limited blocking, the former takes effect, so that the ending ī is replaced by ām: khaṭvā-ī > khaṭvā-ām. A 7.3.113 must then apply: khaṭvā-ām > khaṭvā-yāām > khaṭvāyām (A 6.1.101 [532]). If the more general rule did not apply, despite having been blocked earlier, one would derive khaṭvām which is a correct form, but an accusative (< khaṭvā-ām), not a locative.

As I have pointed out (45), Pāṇini operates with classes and subclasses of entities in respect of operations. Items which have the name ghu by A 1.1.20 (51) are a subgroup of elements called dhātu (A 1.3.1 [47]). Since they are recognized as verbs, they take verbal affixes (A 3.1.91 [66]) such as L-affixes (A 3.4.69 [232]). Nominal units to which the class names sarvanāman, avyaya, and saṅkhya are assigned (A 1.1.27-36, 37-41, 23 [53, 54, 59]) also are called prātipadika (A 1.2.45-46 [48]), so that they can be followed by nominal endings (A 4.1.1 [105]). An item which is called saṣ by A 1.1.24-25 (60) also has the class name saṅkhya so that, for example, paṅcan enters into the derive paṅcadhā 'in five ways', with the suffix dhā, which is introduced to items that contain bases of the saṅkhya group. Again, an item to which A 3.1.95 (66) assigns the name kṛtya also is called kṛt (A 3.1.93), and all kṛt elements have the class name pratyaya by 3.1.1 (15). Similarly, tarāp and tamāp are called gha (A 1.1.22 [73]), tad-dhītā (A 4.1.76 [70]) and pratyaya.
Particular sanjñāsūtras like A 1.1.20 have domains that are totally included in the domains of related general rules like A 1.3.1. So far as such classificatory rules are concerned, nevertheless, one does not block the other, so that two or more class names apply simultaneously. That is, Pāṇini recognizes, as he must, that given elements may belong at once to subclasses and larger groups in which the subclasses are included.

There are cases where operations require that a given element which would otherwise be eligible for membership in more than one class belong exclusively to one. Classificatory rules concerning these are given in the section headed by A 1.4.1-2 (109-110).

Consider once more the derivation of acikarat and atatakṣat (see 387). The former has / instead of a in the abhyāsa syllable by A 7.4.93-94. Replacement by / applies to a if the vowel in the stem that follows is laghu. Now, according to A 1.4.10 (37), a short vowel is assigned the class name laghu. The vowels of both -kar- and -takṣ- are short. They differ, however, in that the latter occurs before a consonant cluster, so that, by A 1.4.11, it is called guru. Nevertheless, the a of -takṣ- does not thereby cease to have the class name hrasva (A 1.2.27 [35]), so that, in terms of what usually holds for classificatory rules, this vowel could still be eligible for having the name laghu. If it were simultaneously labelled laghu and guru, one would derive not only atatakṣat but also *atitakṣat. Since A 1.4.10-11 are stated under the heading of A 1.4.1, only one of the names in question may apply at once to any given entity. Assigning the name laghu by A 1.4.10 to a short vowel preceding a cluster is blocked by A 1.4.11, which is an exception to the more general rule A 1.4.10.

In the same vein, let us consider anaiśiṭ, with sic and the augmented ending it (A 3.1.44, 7.3.96 [236, 440]), together with the corresponding middle form aneṣṭa. By A 7.2.1 (412), the vṛddhi vowel aḥ replaces the -i of ni- before sic that is followed by a parasmālpad ending. By A 1.4.99 (64) any
replacement for an L-affix has the class name parasmaipada. The ending ta of aneṣṭa replaces the L-affix luni, just as the ending of anaiṣṭa does, so that it could be eligible for being called not only aṭmanepada by A I.4.100 but also parasmaipada by A I.4.99. If this were allowed, however, one would derive not only aneṣṭa, with guna substitution (A 7.3.84 [127]), but also *anaiṣṭa. Hence, the classificatory rules in question are stated in the section headed by A I.4.1: ta is exclusively called aṭmanepada by A I.4.100, which blocks A I.4.99.

The instrumental forms chandasā and chandobhīs are derived from the stem chandas- 'meter' with the endings ṭā, bhis. To account for chandobhīs, the -s of chandas- is replaced by -R: chandas-bhīs > chandar-bhīs (A 8.2.66 [551]) > chandau-bhīs (A 6.1.114 [525]) > chandobhīs (A 6.1.87 [528]). Replacing -s with -R depends on the classification of chandas- as a pada by A I.4.17 (75). The ending ṭā is one of the elements referred to by svādīṣu of A I.4.17, but it is vocalic, so that, by A I.4.18, chandas- preceding this ending has the class name bha. If it also simultaneously belonged to the pada class, one would allow not only chandasā but also *chandarā. This is precluded, since the classificatory rules in question are in the section which A I.4.1 heads, so that only one class name is allowed, the one assigned by A I.4.18, an exception to A I.4.17.

Sentence (44) (247) contains the accusative parṇaśālām, derived from parṇaśālā -am, with the second-triplet ending am, introduced to signify an object (karman: A 2.3.2 [240]). In both (43) and (44), however, parṇaśālā refers to a locus (ādharā) of an act, and A I.4.45 (214) provides that a kāraka which plays this role is assigned the name adhikarana. Were this classification allowed for deriving (44), one would have here also parṇaśālāyām, as in (43). This is not acceptable. It is also precluded, since the saṃsāsūtras in question are stated under the heading of A I.4.1: A I.4.46 is an exception to A I.4.45, so that it blocks the application of this general rule.

In particular instances, it is necessary to provide for simultaneous membership in two classes although the
classificatory rules in question have also to be stated in the section headed by \textit{A 1.4.1}. For example, to account for sentences like (41)-(42) (246), kārakas that function as means with respect to the act denoted by \textit{div} have to be classed simultaneously as \textit{karaṇa} and karman. Hence, \textit{A 1.4.43} (214) provides that such a kāraka is called both \textit{karaṇa} and (ca) karman. Similarly, in order that compounds, which are uniquely assigned to one of the classes avyayābhāva, tatpuruṣa, bahuvrihi, and dvandva, all have the class name \textit{samāsa}, \textit{A 2.1.3} (26) provides that any item derived by subsequent rules, up to \textit{kāḍāra-} (\textit{prāk kāḍārāt}) in \textit{A 2.2.38}, is assigned this name. And \textit{A 2.1.23} (314) lets a dvigu compound also have the class name \textit{tatpuruṣa}. 
3.2. Internally and externally conditioned operations.

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The verb form ayajay of

(130) अयजयिन्द्रम् (ayajay indram) 'I venerated Indra.'

varies with ayaja* and ayaja (A 8.3.18-19 [558]). Since ayajay derives from ayaj-a-i, in which the ending i? follows the stem ayaja-, one can account for the required form only if the replacement of -a-and -i by -e (A 6.1.87 [528]) takes effect before any other operation that could possibly apply to ayaj-a-i indra-am. That is, operations that apply within each of the padas of (130) take precedence over any operation that applies across a pada boundary: ayaj-a-i > ayaje; indra-am >

indram (A 6.1.107 [533]); ayaje indram > ayajay i- (A 6.1.78 [524]). If, on the other hand, one allowed A 6.1.101 (532) to apply in ayaj-a-i indra-am so that the -i of the first pada and the /- of the following pada would be replaced by i, the result would be an unacceptable utterance *ayajendram (< ayajai-).

Similarly, in the derivation of

(131) वसतवत्र (vasatv atra) 'Let him remain here.'

at the stage where one has vasati atra, the replacement of / by u in the verb ending that derives from lot (A 3.4.86 [398]) takes precedence over semivowel substitution conditioned by the vowel of the following pada (A 6.1.77 [125]): vasati > vasatu; vasatv atra > vasatv atra.

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Consider now the form ksiiyatif 'dwell', from the verb ksii with the suffix sa (A 3.1.77 [157]). (((ksii-)-a-)-ti), is a pada with two stems (anga: A 1.4.13 [46]): ksii-a- is a complex stem relative to the ending tip, and ksii- is a simple stem relative to the vikaraṇa sa. Since the stem ksii-a- has a penultimate short vowel, A 7.3.86 (127) comes into consideration. Were this to apply, moreover, one would derive ksayati instead of ksiiyatif:

ksii-a-ti > ksei-a-ti > ksayati (A 6.1.78 [524]). This externally conditioned operation does not apply, however, since an internally conditioned one takes precedence. The suffix sa is marked with ñ(A 1.2.4 [513]), so that, according to A 1.1.5 (98),
it does not condition guṇa substitution, here by A 7.3.84 (127), in its stem. Instead, the -i of the verb kṣi- is replaced by -iy (A 6.4.77 [452]): kṣi-a-ti > kṣiyati. kṣiy-a- is still a stem in respect of tṇp, but this stem now does not have a short vowel as its penultimate sound, so that guṇa replacement by A 7.3.86 cannot take place.

Consider also the derivation of kurutas 'they two are making, doing': kr-tas > kr-u-tas (A 3.1.79 [157]) > kar-u-tas (A 7.3.84) > kurutas (A 6.4.110 [455]). Guṇa substitution in the stem kr, conditioned by the suffix u, takes effect to give kar-, the vowel of which is then replaced by u. The ending tas is marked with ŋ so that it does not condition substitution on its stem: The -u of kuru- is not replaced by -o before this ending.

The ending tas also cannot condition guṇa replacement, by A 7.3.86, affecting the penultimate vowel of kr-u-. This does not mean, however, that this stem is absolutely forbidden from undergoing this replacement when tas follows, since the internally conditioned operation that takes effect before u has precedence over anything that is determined by an external condition. By the same token, the correct form kṣiyati from kṣi-a-ti is assured not because guṇa substitution is absolutely precluded by virtue of the marking given to sa but because the internally conditioned replacement of -i by -iy takes precedence over the externally conditioned possible guṇa substitution. In brief, each constituent stem in a complex stem is considered with respect to its affix and what this conditions, working outwardly from interior brackets.

The Instrumental singular kartryā derives from (((((kar-) tf-) l-) ā)), in which the vowel ṛ of the suffix trc is high-pitched (cf. 611). Working outwardly from interior brackets, semivowel replacement (A 6.1.77 [125]) applies first to -ṛ-, then to -i-: kar-ṛ-f-i-ā > kar-tr-f-ā > kartryā. In each instance, as shown, the low-pitched vowel following the semivowel replacing a high-pitched vowel gets high pitch, by A 6.1.174 (610). If, on the other hand, one allowed semivowel substitution first for -i-, one would still derive kartryā, but
not with the proper accentuation. At the stage kartra-vā, substituting r for r is possible, by A 1.1.57 (101), but the ending ā now does not follow a semivowel that has replaced a high-pitched vowel, so that it is not eligible for high pitch by A 6.1.174. Of course, the preferred derivation and the bracketing illustrated here simply mirror the derivational history of kartra: the agentive suffix trc first follows the verbal base, then the feminine affix is added, and the ending follows the stem with this affix.

Let us now consider once more the desideratives jīlīsa. The replacement of i in ji-sa by a long vowel blocks guna substitution (see 639). A 6.4.16, which provides for long-vowel substitution in ji-sa, has also to be considered in connection with A 6.1.9 (382), whereby the first syllable of ji-sa would be iterated. The two rules are not related as utsarga and apavāda. In this case desired results are gotten no matter which of these rules applies first. Thus, if A 6.4.16 applies first to give ji-sa, the syllable ji is doubled, giving ji-ji-sa, then the long vowel of the abhyāsa syllable ji is replaced by short i (A 7.4.59 [383]). On the other hand, if doubling applies first, the -i which precedes -sa in ji-ji-sa is still subject to replacement by -i before san, since it is a stem-final vowel: ji-ji-sa (< ji-sa) begins with the element after which the affix was introduced, so that, according to A 1.4.13 (46), it is an anāga with respect to this suffix.

The fact remains that in Pāṇini's derivational system it should be possible always to have one rule alone apply, and that the choice should be dictated by a recognized principle. Moreover, there are instances where only one derivational procedure will account for the desired results. For example, dudiyūsa 'wish to gamble' derives from div-sa. Suppose that doubling applied before the replacement of -v by -ū (A 6.4.19 [430]). This would serve to derive *dudiyūsa : div-sa > div-div-sa > di-div-sa- (A 7.4.60 [383]) > di-diū-sa > di-dyū-sa (A 6.1.77 [125]) > dudiyūsa (A 8.3.59 [563]). Only if the -v of div-in div-sa is first replaced by -ū can one derive the
required form: \( \text{div}-sa \rightarrow \text{diū}-sa \rightarrow \text{dyū}-sa \rightarrow \text{dyū}-\text{dyū}-sa \rightarrow \text{dū}-\text{dyū}-sa \rightarrow \text{du}-\text{dyū}-sa \rightarrow \text{du}-\text{dyū}-sa \rightarrow \text{du}\text{dyū}-sa \). And the bracketing procedure under consideration dictates this order. A 6.1.9 states an operation which applies to items that end in \( \text{san} \) and \( \text{yan} \), so that doubling would be applicable to the first syllable of \( (\text{div}-sa) \), but A 6.4.19 provides for a replacement that applies to a stem before an affix such as \( \text{san} \). Obviously, this is the internally conditioned operation, which therefore takes precedence. Similarly, in \( (\text{diū}-sa) \) thus gotten, semivowel replacement takes precedence over doubling.

A situation which, though not essentially different, is a slight variant of the bracketing shown thus far may be illustrated by considering the third plural forms \( \text{juhvati} \) 'they are offering obligations' and \( \text{āyan} \) 'they went', derived respectively from \( \text{hu}-\text{lat} \) and \( \text{l}-\text{lan} \). In each case the L-affix is replaced by the ending \( \text{jhi} \) (A 3.4.78 [232]), and the vikaraṇa \( \text{šap} \) is introduced between the verb and ending, then dropped (A 3.4.78, 2.4.72, 75 [157-158]). Two operations come into play for \( (\text{hu}-\text{ḥ}-\text{jhi}) \) thus obtained: doubling of the base syllable (A 6.1.10 [382]) and substituting \( \text{ant} \) for \( \text{jhi} \) in the ending (A 7.1.3 [509]). Doubling is determined by the substitution of zero for \( \text{šap} \), which immediately follows the verb, so that this operation is internally conditioned relative to the replacement of \( \text{jhi} \) by \( \text{ant} \), which takes effect on \( \text{jhi} \) after the entire stem: \( (\text{hu}-\text{ḥ}-\text{jhi}) \rightarrow (\text{hu}-\text{ḥ}-\text{jhi}) \). At this stage, another operation is internally conditioned relative to replacing \( \text{jhi} \) with \( \text{ant} \). \( \text{ḥ} \) of the abhyāsa syllable is replaced by \( \text{jhi} \) (A 7.4.62 [383]): \( \text{hu}-\text{hu}-\text{jhi} \rightarrow \text{jhu}-\text{hu} \). \( \text{jhi} \) follows an abhyāsā stem, so that A 7.1.3 no longer comes into play, since it is now blocked by an exception to this rule, A 7.1.4: \( \text{jhu}-\text{hu}-\text{jhi} \rightarrow \text{jhu}-\text{hu}-\text{ati} \rightarrow \text{jhu}-\text{hu}-\text{ati} \) (A 6.4.87 [452]) \( \rightarrow \text{juhvati} \) (A 8.4.54 [577]).

Two operations also come into consideration once the \( \text{ḥ} \) of \( \text{jhi} \) has been dropped (A 3.4.100 [400]) to give \( (\text{ḥ}-\text{jhi}) \); \( \text{jhi} \) is replaced by \( \text{ant} \) (A 7.1.3) or the augment \( \text{āt} \) is added to the stem (A 6.4.72 [238]). Note that A 7.1.3 has no condition for
the operation stated except that \( jh \) be part of an affix, which necessarily occurs with a stem. In effect, the replacement of \( jh \) by \( ant \) applies simply to part of an ending pure and simple; hence, I have shown \( jh \) surrounded by brackets. On the other hand, introducing the augment \( āt \) depends on a stem's being followed by a particular ending. This operation is externally conditioned relative to the replacement of \( jh \) by \( ant \), which therefore takes precedence: \( l-jh > l-ant > y-ant \) (A 6.4.81 [452]) \( > āy-ant \) (see 659) \( > āyan \) (A 8.2.23 [542]).

The bracketing principle described serves to decide which of two rules that could possibly apply is to take effect, and this holds only if the elements involved in the operations are actually bracketed with respect to each other at what we may call the same level of derivation. Thus, (130) contains two padas, \( ((((ayaj-)a-)/)) \) \( (indira-)am \), and their constituents, and \( ((((ksi-)a-)/)) \) \( (kar-)tr-/i-/ā) \) are single padas. In the first example (see 643), it is necessary to decide which operation takes precedence, one that applies to vowels within a pada or one that involves vowels of two padas. In the other instances (see 644-645), one has to decide which of two operations involving different stems within a pada is to apply first. There are other instances, where sūtras that could come under consideration concern padas and items belonging to a different "level" of derivation. For example, let us consider

(132) b. गोमान् प्रियोस्या (gomān priyo'sya) 'Someone who has many cattle is dear to this person.'

a. गोमत-स्प्रिय-स्थदम्-आस् (gomat-s priya-s idam-as)

(132b) is derived from the abstract string (132a) through operations that apply for constituents padas: \( gomat \rightarrow gomatt \rightarrow gomānt \rightarrow gomān \) (see 469); \( priya-s \rightarrow priya-R \) (A 8.2.66 [551]); \( idam-as \rightarrow idaa-as \) (A 7.2.102 [476]) \( \rightarrow ida-as \) (A 6.1.97 [531]) \( \rightarrow ida-sya \) (A 7.1.12 [492]) \( \rightarrow asya \) (A 7.2.113 [477]); \( priya-R asya \rightarrow priya-\_ asya \) (A 6.1.113 [525]) \( \rightarrow priyo asya \) (A 6.1.87 [528]) \( \rightarrow priyosya \) (A 6.1.109 [533]).
addition, the padas *gomat-s* and *priya-s* of (132a) can be combined, optionally, to form a bahuvrihi compound (A 2.2.24 [317]). The item *gomat-s-priya-s* thus gotten is a derived nominal base, so that the endings included in it are subject to deletion (A 2.4.71, see 301).

Now, suppose there were possible competition between internally and externally conditioned operations in a structure (((*gomat*-s) (*priya*-s)). Deleting *su* by A 6.1.68 (404) would then take precedence over deletion of the ending according to A 2.4.71, since it is internally conditioned. This depends merely on *su* following a consonant within the single pada *gomat-s*, but dropping *su* by A 2.4.71 depends on its occurring within a compound, which consists of two padas. If this decision procedure were allowed, however, one would wrongly derive *gomānpriya* instead of *gomatpriya*. The fact is that the bracketing shown does not come into play. Once a compound is formed, one has a new structure, a derived nominal base (*gomat-s-priya-s*), subject to special rules that apply to such derivates. Hence it is that Pāṇini formulates A 7.2.98 (478) to have *tva* and *ma* replace *yuṣm* and *asm* instead of letting A 7.2.97 provide for this replacement in *yuṣmad*-, *asmad*- followed by an ending and then specifying that -d of these pronouns is not replaced by -a in a derivate such as a compound. For once a derived nominal base such as *yuṣmad-as-putra-s* has been formed, only A 2.4.71 applies to delete the endings included in the compound. The zero replacement for the ending that follows *yuṣmad*- is specifically denoted by *luk*, so that, by A 1.1.63 (103), an operation which this ending would condition on its stem does not apply once the ending has been dropped. Similarly, once the ending of *gomat-s* has been deleted in the compound *gomat-s-priya-s*, the stem *gomat-* is not subject to having its penultimate vowel replaced by ā and does not receive the augment *num.*
3.3. Nitya and anitya operations.

649 The ending *atus* in *kr-atus, pā-atus* ultimately derives from *lit* (*A 3.4.82 [397]*) so that it conditions doubling of a verb syllable (*A 6.1.8 [382]*) In addition, this ending is marked with *k* (*A 1.2.5 [514]*) Accordingly, other operations come under consideration: *-r* substitutes for the *-r* of *kr* (*A 6.1.77 [125]*) the *-ā* of *pā* is deleted (*A 6.4.64 [451]*) None of the rules in question is an exception to the others, nor can bracketing possibly decide which operation takes precedence. Now, if doubling applies first, the other rules can still apply. For *kr-kr-atus* still has *r* before a vowel, and the *-ā* of *pā-pā* is still the final sound of the stem relative to *atus*. On the other hand, if semivowel replacement applies to give *kr-atus* and the *-ā* of *pā* is dropped, leaving *p-atus*, doubling is not possible in terms of *A 6.1.1 (24)*, since there is now no element with a single vowel (*ekāc*), no syllable, to be iterated. The nitya operations do indeed take precedence. In order to allow doubling still to take place, then, Pāṇini has to make a special provision, in *A 1.1.59 (101)*.

650 In certain instances, having a nitya operation take precedence over one that is anitya amounts to providing that affixes which condition sound replacements are introduced before such replacement can take effect. For example, at the stage of derivation where *tud* is followed by *tip*, two possible operations could apply: By *A 3.1.77 [157]*, *śa* is introduced after the verb; or, according to *A 7.3.86 (127*) the *-u* of *tud* is replaced by the guṇa vowel *a*. If guṇa substitution took effect, *śa* would still introduced, since a base of the set beginning with *tud* is still followed by a sārvadhatuka affix denoting an agent. As *tu* has the status of *ti* (*A 3.4.86 [398]*) by *A 1.1.56 (100)*, so does *tod* have the status of *tud*. But if *śa* is introduced first, guṇa substitution cannot apply in *tud-a-ti*. *śa* is marked with *n* (*A 1.2.4 [513]*) so that, according to *A 1.1.5 (98)*, it cannot condition this substitution for its stem by *A 7.3.86*; nor is it possible that guṇa replacement by this rule
apply to the complex stem *tud-a*-preceding *tip*, since the penultimate sound of the stem does not meet the conditions required (A I.1.3 [97]). The nitya operation takes precedence, so that the required form *tudati* is derived.

In other instances, the principle under consideration serves to let an augment be added before a sound replacement applies. For example, given *tan-u-va*, with the ending *va* derived from *loṭ* (A 3.4.85 [398]), two operations come under consideration: *va* receives the initial augment āṭ (A 3.4.92); -u- is optionally deleted (A 6.4.107 [455]). Whether -u- is dropped or not, the ending can receive the augment, since this depends only on its deriving from *loṭ*, but once augmenting applies to give -āva, A 6.4.107 cannot apply to delete -u-, which now does not occur immediately before ṽ. Consequently, augmenting takes precedence: *tan-u-va > tan-u-āva > tan-o-āva (A 7.3.84 [127]) > tanavāva (A 6.1.78 [524]).

That a nitya operation takes precedence over one which is anitya of course does not mean that the introduction of affixes and augments necessarily precedes any and all sound replacements. For example, in the derivation of *teṣām* 'of those' from *tad-ām*, sound replacement precedes the introduction of the initial augment suṭ: *tad-ām > taa-ām (A 7.2.102 [475]) > ta-ām (A 6.1.97 [531]) > ta-sām (A 7.1.52 [498]) > te-sām (A 7.3.103 [482]) > teṣām (A 8.3.59 [563]).
3.4. Suspension of rules and their effects.

Letting a rule (śāstra) \( R_1 \) be suspended (asiddha) with respect to another rule \( R_2 \) can have two effects: (a) Although \( R_1 \) may have to apply before \( R_2 \), the latter does not apply to the results thus obtained, even if the conditions be met for it to take effect. (b) A general principle may dictate that \( R_1 \) take precedence over \( R_2 \), but the rule-suspension results in letting \( R_2 \) apply first. As far as type (a) is concerned, suspending the result (kārya 'what is to be done, brought about') of applying \( R_1 \) has the same effect as suspending a rule. On the other hand, (b) does not hold under this type of suspension. Instead, \( R_1 \) does indeed take precedence, but the effect of this is then treated as though it had not come about (asiddhavat), although it is allowed to stand.

A 6.1.86 (110) provides that a rule whereby a single sound replaces two sounds is suspended with respect to a rule which substitutes ʂ for s and one which introduces the augment tuk. For example, ko in

\((133)\) कोसिन्ध्यत् (kośiṇḍat) 'Who did the irrigating?'
derives from ka-s: ka-s > ka-R (A 8.2.66 [551]); ka-R asiṇcat > ka-u asiṇcat (A 6.1.113 [525]) > ko asiṇcat (A 6.1.87 [528]) > kosīṇcat (A 6.1.109 [533]). By A 6.1.85 (110), ो which replaces -o and a- is treated as both the final of the first pada and the initial of the second pada. Consequently, -s- of kosīṇcat is subject to replacement by -ʂ-(A 8.3.59 [563]). Since A 6.1.109 is suspended with respect to A 8.3.59, however, the latter cannot apply to -ʂ- which follows the vowel gotten by applying the former, so that (133) is derived.

The compound (adhi-tvā) (A 2.2.18 [315]) is a derived nominal base subject to operations that apply specifically in compounds, superseding anything dictated by ordinary bracketing (see 648). In particular, the suffix ktvā of the compound is
replaced by *iyap* (A 7.1.37 [491]): *adhī-īya* Now, replacing the contiguous vowels *-i/-i-* with a single vowel *-i-* (A 6.1.101 [532]) is a nīya operation relative to adding the augment *tuk* to the short vowel that precedes *iyap* (A 6.1.71 [394]): Whether or not the augment is introduced, one still has the vowels *-i/-i-* subject to replacement, but if the long-vowel substitution takes effect first, one no longer has a short vowel subject to augmenting. By virtue of rule suspension as provided for in A 6.1.86, the augment *tuk* is added prior to the replacement of *-i/-i-* by the single long vowel *-i*: *adhi-īya > adhī-īya > adhītya* 'after studying, learning'.

By A 8.2.1 (109), a rule of the tripādi is suspended with respect to any preceding rule, except as otherwise provided for (see 538). The following will serve to illustrate this as concerns sūtras of the tripādi in relation to rules of the preceding seven and one-quarter chapters and sūtras of the tripādi in relation to preceding rules of the same section.

The *-ai of asmai* 'to this one' is replaced by *-āy* before a vowel (A 6.1.78 [524]). If pada-final *-y* is then deleted (A 8.3.19 [558]), the *-ā* of *asma* and the initial vowels of padas such *ud* and *ā* in *ud dhara* (2sg.imper.) 'take up', *ā hari* 'bring' are not subject to replacements that generally apply to contiguous vowels: One has *asma ud ... and asma ā ..., not *asmad ... and *asma* ... (A 6.1.87, 101 [528, 532]). To account for this, A 8.3.19 is suspended with respect to preceding rules such as A 6.1.87, 101, so that it cannot serve to provide elements subject to the operations stated in these rules.

Since A 8.4.68 (584) is suspended with respect to every other sūtra of the Aṣṭādhyāyī, it serves only to reinstate a close vowel *a*.

The *-n*- of *-antī*, as in *kuru-antī*, is replaced by *-m*- according to A 8.3.24 (559). A 8.4.1-2 (570) are suspended in respect of A 8.3.24, so that only the latter rule applies, and *-n*- is not replaced by *-n*- By A 8.4.58 (580), *-n*- then replaces *-m*- before *-t*; and, in accordance with A 8.2.1, this *-n*- is not subject to retroflexion by A 8.4.2.
The dative singular form *amusmai* 'that one' is derived as follows: adas-*e* > ada-*e* (A 7.2.102 [476]) > ada-*e* (A 6.1.97 [531]) > ada-smai (A 7.1.14 [492]) > amu-smai (A 8.2.80 [553]) > amusmai (A 8.3.59 [563]). At the stage adaa-*e*, two operations come under consideration: substituting the second vowel for the two vowels -a-a- and replacing the ending *ne* with *smai*. The former takes precedence, since it is internally conditioned. A 8.2.80 is suspended relative to both A 6.1.97 and A 7.1.14, so that it cannot be considered for possible application at this stage of derivation. If A 8.2.80 were allowed to interact with A 7.1.14, a wrong form would be allowed. Whether or not *smai* replaces *ne* after adaa-*e*, A 8.2.80 could take effect, since the only condition for this is that the pronoun not end with *s*; but A 7.1.14 could not apply to amu-*e*. The nitya operation would take precedence over the anitya operation, with undesirable results.

In the derivation of the participle *pakva* from *pac-ta*, first A 8.2.30 (544) applies to replace -c with -k; then A 8.2.52 (549) applies to let *v* replace the *i* of the suffix.

The forms *rājabhyām* (instr.-dat.-abl. du.), *rājabhis* (instr. pl.), *rājabhyas* (dat.-abl. pl.), *rājasu* (loc. pl.) are derived from a base *rājan*. This is classed as a pada (A 1.4.17 [75]) when the endings in question follow, in order to account for the deletion of -n (A 8.2.7 [539]). Similarly, *rājan*- followed by the affix *kyac* (A 3.1.8 [283]) is classed as a pada (A 1.4.15), so that the -n of the base is deleted: *rājan-*ya > *rāja-*ya > *rājiya* (A 7.4.33 [485]) 'wish a king for oneself' (3sg. pres. *rājiyati*). Now, since the -a of *rāja-* is not replaced by -ā before *bhāyām* or by -e before *bhāyas* and sup, the sūtra that serves to delete -n is suspended with respect to the rules that provide for these replacements (A 7.3.102-103 [482]), as also with respect to the rule whereby *ais* replaces *bhīs* after a stem in -a (A 7.1.9 [492]). On the other hand, the -a of *rāja-* is subject to replacement by -i before *kyac*, so that A 8.2.7 cannot be suspended with respect to every rule that precedes. A 8.2.2 (538) therefore specifies the rules relative to which A
8.2.7 is suspended. By virtue of its suspension in respect of A 7.1.9 and A 7.3.102-103, A 8.2.7 does not supply elements subject to the operations provided for in these sūtras. Similarly, once A 8.2.7 has applied to delete the -n of brahman- in brahmhan-bhyām, although the stem is formed with a suffix kvip (A 3.2.87 [295]), the augment tuk is not added to -a-by A 6.1.71 (394): brahmahabhyām.

Consider now pañcabinś, pañca, and recall that ancillary rules take their place with rules they serve to interpret (see 629). Deleting -n in pañcan-bhis by A 8.2.7 is a nitya operation relative to the accentuation provided for in A 6.1.180 (597). If the latter were to apply first, the deletion of -n would still apply, but if -n is dropped first, A 6.1.180 cannot apply. The rule concerns padas with items called šas. The saṁjñāsūtra A 1.1.24 (60) is brought in to interpret this class name, but pañca-bhis does not contain a term that ends with -n. Similarly, deleting -n by A 8.2.7 is nitya with respect to disallowing feminine affixes according to A 4.1.10 (271). Letting A 8.2.7 be suspended relative to these sūtras lets them apply first, so that the penultimate vowel of pañcan-bhis is given high pitch and feminine suffixes are disallowed after pañcan. Moreover, once the -n of pañcan- has been dropped, since A 8.2.7 is suspended relative to A 4.1.4, the feminine affix tāpay is not added to pañca in the feminine.

As shown in 655, the derivation of forms such as amuṣmaį requires that A 8.2.80 be suspended with respect to earlier rules. This suspension can nevertheless not be absolute. Consider how the instrumental singular amuṇā is derived: adas-ā > adaa-ā > ada-ā > amu-ā > amuṇā (A 7.3.120 [497]). If A 8.2.80 were suspended relative to A 7.3.120, one could not have the ending replaced by nā. Hence, A 8.2.3 (538) disallows the suspension that would otherwise hold by A 8.2.1.

If nothing else were taken into consideration, one might consider that A 8.2.32 is suspended with respect to A 8.2.31 (544), since the rules are governed by A 8.2.1. Of course, this would mean that A 8.2.32 would be vacuous: By virtue of rule
suspension, A 8.2.31 would apply everywhere that A 8.2.32 could possibly apply. This is because A 8.2.32 is an exception to the preceding sūtra. Obviously, then, it should take precedence over the general rule. In effect, rule-suspension does not apply in such instances. Instead, blocks of related general rules with their exceptions are suspended with respect to preceding rules.

The facts to be accounted for through rule-suspension according to A 6.1.86, 8.2.1-3 are such that Pāṇini can specify the sūtras with respect to which others are suspended (see 654-657). There are other cases, where this is not easily done. Consider again some examples of rules headed by A 6.4.22 (111).

A 6.4.36 (447) lets ja-replace han-before hi. This should account for jahi. However, the stem ja-ends with -a, so that one has also to keep A 6.4.105 (455) from applying to delete the ending hi. This could be done by letting A 6.4.36 be suspended with respect to A 6.4.105.

A 6.4.37 (448) serves to delete the -m of gam-before an affix such as kta: gam-ta > gata. A 6.4.48 (450) should not apply to delete the -a of ga-in gata-. Again, one could let one rule, A 6.4.37, be suspended with respect to another, A 6.4.48.

Given sās-hi, two sūtras come into play: A 6.4.35 (447), whereby sā replaces sās before hi, and A 6.4.101 (455), which serves to replace hi with dhi after certain consonants, including s. Clearly, each operation eliminates a conditioning context needed for the other to take effect: if sā replaces sās, giving sā-hi, the ending no longer follows a consonant, and if dhi substitutes for hi in sās-hi, the verb is no longer followed by hi. Once A 1.1.56 (100) is taken into consideration, however, the replacement of sās by sā is a nitya operation relative to substituting dhi for hi. The substitute dhi is given the status of its substituend hi, so that sās can be replaced by sa even if dhi replaces hi first. But once sā replaces sās, the substitution of dhi for hi cannot take effect, since this operation depends on a sound, so that A 1.1.56 does not give sā the status of sās with respect to it. Consequently, replacing
śas with śā takes precedence. To account for śādhī, then, one could let A 6.4.35 be suspended relative to A 6.4.101, so that the latter applies first.

The imperative edhi also contains dhi, which should replace hi according to A 6.4.101. Two other sūtras are involved in deriving edhi, A 6.4.119 and A 6.4.111 (456-457). The relation between A 6.4.101 and A 6.4.119 is crucial. Again, one operation is nītya, the other anītya: if e replaces the -s of as- before hi, then the ending is no longer eligible for being replaced by dhi, but even if dhi first substitutes for hi, the -s of as- is still eligible for replacement by e. In order to ensure the proper results, then, one could once more have rule suspension: A 6.4.119 is suspended relative to A 6.4.101.

Given /-ant (see 647), two operations come under consideration: semivowel replacement by A 6.4.81 or augmenting with ṛṭ by A 6.4.72. The former is a nītya operation, hence would take precedence. To ensure that the augment is added to the stem, then, one could have A 6.4.81 be suspended with respect to A 6.4.72, which would then apply first.

A similar situation holds for A 6.4.111 and A 6.4.72, which apply in deriving āsan‘they were’. To assure that the augment ṛṭ is added, A 6.4.111 could be suspended relative to A 6.4.72, which would then apply first.

There are obvious differences between the examples of rule-suspension discussed earlier and the examples I have taken up in 659. In particular, it is not possible to take care of all the instances dealt with in 659 by rules arranged in sections under a single heading pūrvatrāśiddham or uttaratrāśiddham. For, as shown, some rules would have to be suspended with respect to following ones (uttaratra), others with respect to preceding sūtras. Nor is it reasonable to insist that all the rules in question be assigned to one of two sections, under the possible headings noted. For this would upset a more important organization, according to operands and the contexts for operations. It is not surprising, then, that Pāṇini indeed does not state these rules in a section under a

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heading stating that anything is absolutely suspended (asiddha). A 6.4.22 provides that something is treated as though it had not come about (asiddhatvam). That is, operations are allowed to take place as dictated by general principles, then a result obtained is treated as though it had not taken effect. For example, sās is indeed replaced by sā before hi, but sā-in sā-hi is now treated as though this substitution had not taken place, so that hi can be replaced by dhi. As can be seen, A 6.4.22 is thus comparable to an extension rule like A 1.1.56 (100).

**Remark.**

661 I differ from Pāñinīyas in my interpretation of A 6.4.22. Pāñinīyas maintain that this too should be considered to provide for rule suspension (śastrāsiddhatvam), not the suspension of what results from applying rules (kāryā-siddhatvam). Full arguments for my interpretation are given in part II of my work, where I also discuss the reasons Pāñinīyas give for their interpretation.
3.5. Application of rules in the order they are stated.

There are two groups of rules which necessarily apply in the order they are stated: sūtras of the tripādi and some of those in the section headed by A 1.4.1, where A 1.4.2 applies (109-110). Obviously, if a rule of the tripādi is said to be suspended with respect to any preceding rule, any sūtra of this section applies before any subsequent rule. The rules in question are those that provide for final phonological adjustments. Rules of the section headed by A 1.4.1 are extrinsically ordered for different reasons. There are cases where two sūtras have to apply, thus coming into conflict. The conflict is resolved in favor of the rule stated later, according to A 1.4.2.

The situation spoken of in

(134) देवदत्तो वृक्षसिंहना छिन्नति। (devadatto ṛṛkṣam asinā chinatti) 'Devadatta is cutting a tree with an axe.'

involves three participants in the act of cutting, Devadatta, a tree (ṛṛkṣa), and an axe (asi 'sword, axe'). These are respectively classed as kartṛ, karman, and karana by A 1.4.54, 49, 42 (214). The L-affix lat, replaced by tip, is introduced to signify a kartṛ (A 3.4.69, 77-78 [232]); nominal endings of the second and third triplets are introduced to signify a karman and a karana (A 2.3.2, 18 [240]). One must also account for

(135) आसि: साधु छिन्नति। (asī sādhu chinatti) 'The axe cuts well.'

in which an axe is spoken of as kartṛ. In accordance with usage like (135), one may maintain that people do indeed speak of an axe as an independent (svatantrāḥ) participant in cutting, eligible for classification as kartṛ. The fact remains, nevertheless, that an axe must be wielded as an instrument of cutting if it is to play any role in this activity. That is, for an axe to be classed as kartṛ, it must be eligible simultaneously to be classed as karaṇa. The classificatory rules A 1.4.42 and

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A 1.4.54 come into conflict in this situation. Nor is it permissible to have the participant in question be classed both as karana and karman. By A 1.4.1 only one class name may apply. In accordance with A 1.4.2, the class name provided by the later rule A 1.4.54 alone applies. For such reasons, the sutras that provide for assigning particular class names to kārakas have to be stated in a particular order.

In the derivation of sentences such as

(136) a. त्वान गच्छसि (tvañ gacchasi) 'You are going.'

b. अहान गच्छमि (ahañ gacchāmi) 'I am going.'

only A 1.4.105 or A 1.4.107 (234) can apply, to select a verb ending of the madhyama or the uttama set, since each sentence meets the conditions for one of these rules alone. On the other hand, the conditions for both these rules are met in

(137) त्वानं चाहनं गच्छावः (tvañ cahañ ca gacchāvah)

'You and I are going.'

Only an ending of the uttama set is allowed, however: gacchāvah cannot alternate with gacchathāh (2du.) in (137). This is taken care of by stating A 1.4.105, 107 in the section where A 1.4.2 is in force: In such cases, where two conflicting rules come into play, that one applies which is stated later.

Remark.

Pāṇinīyas treat A 1.4.2 as a general metarule that is applicable anywhere in the Āṣṭādhyāyī. They also accept, however, that in some cases of conflict an operation provided by an earlier rule takes precedence over one provided for in a later rule. I consider these issues more fully in parts II and III.1 of my work.
4. THE BACKGROUND OF PĀṇINĪ'S SYSTEM

4.0. Introduction.

Pāṇini's derivational system presupposes the analysis of utterances into components: padas, stems, bases, affixes, and augments. Strings of the types (11)-(12) (212) must contain individual elements such that relations which hold among components and their meanings are overtly shown, so that Pāṇini has to posit basic forms of bases and affixes. These are then subject to various operations in the course of deriving final utterances. Pāṇini merely operates with such basic units. We do not have evidence in his own words concerning how he proceeded in abstracting units from larger items or the precise criteria for deciding that a particular variant should be treated as basic. Nevertheless, Pāṇinīyas from Kātyāyana on describe certain procedures which are perfectly compatible with Pāṇini's statements, so that we may accept that Pāṇini too operated with such generally accepted procedures. Indeed, given that Pāṇini definitely knows Śākalya’s analyzed text (padapātha) for the Rgveda (cf. A 1.1.16 [76]), we may reasonably conclude that he inherited from his predecessors not only such procedures but also some analyses, which he adapted to his own grammar (see 709). In this section, I shall consider the general procedures used in analysis and the criteria for positing basic forms in Pāṇini’s system. The arguments I present are compatible with this system, although, for reasons given already, I cannot claim to be summarizing any precise chain of reasoning Pāṇini followed.

4.1. Analysis leading to the extraction of elements.

4.1.1. Analysis: reasoning from anvaya and vyatireka.

Consider the sentences
(138) गामानया (gām ā naya) 'Bring the cow.'
(139) अष्वानया (aśvam ā naya) 'Bring the horse.'
(140) गाम्बधना (gām badhāna) 'Tie up the cow.'
(141) अष्वबधना (aśvam badhāna) 'Tie up the horse.'

(138) and (139) have the sequence ā naya and the meaning 'bring' in common; (140) and (141) share the element badhāna and the meaning 'tie up'; the item gām and the meaning 'cow' are common to (138), (140); (139) and (141) have in common the term aśvam and the meaning 'horse'. This is a group of sentences in which certain elements can be be considered to remain constant while others are changed. One can say that, starting with (138), one gets (139) by removing gām and inserting aśvam in its place, (140) by substituting badhāna for ā naya. Similarly, (141) is gotten by removing gām of (140) and inserting aśvam in its place. In brief, by keeping a certain context constant while letting different elements occur in this context, one can attribute meaning differences in utterances to these distinct elements. Using this procedure, partial sentential meanings are attributed to given elements abstracted from sentences.

In general, on condition that

(1) B occurs consequent on the occurrence of A.

and

(2) If A is absent, B does not occur.

both obtain, one concludes that A is the cause of B. In particular, if a meaning (arthā) A is understood when a given linguistic element (sabdā) or one of a set of elements Š is used and not understood when such a linguistic item is not used, then one can conclude that Š is associated with the meaning A as the cause of its being understood through verbal communication. This is the reasoning by concurrent presence (anvaya 'continued occurrence') and absence (vyatireka ), whereby utterance such as (138)–(141) can be analyzed into constituents to which are attributed given meanings.
The same procedure allows analyzing words of utterances into components. For example, consider those parts of the following sentences that are shown in Italicized Devanāgarī and bold face italic:

(142) आस्तेने भूमौ (āste bhūmau) 'He (she) is seated on the ground'.

(143) आसाते भूमौ (āsāte bhūmau) 'They two are seated on the ground'.

(144) आसाते भूमौ (āsate bhūmau) 'They all are seated on the ground'.

(145) भूमौ शेते (bhūmau śete) 'He (she) is lying on the ground'.

(146) भिषजम् अपस्यत् (bhiṣajam apasyat) '... saw a doctor'.

(147) अपस्या भिषजो (apasyad bhiṣajau) '... saw two doctors'.

(148) अपस्या भिषजः (apasyad bhiṣajaḥ) '... saw several doctors'.

(149) र्तविजम् अपस्यत् (ṛtvijam apasyat) '... saw a priest'.

(150) अपस्या र्तविजो (apasyad ṛtvijau) '... saw two priests'.

(151) अपस्या र्तविजः (apasyad ṛtvijah) '... saw several priests'.

In the manner described, (142)-(145) are analyzed as containing the item bhūmau meaning 'on the ground'. In addition, (142)-(144) share the element ās in āste, āsāte, āsate; contrast śete in (145), where te occurs with śe. From such sets, one can posit an item ās meaning 'be seated' and endings te, āte, āte, associated respectively with singularity, duality, and plurality. Similarly, (146)-(151) allow one to
abstract bhīṣaj 'doctor' and rtvīj 'priest', as well as endings am, au, ah, also connected respectively with singularity, duality, and plurality. Moreover, from sentences such as

(152) क्रियिज्ञ यज्ञोस्नुष्ठीयते (rtvījā yajñōnuṣṭhyāte) 'A sacrificial rite is being carried out by a priest.'

(153) क्रियिज्ञ यज्ञोस्नुष्ठीयते (rtvīghyāṁ yajñōnuṣṭhyāte) 'A sacrificial rite is being carried out by two priests.'

(154) यज्ञोस्नुष्ठीयत ऋचिमहिः (yajñōnuṣṭhyāta rtvīghih) 'A sacrificial rite is being carried out by several priests.'

other elements can be extracted that are also associated with these numbers: ā, bhyām, bhīh. In addition, from (149)-(154) it is possible to conclude that items of the group am au ah are linked in common with the sense of objectivity, those of the set ā bhyām bhīh with agency. Similarly, given

(155) a. āste b. āsse 'you are seated' c. āse 'I am seated'

one can recognize a set of endings te se e, also connected with singularity and agency.

By inserting and removing certain elements in given contexts and reasoning from anvaya and vyatireka, one can thus analyze utterances into constituents, including bases and affixes, to which are assigned partial meanings of utterances.

Remark.

669 For fairly detailed discussions and extensive textual references concerning the procedure of removing (udvāpa, uddhāra, apoddhāra) and inserting (āvāpa, prakṣepa) items in contexts and reasoning by anvaya and vyatireka as shown above, not only in grammar but also in other spheres of Indian thinking, see 'Anvaya and vyatireka in Indian grammar', Adyar Library Bulletin 31-32 (1967-1968 [= V. Raghavan Felicitation Volume]): 313-352, 'On reasoning from anvaya and vyatireka in
4.1.2. Positing zero replacements.

The analytic procedure outlined in Section 4.1.1 requires that two conditions be met in order to attribute a meaning A to an element or set of elements S:

(I) If S occurs, meaning A is then understood.

(II) If S is absent, meaning A is not understood.

There is deviation (vyabhicāra) if either of the following holds:

(I') If S occurs, meaning A is not understood.

(II') In the absence of S, meaning A is understood.

Any such deviation precludes attributing a given meaning to a particular linguistic element through reasoning from anvaya and vyatireka. Consider now the sentences

(156) पयस् तत्र तिष्ठति (payas tatra tiṣṭhati) 'The water is standing there.'

(157) पयस् ताडयति (payas tādayati) '... is striking the water.'

(158) पयसा पुष्पाणि सिन्चति (payasa puṣpāṇi sīncati) '... is sprinkling the flowers with water.'

It is possible to abstract a base payas, followed in (158) by the ending ā. Now, in (149) (668), rtvij occurs with am, an ending to which one can attribute the meanings objectivity or object and singularity, reasoning from anvaya and vyatireka. rtvijam in (149) refers to a priest as an object of seeing. In (157), payas refers to water as an object of striking. Nevertheless,
once the base payas has been abstracted, there remains no additional element here to which an additional meaning could be attributed. The base alone appears in (156) and (157). Similarly, although

(159) रामो रावणम हन्ति (rāmo rāvaṇam hanti) 'Rāma is killing Rāvana.'

can be analyzed as containing han-ti made up of the base han 'kill' and an ending ti, to which it is possible to attribute the meanings agency and singularity, there are other instances, where no such affix occurs. For example,

(160) रामो रावणम आहना (rāmo rāvaṇam ahan) 'Rāma killed Rāvana.'

contains ahan, which is comparable to apaśyat, apaśyad of (146)-(151) in that both forms denote actions referred to the past and performed by one agent, just as apaśyam 'I saw' and ahanam 'I killed' are comparable. But ahan lacks an overt ending.

There are thus two general sorts of elements. Some, such as bhiṣajam, bhiṣajau, bhiṣajah, āste, apaśyat, apaśyad, and hanti, admit of straightforward analysis, so that, by reasoning from anvaya and vyatireka, it is possible to abstract affixes to which are attributed certain meanings. Other items, such as payas, ahan, lack overt affixes, although they are otherwise comparable to the former type. It is also the case that payas, payāḥ, payo in (156)-(157) (670) and

(161) तत्र पयायि (tatra payāy) (tatra tiśthanti payāḥ)

(162) ताहयति पयायि (tāhayati payaḥ)

(163) पयोद्र तिष्ठति (payoṭra tiśthati) 'The water is standing here.'

are phonologically comparable to bhiṣajas, bhiṣajah, bhiṣajo in (148) (668) and

(164) भिषजस्त्र तत्र तिष्ठति (bhiṣajas tatra tiśthanti) 'The priests are remaining there.'
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(165) भिषजोक्ता तिष्ठन्ति (bhiṣajo’tra tiṣṭhanti) 'The priests are remaining here.'
That is, payas, payah, payo exhibit the same kind of phonological variation in different contexts as is typical of complex elements like bhiṣajas, bhiṣajah, bhiṣajo. If, then, the variants of these complex items are accounted for by classing the items as padas (A 1.4.14 [49]) and having particular operations apply to pada-final sounds (A 8.2.66, 8.3.15, 34 6.1.113 [551, 557, 561, 525]), it makes sense to have payas, payah, payo also assigned to the pada class.

To be sure, one need not insist that every member of the pada class must terminate in an ending. After all, if payobhiṣ is derived from payas-bhiṣ, one can say that payas followed by the endings bhiṣ is a pada (A 1.4.17 [75]). Similarly, it would be possible to say that a form like payas belongs to the pada class without requiring endings. The same would be said of dadhi 'yogurt, curds' in

(166) दधि तिष्ठति तत्र (dadhi tiṣṭhati tatra) 'The curds are standing there.'

(167) दधि पश्य (dadhi pasya) 'Look at the curds.'

But taking this step has serious consequences concerning the analytic procedure in question. For this results in instances where there is deviation (vyabhicāra: 570), so that the abstraction of bases and affixes associated with certain meanings, through reasoning from anvaya and vyatireka, can no longer be maintained. There is a way of maintaining the integrity of the analysis and also accounting for the fact that payas and so on behave like padas. One can postulate in the grammar that payas, payah and so on are padas, but that endings which elsewhere are overt simply are not explicitly used in them. That is, padas such as payas, dadhi, and madhu 'honey' have zero endings.

Note carefully, however, that the analytic procedure in question involves reasoning from anvaya and vyatireka.
Consequently, one would now have to posit different zeroes for *payah* in (161) and (162) (671), comparable respectively to *devadattaḥ* and *devadattam* in

(168) तत्र तिष्ठति देवदत्तः। (*tatra tiṣṭhati devadattaḥ*)
'Devadatta is remaining there.'

(169) देवदत्तम् अपावतः। (*devadattam apaśyat*) '... saw Devadatta.'

Now, were one to adopt a system in which there are morpheme-classes of allomorphs, including zero morphs, one could simply say that *payah* of (161) contains a zero morph of the morpheme-class that includes s (nom. sg.) and that *payah* of (162) contains a zero morph of the morpheme-class that includes am (acc. sg.), so that there are indeed separate zero morphs involved. In a derivational system like Pāṇini’s, in which initial strings must contain bases with specific affixes, another procedure is preferable. Overt affixes are allowed to occur in initial strings, and they are subsequently replaced by zero: *payas-s > payas, payas-am > payas* (A 7.1.23 [495]).

The abstraction of bases and affixes and the assignment of particular meanings to them by reasoning from anvaya and vyatireka thus entails positing zero replacements for certain elements in Pāṇini’s derivational system.

Remarks.

573. *agnicit* and *somasut* are derived with the kṛt suffix *kvip*, which is deleted (A 3.2.90–91, 2.2.19, 6.1.67, 71 [295, 315, 409, 394]). Pāṇjali says the following concerning these: A meaning that pertains to a given linguistic unit is not understood without the use of the element that signifies that meaning. Yet we see that in the case of examples such as *agnicit, somasut* a meaning is understood without the use of an element to which this pertains. Hence, we consider that this is brought about by zero (deletion) [Bhāṣya 1.241.1–4: न ब्रह्मन्तरेण
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तद्धायिनः शब्दस्य प्रयोगं तस्यार्थस्य गतिर्भवति। पश्यामश्च
पुनर्नतरेणापि तद्धायिनः। शब्दस्य प्रयोगं तस्यार्थस्य
गतिर्भवतीति अभिनिधितं सोमसुद् इति यथा। ते मन्यामहे
लोपकृतमेतदेशेनांतरेणापि तद्धायिनः। शब्दस्य प्रयोगं तस्यार्थस्य
गतिर्भवतीति।] Patañjali speaks here of the use (prayogam)
of a linguistic unit (śabdasya) which signifies a given meaning
(taudvācinah). In the particular instances used as illustrations,
the meaning in question is agent (kartr), attributed to the kṛt
affix kviḥ (A 3.4.67 [248]). Patañjali also speaks of it being
brought about by zero, deletion (lopakṛtam etat) that a
meaning is understood even without the use of the element
supposed to signify that meaning. Since lopa denotes the
absence of an element (A 1.1.60 [79]), commentators clarify
what Patañjali means. Kaiyata notes that the following is
meant: That a meaning is understood in the absence of an
element supposed to signify it is accounted for (saṅgrhitam
'included') by means of zero (lopadvāreṇa). [Pr. II.141:
लोपकृतमिति लोपदारेणैत्ति सह्रुष्टिमित्रत्वः।] That is, as
Nāgeśa points out, it is known from experience in ordinary
usage that the element which remains after another is
replaced by zero in a grammatical derivation conveys the
meaning attributed to the deleted item. [Ud. II.141: एव
शिष्यप्रमाणस्य लुप्पमानार्थोधकवृत्वमनुभवसिद्धमिति भावः।]

2. That the mode of reasoning according to which the
concurrent presence and absence of linguistic elements such as
affixes and the comprehension of meanings said to be
associated with these items can thus be maintained is
nevertheless not a function of real usage but of what a
grammarian posits in order to describe such usage, and
Pāṇinīyas recognize this. The contrast between actual usage
and what a grammarian posits to describe it is brought out
neatly in the Paramalaghumāṇīṣā during a discussion of what

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meanings pertain to nominal bases (prātipadika: A 1.2.45-46 [48]). Five meanings come into play: a generic property (jāti) that characterizes anything signified by a given base and thereby delimits a class of individuals; an individual (vyakti) qualified by such a property; a gender (liṅga, see 273); a number (saṅkhya); and an individual as a participant in an action (kāraka, see 214). The view is proposed that a nominal base has a quintuplet (pañcakam) of meanings, all five of the above, including a kāraka (kārakam api). This meets with an objection: By anvaya and vyatireka, the role that something plays with respect to an action is signified (vācyam) only by an affix (pratyayasyaiva). The objection is refuted by pointing out that the understanding of something's functioning as kārak and so on is known even in cases where there is no overt affix, as in sentences like (166)-(167) (572), where dādhi alone refers to curds as agents of being in a place and objects of seeing. Nor should one argue that this is understood because a hearer recalls an affix that has been deleted (iupta: pratyayasaṃaranāt), since even someone who is not a grammarian and thus does not know of such zeroing (lopaṃ ajānataḥ) understands the meanings in question from the nominal alone (nāmata eva tatpratīteḥ). [PLM 392: कारकमपि प्रातिपदिकार्थ इति पञ्चकमप्रातिपदिकार्थः। नन्वन्य- 

3. Pāṇiniyaś emphasize that the very analysis which entails positing zero replacements has its proper place only as a means for describing usage in a grammar. Thus, for example, VP 1.24 (अपोद्वारपदार्थं ये ये चार्थं: रिथितालक्षणं:। अन्वार्थेयायात्रं ये रूपं ये चापि प्रतिपादकाः॥) distinguishes
between meanings (arthāḥ) that have a fixed status (sthitalakṣaṇāḥ) and those that are gotten through abstraction (apoddhārapadārthāḥ). Two types of speech units (sabdāḥ) are associated with these. Units that are to be explained (anvākhyeyāḥ) are linked with the first type of meanings, and units that serve, in a grammar, to convey (pratipādakāḥ) the others are linked with the abstracted meanings. The Vṛtti on this verse says the following about meanings attributed to components extracted from wholes used in real communication. A meaning gotten through abstraction (apoddhārapadārthāḥ) is totally blended (ātyantasamārsṭaḥ) in a single total meaning from which it is abstracted and given a separate status in a form that is only inferable and posited (anumeyena pari-kalpitena rūpena). For that partial meaning is beyond actual usage (vyavanārātītam), in which meanings of whole elements are understood. It is adopted as the significand of a given element extracted from a larger entity that is actually indivisible so far as usage is concerned, and this is done through reasoning from anyyaya and vyatireka, but only in order to make possible statements of grammatical operations (kāryārtham). [Vṛtti 65.1-6: ... अपोद्धारपदार्थोऽनामात्यन्तसंसृष्टः संसर्गादनुमेयेनपरिकल्पितेनरूपेणप्रकृतिविवेकः सन्नपोद्ध्रयाति प्रविभिक्तस्य हि तस्य वस्तुनो व्यवहारार्थतत्तरुपमः ... तथाव चाप्रविभागे शब्दात्मनि कार्यर्थम-न्वयव्यतिरिक्ताय रूपस्मनुगममकल्पनया समुदायादपोद्धृतानां शब्दानामभिधेयत्वेनानाश्रीयते]

4. Of course, if a grammarian is to describe Sanskrit or any language of a comparable structure in a generalized manner, he must abstract words as components of utterances and accept an analysis of words into constituent bases, affixes, and augments. This does not mean, however, the grammarian must also accept that all these components as he posits them are to be granted real status in actual
communication. As Bhartṛhari puts it, the division of elements with which grammar operates is a postulated (kalpitah) distinction among bases, affixes, and so on, intended to convey something else (parapratipādanāya), namely whole elements used in communication. [Vṛtti on VP 1.171 (222.1): विभागो नाम परप्रतिपादनाय कल्पित: प्रकृतिप्रत्ययादिभेदः] In a similar vein, Nāgęśa notes the following. It is impossible to grasp a relation (sarketa 'convention, conventional relation') between every possible sentence and its meaning, and one cannot explain each and every sentence independently by any brief means. Hence, teachers of old, by the artifice (kalpanayā) of treating sentences as though they were really composed of divisible elements, separated out words. Further, by positing bases and affixes as distinct entities in a word and reasoning from anvaya and vyatireka --- which are themselves only assumed in view of items such as dadhi in utterances like (166)-(167) --- they posited different meaning segments associated with these. But this division of meanings has as its proper domain only a grammar. [LM 5-6: तत्र प्रतिवाक्ये संहीतयहा-सम्भवाततदन्वाख्यानस्य लघुपापेनासक्यत्वाच्च कल्पनया पदानि प्रतिभजय पदे प्रकृतिप्रत्ययाभागकल्पनेन कल्पिताभ्यामन्वयन्तिरेकाभ्या ततदर्थविभागाण्यां शास्त्रमात्र-विषयायामात्र कल्पयित्समाचार्यः] 4.1.3. Signifiers, cosignifiers, and affixes with no meaning.

Let us now consider again two verb forms, pacati and hanti. These share the element ti. Moreover, hanti is immediately divisible into two components: the base han 'strike, kill' and the ending ti. In the manner described in Section 4.1.1, it is possible to attribute the meanings agency
and singularity to this ending. The form *pacati* also signifies an action, cooking, being performed by a single agent. Nevertheless, it is not immediately evident that this should be divided into two constituents. Once a base *pac* 'cook, bake' is abstracted, the question arises whether *-ati* which follows this should be treated as a single element or as two. In connection with this, consider also the forms *puṣyati*'thrive', *sunati*'presses juice out of something', *tudati*'goads, shoves, wounds'. These are comparable in that each signifies an action being performed by a single agent. Let us, therefore, agree to abstract an affix *ti* common to these forms, which are then tripartite: *pac-a-ti, puṣ-ya-ti, su-no-ti* and *tud-a-ti* (see A 3.1.68, 69, 73, 77 [157]).

Another question now comes up: Should the elements which occur between the bases *pac, puṣ, su, tud* and the ending *ti* be treated as signifying part of the meanings of the forms in question? Two meanings are to be considered: singularity and agency. Now there are triplets such as

(170) a. *pacati* '... is cooking' b. *pacasi* 'you are cooking'
    c. *pacāmi* 'I am cooking'

(171) a. *pacatāḥ* 'they two are cooking' b. *pacatāḥ* 'you two are cooking'
    c. *pacāvāḥ* 'we two are cooking'

(172) a. *pacantī* 'they are cooking' b. *pacatha* 'you all
    are cooking' c. *pacāmāḥ* 'we are cooking'

It is possible, by reasoning from anvaya and vyatireka (667) to attribute singularity, duality, and plurality, respectively, to the sets *ti si mi, taḥ taḥ vaḥ, anti* (see A 7.1.3 [509]) *tha maḥ*. It is not possible to say that *-a* or *-ā* in the forms of (170)-(172) is associated exclusively with any one number property. This leaves the alternative of attributing to *-a* or *-ā* of *pacati* and so on the meaning agency. If this step is taken, one should also attribute this meaning to *-ya*, *-no*, *-a* in *puṣ-ya-ti, su-no-ti, tud-a-ti*. The distribution of such agentive affixes could then be stated in terms of classes of verbal bases. In a similar manner, one would now say that *-ya* in passive forms of the type *pac-ya-te* has the meaning
Forms such as \textit{hanti} are comparable in meaning to \textit{pacati}, \textit{pusyati}, \textit{sunoti}, \textit{tudati}, but they differ in that no affix comes between the base and an ending. One way in which such forms can be accommodated in the scheme tentatively adopted is evident. An agentive affix can be introduced after a base of the type \textit{han} also, and then replaced by zero. Moreover, since there are Vedic forms of the type \textit{hanati} (cf. \textit{A} 2.4.73 [158]), one need not make an arbitrary choice among the agentive affixes in forms comparable to \textit{hanti}. The same affix that occurs in \textit{pac-a-ti} will be introduced, then deleted.

Problems remain nevertheless. Consider active agentive perfect forms of the type

(173) a. cakāra b. cakartha c. cakārā / cakara
(174) a. cakratuḥ b. cakrathuḥ c. cakṛva
(175) a. cakruḥ b. cakra c. cakṛma
and medio-passive ones of the type

(176) a. cakre b. cakṛse c. cakre
(177) a. cakrāte b. cakrāthe c. cakṛvahe
(178) a. cakrire b. cakṛdhve c. cakṛmahe

These are divisible into two parts: a base with duplication (cf. \textit{A} 6.1.6 [382]) and endings. In accordance with what has been noted, we should consider that triplets of parasmaipada endings and ātmanepada endings are associated with singularity, duality and plurality; in the forms given, these endings are: \textit{a tha a, atuḥ atuḥ va, uḥ a ma}; \textit{e se e, āte ēthe vahe, ire ēhve mahe}. Since the semantic properties of number qualify agents and objects, one has also to consider attributing the meanings agency and objectivity to some element other than the base. But the only elements other than the iterated base found in these forms are the endings themselves. Nor does any perfect form of this type have an affix between the base and the endings. Consequently, contrary to what was possible in the case of the type \textit{hanti}, one cannot, without being arbitrary, account for (173)–(178) by introducing a particular affix between the base and endings, then deleting it.
Consider also the optatives

(179) a. bhavet' ... should be, let ... be' b. bhaveḥ
    c. bhaveyam
(180) a. bhavetām b. bhavethām c. bhaveva
(181) a. bhaveyuh b. bhaveta c. bhavema

and the precatives

(182) a. bhūyāt'may ... be' b. bhūyāḥ c. bhūyāsam
(183) a. bhūyāstām b. bhūyāstam c. bhūyāsva
(184) a. bhūyāsuh b. bhūyāsta c. bhūyāsma

(179)-(181) contain the base form bhav, as in the indicative bhavati' is, becomes', so that these forms can be considered to have an affix between the base and endings. On the other hand, (182)-(184) have the base form bhū, and there is nothing to justify positing the same affix between this base and the endings. See also 596.

As far as (173)-(178) and (182)-(184) are concerned, then, one cannot speak of agentive or objective affixes other than endings, of the type found in pacati, bhavati, pusaṭi, sunoti, tudati, pacyate under the tentative scheme considered earlier. This requires one to reconsider the scheme. For all the verb forms in question are syntactic items that terminate in verb endings. Each such item has at most one high-pitched vowel, and, if it follows a term other than a finite verb form, it generally has no high-pitched vowel (A 6.1.158, 8.1.28 [588, 615]). These facts are accounted for in a most general manner by setting up a class of verb endings, including those found in (173)-(184), and providing that an element which contains such an ending is a syntactic word (pada: A 1.4.14 [49]). If all these endings are included in a class, it is reasonable to treat them similarly with respect to the attribution of partial meanings. Let us, therefore, say that parasmaipada and ātmanepada endings are associated not only with singularity, duality, and plurality but also with agency and objectivity (see 138-143).

This means, of course, that the affixes which come between bases and endings in forms such as pac-a-ti, puṣya-ti, su-no-ti, tud-a-ti, pac-ya-te can no longer be
considered to signify agents and objects. Nor is it reasonable to treat these elements as presential affixes, since they occur also in preterital forms like apacat (3sg. impfct.), apuṣyat, asunot, atudat, apacyata.

These elements must nevertheless be granted some meaning status. For it is not the case that one can use both pacati, puṣyati, sunoti, tudati, pacyate and *pakti, *poṣṭi, *sotī, *totī, *pakte, as though the affixes that come between the bases and endings were totally without value so far as the expression of the meanings in question is concerned. Let us, then, distinguish between signifiers and cosignifiers, and say the following. The ending ti in hanti, pacati, puṣyati, and so on signifies an agent, as does the ending of cakāra. The ending of a passive form such as pacyate signifies an object. In specifiable circumstances, however, endings such as ti and te, which Pāṇini assigns to the sārvadhātuka class, require accompanying affixes as cosignifiers, but endings such as a and e, which belong to the ārdhadhātuka class (see A 3.4.113-117 [63]), do not require cosignifiers. Thus, -a-(śap), -ya-(śyan), -no-(śnu), -a-(śa) in pacati, puṣyati, sunoti, tudati serve to cosignify an agent, along with -ti-, and -ya-(yak) in pacyate serves to cosignify an object. Agents and objects are considered to be signified by the endings ti, te, and so on.

In terms of Pāṇinian derivations, the distinction between affixes which are signifiers and those that are cosignifiers in forms like pacati amounts to the following. One does not have first a stem paca- of the type B-A₁ to which an ending is introduced to form a pada pacati of the type B-A₁-A₂. The affix -a- of pacati is introduced to the base pac when this occurs with ti which signifies an agent (A 3.1.68 [157]), to form a pada of the type B-A₂-A₁. Similarly, vikaraṇas like śyan are introduced after verbs of particular classes when these occur with sārvadhātuka affixes which signify an agent, and yak follows a verb which occurs with a sārvadhātuka
signifying an object (see 157-158). On the other hand, ārdhā
dhātuka endings such as a, e of perfect forms do not condition
the introduction of these vikarāṇas to verbs, although these
endings also replace an L-affix, which is introduced on
condition that an agent or an object is to be signified (A 3.4.69
[382]).

Verb forms are not the only ones to contain cosignifying
affixes. Let us consider now two feminine stems, ājā
dhe quán, and it is perfectly in order to say that the expression of
femininity requires the use of a suffix with this base. It is not
reasonable to maintain, however, that the expression of
femininity always requires an affix, since there are stems like
vāc- which obviously do not require feminine affixes. Nor is
it necessary or justified to introduce such an affix after a
term such as vāc- and then delete it. There are no pairs
comparable to hanti, hanati (see 679), so that introducing any
particular feminine affix would be arbitrary. Nor is there any
phonological operation associated with vāc- that would justify
introducing and then deleting an affix. In sum, vāc by itself is
feminine. Accordingly, Pāṇini does not introduce any feminine
affix after such a base, though feminine suffixes are
introduced after specified bases (see 271). These affixes are
cosignifiers, which occur if a nominal base is used in the
feminine (strijāṃ, see 273).

There are still other instances, where affixes are
abstracted which are neither signifiers nor cosignifiers of
meanings. The taddhita suffixes lasil and tral are introduced
to padas with nominal endings of the fifth and seventh triplets,
respectively (A 5.3.7, 10 [349]). Obviously, tatas and tatra,
formed from complexes such as tad-as-tas and tad-i-tra, are
semantically equivalent to padas like tasmāt and tasmin,
derived from tad-as and tad-i, with the endings āsi, ṇi
alone. It is thus impossible to attribute to lasil and tral any
meaning particular to these affixes alone, which they would
signify. Nor are these suffixes obviously cosignifiers, since
they are not required for the expression of a kāraka such as a point of departure or a locus: tad-as and tad-i contain affixes introduced to signify such kārakas, and they do not absolutely require the taddhita suffixes in question, which are introduced optionally. Accordingly, the Pāṇinian sūtras that introduce these taddhita affixes do not include any meaning conditions. They provide simply that tasII and tral optionally follow padas with endings of the fifth and seventh triplets, respectively.

One could argue, of course, that not having these affixes even cosignify any meaning is simply a function of the derivational system adopted. After all, a base tad does not by itself signify a kāraka, and tatas, tatra do indeed have affixes following this base.

There are, however, other cases, where a comparable argument is not possible. Consider again A 5.4.28 (355). This sūtra also does not give any meaning condition for the occurrence of the suffix ka. Now, the analytic procedure that involves reasoning from anvaya and vyatireka (see 667) leads to abstracting a nominal base avī from such forms as avī-h (nom. sg.), avī-nā (instr. sg.). The same base, or at least a homophonic and synonymous item, avī occurs in avika, which justifies abstracting an affix ka. Yet avī and avī-ka are absolutely synonymous. Consequently, one has to abstract an affix here that is not linked to any meaning, either as a signifier or as a cosignifier.

**Remark.**

I have used 'signifier' and 'cosignifier' as translations for the Sanskrit terms vācaka and dyotaka, respectively. A meaning directly signified by a vācaka element is called its vācyā or abhidheya's significand, one that is cosignified by a dyotaka element is called its dyotya. Nāgeśa succinctly explains what constitutes an element's being a dyotaka: It is the property of bringing to mind (ubodhakatvam) a
word-meaning relation between a linguistic element and a meaning that properly pertains to another item, with which the former is used (samabhivyāhṛta). [LM 584: द्योतकवन्य नम्बर्न नम्बर्न...]

In accordance with this, I have used 'cosignifier' to render dyotaka. Kātyāyana and Patañjali also use the term dyotya in connection with a meaning cosignified by an element. Thus, in his first vārttika on A 3.1.125 (292), Kātyāyana remarks that if āvāsyake is interpreted as referring to a cooccurring item (upapade), so that the rule provides for an affix on condition that a verb is used with āvāsyaka, an additional provision must be made to let the affixation apply when the meaning in question is to be cosignified (dyotye: vt. I: आवस्यक उपपद हिति चेद द्योत्य उपस्थित्यानम्). In his introduction to this vārttika, Patañjali poses the alternatives: Does one understand that the operation applies if the cooccurring item āvāsyaka is used or if the meaning 'necessary' is to be cosignified? [Bhāṣya II 88.13-14: कथमिव विन्याते आवस्यक उपपदे आहोस्विदावस्यके द्योत्य हिति।] Both signifiers and cosignifiers are meaningful (arthavat) elements. Elements such as the ka of avika (687), on the other hand, are not. Concerning such items, Patañjali explicitly says that they do not convey (na ... pratyāyayanti) anything. [Bhāṣya II 3.8-9: न हि ते किंचित्त पत्याययत्वत्।]

For additional discussion concerning such affixes, which Pāṇinīyas call atyantasvārthika 'absolutely redundant', see pp. 90-94 of the last work referred to in 569.

4.1.4. Positing augments.

Consider the following sets of forms:

(185) a. kṣiptate 'is thrown' b. kṣipta (past ptcple.)
'thrown' (nom. sg. masc. kṣiptaḥ) c. kṣiptvā
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'after throwing' d. kṣeptum 'to throw'
(186) a. vidyate 'is known' b. vidita 'known'
c. viditrā 'after learning, having known'
d. veditum 'to know'

The procedure outlined in Section 4.1 allows one to abstract from (185) a base with the shapes kṣip, ksep meaning 'throw' and affixes that follow this base: ya, te, ta, tvā, tum. Set (186) obviously resembles (185). The only semantic differences among respective members of the two groups are such as one should consider accounted for by a difference in bases. Thus, vidyate is immediately divisible into three constituents: the base vid 'know' and the affixes ya, te, which also occur in kṣipyate. On the other hand, b-d of (186) contain a segment i that is absent in the comparable forms of (185).

If the basis for abstracting affixes, to which particular meanings are attributed, is substitution in given contexts and reasoning from anvaya and vyatireka (see 667-668), it is not proper to treat vidita, viditrā, and veditum as tripartite derivates with an affix i between the base vid, ved and the affixes ta, tvā, tum. The semantic difference between these forms and the comparable ones in (185) is accounted for by the difference in bases alone, so that there remains no meaning that an affix i can signify. Nor is it reasonable to claim that the i of forms in (186) is a cosignifying affix (see Section 4.1.3). kṣipyate, vidyate contain an ending te, which signifies an object (karma), and an affix ya, which cosignifies this. Under the assumption that vidita contains a cosignifying affix i, one would be required to say that this and kṣipta both have a suffix ta signifying an object and that the element i of vidita cosignifies this meaning. In viditrā, veditum, however, the same suffix would have to be treated as cosignifying other meanings. The fact is that the occurrence of this element i is best described in terms of classes of verbs and post-verbal affixes, together with phonological features of the latter (see 144-153).

There remain two major alternatives: (a) The element -/-
of items such as (186b-d) can be treated as a meaningless segment that occurs between certain bases and affixes. (b) This segment can be treated as part of another element: (b1) part of a base (\textit{vidi-ta}, \textit{vidi-tvā}, \textit{vedi-tum}) or (b2) part of an affix (\textit{vid-ita}, \textit{vid-itvā}, \textit{ved-atum}). The choice between (a) and (b) depends on the particular mode of grammatical description adopted.

Suppose that to account for the distribution of \textit{kšip}, \textit{ksep} in (185) one stated that: there are base forms which have alternants with \textit{-i-} and \textit{-e-}; the alternant with \textit{-i-} occurs in certain contexts, the alternant with \textit{-e-} in others, as in (185). In such a system, there is no apparent crucial difference between alternatives (a) and (b). One could now also say that certain bases have alternants with \textit{-i-} in particular contexts. Alternatively, one could say that particular affixes have alternants with initial \textit{i-} in statable contexts, as in (186). In addition, this \textit{i} could be treated simply as a "connecting vowel" that comes between particular bases and affixes. Since the description is now couched in terms of given alternants in given contexts, none of these possible formulations is crucially worse than the others. As I have pointed out, however, this is not Pāṇini's mode of description. Pāṇini's is a derivational system that involves introducing affixes to bases. Both bases and affixes have basic forms, subject to operations in particular contexts. For example, the basic form of the verb in (185) is \textit{kšip}, and the \textit{-i-} of the stem \textit{kšip-} is replaced by \textit{-e-} when particular affixes follow (A 7.3.86 [127]).

Suppose now that the \textit{-i-} of forms in (186b-d) were treated in this system as an element introduced between a base and an affix. There would now be two ways of deriving a form like \textit{veditum}: (a1) \textit{i} is introduced between \textit{vid} and the suffix \textit{tum}, then guna substitution applies: \textit{vid-tum} \textgreater{} \textit{vid-i-tum} \textgreater{} \textit{ved-i-tum} (a2) Guna substitution is conditioned by \textit{tum} before \textit{i} is introduced: \textit{vid-tum} \textgreater{} \textit{ved-tum} \textgreater{} \textit{ved-i-tum}. Under (a1), two rules are necessary to account for the base vowels in \textit{kšeptum}, \textit{veditum}. One rule provides for a
guna vowel to replace a penultimate base vowel in a stem followed by an affix such as *tum. Since the -i- of *vid in *vid-i-tum is not the penultimate sound of the stem which *tum follows, another rule is required to let *guna substitution apply also before this segment /i/. In addition, the right context in question has to be this segment followed by an affix which itself conditions *guna replacement. Otherwise, one would allow forms such as *vedi'tvā instead of *vidi'tvā, since under (a1), one should have /i/ introduced after *vid to derive *vid-i-tvā.

Alternative (a2) also involves complications. As can be seen from *kṣiptvā, the suffix tvā does not regularly condition *guna replacement in a stem. In the derivation of *vid-i-tvā under (a2), then, no operation applies other than the introduction of /i/. But consider also the following:

(187) a. *iṣita b. eṣitvā (iṣ′go, move, send′)
(188) a. likhitva b. lekhitvā / likhitvā (likh′write′)

Under alternative (a2), eṣitvā is derived as follows: iṣ-tvā > eṣ-tvā > eṣ-i-tvā. Lekhitvā is now derived similarly. Of course, this will not do for likhitvā. One cannot now allow likh-tvā > lekh-tvā before introducing /i-. In fact, alternants such as likhitvā and lekhitvā, with the suffix tvā and optional *guna substitution /i/, the base, are the norm only if the segment /i/ occurs with this suffix. It would be preferable, then, to have this segment introduced before *guna replacement applies. As noted, this entails two rules of *guna substitution accounting for the types kṣeptum and vedītum. This is also the case if /i/ is introduced as part of a base. The fact remains that it is preferable to introduce the segment /i/ before a rule of *guna substitution applies.

Let us now take up possibility (b2) of 591, letting / of forms like vidita, vidivā be treated as part of an affix. ta and tvā are suffixes that do not regularly condition *guna replacement, but tum does regularly condition this substitution. The augmented affixes ita, itum have the same properties. Under the possibility being considered, kṣip-tum and vid-itum both
contain stems with penultimate -i- followed by an affix that conditions guṇa replacement, which is now accounted for by a single rule. Under any of the possible procedures, special rules are required to account for forms like esītvā, lekhitvā if /i/ is introduced as an initial augment, one rule will provide that tvā so augmented regularly conditions guṇa substitution. This accounts not only for esītvā but also for other instances, such as devitvā (div 'gambles'), vartitvā (vṛt 'occur, be'). Another rule will provide that tvā augmented with initial /i/ optionally conditions guṇa replacement if the base in question begins with a consonant, has a penultimate /i-/ or /u-/vowel, and ends with a consonant other than /y/ or /u/. This accounts not only for lekhitvā/ likhitvā but also for pairs such as dyotitvā /dyutitvā (dyut 'flash, shine'). Treating /i/ as an initial augment is obviously preferable to the other possible procedures in that one can thereby treat guṇa replacement in the types kṣeptum, veditum as a single phenomenon: a penultimate vowel /i/ /u/ /ō/ /ṛ/ /ṝ/ is replaced by a guṇa vowel. This is Pāṇini's manner of accounting for the facts in question (A 1.2.18, 26, 8 [517, 519, 520]).

Consider now

(189) a. cita 'gathered, heaped'  b. nīta 'led, guided'
   c. stuta 'praised'  d. pūta 'purified, filtered'

(190) a. cetavya 'to be gathered, heaped'  b. netavya 'to be led, guided'

(191) a. stavya 'to be praised'  b. pavya 'to be purified'

(192) a. somasut 'someone who has pressed out Soma juice'
   b. khalapū 'someone who sweeps a threshing floor'

(193) a. upastutya 'after praising'  b. paripūya 'after purifying fully'

The items in (189) contain the bases ci, ni, stū, pū followed by the suffix ta. In (190), the base forms ce, ne are followed by tavya. For the moment, let us take it as given that one is justified in positing ci, ni as basic forms (see 788-790), so that cetavya and netavya are derived from ci-tavya and
ni-tavya, similarly, stavya and pavya are derived from stu-ya and pū-ya (A 3.1.96, 97, 7.3.84, 6.1.80 [121, 122, 127, 524]). In comparable forms, then, bases with short vowels (ci, stu) and bases with long vowels (ni, pū) behave similarly. The items of (192) are also comparable. Both are compounds in which the first constituent denotes an object of the action denoted by the base in the second component. Although bases in -u and -ū behave similarly elsewhere, however, somasut has -t, which khalapū lacks. In the same way, upastutya and paripūya both contain the affix ya, but the former also has -t-, which the latter lacks. There is thus a correlation between the length of a vowel and the presence or absence of t in such derivates. It is, then, not proper to claim that t in any of the forms in question is an agentic affix. Nor can this be treated as a cosignifying affix. It is best considered a meaningless augment introduced as part of other elements in particular contexts. The derivate somasut has t in all its forms, such as somasut (nom. sg.), somasutau (nom. du.), somasutāḥ (nom. pl.), so that this segment has to be treated as the final sound of the compound. Moreover, since the t found in upastutya also occurs with a short vowel, it too should be treated as a final augment. Pāṇini provides for adding the final augment tuk to a short vowel when particular affixes follow (A 6.1.71 [394]).

The pairs in

(194) a. ahanī (nom.-acc. du.) b. ahānī (nom.-acc. pl.)
    'days'
(195) a. haviṣi b. haviṁṣi 'oblations'
(196) a. dhanuṣi b. dhanūṁṣi 'bows'

consist of related dual and plural forms. The duals ahanī, haviṣi, dhanuṣi are immediately divisible into stem forms ahan-, haviṣ-, dhanuṣ- and an ending i. The plural ahānī is also divisible into an ending i and a stem preceding it, except that here the penultimate vowel of the base is long. The plural forms haviṁṣi and dhanūṁṣi also contain the ending i and have long vowels in the stems that precede this ending. In this way, they are comparable to ahānī. They also contain a nasal
segment -m-, which ahāni lacks. The only differences in meaning among the plural forms of (194)-(196) are accounted for by the differences in bases. Here also, therefore, one should operate with an augment, this one added within a base (see A 7.1.72 [488]).

Let us now revert briefly to the forms given in (179)-(184) (681). Modern grammarians of the west and those who accept their analyses generally recognize several suffixes, labelled 'optative' and 'precative' or 'benedictive'. For example, ḥanyāt would be considered to contain the base ḥan, the optative suffix ya, and the ending t; bhūyāsam would be divided into the base bhū, the precative suffix yaś, and the ending am; and āsita would be divided into the base ās, the middle optative suffix i, and the ending ta. As far as forms of the type pacēt are concerned, one could either simply abstract an optative suffix e or consider -e- to derive from -a-ī-; with an optative suffix i, and the post-verbal affix found also in paceti. Considerations of patterning speak in favor of the second alternative: hanyāt lacks a vikaraṇa, as does hant, so that, just as paceti contains a vikaraṇa, so should the corresponding optative. Recall, however, that in Pāṇini's system any finite verb form such as bhavati, bhavet, paceti, pacēt, sunoti, sunuyāt is made up of at most three parts: a verbal base, an ending, and a vikaraṇa between these two. This analysis is dictated by the very procedure of abstracting components (see 667-668). Thus, bhav-a-ti, pac-a-ticonsist of the bases bhav (< bhū), pac, the ending tip --- all of which signify particular meanings --- and the vikaraṇa ṣap, which co-signifies a meaning (see 683). Similarly, sunoti contains the base su, the ending tip, and the vikaraṇa -no- (< -nu-: ṣnu). The same post-verbal affix occurs in sunuyāt. Moreover, given that bhavet, paceti have the same base forms as in bhavati, paceti, one is justified in saying, for reasons of patterning, that bhavet and paceti contain ṣap. In this system one cannot operate with a suffix such as ya or ṭ in addition to the vikaraṇas and endings, so that the element ya found in
sunuyāt and such is considered an augment added to a verb ending, and other optative and precative forms are derived in a comparable manner (see 401, 442).
4.2. Basic forms posited in the grammar.

4.2.0. Introduction.

Pañini's derivational system requires that he operate with posited basic forms of bases and affixes, subject to replacement and augmenting. He must, then, have decided which of a set of variants should be treated as basic with respect to others. In some instances, the choice to be made is just about obvious. For example, given

(197) a. ṛṣiḥ (nom. sg.) b. ṛṣyoh (gen.-loc. du.) 'seer, sage'
(198) a. devi b. devyoh 'goddess, queen'
(199) a. vāyuḥ b. vāvyoh 'wind'
(200) a. vadhūḥ b. vadhyoh 'bride'

the variants ṛṣi, devi, vāyu, vadhū should be treated as basic with respect to ṛṣy, devy, vāvy, vadhv. A phonological rule lets the vowels of (197a)-(200a) be replaced by corresponding semivowels before a vowel (A 6.1.77 [125]). If, on the other hand, ṛṣy and so on of (197b)-(200b) were posited as basic variants, not only would a rule have to let i or û and u or ū replace y, ŋ before consonants, in addition, one would now have to specify where short and long vowels replace semivowels. This alone would suffice to make the first alternative preferable. It is not all, however, since there is a phonological rule whereby y and ŋ are deleted before consonants other than y (A 6.1.66 [522]). Having posited a basic form vāyu, then, one would have to specify that -y- is not dropped in certain instances. And these would be precisely where basic items like vāyu have been posited. To be sure, even if vāyu is made the basic variant, one has to preclude the deletion of -y- followed by ŋ as a result of semivowel substitution (see A 1.1.57 [101, 104]), but one has now not begun by positing a basic form that conflicts with a phonological rule. Clearly, the variants with final vowels, (197a)-(200a) must be considered basic relative to those with final semivowels.

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In other instances, more serious consideration has to be given to possible choices. Recall now that there are general principles which underlie Pāṇini’s grammar (Section 3). The very basis for this, or any other, grammar, is generalization, so that rules are couched in terms of general domains and subdomains within these, where general rules and exceptions to them apply. In accordance with this, that member of a set of variants should be considered basic which has the broadest domain. Other variants are then accounted for through operations that apply to the basic form in particular contexts. There are also cases where rules related in a certain manner dictate the decision to make a given variant basic. Finally, since an initial string must contain only overt bases and affixes, including abstract ones such as L-affixes, it follows that zero can only be a replacement, not a basic element. In what follows, I shall present arguments showing how one can, in the context of Pāṇinian grammar, decide which of a set of variants is to be posited as basic. I do not wish to pretend that these are precisely the arguments Pāṇini considered. On the other hand, it is patent that Pāṇini has indeed made well founded decisions concerning which variants should be accepted as basic. Hence, I consider it reasonable to say that Pāṇini considered alternatives, including some adopted by predecessors, and reached decisions on the basis of arguments comparable to if not identical with those I shall present.

4.2.1. Basic forms and phonologically conditioned variants.

The following are genitive plural forms:

(201) a. senānām ‘armies’ b. agnīnām ‘fires’ c. vāyūnām ‘winds’

(202) a. puruṣānām ‘men’ b. ṛṣīnām ‘seers, sages’
    c. pitṛnām ‘fathers, ancestors’

The endings -nām and -nāṁ should be abstracted. These are best accounted for by considering -nām basic and letting -n-
substitute for \(-n\)- preceded by \(r\), \(ñ\), or \(ṁ\) in the same pada (see A 8.4.1-2 [570]). As can be seen, the domain of \(-nām\) is larger than the domain of \(-nām\), which occurs when one of the above mentioned sounds or \(-n\-(< g\text{'}) precedes, as in \(śaṇṇām < ṣad-ṇām\) (see A 8.4.41-42, 45 [574-575]). Moreover, it is difficult to justify a rule whereby \(-n\)- replaces \(-n\)- not preceded by one of these sounds, since there are items such as \(kāpa\) 'minute part, atom', \(pāṇi\) 'hand', \(kaṇṭha\) 'throat', \(daṇḍa\) 'staff, punishment'.

(203) a. कटमकार्षिता (kaṭam akārṣit) '… made a mat.'
   b. कट्ट करोति (kaṭṭ karoti) '… is making a mat.'
   c. कट्ट करोति (kaṭṭ karoti) '… is making a mat.'

(204) a. फलमचेष्टिता (phalam acaīṣit) '… picked a fruit.'
   b. फलं चिनोति (phalām cinotī)
   c. फलमचेष्टिता (phalaṇ cinotī) '… is picking a fruit.'

(205) a. ओदनमपाक्षिता (odanam apākṣit) '… cooked rice.'
   b. ओदनं पचति (odanaṁ pacati)
   c. ओदनमपचति (odanam pacati) '… is cooking rice.'

(206) a. केदारमलावित् (kedāram alāvit) '… cut the field.'
   b. केदारः लिनाति (kedāraṁ luniṭi)
   c. केदारलिनाति (kedāraliṅniṇāti) '… is cutting the field.'

contain variants katam kaṭarī, kaṭan, agnim agnim agniṇi, odanam odanam odanam, kedāram kedāram kedāraliṁ, with \(-m\), anusvāra (\(ṁ\)) and nasal sounds (including nasalized \(l:\) liṁ) of the same class as following sounds. These variants are immediately describable in terms of basic forms with \(-m\) and
two replacements: -m replaces pada-final -m; -m is optionally replaced by a sound homogeneous with a following consonant other than a spirant (A 8.3.23, 8.4.58-59 [559, 560]).

It would violate a general principle to select variants with -n, -ñ or nasalized semivowels as basic in view of their restricted distribution. Nor is it plausible to consider variants with -m basic. If this were done, one would have a rule providing for m to replace ñ before vowels. Now,

(207) a. hanti (3sg. pres. indic.) b. hamśi (2sg.) c. hanmi (1sg.) d. hanati (3sg. subj.) 'strike, kill'

shows variants han, hamś. Were one to posit a basic form hamś and let the substitution of m for ñ apply, one would allow hamati instead of hanati. Similarly, bhunajatai must not be allowed instead of bhunajatai (3sg. subj.). Moreover,

(208) a. bhûrıkte b. bhûrikše c. bhûrše d. bhunajatai

'enjoy, eat'

shows variants bhûrik-, bhûrikš-, depending on the nonnasal consonant that follows the nasal, just as in (203c) and (204c), but there is no variant bhumık- or bhumš-. All is in order, however, if han and other variants with -n are treated as basic relative to variants with -m, -n, -ñ and a rule provides that pada-interior n is replaced by m before certain consonants (A 8.3.24 [559]). Both pada-interior m from m or n and pada-final -m from -m are then subject to the same assimilatory replacements, which apply optionally for pada-final -m.

Before t-, one has not only forms with -as, such as payas in (156)-(157) (670) but also forms, of the same grammatical categories, in -is and -us, such as sarpiś 'butter' and dhanus 'bow'. Corresponding to such nominative and accusative forms, there are instrumental singulars payasā, as in (158), and sarpiśā, dhanusā. The variants with -s and -s are best accounted for by positing basic forms with -s and letting this be replaced by -s after velar stops and vowels other than a ā, except in pada-final position (A 8.3.59 [563]). It is not proper to posit basic sarpiś, dhanus, payas, and to have -s replace
-s in pada-final position and following a ā. To begin with, there are items like māṣa ‘a kind of bean’, so that one cannot claim s is always replaced by s when an a-vowel precedes it in the interior of a pada, in order to account for the fact that forms of the type payaś- do not occur. In addition, consider

(209) a. tvīṣd / tvīṣ (nom. sg.) b. tvīṣa (instr. sg.)
c. tvīṣdhīṣ (instr. pl.) d. tvīṣtu (loc. pl.) ‘splendor’

(210) a. dvīṣd / dvīṣ b. dvīṣa c. dvīṣdhīṣ d. dvīṣtu

‘enemy’

Since there are items like kāḍa’mat’, pāṭu’’sharp’, one should not posit forms with basic -ṭ, to be replaced by -s between vowels. Nor, in view of items such as mṛṭayati ‘is merciful’, should one posit basic -ḍ subject to replacement by -s between vowels. On the contrary, the items in (209)-(210) are best treated as derived from basic tvīṣ, dvīṣ: pada-final -s is replaced by -ḍ, for which -t substitutes optionally in absolute final position (A 8.2.39, 8.4.56 [546, 578]).

Thus, sarpiṣa, dhanuṣa are to be accounted for through retroflex substitution: sarpiṣ-ā > sarpiṣa, dhanuṣ-ā > dhanuṣa.

Retroflexion will also account for -su in

(211) a. aṅguṣu b. vāyuṣu c. pīṭṣu d. dhūrṣu’yokes’

e. vāksu f. sarpiṣu g. dhanuṣu

as against -su in

(212) a senāsu b. payaḥsu c. tvīṣtu d. dvīṣtu

Now, tvīṣtu and dvīṣtu have -ṭ, as do tvīṭ and dvīṭ of (209)-(210). In effect, it is proper to say there is a pada boundary between -su and a preceding stem (A 1.4.17 [75]). Similarly, one has sarpiṣṣu and dhanuṣṣu, with -ḥ before the ending (-su < -su: A 8.3.58-59 [563]).

payaś, sarpiṣ, dhanuṣ (see 670, 701) are members of sets of variants with: -ḥ before pause and, optionally, before voiceless spirants; -ḥ or -ṅk before voiceless velar stops; -ḥ or -ṅp before voiceless labial stops; -s before voiceless palatals; -iṣ, -uṣ before voiceless velars, retroflex stops, and labials; and -s before voiceless dentals (see A 8.3.15, 34-37, 44, 101, 8.4.40-41 [557, 561, 562, 568, 574]). Similarly,
(213) दहत्याग्निः। (dahati agniḥ) 'Fire burns.'

(214) ग्रामज्ज्वलो देवदत्तः। (gramaṇ gato devadattaḥ) 'Devadatta has gone to the village.'

(215) a. अग्नि: काष्ठानि दहति। (agniḥ kāṣṭhāni dahati) 'The fire is burning the logs.'
   b. अग्नि: काष्ठानि दहति। (agniṣṭ kāṣṭhāni dahati) 'The fire is burning the logs.'

(216) a. देवदत्तः कुम्भान्करोति। (devadattaḥ kumbhān karoti) 'Devadatta makes pots.'
   b. देवदत्तः कुम्भान्करोति। (devadattaḥ kumbhān karoti) 'Devadatta makes pots.'

(217) a. अग्नि: प्रज्वलितः। (agniḥ prajvalitaḥ) 'The fire has flamed up.'
   b. अग्नि: प्रज्वलितः। (agniṣṭ prajvalitaḥ) 'The fire has flamed up.'

(218) a. देवदत्तः प्रस्थितः। (devadattaḥ prasūtītaḥ) 'Devadatta has left.'
   b. देवदत्तः प्रस्थितः। (devadattaḥ prasūtītaḥ) 'Devadatta has left.'

(219) अग्निस्तु दर्शये। (agnīś ca darśyate) 'A fire can also be seen.'

(220) देवदत्तस्थतुर्थः। (devadattaḥ caturthiḥ) 'Devadatta is the fourth.'

(221) अग्निस्त्राः (agnis tatra) 'There is a fire there.'

(222) देवदत्तस्त्राः (devadattas tatra) 'Devadatta is there.'

also show variants with -ṭ, -ṭk, -ṭḍ, -ṭ, and -s, except that the spirants here are forms of an ending (nom. sg.). Since sarpis and agnis are alike, one may consider that here also s should be treated as basic. This is also supported by examples like sarpisṭva and agnis ṭāḍ... (see 568).
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(223) a. vid/ vīt b. viśā c. viḍbhīḥ d. vītsu
'settlement'

one should not treat -ṣ in agniṣ, devadattaḥ as the basic variant. For reasons given concerning (209)-(210) (701), it is not proper to consider vid or vīt basic. It is best, instead, to posit basic viṣ: -ʿd occurs in place of pada-final -ṣ (by way of -ṣ: A 8.2.36, 39 [544, 546]). Accordingly, agniṣ and devadattaḥ, with pada-final -ṣ, should not be derived from basic forms with -ṣ. Nor should -ṣk or -ṣp be considered basic, given the restricted domains of these variants.

Now, if -ṇ were treated as basic, one would have to provide that -ṇ is replaced by ṣk and so on in the contexts noted above. In addition, to account for forms like sarpiṣā:
starting from sarpiḥ-ā, one would have to say that -ṣ replaces -ṇ in the interior of a pada. It is thus recognized that -ṇ is essentially a pada-final variant. This makes it difficult indeed to posit a locative plural ending -ṇu to derive forms such as (211f-g) sarpiṣṇu and dhanuṣṇu (see 702). The initial sound of this affix is, by the very nature of the unit in question, excluded from occurring in pada-final position; yet it is now given a basic form with an initial sound that regularly occurs only in this position. Of course, it is possible to say that this ending is su and to maintain at the same time that items like sarpiṣā, dhanuṣā derive from nominals with basic -ṇ. However, this entails stating two rules of retroflexion, for ṣ and s separately, which obliterates the essential unity of the process.

It is best, therefore, to posit basic forms sarpiṣ, dhanuṣ, and so on, with -ṣ, and to have -ṇ occur as a replacement at an intermediate stage of derivation.

The facts are still more complicated, however. (213)-(218) have forms in -lṇ, -aṇ, and so on in a pattern of absolute parallelism. There are also contexts in which there is no such parallelism. Thus,

(224) a. अभिरिह (agnir lha) 'There is fire here.'
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b. अग्निरत्र (agnir atra) 'There is fire here.'

c. अग्निरदहति (agnir dahati) 'Fire burns.'

have agnir before ō- (oha'here'), a-(atra'here') and the voiced consonant d-. In the same contexts, one has sarpir and dhanur. But one does not have *devadattar:

(225) a. देवदत्त इहा (devadatta iha)

b. देवदत्सत्रा (devadatto'tra)

c. देवदत्स हृष्टः (devadatto drṣṭaḥ) 'Devadatta has been seen.'

Similarly, one has paya, payo in these contexts. Given what has been shown, let us consider it best to say that here too there are items with basic -s (agnis and so on), and that pada-final -s is replaced by -r in specific environments, but that -as is treated in a particular manner.

Consider now punah 'again, but' and

(226) a. किं पुनः करोति (kim punaḥ karoti)

b. किं पुनः करोति (kim punas kaɾoṭi) 'But what is he doing?'

(227) a. कदा पुनः प्रसिद्धति (kāda punaḥ prasthitāḥ)

b. कदा पुनः प्रसिद्धति (kāda punaḥ prasthitāḥ)

'But when did he leave?'

(228) किं पुनस्चतोदयति (kim punaś codayati) 'But what is he objecting to?'

(229) पुनरिह वसति (punar iha vasati) '... is staying here again.'

(230) पुनरधीति (punar adhite) '... is studying again.'

(231) पुनः पुनर्दश्यते (punaḥ punar drṣṭaye) '... is seen repeatedly.'

(226)-(231) have punaḥ and so on, completely parallel to devadattaḥ etc. in (214) and other examples given in 703.
However, *punar* in (229)-(230) contrasts with *devadatta* and *devadatto* in (225). If *devadattas* is posited as the basic form from which *devadatta* and so on are derived, one cannot posit basic *punas*. Consequently, it is necessary to recognize items with basic -s and others with basic -r. Thus, although both *agnir* and *punar* occur before voiced sounds and

(232) a. *sarpīrbiḥ b. dhanurbhiḥ c. caturbhiḥ*

also have -r before a voiced consonant, *caturbhiḥ* is to be treated as a form of a base *catur* 'four'. The ending *bhīs* has a pada boundary before it (A I.4.17 [75]), but the accusative plural ending *as* (*śas*) does not, so that *caturaḥ* cannot be derived from *catus* with the substitution of -r for -s in pada-final position. Conversely, the locative plural ending *su* (*sup*) is preceded by padas, but

(233) a. *caturṣu b. dhūṛṣu*

have pada-final -r before this ending, as against -ḥ in *sarpīḥṣu* and *dhanuḥṣu*, which speaks in favor of positing basic forms *catur* and *dhur* 'yoke'.

Nevertheless, it is patent that items with basic -s and -r have like forms in certain contexts. *agnir* and *punar* occur before voiced sounds; *agni* and *punā* have final long vowels before -r, as in

(234) *अम्नि रक्षासिस सेधातिः* (*agni rākṣaṃsi sedhati* [RV 7.15.10a]) 'Agni drives away the demons.'

(235) *वस्त्रपुनारक्तम्* (*vastram punā raktam*) 'The garment has been dyed again.'

Further, not only do items with basic -r have forms with -s, they also have forms with -s comparable to those in which -s has undergone retroflex substitution. For example, *catusṭaya* 'group of four' clearly must be treated as a derivate of *catur*.

Since Pāṇini's rules are intended to be as general as possible, it follows that where basic -s and -r behave in the same way, this should not be set forth in rules which treat these separately. The rules should bring out what -s and -r have in common by letting shared operations apply to both of
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them. One way to accomplish this is to bring original -s and -r together through substitution. As can be seen from (229)-(231) and (232)-(233) (704), it is difficult to justify doing this by letting -s replace pada-final -r. Pāṇini brings together basic -s and -r by letting -R (ru) substitute for pada-final -s (A 8.2.66 [551]). Both original -r and -R are replaced by -h before voiceless consonants and in pre-pause position (A 8.3.15 [557]). Before particular consonants, then, -h undergoes additional replacements (see 561-562). One of the substitutes is -s, which is subject to assimilatory replacements (A 8.5.40-41 [574]). Another operation -r and -R have in common is that they are both dropped before r-, with consequent lengthening of a preceding vowel (A 8.3.14, 6.3.111 [556, 523]).

There are also operations particular to -R. Only this is replaced by -y when preceded by a or ā and followed by a vowel (A 8.3.17 [557]), by -u when it follows a and occurs before a- or a voiced consonant (A 6.1.113-114 [525]), and only -R is replaced by -h before a nominal ending (A 8.3.16 [557]).

The decision to posit basic -s is not necessarily always based on strictly phonological criteria. Consider again the variants of agnis (see 703-705). One could conceivably posit agnir as the basic form of the pada in question. Moreover, in Pāṇini's system, the fact that Vedic usage has examples such as agniṣ tad does not necessarily speak against positing basic agnir; since in this grammatical system -r followed by a voiceless consonant is replaced by -h with subsequent substitution by -s. In addition, given that deletion of -r before r- applies whether the first consonant is basic -r or a replacement for -s, agni in (234) could be derived starting with basic agnir. What determines the choice of agnis over agnir is a systematic consideration. The item in question is a pada made up of the nominal base agni and a nominal ending. This ending is s (su) in padas like devadattas; where phonological considerations definitely require positing basic s instead of r.
Recall now that tvīṣ, dvīṣ, and viṣ are posited to account for forms such as those in (209)-(210), (223) (701, 703). Similarly, one should posit cit ‘thought’, śarad ‘autumn’, and virudh ‘plant’ to account for

(236) a. cid l cit b. citā c. cidbhiṣ d. citsu
(237) a. śarad l śarat b. śaradā c. śaradbhiṣ
d. śaratsu
(238) a. virud l virut b. virudhā c. virudbhiṣ
d. virutsu

Pada-final -t, -dh are replaced by -d (A 8.2.39 [546]); -t substitutes for -d before voiceless consonants and, optionally, before pause (A 8.4.55-56 [578]). In accordance with such patterning, vāc ‘speech, voice’ and sraja ‘garland’ are posited to account for

(239) a. vāg l vāk b. vācā c. vāgbhiṣ d. vākṣu
(240) a. srag l srak b. srajā c. sragbhīṣ d. srakṣu

Pada-final palatal consonants like -c, -j are replaced by their velar counterparts -k, -g (A 8.2.30 [544]). The same rules as apply to derive cid and so on then apply to replace -k, -g with -g, subject to subsequent replacement by -k.

Remarks.

I. I consider it certain that Pāṇini knew of basic forms different from the ones with which he operates, that he considered alternatives and reached decisions determined by his system of description and the rules formulated in the Aṣṭādhyāyī. As I pointed out in 666, Pāṇini knew the padapāṭha to the Rgveda. A padapāṭha gives an analyzed text corresponding to a continuously recited text (saṁhitāpāṭha), by dividing the latter into constituent padas. For example, to अनिन्धिन्द्रव्याधिपृणाति (RV 10.2.4c, see 568) the corresponding padapāṭha text is अनिन्धिन्द्रव्याधिपृणाति (agniḥ l tāt l viśvām l āl prṇāti). Padas are generally separated by pauses, so that they appear in their pre-pause forms: agniḥ
and so on. That the padapāṭha systematically divides the text of the samhitāpāṭha implies a relation between the two such that one can be treated as derived from the other; and, indeed, rules of prātiśākhya treatises such as Śaunaka’s Rgvedaprātiśākhya formulate the changes needed to derive the samhitāpāṭha from the padapāṭha. It is difficult to see how, knowing Śākalya’s padapāṭha, Pāṇini could avoid considering the possibility of positing items with basic -ṛ. That he posits basic -s and -r instead, I consider to result from his having thought out alternatives within his grammatical system. His grammar does not start with a given text to be analyzed. It presupposes an analysis. Nor does Pāṇini begin with padas. In his derivational system, padas result from adding affixes to stems. I shall consider details regarding various padapāṭhas and related prātiśākhya rules in part VI.1 of my work.

710 It is known that there are no well attested nominal bases in which velar stops occur before vocalic endings. Pāṇini does use forms like ikāḥ (A 6.1.77 [125]), but this is not a normal form of the language described in the grammar, where violations of the regular phonological rules of Sanskrit are permitted as required by the metalanguage. Still, it cannot be ruled out that a nominal base such as śak ‘able, capable’ could have been used at some time, since there is an open-ended set of root nouns. Note, however, that even if, as is probable, there were no nominal bases in -k used in the Sanskrit of Pāṇini’s time and place, he could make a well founded decision to posit basic vāc and sraj to account for forms such as those in (239)-(240) (708). The derivation of forms in (236)-(238) involves substitutions for pada-final consonants. Positing vāc, sraj and having pada-final -c,-ṣ/ undergo replacement conforms to this pattern. I point this out only to avoid suggesting that Pāṇini was somehow operating with a procedure akin to the one known as internal reconstruction, which can depend crucially on the neutralization of phonemic contrasts in part of a morphological set.
4.2.2. Basic nominal endings.

Pāṇini does not treat words (pada: A 1.4.14 [49]) in isolation. In the Pāṇinian system, they are derived as elements related syntactically and semantically to other words of utterances (Section 2). Sūtras of the Aṣṭādhyāyi provide that nominal endings of particular triplets of endings occur under stated conditions (see 240, 265). Therefore, Pāṇini has not only to posit basic forms of nominal endings but also to grant separate status to endings that are homophonous. Thus, there are three separate endings bhyām, belonging to the third, fourth, and fifth triplets, and two endings bhyas, in the fourth and fifth triplets. Nothing distinguishes these from each other except that they belong to distinct triplets, which are allowed to occur under different conditions. In addition, certain homophonic endings are associated with particular operations that make it necessary to distinguish them by means of markers; see 82.

I shall be concerned here with sets of variants which cannot be described solely in terms of phonological rules, and I shall assume that decisions regarding phonologically conditioned variants have been reached (Section 4.2.1). For certain endings, there is no question of positing one of a group of variants as basic, since there is only one form except for phonologically determined variation. This is true of the endings bhyām, of bhyas, of the sixth- and seventh-triplet endings os, and the seventh-triplet ending su (sup). The following, then, remain to be considered: first- and second-triplet endings, ekavacana endings of the third through seventh triplets, and bahuvacana endings of the third and sixth triplets.

Let me begin with variants in the third triplet bahuvacana set. There are two endings to be considered: bhis and an ending contained in forms of the type devais’gods’. Forms with -ais correspond to first-triplet ekavacana forms of the type devas, phalam. -bhis occurs elsewhere, as in ajābhis’she
goats', āgnibhis 'fires', vāribhis 'waters', matibhis 'thoughts', stribhis 'women, females', vāyubhis 'winds', dhenubhīs 'cows', madhubhis 'hones', vadhūbhīs 'brides', pitrībhīs 'fathers, ancestors', mātrībhīs 'mothers', and vāgbhīs 'voices, speeches'. Clearly, bhīs has the broader domain, hence should be treated as basic, and forms with -ais are to be accounted for through substitution.

Two possible replacements for the basic ending bhīs could be considered. There is a general phonological rule whereby ai substitutes for a or ā and a following vowel e or ai (A 6.1.88 [529]). In terms of this rule, one could have bhīs replaced by es or ais in order to derive devais from devabhīs. Other considerations show that ais should replace bhīs. There is a pada boundary between bhīs and its stem (A 1.4.17 [75]), as can be seen from examples such as chandobhīs 'meters' (see 75). Between es or ais and a stem, on the other hand, there is no pada boundary (A 1.4.18), just as the ending ā has no such boundary before it: vācā, srajā have -c-, -j- instead of -k-, -g-, and chandasā has -s-, not -r-. In deva-es or deva-ais, then, pada-interior -a- is contiguous to pada-interior es, ais. There is a particular rule (A 6.1.97 [531]) whereby -a- and a following guṇa vowel are both replaced by the latter, as in pace 'I am cooking (for myself)', derived from pac-a-e (see 730). Once this rule is adopted, one cannot derive devais from deva-es, since the general rule that would give -ai- as a single replacement for -a- and -e- following it is blocked by the exception noted. Therefore, bhīs must be replaced by ais (see A 7.1.9 [492]).

Items with ekavacana endings of the third triplet are of three kinds. Pairs such as vācā: vāgbhīs, srajā: snagbhīs allow one to abstract an ending ā (see 568). This occurs not only with consonantal stems but also with stems that have final vowels before consonant-initial endings; e.g., patyā: patibhis 'husband, master', matyā: matibhis, sakhyā: sakhibhis 'friend', dhenvā: dhenubhīs, vadhvā: vadhūbhīs, pitrā: pitrībhīs, mātrā: mātrībhīs. Plural forms in -ibhis, -ubhis from non-feminine
stems correspond to forms with -īnā, -unā of the types agnīnā, vārīnā, vāyunā, madhunā. This holds only in general, however, as can be seen from patyā. Finally, a singular type devena corresponds to a form of the type devaśis. Here again there is one ending with a broader domain than any other: ā. This is properly considered the basic ekavacana ending of the third triplet.

After a subset of stems in -ī, -u, this ending is replaced by nā (see A 7.3.120 [497]). Given that a and a vowel / following it are regularly replaced by the single vowel e, as provided for in A 6.1.87 (528), the type devena is accounted for by having ina substitute for ā after a stem in -a (A 7.1.12 [492]).

Items with bahuvacana endings of the sixth triplet also are of three kinds. In general, consonant-final bases are followed by ām, as in vācām, srajām, chandasām. ām also occurs with nominals that have -ī -ū -o -au before consonants and -iy -uv -av -āv before vowels: dhiyām: dhibhis ‘thoughts’, bhruvām: bhrūbhis ‘brows’, gāvām: gobhis ‘cows, oxen’, nāvām: naubhis ‘boats’. In addition to forms of the type dhiyām, bhruvām, however, there are also dhinām, bhrūnām, with -nām, which alone occurs after strī- ‘female, woman’ (strīnām). As in these examples, -nām generally follows vowels: devānām, trayānām ‘three’ (masc.-nt.), phalānām, ajānām, agnīnām, matinām, vārinām, devinām, vāyunām, dhenūnām, madhūnām, vadhūnām, pitṛnām, mātṛnām, tirsṇām ‘three’ (fem.), catasṛṇām ‘four’ (fem.). In forms of certain number words, however, -nām follows consonants: caturṇām ‘four’, ṣaṇṇām ‘six’. Finally, pronominal stems have -sām in forms of the type sarvāsām (fem.), sarveśām (masc.-nt.) ‘all’, corresponding to nominative singular sarvā, sarvas, sarvam.

The distribution of ām, nām, and sām is patently more complex than that of other variants considered so far. Just as clearly, nevertheless, sām should not be treated as the basic ending in this group, since its domain is so restricted, so that the choice is between ām and nām. Now, just as a consonant-initial ending like bhis follows a pada, so does nām have a
pada boundary between it and its stem, but āṁ does not. Thus, one has śaṁnāṁ (A 8.2.39, 8.4.41-42, 45 [546, 574, 575]) instead of *śaśnāṁ and vācāṁ instead of *vāgāṁ. Suppose that nāṁ were posited as the basic bahuvacana ending in the sixth triplet, so that āṁ and sāṁ would be accounted for by deleting the n of nāṁ and having s replace it. The reason for this procedure would be to let a stem preceding nāṁ belong to the pada class, so that its final consonant would undergo pada-final substitutions. The fact is, however, that nāṁ is required for this only in a restricted number of instances. First, as part of the derivation of śaṁnāṁ, the -s of šaś- is replaced by -g before -nāṁ. In addition, there is the type paṇcānāṁ (see 466 [A 6.4.7]), in which -n of the stem paṇcān is deleted. After other consonant-final bases, however, the n of nāṁ would itself have to be deleted, with consequent elimination of the pada-boundary: rājaṁyāṁ, rājaṁhis, rājabhyaś, rājasu and paṇcābhyaś, paṇcābhyaś, paṇcābhyaś, paṇcasu are alike, but the form corresponding to paṇcānāṁ is rājānāṁ (A 6.4.134, 8.4.40 [502, 574]) not *rājaṁāṁ or *rājaṁāṁ. In brief, with the exception of a subset of number words, forms of consonant-final stems with a bahuvacana ending of the sixth triplet require that this ending not follow a pada. Therefore, it is preferable to treat āṁ as the basic ending. The variants nāṁ and sāṁ are then to be accounted for by introducing the initial augments n and s to āṁ (A 7.1.52, 54-55 [498]). In this way, one has -nāṁ, before which -n of a pada is deleted and -g substitutes for pada-final -s, as well as -sāṁ, before which stem-final -a is replaced by -e, just as -e substitutes for -a before su (see A 7.3.103 [482]).

Ekavacana endings of the fourth, fifth, and sixth triplets are best considered together. The fourth-triplet ending with the broadest domain is e:

(241) agraye patye mataye vārine dhiye vāyave dhenave
      madhune bhruve pitre mātre gave rāye 'wealth' nāve
      vāce

Feminine stems with bahuvacana forms in -ibhyas, -ibhyas,
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-ubahyas, ūbahyas have corresponding singular forms with -ai:
  (242) matyai devyai striyai dhiyai dhenvai vadhvai
  bhruvai
As can be seen, some forms of type (242) alternate with forms of type (241). To non-pronominal feminine plural forms in -ābhayas correspond singular forms in -āyai:
  (243) ajāyai

The pronominal equivalent is of the type
  (244) sarvasyai
There is a comparable distinction between pronominal and non-pronominal forms to which correspond bahuvacana forms in -ebhyas:
  (245) devāya phalāya
  (246) sarvasmaiv

In the fifth triplet, there is an ekavacana ending as:
  (247) vārṇas dhiyas madhunas bhruvas rāyas nāvas vācas
Singular forms with -es, -os, -os correspond to non-neuter plural forms in -ibhyas, -ubhyas, -obhyas:
  (248) agnes mates vāyos dhenos gos
In addition, feminine nominals with plural forms in -ibhyas,
-ībhayas, ubhyas, ūbhayas have corresponding singular forms with -ās:
  (249) matyās devyās striyās dhiyās dhenvās vadhvās
  bhrvūs
As can be seen, forms of the types (241) and (242) are paralleled by forms of the types (248) and (249).
  Corresponding to (243)-(246), there are fifth-triplet forms of the types:
  (250) ajāyās (251) sarvasyās (252) devāt phalāt
  (253) sarvasmaśat
Apart from all the above, there are fifth- and sixth-triplet forms in -us:
  (254) patyus sakhyus pitus mātus
Sixth-triplet singular forms are identical to fifth-triplet forms with one exception. To bahuvacana forms in -ebhyas correspond ekavacana forms with an ending -syā:
(255) *devasya sarvasya phalasya*

Now, note that fourth-triplet forms corresponding to (247)-(248) are included in the single set (241). In addition, recall that there is a general phonological rule whereby pada-final *e* or *o* and short *a* following either of these are together replaced by *e* and *o* (A 6.1.109 [533]). A parallel rule makes it possible to eliminate (248) as a totally independent type: Let forms of this kind be derived with an ending *as*, the vowel of which is preceded by stem-final *-e* and *-o*, which are then the single replacements for *-e-a-* and *-o-a-* (A 6.1.110). Once this is done, one has two parallel sets of endings: *e ai yai syai*, as in (241)-(244), in the fourth triplet and *as ās yās syās*, as in (247)-(251), in the fifth and sixth triplets.

The first ending of each of these sets has the broadest domain, so that the immediate candidates for basic ekavacana endings of the fourth, fifth, and sixth triplets are *e, as*, and *as*. Moreover, there are again phonological rules that can be brought into play. A vowel *a* or *ā* and a following *e* are both replaced by *ai* (A 6.1.88 [529]), so that *ai, yai, syai* might be accounted for by introducing initial augments *a, ya, sya* or *ā, yā, syā* to the basic ending *e* after specified bases. Since, however, there is another rule, whereby short *a* and a following guṇa vowel are both replaced by the latter in the interior of a pada (see 712), it is clear that the augments should be *ā, yā, syā*, which Pāṇini provides for (A 7.3.112-114, 6.1.88, 90 [499, 529]). Accordingly, *ās, yās*, and *syās* of the fifth and sixth triplets are derived by adding the same augments to the basic endings *as*.

The types (245)-(246) and (252)-(253) must, of course, be accounted for differently. Since the variants found here are restricted to quite specific domains, they are to be derived through operations on forms containing the basic endings *e* and *as*: After a stem in *-a*, the endings *e* and *as*, respectively, are replaced by *ya* and *āt* unless the stem is pronominal, in which case the replacements are *smai* and *smāt* (A 7.1.13-15 [492]). Similarly, the sixth-triplet ending *as* is replaced by *sya* to
account for the type (255). Forms of the type (254) stand completely apart and have to be derived by special rules (see A 6.1.111-112 [534]).

716 Forms with ekavacana endings of the seventh triplet have -i, -e, -smin, -ām, -yām, -syām, and -au:

(256) vārini dhiyī madhuni bhrui pitari mātari gavi rāyi nāvi vāci
(257) deve phale
(258) sarvasmin
(259) matyām devyām striyām dhiyām dhenvām vadhvām bhruvām
(260) ajāyām
(261) sarvasyām
(262) aghau patyau matau vāyau dhenu

Of these, -i has the broadest domain. It is overtly found in forms of the type (256), and -e of the type (257) is immediately explainable starting with -i following -a of the stem: e substitutes for both these vowels by a general phonological rule (A 6.1.87 [528]). Therefore, i may be posited as the basic ekavacana ending of the seventh triplet. The pronominal type (258) is then derived by substituting smin for i, just as smai and smāt replace e and as (see 715). Note also that the types (259)-(261), with -ām, -yām, and -syām, correspond to the types (242)-(244) and (249)-(251), with -ai, -yai, -syai and -ās, -yās, -syās. This parallelism can be accounted for most directly by letting the initial augments ā, yā, and syā be added not only to e and as but also to a seventh-triplet ending ām, which substitutes for i (A 7.3.116-117 [497]). This leaves the type (262), for which special rules are required (see A 7.3.118-119).

There are three overt ekavacana endings of the first triplet. First, s occurs following vowels of non-neuter stems, except for stems in -i that are derived with feminine affixes:

(263) devas sarvas agnis patis matis dhīs vāyus dhenus vadhūs bhrūs gaus rās naus

In addition, there are neuter forms with other endings, found
in the types

(264) phalam sarvam (265) anyat 'other'

Other corresponding forms lack an overt ending:

(266) ajā sarvā vāri devī stri madhu vāk payas sarpis dhanus

Of the overt endings, s clearly has the largest domain, so that this is to be posited as the basic ekavacana ending of the first triplet. Forms such as those in (266) are then to be derived by deleting this ending (A 6.1.68, 7.1.23 [404, 467, 495]). Vocative forms, such as

(267) deva aje amba agne vāyo pitar matar

also are accounted for by deleting s (A 6.1.68-69 [467]). Forms of the types (264)-(265) could now be derived in one of two ways: The basic ending s is replaced by am, ad; alternatively, m and d substitute for s. The choice between these alternatives depends on other considerations (see 725).

Let us first take up dvivacana endings of the first and second triplets, which are always homophonous. There are, to begin with, non-neuter forms in -au:

(268) devau sarvau devyau striyau dhiyau vadhvau
bhruvau pitarau mātarau svasārau kartārau
 gayau rāyau nāvau

The type devau is immediately derivable from deva-au, with the application of a general phonological rule (A 6.1.88 [529]), so that all the forms in (268) can be treated as containing an ending au. In addition, there is an ending i, found in neuter forms:

(269) vārini asthini 'bones' madhuni prāci 'directed to the front, facing east', nāmi/ nāmini 'names'
balinī 'strong' chandasi/ balyasi 'quite strong, stronger' naviṣi 'oblations' dhanuṣi

Neuter forms of the type phale and feminines of the type aje, then, can be derived from phala-i and ajā-i, by a general phonological rule (A 6.1.87 [528]). Finally, there are masculine and feminine forms like

(270) agni mati vāyū dhenū
Clearly, \textit{au} has the single largest domain. It should, therefore, be considered the basic dvivacana ending of the first and second triplets, replaced by \textit{i} in particular contexts (see A 7.18-19 [493]). There remains to consider the types in (270). Forms with \textit{-i} could be derived by letting \textit{i} replace \textit{au} and having a general phonological rule apply to replace \textit{-i} with the single long vowel \textit{-i} (A 6.1.101 [532]), but this will obviously not do for \textit{vāyu}, \textit{dhenū}. Nevertheless, all these should indeed be treated in a like manner, given that they all show long vowels corresponding to short vowels of stems before endings such as \textit{bhīm}, \textit{bhis}. Starting with basic dvivacana endings \textit{au} in the first and second triplets, then, such forms could be described by means of either of two rules:

A. \textit{-i} or \textit{-u} of non-neuter stems and the endings \textit{au} are both replaced by the long vowel corresponding to the former: 
\begin{align*}
& \text{agni-} \textit{au} \rightarrow \text{agni}, \text{vāyu-} \textit{au} \rightarrow \text{vāyu}.
\end{align*}

B. The endings \textit{au} are deleted after non-neuter stems in \textit{-i} \textit{-u}, and the stems vowels are then replaced by long ones: 
\begin{align*}
& \text{agni-} \textit{au} \rightarrow \text{agni}, \text{vāyu-} \textit{au} \rightarrow \text{vāyu} \rightarrow \text{vāyu}.
\end{align*}

A is demonstrably preferable to B. Consider the following:

(271) पारि यद्वन्द्रा रोदसी उभेः अनुभोजीर्महिना ... (\textit{pārī yād indra rōdasi ubhē āubbojīr mahinā} [RV 1.33. 9ab]) 'When, Indra, you encompassed both worlds with might ...'

(272) इन्द्रवायू हुमे सुता: (\textit{indrāvīyū īme sutāḥ} [RV 1.2. 4a]) 'Indra and Vāyu, here are the Soma juices pressed (for you).'

(273) इन्द्रश cā yād yuyudhāte (\textit{indrāś ca yād yuyudhāte aḥiś ca} [RV 1.32.13c]) 'When Indra and the serpent fought ...'

There is a phonological rule of semivowel substitution and another rule, whereby pada-final \textit{-e} and a following vowel \textit{a}- are both replaced by the former (A 6.1.77, 109 [125, 533]), but neither of these operations applies to segments in (271)-(273):
rādasy ubhē 'bubhojīr..., * indravāyv ime..., *... yuyudhāte 'his
cia are inadmissible. Patently, both nominal and verbal dual
forms with -ī, -ū, and -e constitute special exceptions with
respect to phonological operations. Let us, with Pāṇini, speak
of pragṛhya elements, which fail to undergo replacements
before vowels (A 6.1.125 [535]). Let us also consider the way to
c characterize members of the pragṛhya class. There are three
formulations seriously to be considered:

C. Dvivacana endings that terminate in -ī, -ū, -e are
pragṛhya.

D. Dvivacana endings -ī, -ū, -e are pragṛhya.

E. Items that end with -ī, -ū, -e and contain dvivacana
endings are pragṛhya.

D will not do, since under this formulation yuyudhāte of (273)
would not contain a pragṛhya element: āte is the dvivacana
ending in this form, not e alone. In connection with E,
consider also the following:

(274) a. kumāryagāram b. kumāryor agāram ‘the house of
the two girls.’

(274a,b) are alternative expressions: (274b) is a string
equivalent to (274a). The two should therefore be related
systematically. This can be done by letting them both derive
from a single string

(275) kumārī-os agāra-s

consisting of two related padas: kumārī-os, with the dvivacana
ending os of the sixth triplet, and agāra-s, with the ekavacana
ending s of the first triplet. Operations can apply whereby the
string (274b) is derived from (275) or, alternatively, the
padas of (275) can be combined to form a tatpurusha compound
of the type rājapuruṣa (see 301). The nominal endings included
within the compound are then deleted. The -ī of kumārī in
kumārī-agāra should now be subject to semivowel
replacement, giving kumāryagāra. Recall now that, after the
ending as of rājān-as has been deleted in the compound
rājān-as-puruṣa-s, the remaining item rājān- is still classed
as a pada (A 1.4.14, 1.1.62 [49, 103]), so that its -n is dropped

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(A 8.2.7 [539]. By the same convention that allows rājan- to be treated as a pada, the component kumārī- of kumārī-agāra-
also is a pada, as though it still contained the dvivacana ending as. This component also ends with -i. In terms of E, then, we have here a pragṛhya element. Consequently, the -i of kumārī-
would now be exempted from semivowel substitution, although the operation should indeed apply. Therefore, E is to be
rejected. Now, if B were adopted to account for forms of the
types in (270), one would have to accept E also. In deriving
agni from agni-au, for example, one now drops the dvivacana
ending. Only if, by E, items that end in -i and -ō are pragṛhya,
can agni be a pragṛhya element. Since E is unacceptable, then,
B also must be rejected. This leaves us with A and C (cf. A
6.1.102,1.1.11 [532, 76]).

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Two questions remain. First, how can the ending / of
nāmnī and so on be a dvivacana ending that terminates in / if
it consists simply of / ? Second, how can the -i, -ō of forms
like agni and vāyū, gotten by applying A (718), conform to C?
These questions are resolved through conventions that are
required by facts independent of those under consideration.
Recall that there is a rule whereby the initial augment /ī/ is
added to an ārdhadhātuka affix which begins with a consonant
other than y and other rules that disallow this augment after
particular verbs (see 144–153). The affixes tum, sya are
polyphonic and begin with consonants other than y. The affix
which immediately follows the verbs in dā-s-at, mand-īs-at
(A 3.1.3.4 [236]), however, is simply s. Yet, just as one has tum,
itum and sya, isya, one has also s, īs. The rules which apply
relative to augmenting with /ī/ should apply also to account for
s and īs. This is possible if, by convention, what is said to
apply to an element beginning with a given sound applies also
to an element that consists of that sound alone. Similarly,
devābhyaṁ (< deva-bhyaṁ) is accounted for by providing that
the final vowel of a stem in -a is replaced by the long vowel
-ā before certain endings (A 7.3.102 [482]). The form ābhyaṁ
(< a-bhyaṁ < ... idam-bhyaṁ) should be derived in a similar

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manner, although the stem in a-bhyām consists merely of a-
This is possible if, by convention, what is said to apply to an
element ending in a given sound applies also to an element
consisting of that sound alone. Pāṇini adopts such conventions
(A 1.1.21 [99]). Hence, a rule which provides that dvivacana
endings that terminate with i, ū, e belong to the praghya
class also provides, by convention, that endings which consist
solely of i and ū belong to this class. Recall too that a
convention is established whereby a vowel Vз which is the
single replacement for contiguous vowels V1 and V2 is treated
as the final segement of the item which ends in V1 and the
initial segment of the item which begins with V2 (A 6.1.85
[110]). Thereby, the -ū of kurū (< kuru-ū: A 4.1.66 [271]) is
treated as the final vowel of a nominal base (kuru), so that it
is eligible to take nominal endings. Similarly, the vowel -au
of devau is treated as the initial sound of a nominal ending, so
that devau is a pada. In the same manner, the -i of agni and
the -ū of vāyū are treated as the initial sounds of endings, so
that agni and vāyū can indeed be considered to contain
endings. By the convention mentioned above, moreover, these
endings are said to end in i and ū.

In sum, first- and second-triplet dual forms are best
accounted for by positing basic endings au, and forms of the
types in (270) (718) are best derived by having stem-final -i,
-ū and the endings au both be replaced by i and ū (A 6.1.102
[532]).

This established, let us turn to bahuvacana endings of the
first triplet. There is a fairly large variety of forms. First,
there are non-neuter forms with a clearly segmentable ending
-as:

(276) agnyas patayas sakhāyas trayas matayas devyas
striyas dhīyas vāyavas dhenavas vadhivas bhruvas
pitarās mātāras svasāras kartāras tisras catasras
gāvas rāyas nāvas vācas

The feminine types
(277) *ajās ambās sarvās*
also can be accounted for on the basis of *ajā-as* and so on (see below). Neuter forms have -ī:

(278) *phalāni sarvāni anyāni vārini trīni asthini madhūni namāni balīni catvāri chandāmsi ballyāmsi havīmsi dhanūmsi*
A group of number words has corresponding forms with no overt ending, as in

(279) *pañca śat sapta nava daśa*
and one number word has -au: *aṣṭau* 'eight'. Finally, there is the pronominal type *sarve* (nom. pl. masc.)

Once more, there is an ending whose domain is broader than that of any other: *as*. This should consequently be considered the basic bahuvacana ending of the first triplet. The masculine type *sarve* and forms of the types in (278)-(279), as well as *aṣṭau*, are then accounted for through replacing *as* (see A 7.1.17, 20-22 [492-494]). Feminine forms like *ajās* can easily be derived from *ajā-as*, with the application of a general phonological rule whereby the contiguous homogeneous vowels -ā-a- are both replaced by a single long vowel (A 6.1.101[532]). This general rule cannot serve to derive *devās* from *deva-as*, however, since it has an exception (A 6.1.97 [531]), whereby pada-interior *a* and a following guṇa vowel are both replaced by the latter alone; this would allow *devas* as a plural form instead of *devās*: A way is open, nevertheless, to derive *devās* from *deva-as*. As has been shown (718-719), forms like *agni, vāyu* are best derived by means of a rule which serves to replace stem-final -ī and -u and *au* of the dvivacana endings with single long vowels homogeneous with the first, -ī and -ū. This rule can be modified to allow base-final -a and the vowel of -as also be be replaced by a single long vowel homogeneous with the first.

Now, the rule A (718) as formulated is not sufficient to account for certain archaic forms of the type *devī*, equivalent to *devyau*. To account for *devī* on the basis of *devī-au*, then, one should also allow stem-final -ī and the endings *au*
following it to be replaced, optionally, by \( i \) alone. Moreover, there are, again in Vedic, nominative plural forms of the type \( mārūtīs \) 'dedicated to the Maruts'. To account for such forms in addition to the type \( devyās \), one can allow \(-i\) of a stem and the \( a-\) of the ending \( as \) that follows optionally to be replaced by the first vowel alone. In the same manner, it is possible to have \(-a\) of a stem and \( a-\) of the ending \( as \) both be replaced by \( ā \) to derive \( devās \) from \( deva-as \). Both derivations would now involve replacing \( a-\) of \( as \) and a preceding stem vowel with a single long vowel homogeneous with the latter. Let us, therefore, consider modifying A to include such replacements.

A could also be modified to account for certain forms with a bahuvacana ending of the second triplet. As in the first triplet (see 720), here also there is an ending \( as \):

\[
(280) \text{strīyas dhiyas bhrūvas tilsas catasras rāyas nāvas vācas}
\]

In addition, there are forms in \(-īs\), \(-ūs\):

\[
(281) \text{matīs devīs strīs dhenūs vadhūs}
\]

These can now be accounted for by letting \(-i\ -i\ -u\ -ū\) of stems and \( a-\) of the ending \( as \) both be replaced by a long vowel homogeneous with the first. The same kind of substitution will account also for \(-ās\) in \( ajās\), \( ambās\), \( sarvās\) and \(-īs\) in \( mātīs\), \( svasīs\).

The modified version of A has, in effect, to be a series of related rules:

F. \(-a\ -ā\ -i\ -ī\ -u\ -ū\ -r\) together with initial vowels of endings of the first two triplets following these stem vowels are replaced by a single vowel, one that is long and homogeneous with the first of the two contiguous vowels (see A 6.1.102 [532]); e.g., \( deva-as \) \( devās\), \( ajā-as \) \( ajās\), \( agni-au \) \( agnī\), \( vāyu-au \) \( vāyū\), \( matī-as \) (second-triplet ending \( ūs\) ) \( matīs\), \( devī-as \) \( devīs\), \( dhēnu-as \) \( dhēnūs\), \( vadhū-as \) \( vadhūs\), \( mātr-as \) \( mātīs\).

G. Exception: F does not apply where an \( a-\) vowel is followed by a vowel other than \( a \) (A 6.1.104); e.g., \( deva-au \) \( devau\). Since single-vowel substitution by F is disallowed, a
general phonological rule (A 6.1.88 [529]) applies to replace both -a- and -au which follows with -au.

H. Exception: F does not apply where a long vowel is followed by a vowel other than a and also by the a- of the first-triplet ending as (A 6.1.105); e.g., devi-au > devyau, devi-as > devyas, vadhū-au > vadhvau, vadhū-as > vadhvas. Since F is not allowed to apply, semivowel replacement takes effect (A 6.1.77 [125]).

I. Option: Under the conditions given in G–H, the more general rule F is only optionally disallowed with respect to Vedic usage (A 6.1.106). E.g., devi-au > devi/devyau, mārutī-as > mārutīs/mārutyas.

With the addition of one rule, moreover, forms of the types

(282) devān sarvān agnīn patīn sakhīn trīn vāyūn pitān kartīn

are accounted for:

J. The -s of the second-triplet ending with a long vowel gotten by F is replaced by -n in the masculine (A 6.1.103).

Some forms require still other rules. Thus, what F provides for should not apply if dhiyau, dhiyas, bhrivas, bhrivaus are to be derived from dhi-au, dhi-as, bhrū-au, bhrū-as. Instead, -ī and -ū are replaced by -iy and -uv (A 6.4.77 [452]). The alternants strīs/strīyas also call for a particular statement: The -ī of strī- is replaced by -iy before vowels of endings, optionally before the second-triplet ending as (A 6.4.79–80 [500]). Further, in order to derive tisras and catasras instead of *tisraś and *catasraś, one must provide that the -r of the stems tisraś and catasraś is replaced by -r before a vowel (A 7.2.100 [475]). Finally, another special rule serves to replace the -o of a stem and the a- of the second-triplet ending as with the single vowel -ā- (A 6.1.93 [530]), thus accounting for forms like gāścows'.

Although the forms to be described are obviously complex, one might think that the rules referred to in 722 are themselves so complicated that other possibilities should be
entertained. Consider the following possibility. Suppose one posited \( s_f \) and \( s_2 \) as the basic bahuvacana ending of the first and second triplets. Forms of the types given in (276), (280) (720-721) could now be accounted for by providing that \( s_f \) is augmented with initial \( a \). In view of forms like mārutis, this augmenting would be made optional for Vedic usage. Since the type devās cannot be derived from deva-as by a general phonological rule, one would now have to say also that -\( a \) of a stem is replaced by -\( ā \) before \( s_f \). To account for the types in (281), one would also let this long-vowel substitution apply to vowels other than \( a \). Further, the types in (282) (722) would now be derived by substituting \( n \) for \( s_2 \) after long vowels of masculine forms gotten by such replacement. In sum, there is as much complexity in the alternative under consideration as in the set of rules dealt with earlier. Note, moreover, that a rule such as F is required for forms of the types in (270) (718). In addition, dialectal variants such as devī devyau, mārutis / mārutyas are comparable, so that it is reasonable to account for variant dual and plural forms of these kinds in the same manner. This can be done with the rules referred to earlier. It is thus preferable to posit basic bahuvacana endings \( as \) for the first and second triplets. These are distinguished from each other by means of markers: \( jas \) and \( əs \).

Consider now ekavacana endings of the second triplet. An ending \( am \) appears in forms of the types

(283) sakhāyam striyam dhiyam bhrum pitaram
    mātaram svasāram kartāram rāyam nāvam vācam
There are also forms with -\( m \) following a stem vowel:

(284) devam sarvam ajām ambām sarvām agnim patim
    matim devim strīm vāyum dhenum vadhūm
Neuter forms are homophones with first-triplet forms, of the types shown in (264)-(265) (717). Now, as can be seen, striyam and strīm are alternants, just as striyas and strīs alternate (722). In addition, \( am \) clearly has a broader domain than any other ekavacana ending of the second triplet. Hence,
it is proper to posit \textit{am} as the basic ending and to have rules comparable to those which account for forms like \textit{agnim}, \textit{stris} serve also to derive forms of the types in (284); see the references given in 722. Moreover, as was the case for certain forms with \textit{sas}, so here also special rules are required: -\textit{i}, -\textit{u} of \textit{dhr}-, \textit{bhrū}- are replaced by -\textit{iy}, -\textit{uv} before vowel-initial endings; the -\textit{i} of \textit{strī} is optionally replaced by -\textit{iy} before \textit{am}, just as it is before \textit{sas}; and -\textit{ā} replaces both stem-final -\textit{o} and the a-of \textit{am}, as in \textit{gām}.

Let us return now to neuter forms with ekavacana endings of the first two triplets. From what has been shown, it follows that the basic endings are \textit{s} and \textit{am}. Since the forms in question are homophonous, moreover, both endings undergo the same operations, as follows:

K. \textit{s} and \textit{am} are replaced by zero after neuter stems (see A 7.1.23 [495]); e.g., \textit{vāri-s} > \textit{vāri}, \textit{vāri-am} > \textit{vāri}, \textit{madhu-s} > \textit{madhu}, \textit{madhu-am} > \textit{madhu}, \textit{nāman-s} \textit{i} \textit{am} > nāman > nāma (A 8.2.7 [539]), \textit{balin-s} \textit{l} \textit{am} > \textit{balin} > \textit{bali}, \textit{chandas-s} \textit{l} \textit{am} > \textit{chandas}, \textit{sarpis-s} \textit{l} \textit{am} > \textit{sarpis}, \textit{dhanus-s} \textit{l} \textit{am} > \textit{dhanus}.

L. Exception: \textit{am} substitutes for \textit{s} and \textit{am} after a stem in -\textit{a} (A 7.1.24). E.g., \textit{phala-s} > \textit{phala-am} > \textit{phalam} (A 6.1.107 [533]), \textit{phala-am} > \textit{phala-am} > \textit{phalam}.

The type \textit{anyat} requires still another rule. As I remarked earlier (717), this type could be considered to contain an ending \textit{d} or \textit{ad}. Suppose that \textit{s} and \textit{am} were replaced by \textit{d}. This would account for \textit{anyad} (\textit{> anyat}) corresponding to forms like \textit{devas}. However, one could not now derive \textit{anyat} corresponding to \textit{deva} (voc. sg.), which is gotten from \textit{deva-s} by deleting the sambuddhi ending \textit{s} after a stem in -\textit{a}. Under the alternative being considered, \textit{d} in \textit{anya-d} from \textit{anya-s} would be a replacement for the sambuddhi ending \textit{s}. By the metarule according to which a replacement is treated like its substituend (A 1.1.56 [100]), then, \textit{d} also would be a sambuddhi ending. Hence it would be subject to deletion, so that one could not derive a vocative \textit{anyat}. Consequently, one must consider substituting \textit{ad} for \textit{s} and \textit{am}. Now, in \textit{anya-ad} from \textit{anya-am}.
the replacement is treated like its substituend; so that one could let the -a of anya- substitute for both contiguous vowels. However, there remains a problem connected with anya-ad in which ad has replaced s. For now F (722) would apply here to give *anyād instead of the required form. Hence, a different procedure must be adopted. Let s and am be replaced by ad which conditions a particular operation: That part of a stem which begins with its last vowel is deleted before this ending: anya-ad > anyad. In any-ad thus gotten, there is no sequence of vowels subject to replacement, and ad which replaces the sambuddhi ending s follows a consonant, so that it is not subject to deletion. Pāṇini follows this procedure, by marking the substitute ad with qʾ (see A 7.1.25 [495]).

There are thus good reasons in Pāṇini's system not only for positing basic nominal endings but also for positing the particular basic endings in question (see 67 with Figure B).

4.2.3. Basic verb endings.

4.2.3.0. Introduction.

Positing basic verb endings involves more complexities than are connected with nominal endings. Arriving at basic verb endings involves a series of abstractions, and this has to do with the semantics with which these endings are associated. For verb endings signify not only kārakas and numbers connected with these, as do nominal endings, but also have to do with time references and modalities. Therefore, it will be best to consider these endings in steps, beginning with endings found in different tense and modal forms.

4.2.3.1. Endings in different tense and modal forms.

Present indicative forms show the following endings: prathama: tī (ekavacana) tas (dvivacana) anti, atī (bahu-
vacana), madhyama: sī thas tha, uttama: mi vas mas.
These are obvious in the types:

(285) atti attas adanti, atsi atthas attha, admi advas
admas 'eat'
(286) sunoti sunutas sunvanti, sunoṣi sunuthas sunutha,
sunomi sunuvasi sunvas sunumas i sunmas 'press
juice out of something'
(287) juhoti juhutas juhvati, juhoṣi juhuthas juhutha,
juhomi juhulas juhumas 'offer oblations'

In addition, -doḥ- is the regular phonological outcome of -dht-
and -dhh- (see A 8.2.40 [547]), so that runaddhi 'holds in,
besieges', runddhās, runddhās, and rundha are properly
treated as containing the endings tī tass thas tha. Forms of the
type bhavati'is, becomes', bhavatas clearly have a stem in -a
(bhava-) followed by the endings tī and tas. In parallel
fashion, then, bhavanti should be treated as consisting of the
stem bhava- and the ending anti. A particular substitution
rule (A 6.1.97 [531]) allows for deriving bhavanti from
bhava-anti. The types tudanti 'shove, goad, wound', divyanti
'gamble', corayanti 'steal' are derived similarly, from
tuda-anti, divya-anti (≠ ... divyanti), and coraya-anti. The
distribution of the bahuvacana endings anti, ati is thus: ati
with stems that have undergone doubling, anti elsewhere.

The sets

(288) roditī ruditas rudanti, rodiṣī rudithas ruditha,
rodīmi rudivas rudimās 'cry, weep'
(289) svapitī svapitas svapanti, svapiṣī svapithas
svapitha, svapimi svapivas svapimās 'sleep, dream'
(290) braviti brūtas bruvanti, braviṣī brūthas brūtha,
bravimi brūvas brūmās 'say, speak'

contain forms with anti, but svapiti, roditī, svapitas, ruditas,
and so on have -iti, -itas and so on following the verbs; and
braviti, braviṣi, bravimi have -iti, -isi, -imi after the verb.
These particular endings are restricted to particular verbs, so
that they are best treated as derived from basic tī, tass and so
on through augmenting (A 7.2.76, 7.3.93 [440]).
Middle present forms, as in
(291) sunute svāte sunvate, sunuṣe sunvāthe sunudhve,
sunve sunuvahel sunvahe sunumahel sunmahae
(292) rundhhe rundhāte rundhate, runtse rundhāthe
rundhve, rundthe rundhvahe rundhmahe
obviously contain the following endings: prathama: te āte ate,
madhyama: se ṛthe ṛhve, uttama: e vahe mahe.

stuvite, stuvīše, and so on, which vary with stute, stuṣe,
etc., are to be treated in the same manner as the corresponding
active forms staviti / stauti, and so on: The initial augment i-
is added optionally to the endings (A 7.3.95 [440]). Ēte 'is
lying down, sleeping', švāte and āste 'is seated, āsāte
contain the same endings te and āte, but āsate and āserate
differ. The latter is derived in the most straightforward way
by adding the augment ṛ- to the ending āte (A 7.1.6 [510]).

As was shown in 729, forms of the type bhavanti should
be derived from stems in -a followed by the ending -anti.
Accordingly, the type pacante 'they are cooking (for them-
selves)', corresponding to pacanti 'they are cooking (for some
one else)', is to be derived from paca-ante, with the variant
ante, found only with stems in -a. In the same way, pace 'i
am cooking', which corresponds to pacate, pacase as sunve
corresponds to sunute and sunuṣe, should be analyzed into a
stem paca- and an ending e. In both instances, pada-interior
-a- and a following guna vowel are then replaced by the latter
alone (A 6.1.97 [531]): paca-ante > pacante, paca-e > pace.

Forms of the type pacete, pacethe stand apart. Such
forms are parts of sets with stems in -a only, so that
considerations of domains speak for treating them as derived
from forms with more basic endings āte, āthe. There is a
general phonological rule whereby a and a following i-vowel
are both replaced by e(A 6.1.87 [528]). One can take advantage
of this, by providing that the endings undergo substitution that
results in a sequence -a- ̄i-. Obviously, the most
straightforward procedure would be to let i- replace the
initial ā- of the endings. Note, however, that optative forms
of the type paceyus, paceyātām require -iy- after the stem. Accordingly, Pāṇini lets iy substitute for ā-of the endings (A 7.2.81 [443]). y is then dropped before the consonants t, th (A 6.1.66 [522]), just as the -y- of paca-iy, paca-iyām corresponding to paceyus is deleted to derive pacet, pacetām.

Forms of the future type

(293) atsyati atsyatas atsyanti, atsyasi atsyathas atsyatha, atsyāmi atsyāvas atsyāmas 'eat'

(294) sosyati sosyatas sosyanti ... 'press juice out of something'

(295) sosyate sosyete sosyante, sosyase sosyethe sosyadhve, sosye sosyāvahe sosyāmahe

contain endings found in presents of the type pacati, pacate.
The endings now follow a stem with an affix -syā, augmented -iṣya (A 3.1.33 [236]).

The future type

(296) attā attārau attāras, attāsi attāsthās attāsthā, attāsmi attāsvās attāsmas

(297) sotā sotārau sotāras, sotāsi sotāsthās sotāsthā, sotāsmi sotāsvās sotāsmas

(298) sotā sotārau sotāras, sotāse sotāsāthe sotādhve, sotāhe sotāsvāhe sotāsmahe

have endings after a stem with the suffix -tās (A 3.1.33), which has a variant -tāḥ before e and one without -s before s, r, dh (A 7.4.50-52, 8.2.25 [435, 543]). Madhyama and uttama endings are the same as in the types (293)-(295), but prathama endings differ. Given this situation, forms with prathama endings are best considered to have replacements for more basic endings ti and so on (see A 2.4.85 [403]).

Imperfect active forms of the type

(299) asunot asunutām asunvan, asunos asunutam asunuta, asuvam asunuvāl asunva asunumāl asunma

obviously have the following endings: prathama: t tām an, madhyama: stam ta, uttama: am va ma.

In the type
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(300) abhavat abhavatām abhavan, abhavas abhavatam
abhavata, abhavam abhavāva abhavāma

all forms except abhavan and abhavam are unambiguously
divisible into an augmented stem abhava- or abhavā- and
endings: abhava-t, abhava-tām, abhava-s, abhava-tam,
abhava-ta, abhavā-va, abhavā-ma. As bhavanti is derived from
bhava-anti (see 728), so also should abhavan be derived from a
form in which abhava- is followed by an ending with -a-( -ant:
see below). Similarly, abhavam should be derived from
abhava-am, and the same rule that accounts for -a- in place of
-a-a- to give abhavam (A 6.1.107 [533]) will apply also to
derive akrinām 'bought' from akrinā-am. The same phonolog-
ical rule that accounts for runaddhi ( < ... runadh-ti ),
rundhas ( < ... rundh-tas) and so on (see 728) accounts also for
arunddham, arundham, arundha on the basis of a stem
arundh- followed by the endings tām, tam, ta: The second and
third singular forms arunat are to be derived from arunadh-s;
arunadh-t, with deletion of the endings -s, -t after a
consonant (A 6.1.68 [404]).

There is also an ending us: This regularly occurs in the
type ajuhavus'offered oblations', but is not limited to this type
alone, as can be seen from avidus’knew’. Clearly, us and an
cannot be collapsed by virtue of any phonological rule, so that
one has to be considered a replacement of the other. Just as
clearly, the domain of us speaks against considering this the
basic bahuvacana ending of the prathama triplet under
consideration. Instead, the ending which appears in asunvan,
abhavan and so on should be considered more basic (cf. A 7.1.3,
3.4.109 [509, 402]). Now, there is a phonological rule whereby
the final consonant of a pada that ends in a cluster is deleted
(A 8.2.23 [542]). In addition, there is a clear pattern of
correspondence between endings found in present and
imperfect forms: ti: t :: si: s. According to the same pattern,
ant should correspond to anti found in present forms (cf. A
7.1.3, 3.4.100 [509, 400]).

733 The imperfect forms related to (288)-(290) (729) are

[ 558 ]
(301) arodīt arudītām arudan, arodīs arudītam arudita, arodam arudiva arudima
(302) asvapīt asvapītam asvapan, asvapīs asvapītam asvapīta, asvapam asvapīva asvapīma
(303) abravit abrūtām abrūvan, abravīs abrūtam abrūta, abram abrūva abrūma
abravit, abravīs show the same augment as in bravīti, bravīṣi, and asvapītam, arudītam etc. also have the same augment as the corresponding present forms, but asvapīt, asvapīs, arodīt, arodīs contain -ī- instead of -ī-. The augment -ī- also is found in āsit, āsīs, corresponding to astī, aṣī, from as'be' (A 7.3.96, 98 [440]). In addition, ādat, ādas'ate' contain endings with the augment -a-, which appears also in dialectal forms of rūd: arodat, arodas (A 7.3.99-100).

734 Imperfect middle forms like
(304) asunuta asunvātām asunvata, asunuthās asunvāthām asunvadhām, asunvī asunvāvahī ā asunvahī asunumahī ā asunmahī
(305) aruddhā arundḥātām arundhata, arundḥās arundḥāthām arundhāvahī arundhī arundhavahī arundhmahī
contain the following endings: prathama: ta ātām ata, madhyama: thās āthām dhvam, uttama: i vahi mahī.

The ending of aṣerata obviously should be accounted for in the same manner as the ending of the corresponding present stāte (see 730), with the augment -ī- added to -ata. Similarly, the -e- of apacetām, apacethām is to be explained in the same manner as the -e- of the corresponding present forms pacete, pacethe. After stems in -a, one has, as in the present, an ending with -n-: apacanta. Stems in -a also have forms of the type apace, obviously to be analyzed into a stem with -a- and an ending. Given that forms of the type asunvi consist of a stem and an ending -ī, then, apace should be derived from apaca-ī, with -e replacing -a-ī by a general phonological rule (A 6.1.87 [528]).

735 Conditional forms contain endings as found in imperfect
forms of stems in -a, since endings here follow stems with the suffix -syā, augmented -iṣya (A 3.1.33 [236]). For example:

(306) aṣoṣyat aṣoṣyatām aṣoṣyan ...
(307) aṣoṣyata aṣoṣyetām aṣoṣyanta ...

From what has been shown up to now, it is proper to say that aorist forms like

(308) abhūt abhūtām abhūvan, abhūs abhūtam abhūta, abhūvam abhūva abhūma ‘be, become’
(309) aghasat aghasatām aghasan, aghasas aghasatam aghasata, aghasam aghasāva aghasāma ‘eat’
(310) ahauscit ahauscitām ahauscus, ahauscis ahauscitam ahauscita, ahausam ahausciva ahauscima ‘offer oblations’
(311) asoṣṭa asoṣṭātām asoṣṭata, asoṣṭhās asoṣṭāthām asoṣṭhvam, asoṣī asoṣtvahī asoṣmahi ‘press juice out’

contain the same endings as in active imperfect forms; see 732-734.

However, us is more wide spread in the aorist than in the imperfect. This is the regular bahuvacana ending of sigmatic formations such as ahauscus, and it appears also in aorists like adus ‘gave’, from stems in -ā (cf. A 3.4.109-110 [402]).

Active optative forms also have the bahuvacana ending us in the prathamā triplet (cf. A 3.4.108 [401]); otherwise, one finds here also the endings seen in imperfect and aorist forms. For example:

(312) adyāt adyātām adyus, adyās adyātam adyāta, adyām adyāva adyāma
(313) sunuyāt sunuyātām sunuyus ...
(314) bhavet bhavetām bhaveyus, bhaves bhavetam bhaveta, bhaveyam bhaveva bhavema

Not only active optative forms but also corresponding precative forms (see (179)-(184) [681]) have the bahuvacana ending us in the prathamā triplet. Otherwise, the same endings are found here as in imperfect and aorist forms, but all these endings are now preceded by certain elements. As has been shown (696), forms like sunuyāt, tanuyāt, krīṇiyāt,
rundayit are to be treated as containing cosignifying affixes --- the suffixes nu, u, nı and the infix n --- and endings with augments. The cosignifying affixes are those found also in present and imperfect forms. Similarly, as atti and juhoti are derived by introducing sap and then deleting it (A 2.4.72, 75 [158]), so also are adyāt, juhuyāt and other optative forms of the verbs. Again, bhavet and so on are derived with the cosignifying affix sap in the same manner as the corresponding present and imperfect forms bhavati, abhavat, and so forth.

There is an obvious difference between forms that western grammarians traditionally label 'optative' and 'precative'. Precative forms, such as bhūyāt, sūyāt, tudyāt, rudhyāt, tanyāt, kriyāt obviously lack the vikaraṇas found in corresponding optative forms, such as bhavet, sunuyāt, tudet, rundhyāt, tanuyāt, kriṇiyāt; and hūyāt lacks the reduplication found in juhuyāt. In addition, optative forms like adyām, adyāva, adyāma differ from corresponding precatives such as adyāsam, adyāsva, adyāsma in that the latter contain an -s- which is absent from the former. Further, hūyāt shows a long base vowel, as opposed to juhuyāt, with a short vowel before -yāt. Once it is accepted that all such forms contain augmented endings, their common and distinct properties can be accounted for as follows. First, let there be two sets of homophonous endings, belonging to different classes: sārvadhatu and ārdhadhatu endings (A 3.4.113, 116 [63]), and let the augment yās be added to parasmaipaśa endings of both sets (A 3.4.103 [401]). The vikaraṇas sap, snu, and so on (see 157) are introduced only if verbs occur with sārvadhatu affixes. In addition, non-final -s- in such augmented endings as -yāsam is deleted if the ending belongs to the sārvadhatu class (A 7.2.79 [442]). For example, su-nu-yām (< ... su-nu-yāsam) contains the augmented ending yām, without -s-, after the stem su-nu;, with the vikaraṇa snu, the corresponding precative sūyāsam has the ending yāsam after a stem that lacks the vikaraṇa. Moreover, the stem vowel of su-yāsam is replaced by the corresponding long vowel before
of the ārdhadhātuka affix -yāsam (A 7.4.25 [426]). Such
lengthening does not apply before the y- of a sārvadhātuka
affix; for example, the stem suṇu- of suṇuyaṁ ends with a
short vowel.

The precative bhūyāsam lacks the vikaraṇa sap, which is
introduced if the verb occurs with the augmented sārvadhātuka
ending yāsam, as in bhāveyam ( ... bhū-a-yāsam ). Now, a
general phonological rule (A 6.1.87 [528]) has e replace both a
and a following i, so that it makes sense to derive bhāveyam
by letting iy- replace yā- after a stem in -a (A 7.2.80 [442]).
The same rules allow for the -e-of forms like bhāvet, bhāves,
which, however, lack the -y- found in bhāveyam and bhāveyus
(-yus < -yāus: A 6.1.96 [531]). Another sūtra comes into play,
whereby y is deleted before a consonant other than y (A 6.1.66
[522]).

The derivation of bhāveḥ from bhū-a-yāss also involves
deleting non-initial -s- of the ending. In order to derive
bhūyās from bhū-yāss, in which the ending s has the augment
yās-, one cannot invoke the same rule, since the ending in
question does not belong to the sārvadhātuka class. Instead,
the penultimate -s- of this ending is deleted by another rule:
s is dropped if it is the first consonant of a pada-final cluster
(A 8.2.29 [543]). The same rule applies, twice, in deriving
bhūyat from bhūyāsst, which has not only the augment yās but
also an additional -s-, for reasons to be noted in 739.

Consider now middle optative and precative forms, such
as those of the verbs su 'press juice', edh 'thrive':

(315) suṇvita suṇvīyatām suṇvīran, suṇvīthās
    suṇvīyatām suṇvīdhvam, suṇvīlya suṇvīvahi
    suṇvīmahī
(316) edheta edheyatām edheran, edheythās edheyyathām
    edheydhvam, edheya edhevahi edhemahī
(317) soṣīstā soṣīyastām soṣīran, soṣīsthās
    soṣīyasthām soṣīdhvam, soṣīlya soṣīvahi soṣīmahī
(318) edhiṣṣīṭa edhiṣṣīyastām edhiṣṣīran, edhiṣṣīsthās
    edhiṣṣīyasthām edhiṣṣīdhvam, edhiṣṣīlya edhiṣṣīvahi

[ 562 ]
Edhisiṃahi

Here again, most of the endings are those found in corresponding imperfect and aorist forms, though they differ by being augmented, but there are also two distinct endings: ran, the bahuvacana ending of the prathama triplet, and a, the ekavacana ending of the uttama triplet. A set such as sunviya sunvivaḥi sunviṃahi could be derived with endings a vahi maḥi to which an augment -y- is added. The -y- of -lyvaḥi, -lyṃahi would then be dropped by the same rule as applies in deriving baveva, bhavema and so on (see 738). Nevertheless, one must consider also sets such as soṣṭa saṣṭaḥ saṣṭaḥ, which require an augment sily- Just as a distinction is made between sārvadhātuka and ērdhadhātuka endings in active optative and preceptive forms, then, let this distinction be made also for corresponding medio-passive forms. The initial augment sily- is added to all such endings, but non-initial -s- is dropped in endings that belong to the sārvadhātuka class. This is not all, however. Forms such as soṣṭa, soṣṭāstām, soṣṭhashās and soṣṭāstham show not only initial sily-, sī- but also an extra s, preceding t, thand ṭ, th. Accordingly, it is proper to introduce an extra s as an augment for t, th in endings of such forms (see A 3.4.107 [401]), and to have the same augment occur with an active ending such as t, as in bhū-vasst (see 738). Since edh is a set base, one has edhisiṣṭa and so on, with the initial augment if that is generally added to ērdhadhātuka endings beginning with consonants other than y (A 7.2.35 [145]).

Active imperative forms show the endings tu, tām and antu or atu in the prathama triplet; e.g., astu stām santu, bhavatu bhavām bhavantu, jhuotu jhuutām jhuvatu. The distribution of antu and atu is the same as that of anti and ati (see 728).

The dvivacana and bahuvacana endings of the madhyama triplet are respectively tam and ta, as in stām sta, bhavām bhavata, jhuutām jhuhuta.

There are several types of singular forms. To forms of
the types bhavatam bhavata, sunutam sunuta, tudatam tudata, tanutam tanuta, in which tam and ta follow stems in -a or with affixal -u that is not preceded by a consonant cluster, correspond singular forms with no overt ending: bhava, sunu, tuda, tanu. To the type muśnitam muśnīta, in which tam and ta follow a stem with the affix -ni- preceded by a consonant, the corresponding singular form is of the type muśāṇa. Since stems in -a lack an overt ending, it is simplest to treat muśāṇa and so on as a subtype of this sort of imperative (cf. A 3.1.83 [405]). Consonant-final stems have an ending dhi, which occurs also with certain other stems, such as jhū-; e.g., addhi, rundhi, juhudhi. Elsewhere, one has the ending hi, as in yāhi 'go, travel', ihi 'go', kṛṣiṇhi 'buy' āpnuhi 'reach, obtain'. This ending also occurs augmented with initial i; e.g., rudhihi, svapīhi. Of the overt endings, hi has the broadest domain, so that it can be treated as basic with respect to dhi and zero (A 6.4.101, 105, 106 [455]).

First person dual and plural forms have -āva and -āma after stems. Moreover, in sets where stems have variant shapes, these endings follow stems in the form found before tu, not in the form found before other dvivacana and bahu-vacana endings. For example, juhavāva juhavāma, sunavāva sunavāma, runadhāva runadhāma, ayāva ayāma have stems comparable to those of juhotu (-hav-āva < -ho-āva: A 6.1.78 [524]), sunotu, runaddhu, etu (ayāva < e-āva). Āva and -āma should not be considered to consist of -va, -ma preceded by an affix ā, for the same reasons which preclude positing affixes -yās- and -sīy- in optative forms. Hence, it is best to say that these imperative forms contain the endings va and ma to which is added the augment ā (A 3.4.92 [398]). In order to show that these augmented endings occur with stems that undergo guna replacement (-no-< -nu-: A 7.3.84 [127]), moreover, in Pāṇini's system they are marked with p (cf. A 1.2.4 [513]). First singular forms such as juhavāni, sunavāni, runadhāni, and ayāni are, then, best treated as having an ending ni (A 3.4.89 [398]) augmented in the same way
Forms of the type jivatāt 'may he live', 'may you live' are equivalent to and alternate with forms containing hi or its replacements and tu. Consequently, tāt is to be considered an optional substitute for hi and tu (A 7.1.35 [441]).

Examples such as

(319) sunutām sunvātām sunvalām, sunuṣva sunvāthām
sunudhivam, sunavai sunavāvahai sunavāmahai
show the following endings in middle imperative forms:
prathama: tām ātām atām, madhyama: sva āthām dhva,
uttama: ai āvahai āmahai. In addition, stems in -a, which have
indicative forms of the type pacante have corresponding
imperatives of the type pacantām. Forms such as pacetām,
pacethām are accounted for by the same rule that applies to
derive pacete, pacethe (see 730).

Perfect active forms have the following endings: prathama: a
atus us, madhyama: tha athu a, uttama: a va ma. For example:

(320) juhāva juhuvatus juhuvus, juhotha juhuvathus
juhva, juhāval juhava juhuviva juhuvima
(321) cakāra cakratus cakrus, cakartha cakrathus cakra,
cakāral cakara cakra cakrma
(322) dideva didivatus didivus, didevitha didivathus
didiva, dideva didiviva didivima
(323) tutoda tutudatus tutudus, tutoditha tutudathus
tutuda, tutoda tutudiva tutudima

from the verbs hu, kr, div, tud. Forms of the type papau
'protected', dadau 'gave' are the norm for bases in -ā only
(pā tum, dā tum ), so that it is proper to consider that the
endings of such forms replace a (see A 7.1.34 [441]).

Perfect middle forms have the following endings:
prathama: e āte ire, madhyama: se āthe dhve, uttama: e
vahe mahe. For example:

(324) suṣuve suṣuvāte suṣuvire, suṣuviṣe suṣuvāthe
suṣuvīdhvei suṣuvīdhve (see A 8.3.79 [566]),
suṣuve suṣuvivahe suṣuvimahe
(325) cakre cakrāte cakrire, cakṛse cakrāthe cakṛdhve
4.2.3.2. The set of basic verb endings.

It is thus possible to abstract a series of verbal endings as shown below, with traditional western labels 'present' and so on:

**Active endings**

<table>
<thead>
<tr>
<th>Tense</th>
<th>Conjugation</th>
<th>Present</th>
<th>Future</th>
<th>Imperfect</th>
<th>Conditional</th>
<th>Aorist</th>
<th>Optative</th>
<th>Imperative</th>
<th>Perfect</th>
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<tr>
<td>Present</td>
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<td>tas</td>
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<td>tas</td>
<td>tha</td>
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<td>mas</td>
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<tr>
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**Middle endings**

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<th>Imperfect</th>
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<td>i vahi</td>
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Pāṇini

Optative: a ātām ran thā āṭhām dhvam a vahi mahi
Imperative: tām ātām atām sva āṭhām dhvam ai vahai mahai antām
Perfect: e āte ire se āte dhve e vahe mahe

This array of endings is clearly susceptible to reduction. There are, for example, some obviously discernible patterns indicating that some endings can be related to others in a systematic manner. Thus: (a) ti: t tu: anti: ant antu (b) vas: va: mas: ma (c) te: ta: tām: ante: anta: antām (d) āte: ātām: āthe: āṭhām (e) e: i: ai: vahe: vahi: vahai: mahe: mahi: mahai. Now, the very analytic procedure which allows one to abstract such units associated with particular meanings (see 667-668) precludes certain extreme reductions. Suppose, for example, that, on the basis of the patterns shown in (a)-(e), one posited basic endings t, s, and m, to which other elements would be added. The endings ti, si, and mi would then be gotten by adding i to these, and a would be added to t and s, yielding ta and sa, to which in turn i could be added in order to arrive at te and se (< ta-i, sa-i). A problem immediately arises in that, parallel to the pair s: si, one has thās: se, not *sa: se. Nor is there any pair *ma: me; one has instead i: e and a: e. Of course, e can be derived from a-i, so that the pair a: e is at least comparable to others. And once one has embarked on such an analysis, the parallelism of e: vahe: mahe invites one to treat the last two also as consisting of vaha, maha and an element i. Yet the parallelism between ti: t, si: s and pairs of middle endings breaks down in more than one way. Not only does one not have *ma or *sa, one does have i and thās, and instead of *vaha, *maha, one finds vahi, mahi. Clearly, it is not possible to abstract a suffix i generally used and connected with a particular meaning. Not even treating such an element i vaguely as a "primary marker" will work in any generalized manner. Let us therefore take the endings as shown for our starting point.
Let us begin by considering active endings other than the bahuvacana endings of the prathama set. In accordance with what has been noted in 744, it is reasonable to posit as basic those endings that appear in present and future forms: \( ti \) \( tas \), \( si \) \( thas \) \( tha \), \( mi \) \( vas \) \( mas \). To arrive at endings which appear in other forms, with the exception of imperative and perfect forms, one can then let the following operations apply.

**A.** 1. \( -i > 0 \): \( ti > t \), \( si > s \)
2. \( -s > 0 \): \( vas > va \), \( mas > ma \)
3. \( tas \) \( thas \) \( tha \) \( mi > tām \) \( tam \) \( ta \) \( am \), respectively

Imperative endings are gotten by the following:

**B.** 1. \( -i > -u \): \( ti > tu \)
2. \( si > hi \)
3. \( mi > ni \)
4. Other endings are subject to operations given under

**A:** \( vas > va \), \( mas > ma \) (**A.2**); \( tas \) \( thas \) \( tha > tām \) \( tam \) \( ta \) (**A.3**)

5. Uttama endings receive the initial augment \( ānī \) \( āva \) \( āma \)

To obtain optative and precative endings, one can let \( A.1-3 \) apply and have the following take effect:

**C.** 1. The initial augment \( yās \) is added to endings
2. \( X > us \) (where \( X \) is an ending whose basic form is to be specified; see 747-748)

Endings which appear in perfect forms are for the most part distinct, so that it is simplest to have a rule substituting these endings for the basic ones:

**D.** \( ti \) \( tas \) \( X \) (see **C.2**), \( si \) \( thas \) \( tha \), \( mi \) \( vas \) \( mas > a \) \( atus \) \( us \), \( tha \) \( athus \) \( a \), \( a \) \( va \) \( ma \)

Having posited \( ti \), \( tas \), and so on as basic active endings, one could, in parallel fashion, posit \( te \), \( āte \), and so forth as the basic middle endings. However, one would then have to state four different substitutions for a single sound, \( e \), as follows:

**a.** \( e > a \) (\( te > ta \)),  
**b.** \( e > ām(āte > ātām, āthe > ātāhīm) \),  
**c.** \( e > am(dhve > dhvam) \),  
**d.** \( e > i \) (\( e > i \), \( vahe > vahi \), \( mahe > mahi \)).

On the other hand, if one treats as basic the endings found in imperfect forms, those of present and future forms are more
simply derived, as follows.

E. 1. That part of an ending which begins with its last vowel is replaced by e: ta > te, ätäm > äte, äthäm > äthe, dhvam > dhve, i > e, vahe > vahe, mahe > mahe
2. thäs > se

Perfect endings, then, can be derived by letting E.1-2 apply together with two rules, one of which (F.1) is an exception to part of E.1:

F. 1. ta > e
2. X (see C.2 [745]) > ire

Optative endings can now be gotten by the following:

G. 1. The initial augment siy is added to endings.
2. X > ran
3. i > a

To account for tām, sva, ai, vahai, and mahai of imperative forms, different strategies are possible. First, the following substitutions could apply:

H. 1. -i > -ai: i > ai, vah > vahai, mahe > mahai
2. -a > -ām: ta > tām
3. thäs > sva

Alternatively, one could let the substitutions provided for in E.1-2 take effect and then have special replacements for -e obtained in this manner:

I. 1. In uttama endings, -e > -ai: e > ai, vahe > vahai, mahe > mahai
2. After s and v, respectively, va and am replace -e: se > sva, dhve > dhvam
3. Elsewhere, -e > -ām: te > tām, äte > ätām, äthe > äthām

Note that although I.1-3 all provide replacements for e, they cannot be reduced to a single rule in the way that E.1 can be stated instead of four separate rules.

Now, at first blush H.1-3 appears to be the preferable set of rules in that it avoids a two step derivation such as: i > e > ai, vah > vahe > vahai. Nevertheless, just such derivations are required in certain instances. Although subjunctive forms are
not part of the language currently used in Pāṇini's time, they were part of Vedic usage, which Pāṇini also accounts for. And Vedic usage does have middle subjunctive forms of two types, such as īlāmahe, īlāmahai 'let us invoke, praise'. To account for both types, one need only let E.1 take effect and then have a substitution such as is provided for in I.1 take effect optionally (cf. A 3.4.96 [399]). Given that this is justified for such subjunctive forms, I.2-3 are also justified.

I have thus far left certain endings out of consideration: anti, ati of present forms, anti of future forms, ant and us of aorists, ant in conditional forms, antu and atu of imperatives, and ate, ante, ata, anta, atām, antām. I have also left unspecified the basic ending to which apply C.2, F.2, G.2 as well as the ending replaced by us according to D. We have now to consider what should be posited as the basic active and middle endings in these instances.

To begin with, note that the operations stated in A-I do not depend on the occurrence of endings after particular stems. Rules providing for the proper distribution of anti, ati, etc., on the other hand, have to take into consideration specific stem forms. Consider first the possible basic active ending. From what has been pointed out earlier, it follows that one would select anti as basic, since this ending has the broadest domain. This would be the value of $x$ in rules such as C.2 (745). To account for ati in present forms, then, one could have a rule

$J. n > 0$ in anti following a doubled base

Together with B.1, this accounts also for atu. In order to account for us in imperfect and aorist forms, another rule is required:

$K. anti > us$ after a stem with the aorist suffix $s$, after a stem gotten by doubling a base, and after vid

As for the middle endings, it follows from what was said earlier that ata should be posited as basic. F.2 and G.1 (746) would now replace this with ire and ran. E.1 and I.3 account for ate and atām. In order to obtain anta, then, one could have
a rule.

L. *n* is inserted before the *t* of *ata* if this ending follows a stem in *-a*

Now, there are Vedic subjunctive forms of the type *āsātai* (3sg.), corresponding to the indicative *āste*. Such forms are accounted for in a manner parallel to the one in which *īlāmahāi* is derived (see 746): The ending *te* is augmented with initial *ā* and has its final vowel replaced by *ai* (A 3.4.94, 96 [399]). The expected plural form corresponding to *āsātai* is *āsāntai*, which should be derived in the same manner: *-ai* should replace the *-e* of the ending, which should also receive the initial augment *ā*. Since *āsāntai* contains *-n*, the ending in question should be *ante* (< *anta*), and this brings up a problem with L. In accordance with the indicative forms *āste*, *āsate*, the stem in *āsātai*, *āsāntai* is *ās*, which does not end in *-a*, so that L will not account for *ante* (< *anta* ) in such subjunctives. One obvious way around this is to have an additional rule to derive subjunctive forms:

M. *n* is inserted before the *-t*-of *ata*

Alternatively, one could start with *anta*. A rule would then apply as follows:

N. *n > Ø* in *anta* immediately following a stem unless the stem ends in *-a*

This alternative has two advantages. First, there is now a single operation, instead of two, that accounts for the required derivatives: N serves to drop *-n*-of the ending in deriving forms such as *āsate*, but this cannot apply in the derivation of *āsāntai* (< *ās-āntai* ), where *-ant-* does not immediately follow *ās*- Secondly, there is now a pair of parallel operations, provided by J and N. However, there is a serious disadvantage to this alternative. In terms of the domains of the endings under consideration, it is *ata*, not *anta*, which should be treated as basic.

Clearly, the main difficulty lies in the distribution of *anti, ati* on the one hand and *ata, ata* (*ate, ante*) on the other. There is yet another way in which to account for the data
while reconciling the different distributions of endings with and without \(-n\). Instead of selecting as basic one of the active and middle endings found in final forms, one can posit an abstract segment in basic endings, and let this segment undergo replacements:

1. \(x \rightarrow ant\)
2. \(x \rightarrow at\) after a doubled base
3. \(x \rightarrow at\) In an åtmanepada ending, provided the ending follows a stem that does not end in \(-a\)

Pāṇini proceeds in this manner, by positing jhi, jha and having the segment jh be replaced by ant and at (A 7.1.3-5 [509]). O.1 is now the general rule to which O.2-3 are exceptions. By O.2, one gets ati in forms like juhval, as opposed to anti, by O.1. This rule also applies to jha, jhe after stems that do not end with \(-a\). Moreover, jh of the augmented ending ājhai in ās-ājhai does not directly follow the stem ās-; so that O.3 cannot apply; instead, O.1 takes effect: ās-ājhai \(\rightarrow\) ās-āantai \(\rightarrow\) āsāntai (A 6.1.101 [532]).

We now have to consider more closely A-1 (745-746). As I have noted, these rules do not include particular stems as conditioning contexts. It is patent, nevertheless, that the operations provided for in such rules should not apply indiscriminately. One needs to distinguish in some manner where these operations are to take effect. In the foregoing discussion, I have used terms such as present, future, and imperfect. I have done this only in order to allow a preliminary presentation of the kinds of statements needed to arrive at certain endings after one has posited basic endings. Even a slightly closer scrutiny suffices to show that these rules as stated involve difficulties. Suppose, for example, that one took seriously a term such as present or future, so that forms such as pacati, paksyati would be deemed proper only if the action in question were referred to current or future time. This is clearly too strong a requirement. There are, after all, sentences such as (27)-(28) (230), in which the "present" forms pacati, pacyate occur although the action is
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referred to past time. One might, therefore, consider using terms such as present, future merely as labels for sets of endings.

Now, this would be an innocuous procedure in a system where an array of endings such as given in 744 were set up and the use of forms containing these endings were described. But this will not do in a derivational system like Pāṇini’s, where abstracted affixes are introduced under meaning conditions and operations are performed on basic endings to arrive at endings as used. For example, consider again the rules under B, supposed to supply imperative endings such as tu, hi, ni instead of the basic endings tl, si, mi. Obviously, these rules should apply only if imperative endings are to be derived. Conditions have to be imposed on the rules. Operating with the terminology used thus far in this section, moreover, there is only one apparent way to do this. One would have to let B.1-3 apply on conditions that ti and so on are imperative endings. It is now these basic endings, not tu and so on, which are first called imperative. Of course, this means that distinct sets of basic endings ti tas jhi etc. are recognized, such that members of different sets are subject to distinct operations. Thus, for example, imperfect, conditional, aorist, and optative ti would now be subject to A.1 (ti > t); optative t( < t/) would then be subject to C.1; present and future ta would be subject to E.1 (ta > te); and so forth.

The question arises now: Why posit and introduce present ti, future ti, imperfect ti etc. instead of operating simply with present-future ti, imperfect t, etc.? Recall that such affixes are abstracted through a procedure that involves reasoning from anvaya and vyatireka, which allows associating particular elements with given meanings (see 567-568). By the procedure in question, moreover, all the verb endings considered can be associated with meanings which they have in common: They signify agents (kartrap) and objects (karman) relative to activities. It is thereby legitimate to posit two sets of basic endings: parasmalpada endings ti, tas, etc., and
ātmanepada endings ta, ātām, etc. (see 64 with Figure A). Given this, let us consider just how rules might be formulated to introduce these basic endings. One could have rules such as the following:

**P.** तिः कर्तिः कर्मणि च भावे चाकर्मकेभ्यः (tīṇa kartari karmanī ca bhāve cākarmakebhyaḥ)

**Q.** वर्तमाने भवन्ति (vartamāne bhavanti)

**R.** भूतेद्यातनि (bhūte'dyatanī)

**S.** अनय्यातने द्यास्तनि (anadyatane hyastani)

**T.** परोक्षे परोक्षा (parokṣe parokṣā)

**U.** भविष्यति भविष्यन्ति (bhaviṣyati bhaviṣyanti)

By **P.** verb endings (tīṇa) in general would be introduced when a karṇa or a karman is to be signified or, after verbs without a karman, when a karṇa or an act denoted by the base itself is to be signified. **Q–U** would then provide for the occurrence of endings called bhavanti ('present'), adyatani, hyastani, parokṣā, and bhaviṣyanti ('future') under the following conditions relative to whatever a verb signifies. It is current, present (vartamāne); it is referred to the past (bhūte) in general, including the day of reference (adya); it is referred to the past excluding the day of reference (anadyatane); it is not only referred to the past excluding the day of reference but also is outside the direct experience of the speaker (parokṣe); it is referred to the future. Additional rules would provide for the distribution of parasmaipada and ātmanepada subsets of all such groups of endings.

Now, the class names bhavanti, adyatani, hyastani, parokṣā, bhaviṣyanti would also have to be introduced by rules. Moreover, these would be particularly redundant sūtras of the type

**V.** तिपतिःसिप्त्तथसमियन्वस्मस्तातांशास्तासांषांष्वमिः (tiptasjhisipthasthamibvvasmas-
The only purpose served by such rules would be to have sets of identical basic endings, introduced by sūtras like $P-Q$, in order to states operations in $A-I$ with respect to these separate groups of endings. As I have noted, one cannot consider that these sets of endings are characterized by semantic properties such that, for example, bhavanti endings could be said to occur only when an activity is referred to the present. Clearly, the procedure under discussion is less than elegant.

To be sure, one could avoid repetitious rules such as $V-W$ to some extent. One might have sūtras such as

X. तिप्पंस्तिसन्तिसप्तथमिन्वस्मस्तेआतेअतेसेआथेधे-एवहेमहे भवन्ति।

Y. स्यतिसप्तस्यतस्य्यस्यस्यस्यस्यथस्थस्यामिस्यामस्य-स्यामस्यतेस्येत्तेर्न्तेस्येत्तेर्न्तेस्येत्तेर्न्तेस्येत्तेर्न्तेस्येत्तेर्न्तेस्येत्तेर्न्तेस्येत्तेर्न्तेस्येत्तेर्न्तेस्येत्तेर्न्तेस्येत्तेर्न्तेस्येत्तेर्न्तेस्येत्तेर्न्तेस्येत्तेर्न्तेस्येत्तेर्न्तेस्येत्तेर्न्तेस्येत्तेर्न्तेस्येत्तेर्न्तेस्येत्तेर्न्तेस्येत्तेर्न्तेस्येत्तेर्न्तेस्येत्तेर्न्तेस्येत्तेर्न्तेस्येत्तेर्न्तेस्येत्तेर्न्तेस्येत्तेर्न्तेस्येत्तेर्न्तेस्येत्तेर्न्तेस्येत्तेर्न्तेस्येत्तेर्न्तेस्येत्तेर्न्तेस्येत्तेर्न्तेस्येत्तेर्न्तेस्येत्तेर्न्तेस्येत्तेर्न्तेस्येत्तेर्न्तेस्येत्तेर्न्तेस्येत्तेर्न्तेस्येत्तेर्न्तेस्येत्तेर्न्तेस्येत्तेर्न्तेस्येत्तेर्न्तेस्यए-गहेमहे भवन्ति।

X gives the name bhavanti to the endings tip tan ant, sip this tha, mip vas mas, te āte ate, se āthe dhve, e vahe mahe. By Y, syati syatas syanti and so on have the class name bhaviṣyant. But such rules fails to bring out that one can and should abstract from sequences such as syati, syatas an affix sva followed by endings. If anything, this alternative is less elegant that the one involving rules such as $V-W$.

There is another approach. As has been pointed out, even if the class names bhavanti and so on are used, one must consider them only terms referring to sets of endings, without
absolute specific semantic values. This being so, the purpose
served by such terms can equally well be served by terms with
no possible semantic interpretations in Sanskrit, by simple
labels. Yet something more is required than mere labels which
allow distinct operations to apply to basic endings. After all,
Panini's is a derivational system in which affixes are
introduced to bases under stated conditions, including meaning
conditions. The elements in question, then, should be such as
are compatible with rules like P-U (750) without requiring
rules such as V-W.

These requirements are met if one operates with abstract
affixes, introduced under meaning conditions and replaced by
basic endings. Such abstract affixes are Panini's ten L-affixes
(see 232–233), all of which are introduced to verbs under the
same general conditions. Specific L-affixes occur under more
particular conditions. All L-affixes are replaced by basic
endings, which are then subject to different operations (see
395-403), depending on the L-affixes from which they derive.
In this manner, Panini is able to posit a single set of basic verb
endings, which belong to two major subgroups, parasmaipada
and atmanepada affixes.

Remarks.

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1. It is of interest and useful to contrast Panini's system
with a system such as Hemacandra's, in which L-affixes are
not posited and ten sets of verb endings are recognized. These
are given class names as follows:

vartamanā : līv tās anti sivī thesa tha mīv vas mas te āte ante
se āthe dhve e vahe mahe (Hem. 3.3.6: वर्तमाना
सिद्धान्तसिद्धांस्थिन्नितिन्निस्थिन्निः

म्याध्वेश्याध्याख्यामहेः)
क्रियातिपत्ति: syat syatām syan syas syatam syata syam sāva yāma syata syetām syanta syathās syethām syadīvam sye syāvahi syāmahi (Hem. 3.3.16: क्रियातिपत्ति:
स्थतस्यतम्यग्न्यस्यस्यतम्यस्यग्न्यस्यस्यस्यतस्येरताम्-
स्यन्तस्याध्यांस्याध्याम्याध्वम्यस्याब्ध्याहिस्यामहेः)
Hemacandra's rules are obviously of the type X-Y (750), and in his system endings referred to by the class names thus assigned are introduced by means of sūtras of the type Q-U. For example, Hem. 5.3.4: भविष्यन्ति (वात्स्य) (bhaviṣyanti [vartsyati 1]) provides that endings called bhaviṣyanti occur if an act is referred to future time (vartsyati).

2. Hemacandra is not the first to have used such a scheme. A similar system is found in the Kātantra. However, here forms of the types bhaviṣyati, abhaviṣyat are treated as containing endings conjoined with sya. Thus, Kāt. 3.1.24 (वर्तमान तितसन्निसिध्यथामिवस्यस्तेआतेआन्तेसेआथेरे-वहेमहे) [vartamāṇā titasantisithasthamivasmasteāteanteṣeāthē dvēevahemahe] and 3.1.27 (हयस्तनि वितामनसितम्यअप्यम-
तातामन्तथासाध्यांध्विविवहिमहि) [hyastani ditāmansitamat-
amvamatātāmantathāsāthāmdhavimahimahi] provide that ti tas anti and so on are called vartamāṇa, and that di tām an and so forth are called hyastani. According to Kātantra 3.1.32-33 (स्यसिहतानि त्यादीनि भविष्यन्ति। द्वादीनि क्रियातिपत्ति।) [syasamhitāni tyādini bhaviṣyanti, dyādini kriyātipattih], tī and so forth conjoined with sya (syasamhitāni) are called bhaviṣyanti, and di and so forth conjoined with sya are called kriyātipatti.

In the present context, it is not necessary to consider more details concerning such grammars. Suffice it to note that the use of labels like bhavantī for verb endings goes back
consider now the following pairs:

(326) a. bhrātuḥ putraḥ  b. bhrātryaḥ 'brother's son'
(327) a. svasuḥ putraḥ  b. svasṛlyāḥ 'sister's son'
(328) a. duhituḥ putraḥ  b. dauhitṛaḥ 'daughter's son'
(329) a. putrasya putraḥ  b. pautraḥ 'son's son'
(330) a. upagor apatyam  b. aupagavah 'descendant of Upagu'

as shown, (326a)-(329a) have the same meanings as (326b)-(329b). in addition, it is possible, by the procedure outlined in 567-668, to abstract from the items in b of these pairs affixes to which one can attribute the meaning 'offspring, descendant'. thus, (326b) is divisible into a base bhrāṭṛ 'brother' and an affix vya (vyaṭ; a 4.1.92, 144 [331, 335]): bhrāṭṛ-vya-s, with the ending su. Similarly, svasṛya- of svasṛlyāḥ should be analyzed into svasṛ and an affix iya (see a 4.1.143), before the vowel of which semivowel replacement applies to the -ṛ of svasṛ (a 6.1.77 [125]). Given the exact parallelism between (326b)-(327b) and (328b), moreover, one is justified in considering that dauhitra consists of duhitr and an affix a (aḥ; a 4.1.104). Here again, semivowel substitution applies to -ṛ before the affix. Something more has to take effect, however, if one is to arrive at dauhitra. In view of the analysis made, one must say that the affix a of this derivate also conditions the substitution of -au-for the -u-in duhitr (see a 7.2.117 [479]). Again, pautra
of (329b) should be treated as containing putra 'son' followed by an affix that conditions the replacement of -u- by -au-. This affix can only be a. In order to derive pautra from putra-a, then, one has to posit another operation: -a of a stem is deleted before the affix found in pautra (A 6.4.148 [504]). In accordance with what has been said, one is justified in saying that aupagava of (330b) contains the base upagau followed by a suffix that conditions the replacement of the first u by au (A 4.1.83 [335]), and once more this affix must be considered to condition another operation: -u of a preceding stem is replaced by the guṇa vowel -o (A 6.4.146 [504]).

There is ample justification for treating items like those in (326b)-(330b) as not only semantically but also formally more complex than others, to which they are related in ways that are clear and can be stated in rules of a derivational system. That is, given items are derivates that contain affixes which condition particular operations on more primitive items. This being established, one can generalize and consider that such operations in grammatical contexts take effect elsewhere also, though there may not be any question of semantically more and less complex elements. Specifically, one can posit basic forms of nominal bases and treat other forms of these bases as resulting from operations that apply in particular contexts.

As I pointed out in Section 4.2.1, phonological considerations dictate positing certain forms as basic. Thus, Pāṇini posits cit, śarad, virudh (see 708), and has rules whereby d substitutes for pada-final t or dh and t replaces these before voiceless consonants. Similarly, Pāṇini operates with basic items in -th, -p, -bh; e.g., dadhimath 'one who churns yogurt' (nom. sg. dadhimad / dadhimat, instr. sg. dadhimathā, instr.pl. dadhimadbhit, loc. pl. dadhimatsu ), dharmagup 'one who protects, keeps his duty' (dharmaug / dharmagup, dharmagupa, dharmagubbhi, dharmagupsu ), kakubh 'peak' (kakub / kakup, kakubah, kakubbhi, kakupsu). In addition, basic forms with palatals, such as vāč and srauj, are
posited; in pada-final position, velars replace the final consonants of such bases.

Again, Pāṇini posits tvis, dvis, and vis, with basic -ṣ and -ś, subject to replacement in particular contexts (see 701, 703). He also operates with a basic form dis 'direction' (see A 3.2.59 [295]), as in disau (nom.-acc. du.), disāḥ (nom.-acc. pl.), disā (instr. sg.), which are comparable to visāu, visāḥ, visā. However, dis, posited on the basis of such parallelism, cannot be allowed to have its -ś replaced by -ṣ (A 8.2.36 [544]), since this would result in forms such as *digbhyaṁ, *digbhīḥ; comparable to vidbhyaṁ, vidbhīḥ, instead of digbhyaṁ, digbhīḥ. Hence, a special rule is required, replacing base-final -ś with a velar stop in particular instances (A 8.2.62 [295]).

Pāṇini also operates with basic forms in -n, such as abhralīḥ 'which licks clouds, that is, lofty', upānāḥ 'sandal': abhralīnau, abhralīnaḥ, abhralīh and upānānau, upānānaḥ, upānānaḥ are parallel. Here too, however, there is a general rule and an exception to it. -n of a base is generally replaced by -dh, whence -d in pada-final position and before consonants other than semivowels or nasals (A 8.2.31, 8.4.53 [544, 577]); e.g., abhralīn (nom. sg. < ... abhralīh-s ), abhralīdḥyaṁ, abhralīdḍhiḥ. If this replacement were allowed to apply to upānāḥ, the result would be forms like *upānadvyaṁ, *upānadvḥ instead of upānadvyaṁ, upānadvḥ. Consequently, a special rule is required, whereby a dental replaces the -n of naḥ. In view of forms such as naddhum (< ... naḥ-tum: A 8.2.40, 8.4.53 [547, 577]), the substitute is dh (A 8.2.34 [544]).

There is a base -yuj, as in

(331) a. āsvayuj/āsvayuk b. āsvayujā c. āsvayugbhīḥ d. āsvayukṣu 'one who yokes horses'

As can be seen, this has forms parallel to those of (240) srauj (708). Similarly, from the uncompound nominal base yuj, derived with the kṛt suffix kvin (A 3.2.59 [295]), one has yujā, yugbhīḥ, yukṣu. In certain forms, however, a compound such as āsvayuj differs from simple yuj: yuṇ (nom. sg.), yuṇāu (nom.-acc. du.), yuṇāḥ (nom. pl.), yuṇjam (acc. sg.) as opposed
to aśvayug, aśvayujau, aśvayujah, aśvayujam. Given the facts noted, it is proper to let an augment -n-(num) be introduced to the stem yuj- before sarvasnāmasthāna endings in order to account for the uncompounded forms with -n and -ñj-: yuj-s > yuj (A 6.1.68 [404, 467]) > yunj (A 7.1.71 [488]) > yunj (A 8.2.23 [542]) > yunj (A 8.2.62 [550]), yuj-au > yunj-au > yunj-au (A 8.3.24 [559]) > yunjau (A 8.4.58 [580]).

A base sat 'which is, being' is to be abstracted from forms like satā (instr. sg. masc.-nt.), sadbhāyām (instr. du.), sadbhī (instr. pl.), satsu (loc. pl.). Here again, however, some forms are to be accounted for with an augment -n-: san(nom. sg. masc.), santau (nom.-acc. du.), santas (nom. pl.), santam (acc. sg.). In Pāṇinian terms, num is added to the stem sat- before sarvanāmasthāna endings (A 7.1.70 [488]). This augment is not introduced after sat (nom.-acc. sg. nt.) gotten from sat-s by deleting the ending su or am after a neuter base (A 7.1.23 [495]). The deleted ending is not a member of the sarvanāmasthāna class (A 1.1.43 [69]).

It will not do, however, simply to provide for adding the augment num to such participial stems in general before the endings in question. For example, dadat (nom. sg. masc.), dadatau, dadatāh, dadatam 'one who gives' contain a participial stem dadat- but lack this augment; dadantī (nom.-acc. pl. nt.) alternates with dadati, which also lacks the augment. In effect, a series of particular rules is required in addition to the general rule that introduces num (see 489). Nevertheless, all such participial bases are to be posited with a basic form in -at.

The augment num is also to be added to stems of the type gomat- 'rich in cows' (gomata, gomadbhyām, gomadbhī, gomatsu) in order to account for gomantau, gomantah, gomantam. In addition, forms of the type gomān require that the -a- of -at- be replaced by a long vowel (A 6.4.14 [469]). This substitution applies only if the stem is followed by an ending su that is not a sambuddhi, so that vocatives such as goman are accounted for. The same long-vowel substitution
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applies in deriving forms of the type suyaśāh (nom. sg. masc.) 'one who has good fame' from stems with -as (cf. suyaśasā).

The domains of variants in
(332) a. mahataḥ (acc. pl. masc.) mahata (instr. sg.)
    mahaddhyām (instr. du.) mahaddhīḥ (instr. pl.)

b. mahān (nom. sg.) mahāntau (nom.-acc. du.)
    mahāntaḥ (nom. pl.) mahāntam (acc. sg.) 'great'

justify positing a base mahat, which appears also in mahat (nom.-acc. sg. nt.), although mahān and so on have -ā- in more forms than does a stem like gomat-. Before sarvanāmasthāna endings, the augment num is added, and the vowel of -ant-thus gotten is then replaced by ā (A 6.4.10 [469]). mahānti (nom.-acc. pl. nt.) is similarly derived from mahat -i, with the sarvanāmathāna ending Śi.

baliyaṅ, baliyaṁsau, baliyaṁsaḥ, baliyaṁsam 'stronger' are accounted for by the same operations, starting from a stem baliyas-; which appears also in forms such as baliyasah, baliyasā, baliyaḥ (nom.-acc. sg. nt.). The -o- of items like baliyoḥdhyām, baliyoḥdhiḥ is also appropriately derived from a basic -as (see 703-706). In addition, baliyaṁsi (nom.-acc. pl. nt.) is derived from baliyas -i, just as mahat -i serves to account for mahānti. chandāṁsi, havirṣi, dhanumṣi are derived in a similar manner from bases chandas, havis, and dhanus.

pumān, pumāṁsau, pumāṁsaḥ, pumāṁsam bear obvious resemblances to corresponding forms of a stem like baliyas-. However, pumāsah (acc. pl.), pumāsā, pumbhām, pumbhīḥ do not conform to what is expected from a base in -as. Nor is a form like purī in puṅgava 'bull' what one should expect as the first member of a compound from a base pumas. The forms in question speak for positing pums (→ pumā: A 8.3.24 [559]), whose final final cluster -ms is simplified at a pada boundary (A 8.2.23 [542]). The -m thus obtained is then replaced by -m (A 8.3.23 [559]), which itself is subject to replacement by nasals homogeneous with following stops (A 8.4.58 [580]). Having posited a base pums, then, Pāñini accounts for pumān
and other forms which require a stem form pumas- by substituting -as for the -s of punis- (A 7.1.89 [473]).

(333) a. balin (voc. sg.) balinaḥ balinaṁ balinā
b. balibhyāṁ balibhīḥ bali (nom.-acc. sg. nt.)
c. balini (nom.-acc. pl. nt.)

ccontain: balin-, bali-, and bali-. The second occurs only at pada boundaries, the last when the ending śi follows, which speaks for considering balin as the basic form. The variant bali is gotten by deleting pada-final -n (A 8.2.7 [539]): balin-śi am > balin (A 7.1.23 [495]) > bali, balin-bhyām > balibhyām. The variant balin-in balini is accounted for by letting -i- replace the penultimate sound of balin- before the sarvanāmasthāna ending śi (A 6.4.12 [469]). Long-vowel substitution, together with deletion of pada-final -n, also accounts for bali (nom. sg. masc.): balin-s > balin (A 6.1.68 [404, 467]) > balin (A 6.4.13 [469]) > bali. Long-vowel replacement may apply in balin from balin-s only if the ending su is not a sambuddhi ending. In addition, to account for balin, deletion of stem-final -n in balin from balin-s with sambuddhi su has to be disallowed (A 8.2.8 [539]). As shown, balin obtained by deleting su has the same status as balin-s (A 1.1.62 [103]), so that the substitution of -i- for the penultimate vowel of balin takes effect as though the stem actually occurred with an ending. On the other hand, the zero substitute for su after neuter balin does not have this effect, since the ending is not classed as a sarvanāmasthāna after a neuter base (see A 1.1.43 [69]): balin-s > balin > bali.

(334) a. brahmahan (see A 3.2.87 [295]) brahmahaṇau
brahmahaṇaḥ brahmahaṇam brahmahaṇā
b. brahmabhyām brahmabhīḥ c. brahmahā

have -han- and -ha- comparable in their distribution to balin-, bali- of (333), and brahmahā is comparable to bali. If a basic form -han is posited, the same operations that serve to derive bali, balibhyām can apply to account for -hā, -ha-: -han-s > -han > -hān (A 6.4.13 [469]) > -hā, -han-bhyām > -habhyām, and so on.
Similarly, as the penultimate vowel of *baliṃ-* is replaced by a long vowel before *śi* to account for *baliṇi*, so also is it possible to derive *nāmāṇi* ‘names’, *parvāṇi* ‘joints, sections’ by letting *-ā-* replace penultimate *-a-* in stems *nāman-, parvan-* before *śi* (A 6.4.8 [469]). In addition, *nāma* (nom.-acc. sg.), *parva* are immediately describable in the same way as *bali*: *nāman-*l am > *nāman* > *nāma*. *nāma-*v, *parva-* in *nāmabhyaṃ, parvabhyaṃ, nāmabhīḥ, parvabhīḥ*, and so forth are accounted for by dropping the *-n* of *nāman-, parvan*- at a pada boundary. Again, *ātman-* ‘self’, which appears in *ātman* (voc. sg.), has its *-n* deleted to derive *ātmbhyām, ātmabhīḥ*, and so on. All this speaks for positing bases *-han-, -nāman, parvan, ātman*, with *-n*, just as *bali* ends with this consonant.

The types with *-an* and *-in* also differ in details. Thus, *ātmānau, ātmāṇah, ātmānam* have a long penultimate vowel, but *-han, bali* have short penultimate vowels in equivalent forms. Given these facts and also that *-hā, bali* too have long base-vowels, it is nevertheless proper to posit bases in *-an* of the type *ātman*, as Pāṇini indeed does. However, long-vowel substitution applies more generally for the type *ātman*: The penultimate vowel of such a base is replaced by *-ā-* before any sarvanāmamasthāna suffix other than *su* classed as sambuddhi (A 6.4.8).

By the operations noted,

(335) a. *rājan*  b. *rājabhyām rājabhiḥ*  
c. *rājā rājānau rājānaḥ*

are also accounted for. Additional rules are needed to derive forms such as *rājñaḥ* (acc. pl., abl. sg., gen. sg.), *brahmāgnah, nāmnī* (nom.-acc. du.), where *-n* occurs instead of *-an-* before vowel-initial endings other than those of the sarvanāmamasthāna set. The *-a-* of *-an* in a stem is dropped before such endings, optionally deleted before *āi* and *śi*, but kept if *-an* follows a consonant cluster that ends with *v* or *m* (see A 6.4.134, 136-137 [502]).

*pāncabhīḥ, pāncabhyaḥ, pāncaḥ* conform to the pattern of bases in *-an*, and *pānca* (nom.-acc. pl.) is derivable from
pañcan- with deletion of pada-final -n: pañcan-as > pañcan (A 7.1.22 [494]) > pañca (A 8.2.7 [539]). pañcänām, however, does not conform to the usual pattern of -an-stems and requires a special rule (A 6.4.7 [468]). Special provision also has to be made to account for astabhiḥ beside astabhiḥ (see A 7.2.84 [474]).

767 (336) a. pathibhyām pathibhiḥ b. panthānau panthānāḥ panthānam c. pathaḥ pathā

Forms of the type in (336b) are like equivalent forms of rājan (see (335c) [765]), but forms in (336a) are comparable to equivalent forms of balin- (see (333b) [762]). In addition, pathaḥ, pathā, and so on, with a stem path-, and panthān (nom. sg.) conform to neither of these types. Now, pathi- can be accounted for through deletion of pada-final -n before the consonant-initial endings bhyām, bhis, bhyas, sup. The same operation accounts also for pathi- in compounds, as in pathi-kṛt 'path maker', as opposed to rāja- in rāja-purusa. It is best, therefore, to posit a base pathin for deriving the forms in (336). The stem form path- is then gotten by dropping -in before vocalic endings šas and so on (A 7.1.88 [472]), and panthan- is accounted for by replacing the -i- of -in- with -a- when sarvanāmastiṇa endings follow and substituting -nth- for -th- in these contexts (A 7.1.86-87). In addition, before the particular ending su, the final consonant of the stem is replaced by -ā (A 7.1.85): pathin-s > pathīā-s > panthiā-s > panthaā-s > panthās, pathin-au > panthin-au > panthan-au > panthānau, pathin-as (ending šas) > pathas, pathin-bhyām > pathibhyām.

768 (337) a. śvabhyām śvabhiḥ śvabhyaḥ śvasu b. śvā śvānau śvānāḥ śvānam c. śunā śunā śune śunāḥ śunoh śunām śuni

(337a,b) are like the equivalent forms of a base in -an such as rājan- of (335) (765), which justifies positing a base śvan. On the other hand, (335c) does not conform to the same pattern; contrast rajñāḥ rajñā ājñāne rajñāḥ rajñōḥ rajñām rajñī. Yet it is not plausible to posit a base śun and to have a rule

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inserting -a- in order to account for śvan-. For śva- occurs not only followed by consonant-initial endings which regularly have pada-boundaries before them but also before a pada boundary when it is the first member of a compound, as in śva-māṃsa ‘dog meat’. There is a pattern according to which pada-final -n is deleted (see A 8.2.7 [539]) and pentultimate vowels of bases followed by endings other than those with pada boundaries undergo replacements. It is best, then, to posit śvan as the base. Forms with sun- are then derived through samprasāraṇa substitution (A 6.4.133 [501]): śvan-as (ending šas) > svan-as > šunas, śvan-a ... > sunā, and so on. Similarly, yūn- of the set

(338) a. yuvabhyaṁ yuvabhiḥ yuvabhyaḥ yuvasu b. yuvā
tyuvānaḥ yuvānaḥ yuvānam c. yūnaḥ yūnā yūne
yūnaḥ yūnoḥ yūnāḥ yūni

is derived from yuvan through samprasāraṇa replacement; e.g.,
yuvan-as > yuwan-as > yuunas > yūnas (A 6.1.101 [532]).

Other nominal forms too are best accounted for by samprasāraṇa substitution. Consider now

(339) a. vidvān vidvāṃsau vidvāṃsah vidvāmsam
b. viduṣāḥ viduṣā viduṣe viduṣah viduṣāḥ viduṣāṁ
viduṣi c. vidvadbhyām vidvadbhīḥ vidvadbhyāḥ
vidvatsu

The forms of (339a) are exactly like comparable forms of ballyas(760); they can be derived from a base vidvāsa ‘one who knows, learned’, by the same operations as serve to derive ballyān and so on. The forms in (339b) should, then, be derived through samprasāraṇa substitution (A 6.4.131 [501]); e.g., vidvās-as (ending šas) > vidvās-as > vidvās-as > vidūsas (A 8.3.59 [563]). The forms in (339a,b) clearly require positing a base in -s. On the other hand, the forms in (339c) show a stem vidvad-, vidvat- before endings with pada boundaries, and such forms occur also as first members of compounds, as in vidvat-sabhā ‘assembly of the learned’. There is no parallel for a rule replacing -t or -d with -s in pada-interior position, so that, in accordance with the items which clearly
contain *vidvas*; it is best to posit this as the basic form and let *-s* be replaced by a dental stop in pada-final position (A 8.2.72 [551]).

Consider now

(340) a. caturah caturbhiḥ caturbhyaḥ caturṇām
caturṣu b. catvāraḥ catvāri (nom.-acc. nt.)

One might think of invoking samprásāraṇa replacement to account for the stem form catur-, but this is not justifiable. To begin with, catur- clearly has a broader domain than catvār-, which occurs before the sarvanāmasthāna endings jas, śi. In addition, the distribution of catvār- and catur- simply does not conform to that of other stem forms concerning which samprásāraṇa substitution is justifiably invoked. Thus, one has (337a) śvabhāḥ and (339c) vidvadbhīḥ (768-769), which do not involve samprásāraṇa, but caturbhīḥ, which would involve this replacement under the possibility being considered. Similarly, catur- in a compound like catur-akṣa 'four-eyed' contrasts with vidvat- in vidvat-sabhā. It is preferable, therefore, to posit catur as the basic variant. catvāraḥ and catvāri are then accounted for by introducing an augment -ā- after the last vowel of catur- before sarvanāmasthāna endings (A 7.1.98 [490]): catur-as (ending jas) > catuār-as > catvāras (A 6.1.77 [125]), catur-i (ending śi) > ... catvāri.

For similar reasons, anaguh is the base posited to account for

(341) a. anaguhah anaguhā anaguhē anaguhah anaguhoh
anaguhām anaguhī b. anagvāhau anagvāhāh
anagvāhām c. anagvān anagvān d. anagubhīm
anagubhīḥ anagubharaḥ anagutsu

(341a) anagvāhau and so on are derived in the same manner as catvāraḥ, by adding the augment -ā-. anagvān requires not only this augment but also -n- (A 7.1.82 [490]). The vocative singular anagvān is derived by introducing am (A 7.1.99) together with -n-. Moreover, as pada-final -s in *vidvas* is replaced by a dental stop before a pada boundary, so is the -h of anaguh- replaced by such a stop (A 8.2.72 [551]) in deriving
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anādubhyām and so on.

772 (342) a. devi devim devih devibhyām devibhih
devibhyah devinām deviṣu b. devi c. devyau
devyāh devyai devyāh devyām

(343) a. vadhūḥ vadhum vadhubhyām vadhubhih
vadhubhyah vadhūnām vadhūṣu b. vadhū
c. vadhvau vadhvah vadhvā vadhvai vadhvāh
vadhvām

The stem forms devy-, vadhy- are accounted for by a general phonological rule that lets y and ū occur instead of i- and u-vowels before other vowels (A 6.1.77 [125]). Moreover, there are no general phonological substitutions that apply to base-final vowels at pada boundaries before consonants. Hence, devi- and vadhu- are properly treated as the basic stem forms (see also 697). Special rules are needed to derive devim, vadhum from devi-am, vadhu-am and devis, vadhus from devi-as, vadhu-as, with the ending śas (see A 6.1.102, 107 [532-533] and 722). The short vowels of the vocative singular forms devi, vadhu are gotten by replacing -ī -ū with the corresponding short vowels (A 7.3.107 [483]).

773 (344) a. stri strimi striyam strihi striyah stribhyām
stribhih stribhyah striṇām striṣu b. striyau
striyā striyai striyah striyoh striyām

(345) a. dhīh dhibhyām dhibhih dhibhyah dhīṣu b. dhiyau
dhiyāh dhiyam dhiyāh dhiyā dhiyai l dhiye
dhiyāḥ dhiyāh dhiyoh dhiyām dhiyāmi dhiyi

(346) a. bhrūḥ bhrūbhyaṃ bhrūbhhi bhrūbhhyah
bhrūnām bhrūvām bhrūṣu b. bhruvau bhruvah
bhruvam bhruvah bhrūva bhruvai l bhruve
bhruvāḥ bhruvāḥ bhrūvām bhrūvi

The obvious parallelism between forms of (344a)-(346a) and (342)-(343) (772) justifies positing stri 'female, woman', dhi 'thought', and bhrū 'brow'. However, instead of stry-, dhy-, bhrv-, one has stri-, dhy-, and bhrv- before vocalic endings, so that exceptions to the general rule of semivowel substitution have to apply (see A 6.4.77, 79, 80 [452, 500]).

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The stem form *paty-* of (347c) is immediately accounted for by the general rule of semivowel substitution (A 6.1.77 [125]), so that *pati-* is justifiably posited as the basic stem. *patim* is now derived from *pati-am* in the same way that *devim* derives from *devi-am* (see 772). *pati*, then, is similarly derived from *pati-au*, by substituting -*i-* for the stem vowel -i- and the endings *au*, *aut* (see [270] [718]). The same operation, applied to *pati-as* (ending *jas*), gives *patis*, so that another rule is needed to obtain *patin* (see A 6.1.103 [532]). *patinām* also has a long base vowel, by a rule that provides for long-vowel replacement before *nām* (A 6.4.3 [468]). Once *pati* is posited as the base, moreover, the vocative singular *pate* is accounted for through guṇa substitution (A 7.3.108 [484]). In addition, since *ay* regularly replaces *e* before vowels (A 6.1.78 [524]), *patayas* also is derived by letting guṇa replacement apply to the stem of *pati-as* (ending *jas*) (see A 7.3.109 [484]).

The rules which serve to derive (347c,d) also account for *maty-* and *mate-* in (348c,d) from a base *mati* 'thought'. The variant *mate*- has a broader domain than that of *pate-in* (347): *mataye* (< *mate-e*) as opposed to *patye*. A rule is thus needed whereby guṇa substitution applies to a stem such as *mati-* before the endings *ne, nasi, nas* (A 7.3.111 [484]). Of course, in order to account for *matēh* on the basis of *mate-as*, another operation must be allowed to apply: The -*e* of the stem and the vowel of the endings are both replaced by the former (A 6.1.110 [533]). Moreover, *matau* requires still another special rule, substituting -*a* for stem-final -i (A 7.3.119 [497]).

The forms in

(349) a. *dhenūḥ dhenum dhenuḥbhīḥ dhenubhīḥ*
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dhenuṣu b. dhenū dhenūḥ dhenūnām c. dhenvā
dhenvai dhenvāḥ dhenvōḥ dhenvām d. dhenō

dhenave dhenōḥ e. dhenau

exhibit the same patterning as in (348), except, of course, that one has here -u -o -av instead of -i -e -ay. The rules which provide for guṇa and semivowel replacement to derive forms in (348) apply also to derive forms of (349) from a base dhenu, the final vowel of which is replaced by -ū and -a, respectively, in accounting for dhenūnām and dhenau.

(350) a. agnim aqnim aqninā agnibhyāṃ agnibhiḥ
agnisu b. agnī agnim agninām c. agnyōḥ d. agne
agnaye agneh e. agnau

(351) a. vāyuḥ vāyum vāyunā vāyubhyāṃ vāyubhiḥ
vāyusu b. vāyu vāyun vāyunām c. vāyvo

d. vāyo vāyave vāyoḥ e. vāya

are parallel to (348)-(349) except in three ways. First, agnim, vāyuṅ have -in, ūn instead of -is, -ūs. This is accounted for by the rule which replaces the -s of śas by -n in the masculine, as in patin (see 774 ). In addition, agninā and vāyunā differ not only from matyā, dhenvā but also from patyā. A particular rule is required, then, whereby nā replaces the ending ū after a particular subset of stems in -i -u (A 7.3.120 [497]). Finally, (350)-(351) lack certain alternations found in (348)-(349); for example, agnaye, agnēḥ as opposed to matyai /mataye, matyāḥ /mateḥ. Guṇa substitution before endings marked with ū is optional for a subset of feminines in -i or -u, following which the endings are also optionally augmented with initial ā (A 7.3.112 [499]), but such guṇa substitution is obligatory for masculine bases of the type agnī, vāyu. In Pāṇini’s sytem, this is accounted for through classifications: Stems such as agnī- and vāyu- are assigned to the ghi class alone, but feminine stems like mati- and dhenu- are allowed to belong both to the ghi and the nadi classes (A 1.4.6-7 [56-57]).

trayāḥ trīn tribhīḥ tribhyaḥ triṣu are obviously of the type (350) agnayaḥ and so on. However, the genitive plural

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trayānām is equally clearly not of the same type as agninām, although it too has a long vowel before -nām. Having posited tri 'three' as the basic form, then, Panini lets trayā- replace the stem tri- before -ām (A 7.1.53 [486]).

778  (352) a. sakhībhīyāṃ sakhībhītā sakhībhyaḥ sakhīṣu
   b. sakhīṃ sakhīnām c. sakhīya sakhīye sakhīyuḥ
   sakhīḥ sakhīyau d. sakhe e. sakhāyau sakhāyaḥ
   sakhāyam f. sakhā

(352a-d) are like equivalent forms of pati (774). Accordingly, Panini operates with a basic stem sakhi- 'friend' and allows sarvanāmasthāna endings other than sambuddhi su condition vṛddhi replacement in this stem (A 7.1.92 [511]). This does not account for sakhā (nom. sg.). Note, however, that sakhā is formally similar to rājā (765). In accordance with this, Panini accounts for sakhā, derived from sakhi-s, by replacing the -i of the stem with -an (A 7.1.93 [471]), thus obtaining sakhān-s, whence sakhā derives in the same way that rājā derives from rājan-s.

In a similar vein, consider trīṇi (nom.-acc. nt. pl.). This is the only neuter form that differs from forms masculine forms tribhiḥ and so on (777), so that neuter forms also should be derived from tri. Nevertheless, trīṇi is comparable to bāllī, from bālin. Since other forms require a base tri, then, Panini accounts for trīṇi by introducing the augment num to this base before the ending Śi (A 7.1.73 [488]). Once trin-i is thus gotten, the long-vowel substitution that applies in the type bāllī (< bālin-i: A 6.4.8 [469]) takes effect: trin-i > trin-i > trīṇi (A 8.4.2 [570]).

Consider also

(353) a. vāri vārīṇā vāribhyām vāribhiḥ vāribhyaḥ vārisu b. vāriṇāṃ c vārīṇī vārīṇi vārīne vārīṇaḥ vārīṇoḥ vārīni

(354) a. madhu madhunā madhubhyaṃ madhubhiḥ madhubhyaḥ madhuṣu b. madhūnām c. madhunī madhūni madhunā madhunoh madhuni

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(353a,b) and (354a,b) vārinā, madhunā, and so on are comparable to equivalent forms of agni and vāyu (776). In particular, the genitive plurals vārinām, madhunām are of the types agnīnām, vāyūnām, not of the type balinām. It is, therefore, proper to accept vāri and madhu as the basic variants. On the other hand, (353c) and (354c) are comparable to equivalent forms of balin (762). Accordingly, Pāṇini introduces the augment num to neuter stems in final i- u- r-vowels before vowel-initial endings (A 7.1.73).

(355) a. asthi Asthibhyām asthibhiḥ asthibhyah  
    asthiṣu b. asthini asthini c. asthnaś asthine 
    asthnaḥ asthnoḥ asthnam asthni

(355a,b) speak for positing a base asthi, comparable to vāri of (353). On the other hand, forms with vowel-initial endings of the third through seventh triplets are of the type rājan (765). It is difficult to justify positing asthan as the base for deriving (355a,b). There is no parallel for -i- replacing the penultimate -a- of such a base before Śi, Śi. In addition, the endings su, am are regularly dropped after neuter consonant bases, with no residual effect on their stems (A 7.1.23 [495]). In order to derive asthi from asthan-s, asthan-am, then, one would have to provide specially that the replacement of -an by -in takes effect even after the endings have been deleted. Positing a base asthin does not involve such difficulties. On the other hand, there is no parallel for replacing the -i- of -in with -a- before vocalic endings like ā. The operations which apply to a set of masculine bases including pathin (767) do not afford a true parallel: pathā and so on exhibit a stem form path-; not pathan-. Since the set of bases with forms as in (355) are all neuter and the type vāri involves introducing an augment to give a stem type vārin- before vocalic endings, it is best to derive the forms in (355) from a base asthi whose -i- is replaced by -an before vowel-initial endings of the third through seventh triplets (A 7.1.75 [470]).

(356) a. pitṛbhyaḥ pitṛbhhiḥ pitṛbhhyas pitṛṣu b. pitṝn 
    pitṝnām c. pitrā pitre pitroḥ d. pitaḥ pitaraḥ

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_pitaras pitaram pitari e. pituḥ t. pitā_

(356a-c) clearly support positing a base _pitr_, comparable to _patī_ and _sakhī_ (774, 778). The vocative singular _pitāḥ_ (< _pitar_ ) and other forms in (356d) moreover, are like _pate_ and so on. These too, then, should be accounted for by guna substitution, only this replacement now takes effect in a broader domain, including the locative singular (see A 7.3.110 [484]). Special rules are now required to derive _pituḥ_ from _pitr-as_ by way of _pitur_ and _pitā_ from _pitr-s_ (see A 6.1.111, 7.1.94 [534, 471]). Just as _sakhā_ is derived from _sakhi-s_ by replacing the _-i_ of the stem with _-an_ (778), so is _pitā_ derived by letting _-an_ substitute for the _-r_ of _pitr_- before _su_. The feminine type _mātr_ ‘mother’ inflects in the same way as the type _pitr_ except that the _-s_ of _śas_ is not replaced by _-n_ after such a base: _mātfs_.

There is another type of _-r_ -stem, with _-är_ - instead of _-ar_- in forms comparable to _pitarau pitarah pitaram_ ; for example: _kartārau kartārah kartāram, svasārau svasaśārah svasāram_ from _kartr_- and _svasr_- . Given that this type also has forms with _-ar_, such as _kartar, svasar_ (voc. sg.) and _kartari, svasari_ (loc. sg.), it is simplest to let guna substitution apply to give _kartar_- and then to let the penultimate vowel of this stem be replaced by _-ā-_ (A 6.4.11 [469]).

(357) a. _tisrbhiḥ tisrbhyāḥ tisrṇām tisṝṣu_ b. _tisrakah_

(358) a. _catasrbhiḥ catasrbhyāḥ catasrṇām catasṝṣu_ b. _catasrakah_

(357a) and (358a) clearly exhibit feminine stems _tisr_- and _catasr_- , which differ from the feminine type _mātr_- (781) in having short _-r_- instead of _-ṛ_- before _-nām_ (A 6.4.4 [468]). In addition, the _-r_ of these stems is not subject to guna substitution before the vowels of _jas_ and _śas_; instead, it is replaced by _-r_ (A 7.2.100 [475]).

Masculine and neuter forms corresponding to those in (357)-(358) are from the bases _tri, catur_ (770, 777, 779). Moreover, _tri_- and _catur_- occur as first members of compounds, regardless of the gender in question. Accordingly,
tri and catur are posited as the bases, and tisr-, catasr- are allowed to replace these in the feminine (A 7.2.99 [486]).

(359) a. nauḥ naubhyāṁ naubhiḥ naubhyāḥ nauṣu 
b. nāvau nāvah nāvam nāvā nāve nāvah nāvoh 
nāvām nāvi

There is a general phonological rule whereby āv occurs before vowels instead of au (A 6.1.78 [524], so that nau 'boat' is posited as the base to account for (359). Similarly, go'cow, bull' is posited to derive

(360) a. gobhyāṁ gobhiḥ gobhyaḥ goḥ goṣu 
b. gavā 
gave gavoḥ gavāṁ gavi 
c. gauḥ gāvau gāvah 
d. gām gāḥ

For the same general phonological rule accounts for gav- before vowels instead of go-, found before consonant-initial endings of (360a), and goḥ is derivable from go-as (endings nāstī, nās) in the same way that dhenoḥ, vāyoḥ are derived from dheno-as, vāyo-as (775-776). On the other hand, (360c) requires a stem gau-, so that a special rule is needed, whereby vṛddhi substitution applies to go before sarvanāmasthāna endings (see A 7.1.90 [511]). This has a parallel in the derivation of sakhāyau and other forms of sakhi (778). In addition, a particular rule is required to account for gām and gās from go-am and go-as (A 6.1.93 [530]).

The bases go, nau also have variants -gu, -nu, as in citra-gu' some one who has spotted cows', ati-nu' one that has gone beyond the boat'. As can be seen from examples like adhi-stri 'concerning women', with -stri instead of stri, the variants -gu and -nu are to be accounted for by short-vowel substitution (A 1.2.47-48 (459, 322).

(361) a. ráyau ráyah ráyam ráyā ráye ráyah ráyoḥ ráyām 
ráyī b. ráḥ rábhyāṁ rábhīḥ rábhyāḥ ráṣu

shows a stem ráy- in contexts where (359b) has nāv-. In addition, ati-ri has -ri in a compound type where one finds the variant -nu. These facts speak for positing a base rai 'wealth'. In order to account for rā- as in (361b), then, a special rule is needed whereby -ā replaces the vowel of rai-
before consonants (see A 7.2.85 [474]): rai-s (ending su) > rās and so on.

784 Consider now stems in -a and -ā. The first type is illustrated by

(362) a. devaḥ deva devasya b. devābhyaṁ devāya
devānāṁ c. devam d. devāḥ devān e. devau
deveṇa devaḥ devāt f. devebhyaḥ deveyoḥ
deve deveṣu
devaḥ, devasya clearly consist of a stem deva- with the endings s, sya, and the vocative deva consists of this stem alone (see (267) [717]). The forms in (362b) are then accounted for by lengthening the -a of deva- before the endings in question (A 7.3.102, 6.4.3 [482, 468]). devam can be derived from deva-am, just as patim, matim, agnim, vāyum are derived from pati-am, mati-am, agni-am, vāyu-am (724, 774-776). Similarly, as patim is derived from pati-as by way of patis, so can devān be derived from deva-as (ending śas) by way of devās (see 722 f). The nominative plural devaḥ is derived from deva-as (ending jas). Given a basic stem deva- abstracted from such forms, devau, devais, deveṇa, deve, devāt are accounted for on the basis of general phonological rules applied to deva-au, deva-ais (A 6.1.88 [529]), deva-inā, deva-i (A 6.1.87 [528]), deva-āt (A 6.1.101 [532]). In the same way, a general phonological rule accounts for the pronominal type sarve (sarva-i: A 7.1.17 [492]) and the neuter dual type phale (phala-i: A 7.1.19 [493]). Having stem-final -a replaced by -e (A 7.3.103-104 [482]) accounts directly for devebhyaś, deveṣu, as well as the pronominal type sarveśām, and indirectly for devayos (deve-os). Finally, the neuter type phalāṇi is derived in the same general manner as vārṇi, madhūṇi (779): the augment num is added to the stem before the ending śi(A 7.1.72 [488]), and the penultimate vowel of the augmented stem is then replaced by a long vowel (A 6.4.8 [469]): phala-i > phala-n-i > phalāṇi.

Finally, let us consider stems in -ā:

(363) a. ajā ajāḥ ajām ajābhyaṁ ajābhīḥ ajāyai
ajābhyah ajāyān ajānām ajāyām ajāsu b. aje
c. aje ajaya ajayōh
(363a) justifies abstracting a stem ajā-: ajā < ajā-s (A 6.1.68 [404, 467]), ajās < ajā-as (A 6.1.102 [532]), ajām < ajā-am (A 6.1.107 [533]), and so on. The dual aje, then, is to be derived from ajā-i (A 6.1.87 [528]), with the endings ści (see A 7.1.18 [493]). Once ajā- is abstracted as the basic variant, forms in (363c) require rules whereby -ā is replaced by e (A 7.3.105-106 [483]). Stems like ajā- generally have vocative singulars of the type aje.

Although ambā- otherwise behaves in the same manner as such -ā- stems, it has a corresponding vocative ambā, which requires a special rule (A 7.3.107) replacing -ā with short -a.

Pāṇini thus posits, for reasons I have pointed out, particular basic forms to account for the sets of related forms discussed above. In turn, some of these are more primitive than others. For example, deva is a nominal base, devi- a basic stem form with a feminine affix; tri- is a nominal base, but tisr- is a replacement for the stem tri- in the feminine.

Remarks.

1. It is clear from what I have shown that Pāṇini accounts for certain forms of given bases by allowing operations to apply that result in what amount to basic forms of other types. For example, substituting -an for the -r of pitṛ- in pitar-s gives pitan-s, with a stem of the type rājan- (see 781). The forms derived from pitan-s and rājan-s are of the same type: pita-, rāja-. There are also limits to such channelling, determined by observable patterns. Consider again, for example, how Pāṇini derives kartā kartārau kartāraḥ kartāram and sakha sakhayau sakhayām sakhayam (781, 778). kartā and sakha are derived similarly: The final vowels of the stems are replaced by -an before the ending su to give kartan-s, sakhan-s. To obtain the stem form kartār-, Pāṇini
first lets guna substitution apply in \textit{kartṛ-} to give \textit{kartar-},
the penultimate vowel of which is then replaced by -ā-. On the
other hand, \textit{sakhāy-} is derived differently: vrddhi substitution
applies in \textit{sakhi-} to give \textit{sakhāi,} then -ai- is replaced by -āy-
before vowels. One might ask why \textit{sakhāy-} is not accounted for
in the same manner as \textit{kartār-}, by replacing the -i of \textit{sakhi-}
with the guna vowel -e, letting this undergo replacement by
-ay, and then letting -ā- substitute for the penultimate -a- of
\textit{sakhāy-}. One would then have two parallel pairs: \textit{pitaraḥ : kartāraḥ :: agnayaḥ : sakhaṇyāḥ.} However, there is no thorough
parallelism to which one could appeal to justify this
procedure. Certainly, \textit{sakhāyau, sakhaṇyam and agni agnim}
differ totally. The fact is that \textit{sakhi} is a unique base. For this
very reason, it is not advisable to derive the type \textit{kartār-} by
having vrddhi replacement apply in \textit{kartṛ-}, as in \textit{sakhi-}. Given
this, together with the fact that there is also a base \textit{rai,}
Pānini's procedure is understandable and justifiable.

2. Although there is no conclusive evidence to prove the
point, it is at least plausible to consider that Pānini took under
consideration such possibilities as I have pointed out in 786
and rejected some in favor of others on the basis of such
reasons as I have given. It is certainly true that Indian
grammarians are not unanimous in the way they account for
the facts. Thus, Pānini's way of accounting for the types
discussed in 785 is followed by most but not by all later
grammarians. Hemacandra simply has -ār substitute for the
-ṛ of stems like \textit{kartṛ-} before endings which are called \textit{sarva-
nāmasthāna} in Pānini's system and he calls \textit{ghuṭ.} [Hem. 1.4.38:
\textit{तुस्वसून्द्रम् प्रत्येकात्राḥ तृतीयोत्तरः प्रमाणा गुटेरात्}] Additional
data from non-Pāninian grammars concerning this issue are
treated in 'Indian grammarians on vowel alternations in
Sanskrit', appearing in the Ramakrishna Gopal Bhandarkar
150th birth anniversary special number of 
\textit{Annals of the Bhandarkar Oriental Research Institute} (Pune).
4.2.5. Basic forms of verbs.

Consider now the following sets:

(364) a. cinoti (3sg. pres.) b. cetum (inf.) c. cayana (nt. action noun: nom.-acc. sg. cayanam) d. cita (past ptcple.: nom. sg. masc. citaḥ) e. cāyayati (3sg. pres. caus.)

(365) a. sunoti b. sotum c. savana d. suta e. sāvayati

By the procedure outlined in Section 4.1, the items in (364) can be analyzed as follows:

- cinoti: a verbal base ci 'gather, heap' followed by the affix -no- and the ending ti
- cetum: a stem ce- and the suffix tum
- cayana: a stem cay- and the suffix ana
- cita: a stem ci- and the suffix ta
- cāyayati: a stem cāy-ay- with an affix -a- and the ending ti. cāy-ay- itself consists of the stem cāy- and an affix -ay-.

The items in (365) contain the stems su-, so-, sāv- with the same affixes. Since there is a general phonological rule whereby ay av āy āv replace e o ai au before vowels (A 61.78 [524]), cay- and sav- can be derived from ce- and so-. Similarly, cāy- is derivable from cai-; as in acaśīt (3sg. aor.). Moreover, although there is no comparable preconsonantal variant sau- (3sg. aor. asāvit), patterning justifies letting sāv- also derive from sau- before a vowel.

b-d of the sets

(366) a. nayati b. netum c. nayana d. nita e. nāyayati 'lead, guide'

(367) a. cyavate ('moves, shakes' [intr.]) b. cyotum c. cyavana d. cyuta e. cyāvayati ('moves, shakes' [tr.])

(368) a. bhavati b. bhavitum c. bhavana d. bhūta e. bhāvayati

obviously contain the same affixes as the equivalent items of (364)-(365), and nay-, cyav-, bhav- are again to be considered
phonologically conditioned variants of base forms with -e and -o: ne-, cyo-, bho-. Although bho- does not actually occur, one is justified in positing it on the basis of patterning. Recall also that itum is best treated as an augmented variant of tum (690-693).

In accordance with what I pointed out earlier (697), of the variants ci ce su so ni ne, cyu cyo, and bhū bho, the first member of each pair should be considered basic, the other derived. The vowels -e-o are then gotten as replacements for -i-i and -u-u in particular grammatical contexts: tum (tumun), anal(yut), and a(ṣap), the last in (366a)-(368a), are affixes before which -i-i -u-u of verbs are replaced by the guṇa vowels e o (A 7.3.84 [127]); no (śnu) and ta (ktā), on the other hand, are suffixes before which this substitution does not apply (A 1.1.5, 1.2.4 [98, 513]). The suffix a (ṣa) that follows the base in dhiyaṭī of the set

(369) a. dhiyaṭī b. dhetum c. dhayana d. dhita
e. dhāyaṭī
also does not condition guṇa replacement. Instead, the vowel of dhi-‘hold’ is replaced by -iy (A 6.4.77 [452]).

(370) a. harati b. hartum c. harana d. hrta
e. hārayati
In accordance with what has been said, hr ‘take’ is to be considered the basic variant, and (370a-c) are to be derived through guṇa substitution. The guṇa replacement for r, however, is a followed by r (A 1.1.51 [93]), so that there can be no variation comparable to the one seen in ce cay, so sav.

The set

(371) a. paṭhati b. paṭhīlum c. paṭhana d. paṭhīta
e. pāṭhayati ‘recite, read’
has paṭh- in contexts where bases with -i-i -u-u -r have different forms, with -i, -e, and so on. This is not merely a function of its ending in a consonant but of its having penultimate -a-, for which there is no distinct guṇa substitute (cf. A 1.1.2 [9]). Penultimate -i- and -u- of bases are subject to distinctive guṇa replacement.
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(372) a. ksipati b. kṣeptum c. kṣepaña d. kṣipta
   e. kṣepayati
(373) a. nudati b. nottum c. nodana d. nutta
   e. nodayati

have ksip-, kṣep- 'throw' and nud-, nod- 'push, remove' in items where (371) has only path- 'read, recite, study'; see also 798.

Let us now return to (364e)-(369e) cāyayati, sāvayati, nāyayati, cyāvayati, bhāvayati, dhāyayati. These have in common a meaning absent from other members of their sets: They mean 'cause ... to A', and the values of A are the meanings attributable to the bases ci'gather, heap' and so on in (364)-(369). In addition, these causative forms share affixes. They all have -a- before an ending, a predesinential suffix found also in (366a)-(368a). In addition, however, there is an affix -ay- before -a-, and this affix is itself preceded by the base forms cāy-, sāv-, nāy-, cyāy-, bhāv-, dhāy-. By the procedure sketched in section 4.1, -ay- is abstracted as an affix associated with a meaning common to all members of the set in question: causation. What is more, given that (364e)-(369e) are semantically more complex than (364a)-(369a), it is licit to treat the former as derivative with respect to the latter. Thus, nāyay-, cyāvay-, and bhāvay- are stem forms of derived verbs, followed by -a- and -ti- just as the primitive stems nāy-, cyāv-, and bhāv- precede these suffixes. Now, as these are phonologically conditioned variants of ne-, cyo-, and bho-, so are nāyay-, cyāvay-, and bhāvay- phonologically conditioned variants of nāye-, cyāve-, bhāve-; and as the -e, -o of ne-, cyo- result from guṇa substitution before the affix -a- (ṣap), so is the -e of nāye-, cyāve-, bhāve- properly treated as resulting from guṇa substitution before the same suffix. The causative affix contained in these derived bases is thus -i-(ṇic: A 3.1.26 [281]). This affix itself conditions substitutions in bases that precede it: nāy-i-, cyāv-i-, bhāv-i-. A vowel always follows nāy-, cyāv-, bhāv- in these derivates, so that these base forms are appropriately treated as phonologically
conditioned variants of *nai-, cyau-, bhau-. That is, the causative suffix *-/i/- is a context for replacing *-i/*-i/*-u/*-u with the *vṛddhi vowels *ai/*au (see A 7.2.115 [417]). Before the same suffix, *-/r/ is replaced by the *vṛddhi vowel *-a, automatically followed by *r, as in *hār-ay- of (370e) *hārayati. In addition, penultimate *-a- of a base undergoes *vṛddhi substitution before the causative suffix (A 7.2.116), as in *pāth-/i/- of (371e) *pāṭhayati. On the other hand, penultimate *-/i/- and *-/u/- of verbs are subject only to *guna replacement before this affix: (372e) *kṣepayati, (373e) *nodayati. Moreover, this applies only to light penultimate vowels of unaugmented stems, as can be seen from

    e. *jīvaryati
The vowel of *jīv- `live' is not subject to *guna or *vṛddhi substitution.

Consider now

    e. *kārayati
(376) a. *kīrti b. *karīti c. *karāṇa
    d. *kīṇa e. *kārayati

(375) is similar to (370) (791) and justifies positing a base *kṛ- `do, make' to account for the forms in question. (376c,e) are homophonous with (375c,e), but, as can be seen from (376b,d), this does not immediately warrant positing for (376) too a base *kṛ subject to *guna and *vṛddhi substitution. Third person active perfect forms corresponding to (375) and (376) also show differences: *cakāra *cakratuk *cakrūḥ from the base of (375) but *cakāra *cakaratuk *cakarūḥ from the base of (376). *cakāra can, of course, be derived from *kṛ, with *vṛddhi replacement conditioned by the ending *a(*nal). Just as clearly, however, *cakratus, *cakrus, and *cakaratus, *cakarus cannot be derived from the same source. The forms from the base of (375) are immediately derivable from *kṛ-atus and *kṛ-us, with semivowel replacement (A 6.1.77 [125]), but *cakaratus, *cakarus cannot be derived from the same forms without contradiction. Again, the passives *kriyate and *kīryate have
different forms before the same suffix (yak). Clearly, it will not do to posit a base kr to derive the forms of (376).

(376a) kirati contains the accented affix -a- (śa) found also in (369a) dhivyati, (372a) kṣipati, (373a) nudati (790-791). There is, then, a distribution of forms in (376) as follows: kar- before affixes that condition guṇa substitution, kār- before affixes that condition vṛddhi replacement, kir- and kīr-, respectively, before vowel-initial and consonant-initial affixes which do not condition guṇa or vṛddhi replacement.

Other bases conform to the same pattern; for example:
(377) a. girati b. garitum garatum c. garaṇa
d. gīrṇa e. gārayati

(378) a. jiryaśi b. jaritum jaratum c. jaraṇa
d. jīrṇa e. jārayati

One might consider positing basic kir 'spread, strew', gir 'swallow', jir 'age, decay' to account for these. And there is a parallel for prevocalic -ir- paired with preconsonantal -īr-:
gīr girau gīrāh giraṁ girau gīrāh gire giraṁ giroh gīrām :
gīrbhyām gīrbhīḥ gīrbhyaṁ girṣu 'speech, voice'. Nevertheless, this is not an acceptable possibility. No form of the noun gir has -ar or -ār, so that this base does not offer an exact parallel. More importantly, positing basic kir and so on would require special rules for obtaining base forms with -ar, -ār through substitutions which have no parallels. To be sure, deriving (336b) pānthānau and so on (767) involves replacing the -i- of pathin- with -a-, but this does not afford a good parallel. After all, verbal base forms with -ar and -ār have their closest analogs in nominal bases of the types pītṛ and kātṛ (781). Moreover, if stīr 'strew, spread' were posited as the base for

(379) a. stṛpāti b. staritum sstaritum c. staraṇa
d. stīrṇa e. stārayati

one would also have to provide that -ir is replaced by -r in deriving stṛpāti, which is without parallel. If one is to avoid substitution rules for which there is no good systematic support, then, kir, gir, jir, stīr cannot be posited as the bases
for (376)-(379).

Of the variants that do occur, one is left with those that end in -ar and -ār. But these too can hardly be treated as basic, since they occur precisely in contexts that condition guṇa and vṛddhi replacement, which points to bases ending in r-vowels. Nevertheless, it is not possible merely to posit kr, gr, jr, and str, since the bases in question do not behave in exactly the same manner as do bases of the type (375) kr.

Nor is it possible for Pāṇini to gather together in his dhātupāṭha all bases like those of (376)-(379) within a single group for which particular operations are provided. kīrati and girati contain the affix -a- found in the type tudatī (A 3.1.77 [157]); jīryati has the suffix -ya- that occurs in the type dīvyati (A 3.1.69); and strnāti contains the affix nā seen in the type kṛnātī (A 3.1.81). In order to have these affixes introduced after the bases in question, then, Pāṇini has to assign them to different major groups in his dhātupāṭha.

Another way has to be found, then, to distinguish bases like those in (376)-(379) from ordinary bases in -r, such as kr. In this connection, let us now consider cicīṣa, didhiṣa, susūṣa, cucyūṣa, ninīṣa, and bubhūṣa, desideratives of the bases ci, dhi, su, ni, bhū. As one can see, the suffix -sa- (san: A 3.1.7 [279]) not augmented with r requires long vowels even for verbs with basic short vowels, so that a rule is to be provided whereby final vowels of verbs are replaced by corresponding long vowels before the desiderative suffix -sa- (A 6.4.16 [422]). Given that i u r are all subject to guṇa substitution, one would expect that lengthening apply also to -r before -sa-, as it does to -i and -u. But the desiderative suffix is not preceded by -r. Instead, one has -ir, as in jihirṣa, cikirṣa, desideratives formed from hr, kr. In addition, note that the suffix -nā- (śnā) of strnāti in some instances follows short vowels that have to be considered replacements for basic long vowels. Thus,

(380) a. punāti b. pavītum c. pavaṇa d. pūta e. pāvayati

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shows forms comparable to (368b-e) bhavitum, bhavana, bhūta, bhāvayati (789), so that (380) calls for positing a base pū 'purify'. Similarly, the base for

(381) a. lunāti b. lavitum c. lavana d. lūna
e. lāvayati

is lū 'cut'.

Systematic considerations thus indicate that base-final -ir before consonants be treated as a reflex of -i, and that str- of (379a) strṇāti can properly be accounted for as a replacement for stf-, with vowel shortening, as in punāti and lunāti (A 7.3.80 [424]). In brief, two kinds of verbal bases can be posited: some with short -i, such as hr- and kr-, others with long -i, such as kf-, gr-, jr-, and stf-. Pāṇini does posit both these types. In his system, -i of a verbal stem is generally replaced by -ir; but -ur substitutes for this after a labial (see A 7.1.100, 102 [423]), and penultimate -i; -u-of a base in -r is replaced by a long vowel before consonants and at pada boundaries (see A 8.2.76-78 [552]). The first replacements apply before affixes that do not condition guṇa or vṛddhi substitution, contexts in which bases with -i have -i before consonants in general, -ri or -ri before certain affix with initial y- (see A 7.4.27-28 [427]), and -r before vowels. The -i of a subset of bases is replaced by short -i before the suffix śnā. The affix ta (kta) of hrta, krta, and so on does not condition guṇa replacement, so that -i is replaced by -ir before this suffix: kir-ta, gir-ta, jir-ta, and str-ta, whence kṛna etc.: kir-ta > kir-na (A 8.2.42 [549]) > kir-na- (A 8.2.77) > kṛna (A 8.4.1 [570]).

(382) a. vartate b. vartitum c. vartana d. vṛtta
e. vartayati

shows the pattern expected of a base vṛt 'occur, be', with vart- gotten by guṇa substitution. On the other hand,

(383) a. kirtayati b. kirtayitum c. kirtana
d. kirtita e. kirtayati

has kirt- throughout, just as jīvati and so on of (374) (792) have only jīv-. Since base-final -i is replaced by -ir, with
subsequent lengthening to give -Ir before consonants, this suggests that the base of (383) should be kṛt ‘tell, narrate, glorify’: kṛt- → ... kirt- (A 8.2.78 [552]). Penultimate -r- is not subject to guṇa substitution, just as penultimate -r- in an unaugmented verbal base is not subject to this replacement.

There are thus good grounds for positing verbal bases with both final and internal /r/ subject to replacement by guṇa and vṛddhi vowels in particular grammatical contexts. Not every guṇa or vṛddhi vowel in a base, however, must result from such substitution. Consider, for example:

(384) a. ceṣṭate b. ceṣṭītum c. ceṣṭana d. ceṣṭīta
e. ceṣṭayati

(385) a. ḍhaukate b. ḍhaukitum c. ḍhaukana.
d. ḍhaukita e. ḍhaukayati

These show ceṣṭ- and ḍhauk- throughout, and there is no systematic reason to suppose basic forms ciṣṭ, dhuk. Indeed, ciṣṭ would not account for forms with ceṣṭ- before affixes that condition guṇa substitution, since the -r- of this supposed base is neither light nor penultimate. If the base were ciṣṭ, one would expect *ciṣṭate, *ciṣṭītum, and so on, as one has

(386) a. bhikṣate b. bhikṣītum c. bhikṣāna
d. bhikṣīta e. bhikṣayati

from bhiks ‘beg’. Accordingly, one must posit ceṣṭ ‘be active, strive’ and ḍhauk ‘approach’ with basic guṇa and vṛddhi vowels. Similarly,

(387) a. tvarate b. tvarītum c. tvarāṇa d. tvarīta
e. tvarayati

has tvar- not only in contexts where a base like (375) kṛ has -ar (793) but also where such a base has -r; so that there is no justification for positing tvṛ and having tvar- result from guṇa replacement. The verb to be posited here is simply tvar ‘hasten, rush’, comparable to (371) pāṭh (791) or śak ‘be able’, as in

(388) a. śaknoti b. śaktum c. śakana d. śakta
e. śākayati

On the other hand, the causative tvari differs from pāṭhi, so
that special provision has to be made for the short vowel in this derivate (see 184, 188-189).

Not only is it necessary to recognize verbs like ceši, with basic e, it is also necessary to recognize e as a replacement for a in contexts which do not regularly condition guṇa substitution. For example, consider the third person active perfect forms of kṣip, nud (791), kṛ, ḫṛ (793), smṛ ‘remem-
ber’, pāṭh, śak. The ending -a (pāṭh) conditions guṇa and vṛddhi substitution (A 7.3.86, 7.2.115-116 [127, 417], as can be seen from cikṣepa, nunoda, cakāra, cakāra, sasmāra, papātha, and śaśāka. On the other hand, atus and us do not regularly condition such replacements (A 1.2.5 [514]): cikṣipatūṇa cikṣipuṇa, nunudatūṇa nunuduṇa, cakratuṇa cakruṇa. To be sure, sasmaru-
tuṇa sasmaruṇa and cakratuṇa cakruṇa do show guṇa replace-
ment before these endings, but this is the case for stems with -f- vowels which have particular properties: verbs with -f- preceded by a cluster and verbs with -f- (A 7.4.10-11 [418]). The corresponding forms of pāṭh and śak are papātha
peṭhatuṇa peṭhuṇa and śaśāka śekatuṇa śekuṇa. Patently, the forms with -e- should not be derived through any sort of guṇa substitution. On the contrary, these call for a special rule
replacing -a- of bases with -e- and simultaneously dropping abhyāsa syllables (A 6.4.120 [458]).

The forms in

(389) a. atti b. attum c. adana [d. anna 'food']

e. ādayati

clearly are to be derived from a base ad ’eat’, with initial a-
Similarly, asti asi asmi have a base form as ‘be’. The
corresponding dual and plural forms, however, differ from
those of ad in that one has here a base form s-; without a-
staḥ sthāvaḥ svah, santi sthā smaḥ contrast with attaḥ attaḥ
advah, adanti attha admah. One could consider, then, positing
either as or s as basic.

Under the first alternative, the a- of as- is dropped
before endings like tas (see A 6.4.111 [456]). On the other
hand, if s is accepted as the basic form, asti and so on have to
be derived by introducing an augment *a- to the verb before endings such as *tip. In addition, the Imperfect āsīt āstām āsan, āśīḥ āstām āsta, āsam āsva āsma would now be derived by introducing the augment *ā- to *s. This augment and initial vowels of verbs, moreover, combine to give vṛddhi vowels (A 6.1.90 [529]), as in aiṅśata 'looked', aiṅhata 'strived', imperfects corresponding to the presents īkṣate, īhate. Note, however, that this special augment (āt; A 6.4.72 [238]) regularly occurs with vowel-initial bases, so that letting it occur with *s to derive āsīt and so on has no systematic support. Nor will it do to cite the type kṛṇāti kṛṇanti, with *nā- and *n- as a possible parallel for adding the augment *ā- to *s. The putative augment of *nā- would have to be an alternant to another augment, *i-, in forms like kṛṇītaḥ, so that this could not really afford any parallel for the proposed procedure. In effect, *nā- and *nī- are best treated in the same manner as *ā and *ī of verbs with basic *ā, of the type (400)mā (803). Moreover, if *as is posited as the base, not only does adding the augment āt to derive āsīt and so on fit in with what is proper to vowel-initial verbs, it is also true that dropping *a- to account for forms like stāḥ and santi also has an exact parallel: The distribution of *na- and *n- (Śnam: A 3.1.78 [157]) in runaddhi runddhaḥ rundhanti, runatsi runddhaḥ rundha, runadhmi rundhvaḥ rundhmaḥ is precisely like that of *as- and *ś- in asti stāḥ santi and so on. It is preferable on systematic grounds, then, to posit *as and account for *s by deleting the *a- of this base (A 6.4.111); see also 824.

As there are bases like (387) tvar, (388) śak, and (389) ad (798-800), with basic *a, so are there bases with non-final *ā that should not be treated as a replacement. For example,

(390) a. śāghate b. śāghitum c. śāghana
d. śāghita e. śāghayati

(391) a. rādhnoti b. rāddhum c. rādhana d. rāddha
e. rādhayati

(392) a. āpnoti b. āptum c. āpana d. āpta e. āpayati

have *ā everywhere, including forms whose affixes certainly do
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not condition vṛddhi replacement. Accordingly, ślāgh ‘praise’, rādh ‘succeed’, āp ‘reach, obtain’ are to be posited as basic forms. The desiderative ipsa, then, requires special rules to replace ā with l and to drop the abhyāsa syllable generally called for in a derivate with san (A 7.4.55, 58 [436]).

There are also bases with final -ā. For example,
(393) a. yāti b. yātum c. yāna d. yāta e. yāpayati obviously contains yā ‘go, travel’, augmented with -p in the causative (A 7.3.36 [124]). The following bear obvious similarities to (393):

(394) a. jighrati b. ghrātum c. ghrāna
     d. ghrāna l ghrāta e. ghrāpayati

(395) a. dhāmati b. dhmātum c. dhmāna d. dhmāta
e. dhmāpayati

These contain, then, ghrā ‘smell’ and dhmā ‘blow’. However, in addition to ghrāyāt, dhmāyāt, one has also ghreyāt, dhmeyāt, and ghri-, dhmi- occur in jehṛilyate, dedhmiyate. Nevertheless, the domains of the stems ghre-, dhme- and ghri-, -dhmi- are so restricted that one should posit basic ghrā, dhmā and account for variants with -e and -i through substitution for -ā in particular contexts (see A 6.4.68, 7.4.31 [451, 428]). Similarly, the base forms in (394a), (395a) are to be accounted for by substitution (A 7.3.78 [437]). The similarity between the intensives of the bases in (394)–(395) and neniyate does not suffice to warrant positing basic ghri and dhmi, comparable to (366) ni (789).

There are also bases with variants in -ā -e -i which differ from (394) ghrā and (395) dhmā in that the base forms with -i occur not only in forms equivalent to jehṛilyate and dedhmiyate but also in forms equivalent to (394d) and (395d). Thus, b,c,e of

(396) a. pibati b. pātum c. pāna d. pīta e. pāpayati

(397) a. jahāti b. hātum c. hāna d. hīna e. hāpayati

are like b,c,e of (394)–(395), and peyāt, heyāt are like ghreyāt, dhmeyāt, but pīta, hīna differ from ghrāna l ghrāta, dhmāta. Similarly, although pepīyate and jehiyate are comparable to
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jeghriятe and dedhmiyte, the passives plyate, hlyate differ from
ghrayate, dhmаяte. Given the wider scope of the
variants pi- and hi-, one might consider positing these as
basic forms and accounting for patum, pana, and so on by having
-и in a subgroup of verbs be replaced by -а before affixes
which generally condition guna substitution. This will not do,
however, for the desiderative pipасatт, since the suffix san
does not normally condition guna substitution for bases in -и,
as can be seen from ninисатт (cf. A 1.2.9 [515]). Nor would it do
to have guna substitution account for peyат, heyät, because the
affix in question also does not determine guna substitution (cf.
A 3.4.104 [401]). On the contrary, the similarities between
(396)-(397) and (394)-(395) make it more proper to consider
that the bases of (396)-(397) are па 'drink', ха 'leave,
abandon'.

Similarly, it is difficult to justify positing sthi, dhi, and
mi, comparable to (364) ci (788), in order to account for
(398) a. tиsthatт b. sthатум c. sthана d. sthitа
   e. sthапаты
(399) a. dadhат b. dhатум c. dhана d. hitа
   e. dhапаты
(400) a. mimите b. mтум c. mана d. mита
   e. mапаты

On the contrary, Panini is justified in positing basic sthā 'be
in place, remain, stand', dhā 'place, make', mā 'measure' and
providing that -и substitutes for the -а of the verbs sthā, mā
when these occur before affixes in -т that are marked with k,
before which hi- replaces dhā- (A 7.4.40, 42 [429, 438]). The
-e of stheyät, dheyät, meyät is accounted for by the same rule
that serves to replace the -а of pā in peyät (see A 6.4.67
[451]), and the rule by which -и substitutes for -а to account
for pi- in plyate accounts also for sthi-, dhi-, mi- in
sthityate, dhiyate, miyate (A 6.4.66).

The language Panini describes thus requires him to posit
three groups of bases in -а: some simply with invariant -а;
others with variants in -е, -т; and still others with variants
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in -e, -i, and -i. All such bases have variants with no vowel at all (A 6.4.64), as in the perfect forms yayatuḥ yayuḥ, jaghratuḥ jaghrūḥ, dadhmatuḥ dadhmuh, papatuḥ papuḥ, jahatuḥ jahuḥ, tasthatuḥ tasthuḥ, dadhatuḥ dadhuḥ, and mamāte mamire, with the endings atus, us (3du., pl. act.) and äte, ire (3du., pl. mld.).

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a-d of the sets
(401) a. jayati b. jetum c. jayana d. jīta
   e. jāpayati
(402) a. adhīte b. adhyetum c. adhyayana d. adhīta
   e. adhyāpayati
(403) a. krīnāti b. kretum c. krāyana d. krīta
   e. krāpayati

warrant setting up bases ji 'conquer, be victorious', i (adhi-i 'study, learn'), and krī 'buy'. jīta, krīta are like (398d) sthīta, (396d) pīta (803), and the causatives jāpayati, krāpayati are comparable to sthāpayati. Nevertheless, (401b,c) and (403b,c) are not like the equivalent forms of sthā and pā. On the contrary, b-d of (401), (403) are precisely like forms of bases in -i, i; such as (364)ci and (366)nī (788-789). It is accordingly justifiable to posit ji, i, krī as the bases and to have -ā replace the vowels of these verbs in deriving their causatives (A 6.1.48 [392]).

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Consider now
(404) a. iliyaτe b. letum i lātum c. layana lāna
d. -lna e. lāyayati lāpayati
(405) a. iliyaτe b. dātum c. dāna d. dīna e. dāpayati
(406) a. minotī b. mātum c. māna d. mīta e. māpayati
(407) a. mināτi b. mātum c. māna d. mīta e. māpayati
(404a) iliyaτe has a high-pitched base vowel and a suffix -ya-, so that it is to be classed as a present form of the type dīvyati, with the affix ṣyan (A 3.1.69 [157]) following ili- (404b,c,e) letum, layana, lāyayati are like (366b,c,e) netum, nayana, nāyayati, from the base nī (789), and -lna (see 189c) has a stem ili-. Moreover, the desiderative iliśate and the perfect forms iliyaτe, iliyyire clearly differ from pipāsati and
mamāte, mamire (803). Accordingly, the variants with lā-, lāp-in (404b,c,e) do not warrant positing basic lā comparable to pā. Instead, the basic form to be posited is ī / 'adhere, cling', the vowel of which is optionally replaced by -ā instead of -ē in contexts that regularly determine guṇa substitution (A 6.1.51 [392]). (405) has dī- and dā- in the same contexts where (404) has īl- and lā-, except that dā- does not alternate with de- and the desiderative of the verb in question is didiśate. Hence, dī / 'diminish, perish' is to be considered the basic variant, with dā- gotten through substitution before suffixes that usually condition guṇa substitution (A 6.1.50). By the same token, the bases for (406), (407) are mi' set, build' (desid. mimiśati ) and mi / 'deceive, change, harm' (desid. mimiśati).

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b-e of the sets
(408) a. dhyāyati b. dhyātum c. dhyāna d. dhyāta
e. dhyāpayati
(409) a. gāyati b. gātum c. gāna d. gīta e. gāpayati
(410) a. dhāyati b. dhātum c. dhāna d. dhīta
e. dhāpayati
are patently similar to forms of bases in -ā, as are the precative forms dhyāyāt / dhyeyāt, geyāt, dheyāt, the desideratives didhyāsati, jīgāsati, and the perfect forms dadhyātuh dadhyun, jagatuh jaguh, dadhatuh dadhuḥ (see 802-803). (408a)-(410a), on the other hand, are not so easily accounted starting from basic dhyā, gā, dhā. Thus, (410a) dhāyati, (408a) dhyāyati, and (409a) gāyati are immediately derivable from dhē-a-ti, dhyai-a-ti, and gai-a-ti (A 6.1.78 [524]), with the affix śap (A 3.1.68 [157]), but there is no parallel for replacing basic -ā with -e or -ai before this suffix. Of course, (408a) and (409a) could be considered to have the suffix śyan (A 3.1.69). Still, given that (409b-e) and (410b-e) are exactly comparable, it would make sense to treat (409a) and (410a) in the same manner. But (410a) obviously cannot contain śyan following a stem dhā-. Moreover, the derived nominal bases -jighra,-dham,-pība,-dhaya clearly
have the base forms found in (394a) jighrati, (395a) dhramati, (396a) pibati (802-803), (410a) dhayati, and none of the first three could possibly be considered to contain a suffix -ya-. It is reasonable to say that, as -piba and so on have a suffix -a- (śa: A 3.1.137 [290]), so also does -dhaya. Parallelism therefore speaks for saying that dhayati too has -a- (śap) after the base, so that this is to be derived from dhē-a-ti. Parallelism also speaks for deriving gāyati from gai-a-ti, with the same suffix.

There is, then, a problem: (408b-e)-(410b-e) are obviously accounted for starting with bases in -ā, but one cannot derive (408a)-(410a) satisfactorily in the same way. Pāṇini’s solution is as follows. He posits bases in -ai, -e: dhyai ‘think, meditate’, gai ‘sing’, dhe (dheṣ) ‘suck’. He also provides that base-final -e -o -ai -au which occur in verbs as they are taught, before they have entered into operations whereby these vowels could result from substitutions, are replaced by -ā, but not when an affix marked with ś follows such a base (A 6.1.45 [392]). The -ā thus gotten is then subject to operations that apply also to verbs with primitive -ā. This recognizes that, in terms of major operations, bases like those of (408)-(410) have to be treated as ending with -ā.

(411) a. dyati b. dātum c. dāna d. dita e. dāpayati
(412) a. syati b. sātum c. sāna d. sita e. sāyati

also have forms that are like those of bases with -ā, in particular, the type (398) sthā (803); deyāt seyāt, didāsati siṣāsati, dadātuh daduḥ, sasatuh sasuḥ also follow this pattern. Suppose that dyati and syati were derived from dā-a-ti and sā-a-ti, with the suffix -a- (śa) of the type tudati (A 3.1.77 [157]). This affix does not condition guṇa substitution (A 1.2.4 [513]), just as -ta- (kta) of participles such as dita and sita does not determine such replacement.

One could, then, have -a- in dā-a-ti and sā-a-ti condition the replacement of -ā by -ī. This will not do, however. For, as (369a) dhiyati (790) derives from dhi-a-ti with the suffix śa, so would di-a-ti, si-a-ti give *diyati, *siyati unless special
provision were made, not only to preclude such forms but to allow for *chyati* 'cuts', *syati* 'sharpens' and so on, instead of comparable undesirable forms. Thus, *dyati, syati* and other forms of this type are best derived with the suffix *śyan*.

Of course, this then involves dropping a base vowel before this suffix. Pāṇini accounts for verbs of the type (411)-(412) by positing bases with primitive -o (*do* 'cut', *so* 'terminate, conclude'), subject to replacement by -ā in the same way that -ā substitutes for -e and -ai in the bases posited for (408)-(410) (806). Moreover, since the substitution does not apply if a base occurs before a suffix marked with ś, Pāṇini cannot have -o replaced by -ā before *śyan*. Instead, -o is dropped before this affix (A 7.3.71 [424]).

The sets

(413) a. *pacati* b. *paktum* c. *pacana* d. *pakva*
   e. *pacayati*

(414) a. *yajati* b. *yaśṭum* c. *yajana* d. *iṣṭa*
   e. *yājayati*

are similar in some important respects. As shown in 792, the -ā- in causatives like (371e) *pāṭhayati* (791) is to be accounted for through vṛddhi substitution, so that -ā- replaces basic -a- in *pāṭh*.

The -ā- of *pāca-yati, yāja-yati* should be explained in the same way, and this applies also for the -ā- in sigmatic aorist forms like *apākṣit, ayākṣit*, and in *pāka* 'cooking', *yāga* 'sacrificial rite' (A 7.2.3, 116 [412, 417]). Thus, *pacati, pakṣyati* (3sg. fut.), *paktum, pacana* : *apākṣit, pāca-yati, pāka*

and *yajati, yakṣyati, yaśṭum, yajana* : *ayākṣit, yāja-yati*, *yāga* agree with respect to base vocalism. But *pakva* and *iṣṭa* have different base vocalisms, as do the passives *pacayate* and *iṣṭaye*. The verb of (414) has a variant that verbs of the type (371) *pāṭh*, (413) *pac* do not have. Similarly,

   e. *svāpayati*

has *svap, svāp*, and *sup* comparable to *yaj, yāj*, and *iṣṭ*. It is patent that *sup* does not belong to a set which patterns like (373) *nud* (791). Similarly, although *supta* and *supyate* are
like īṣṭa and īṣyate, svāptum, svapana, and svāpayati clearly differ from ēṣtum ēṣitum, ēṣaṇa, and ēṣayati, which are properly derived from a base īṣ 'wish, desire'. In addition, consider the following.

(416) a. vayati b. vātum c. vāna d. uta e. vāyayati

shows the pattern of a base in -e, such as (410) dhe (806). However, uta has a base form ū-, and ůyate, ůyāt have ū-. In contexts where this long vowel is to be derived from ū- (see A 7.4.25 [426]). If, despite the differences between forms of īṣ and the base in (414), one wished to posit basic īj, one would then also posit ū as the base for (416). A rule inserting -a- to give yaj could be considered to account for yajati, yāj-i (< yaj-i), and so on, but such a rule would not suffice to take care of (416) and related forms. Hence, positing īj and sup as the bases for (414)-(415) is not to be recommended. It is preferable to proceed differently.

Recall (see 768-769) that the stem forms śun-, vidus- (< vidus-) in (337), (339) are to be accounted for through samprasāraṇa substitution, starting with basic śvan- and vidvas-. Similarly, Pāṇini posits basic yaj 'venerate, perform a rite, officiate at a sacrificial rite', svap 'sleep, dream', ve 'weave' to derive (414)-(416), and provides that samprasāraṇa replacement applies to these bases before certain affixes (see A 6.1.15-16 [388]).

Similarly, prach 'ask' is posited to account for

(417) a. prcchati b. prāṣtum c. pracchana d. prṣa
   e. pradchayati

and related forms such as prakṣyati (3sg. fut., see 818), papraccha (3sg. pftct.), aprākṣit (3sg. aor.), prcchyate.

Some forms in the set

(418) a. paśyati b. draṣṭum c. darśana d. drṣṭa
   e. darṣayati

could also be derived through samprasāraṇa substitution applied to a base draś, related suppletively with paśya (see A 7.3.78 [437]); similarly, drakṣyati, adrākṣit, drṣyate could be derived from draś (see 817) in the same way that prakṣyati
and so on are derived from prach (808). However, the parallel is not complete: darṣayati is comparable to causatives like (382e) vartayati (797), with the usual guna replacement for r, and the perfect dadarśa also is comparable to the type vavarta, not to papraccha. In addition, although adrākṣit is like aprākṣit, the verb of (418) has an alternative aorist adarśat.

There is thus a choice to be made, between positing drś or considering draś to be the base. If the latter alternative is adopted, a special operation is needed to account for darś-. Conversely, if drś is treated as basic, a special rule is required to provide for draś-, whence draś- by vṛddhi replacement. The same question arises with respect to the base of

(419) a. srjati b. sraṣṭum c. sarjana d. srṣṭa
e. sarjayati

and related forms like srakṣyati, sasarja, asrākṣit, srjyate. Other data indicate that it is preferable to posits drś 'see, look' and srj 'let loose, create'. Consider now

(420) a. trpyati b. tarptum/ tarpitum /trap tum
c. tarpāṇa d. tṛpta e. tarpayati

trap- occurs only before consonant-initial affixes which condition guna substitution; as in (420b) and trapsyati, but each such form has an alternant with tarp-, as in (420b) and tarpsyati / tarpiṣyati. Moreover, the base of (420) is one of a set of verbs such that ārdhadātuka affixes following them optionally take the initial augment īt (see A 7.2.45 [150]), so that there are sets of equivalent forms such as (420b) and tarpsyati / tarpiṣyati / trapsyati. It is thus the case that tarp- occurs everywhere that trap- does, though the converse is not true. The domains of these variants indicate, then, that tarp- is to be given preference over trap-. In addition, tarp- is accounted for through the usual guna substitution, so that a base trp 'be pleased, satisfied' is to be posited. Since trap- and draś-, sraj- have similar domains, one should also posit basic drś, srj. Pāṇini does. He obtains draś-, sraj-, trap- by
providing that -a- (am) is inserted as an augment after the vowels of drś, srj, trp, optionally for the last (see A 6.1.58-59 [393]).

Let us now consider

(421) a. sīṇcati b. sektum c. secana d. sikta
e. secayati

(422) a. muṇcati b. moktum c. mocana d. mukta
e. mocayati

(423) a. vindati b. vettum c. vedana d. vitta
e. vedayati

All forms except the first in each set contain bases without nasals. Accordingly, one should posit sic 'pour, irrigate, sprinkle', muc 'loose, release', vid 'find' and provide not only for guṇa substitution to apply in grammatical contexts where it applies also to other verbs, such as (372) kṣip and (373) nud (791), but also for the addition of a nasal segment when the bases occur with the suffix -a- (ṣa) of sīṇcati, muṇcati, vindati.

This nasal could be either n or m. Both of these are replaced by ṁ in pada-interior position before consonants other than semivowels and nasals, with ultimate replacement of ṁ by a stop homogeneous with one that follows (A 8.3.24, 8.4.58 [559, 580]). In connection with this, consider the following groups of third person forms: rīṇakti rīṅktah rīṅcanti, rīṅkte rīṅcāte rīṅcate 'leave behind'; yunakti yunktah yuṇjanti, yunkte yuṇjāte yuṇjate 'connect, join, yoke'; bhunakti bhunktah bhunjantti 'protect', bhunkte bhunjāte bhunjate 'enjoy, eat'; bhinatti bhinttah bhindanti, bhintte bhindāte bhindate 'split, break'; runaddhi rundadhāh rundhanti, runddhe rundhāte rundhate 'hold in'; pinasṭi pimṣṭah pimṣantti 'grind'. Here also different nasal segments occur within stems. Moreover, there is a clear pattern: -na-; the nasal of which is subject to replacement by -n-; and -n- occur in distinct grammatical contexts. In addition, bhindanti and the passive bhidyate are like vindanti and vidyate It is clearly preferable to consider that the nasal segment introduced to
There are sets in which forms with nasal segments are more widespread. For example,

(424) a. dhvamsate b. dhvamṣitum c. dhvamsana
d. dhvasta e. dhvamsayati

(425) a. anakti b. anktum c. anijana d. akta e. anjajayati

(426) a. unatti b. unditum c. undana d. unnal utta
e. undayati

The broad domain of forms with nasal segments in the base speaks against positing dhvas, aj, ud and adding a nasal augment in particular contexts. Thus, stems with nasal segments occur in contexts that call for either guna orṛddhi substitution, as in b, c, e of (424)-(426) and in forms such as the futures dhvamsisyate, anksyati / anijisyati, undisyati, and the aorists adhvamsiṣṭa, anijit, andit. Accordingly, it is proper to posit dhvans 'be lost, perish', anj 'smear, anoint', und 'wet' and let the penultimate -n- of such bases be deleted before affixes that do not condition guna orṛddhi replacement (see A 6.4.24 [446]). anakti and unatti, then, are derived from anj-ti and und-ti.

One could consider inserting an augment -a- to get anaj-ti and unad-ti, but there is no systematic parallel for this procedure in comparable forms. Panini accounts for such forms as follows. The bases anj, und are included in the major group of verbs beginning with rudh, so that śnam is introduced as an infixed affix to these verbs when they occur with agentive sārvadhātuka affixes (A 3.1.78 [157]): a-na-nj-ti, u-na-n-d-ti. The -n- of the bases is then deleted (A 6.4.23 [446]): ananj-ti > anaj-ti > ... anakti, unand-ti > unad-ti > unatti.

There are still other sets, in which all forms have stems with internal nasals; for example:

(427) a. krando b. krandinum c. krandoana d. krandoita
e. krandoayati

(428) a. kāṅkṣati b. kāṅkṣitum c. kāṅkṣana d. kāṅkṣita
e. kāṅkṣayati
It is, therefore, proper to posit krand 'cry' and kāṅkṣa 'desire'. It is also necessary, however, to distinguish such bases from others, like (424) dhvans, (425) anj, and (426) und (811). It will not do, moreover, to posit for (427)-(428) bases with original -m-. For

(429) a. dhanvati b. dhanvitum c. dhanvana d. dhanvita
e. dhanvayati 'run'

is of the same type, and there is no way, short of an ad hoc rule, to have -n- replace base-interior -m- before -v.

Pāṇini distinguishes bases of the two types as follows. He posits some bases simply with penultimate -n-; for example, dhvans, anj, und. In addition, he posits bases without such a nasal but specially marked, with i, and then provides (A 7.1.58 [439]) that verbs so marked receive an augment -n- (num) unconditionally. Penultimate -n- is deleted only in bases which have not been marked with i.

There are also bases with final nasals subject to deletion. For example:

(430) a. namati b. nantum c. namana d. nata
e. namayati
(431) a. gacchati b. gantum c. gamana d. gata
e. gamayati
(432) a. tanoti b. tanitum c. tanana d. tata
e. tānayati

obviously contain forms of bases nam 'bend, bow', gam 'go', and tan 'stretch', the final nasals of which are dropped before affixes like kta, which in Pāṇini's system are marked with k or r (see A 6.4.37 [448]).

Consider now

(433) a. krāmati b. kramitum c. kramaṇa d. krānta
e. kramayati
(434) a. sāmyati b. sāmitum c. sāmana d. sānta
e. sāmayati

These sets also obviously involve bases with nasals: kram 'stride' and sām 'become calm, peaceful', but the -m of these verbs is not dropped before kta. A distinction thus has to be
made between bases of this type and others, like those of (430)-(432).

Note that in (430a) nantum and nemiyati (3sg. fut.) the suffixes tum and sya are not augmented with it, but that they are so augmented in the comparable forms of (433) kram and (434) šam: kramitum, kramiṣyati, šamitum, šamiṣyati. In addition, recall that some bases after which ārdhadhātuka affixes are not regularly augmented with it nevertheless do condition this augment in specific instances. One such base is gam: gantum and gamiṣyate have unaugmented suffixes, but gamiṣyati contains augmented -iṣya- (A 7.2.58 [149]). So far as (430)-(431) are concerned, then, the final nasal of a base is dropped if it generally does not condition augmenting with it.

In Pāṇini's system, such verbs have low-pitched base vowels (see A 7.2.10 [145]). Now, (432) tan does not conform to this, as can be seen from tanitum, taniṣyati. Nevertheless, tan is part of a group of bases which have similar characteristics, including the absence of final nasals before affixes like kta.

Pāṇini thus provides (A 6.4.37) for deleting final nasals not only in verbs taught with low-pitched base vowels but also in bases of the subgroup that begins with tan. Other bases with final nasals, such as (433) kram and (434) šam, have their penultimate vowels replaced by long vowels before affixes like kta (A 6.4.15 [422]).

(435) a. khanati b. khanitum c. khanana d. khāṭa
e. khanayati

(436) a. jāyate b. janitum c. janana d. jāṭa
e. janayati

also show bases with final nasals: khan 'dig' jan 'come into being, be born', and these are similar to (433) kram and (434) šam in that they condition augmenting with it for suffixes. They are not exactly like khan and šam, however, as can be seen from (435d) khāṭa, (436d) jāṭa and khāyate, jāyate (of the type āṣyate : (9), A 1.3.13, 3.4.69 [138, 232]), which alternate with khanyate, janyate. The corresponding forms of kram and šam are krānta, Šānta, kramyate, šamyate. khā-, jā-
are accounted for by having ā substitute for the final consonants of khan- and jan- before affixes marked with k or ṇ and letting this replacement apply optionally before y- of an affix (A 6.4.42–43 [448]). jā- of (436a) jāyate 'is born', on the other hand, is provided for by a special rule (see A 7.3.79 [437]) which lets jā- replace jan- before śyan.

(437) a. divyati b. devitum c. devana d. dyūta
e. devayati

(438) a. silvati b. sevitum c. sevana d. syūta
e. sevayati

are best accounted for by positing bases of the type (372) kṣip (791): div 'gamble' and siv 'sew', as in the perfect forms didivatḥ, sisivatḥ. Positing div, siv of the type (374) jīv (792), would not only require a short-vowel replacement to account for div- and siv- in such forms but would also not immediately provide for dev-, sev- in forms such as b, c, e of (437)-(438), since penultimate -i- of an unaugmented base does not regularly undergo guṇa substitution. The -i- of divyati, silvati, then, is to be gotten by replacement (A 8.2.77 [552]). In addition, dyū- and syū-, as in syūta and dyūta, require replacing -y of the bases with û (A 6.4.19 [430]).

The ś- of -śya- in śakṣyati, from (388) śak (798) is accounted for by retroflexion after -k- (A 8.3.59 [563]). In addition, -c is replaced by a velar before consonants other than semivowels and nasals (A 8.2.30 [544]). After pak-, sek-, mok- thus gotten from the bases (413) pac, (421) sic, and (422) muc (808, 810), the s- of -śya- then undergoes retroflexion: pakṣyati, sekṣyati, mokṣyati.

Consider now

(439) a. devešti b. deveštum c. devešana d. dvīṣta
e. devešayati

All the base forms here have -ṣ. On the other hand, advekṣat (3sg. aor.), deveksi (2sg. pres.), devekṣyati have base forms with -k, which appears only before -ṣ- (< -s-). Given the domains of the variants, it is proper to posit a base dvīṣ'hate', whose -ṣ is replaced by -k before s- of an affix (see A 8.2.41 [548]).
(440) a. viṣati b. veṣṭum c. veṣana d. viṣṭa
e. veṣayati

are also forms of a base with a variant in -k before ṣ-:
avikṣat, veḵṣati. Since (440b,d) also have base forms with
-ṣ, moreover, one can derive avikṣat and so on by having the
same operation which replaces the ṣ of a base with -k, as in
advikṣat (817) apply here too. Nevertheless, (440a) viṣati,
(440e) veṣayati, and viṣyāt (3sg. prec.) contain base forms
with -ṣ, not ṣ. And it is precisely before pada-interior
vowels and semivowels that consonant-final bases show no
phonological replacements; cf. pacaṭi, pacyate; asicat, sicicu; oveṣana. Consequently, it is best to posit a base viṣ ‘enter’ and
to let its final consonant undergo replacement by ṣ before
nonnasal stops and spirants and in pada-final position (A 8.2.36
[544]). Similarly, the ṣ of (418) dṛṣ (809) is replaced by
-ṣ in deriving drakṣyati and so on.

(441) a. vaṣṭi b. vaṣitum c. vaṣana d. uṣita
e. vāṣayati

also is accounted for with a base in -ṣ: vaṣ ‘desire’. In
addition, this base is subject to samprāṣaraṇa substitution
before affixes marked with k or n (see A 6.1.16 [388]), as in
(441d) uṣita, uṣṭaḥ (3du. pres.) uṣanti (3pl.), and so on.

Replacement by -ṣ does not apply only to -ṣ of verbs. It
must apply also to some palatal stops. For example, (414a,c)
yajati, yajana (808), ijjate have yaj- and ijj- but (414b,d)
yaṣṭum, iṣṭa have yaṣ- and iṣ-. Similarly,

(442) a. māṛṣṭi b. māṛṣṭum c. māṛjana d. mṛṣṭa
e. māṛjayati
develop from mṛj ‘wipe, clean’ (see A 7.2.114 [415]), but -ṣ
appears in (442d) mṛṣṭa and mṛṣṭaḥ etc. The -j of yaj, mṛj
is replaced by ṣ in the contexts where ṣ substitutes for -ṣ
(A 8.2.36 [544]). The same replacement applies also to the -ch
of (417) prach (808), as in praṣṭum, prṣṭa.

The base of

(443) a. vrṣcati b. vraṣcana c. vraṣṭum d. vrkṇa
e. vraṣcayati

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and related forms such as the future vraşciyati, the aorist awrašcit, and the passive vrşcyate is clearly of the type (417) prach, with -ra- subject to samprasāraṇa substitution. In addition, (443c) vraştum is comparable to (414b) yaśtum and (417b) praṣṭum. As the palatals of these bases are replaced by -ś, then, this substitution will account for vraś- from a more basic form with -c. This does not, however, take care of all that must be accounted for, since the -ś- in vraśc- and vrśc- of other forms is absent. Recall, nevertheless, that a rule is required whereby -k- is deleted if it is the first consonant of a cluster followed by a consonant other than a semivowel or nasal (A 8.2.29 [543]), as in taśta from takṣ-ta (cf. takṣaṇa). In a comparable manner, -s- can be deleted if it is the first consonant of a cluster in the same contexts. In addition, s contiguous to a palatal stop is replaced by ś (A 8.4.40 [574]), so that vraśc can be derived from vraśc, the basic form Pāṇini posits. See also 825.

In pada-final position, -ś is replaced by -ṛ, subject to replacement by -t, as in (209) tvṛ/tvṛ(701); similarly, there are imperfect forms advṛt, avat, amṛt, which correspond to (439a) dveṣṭi, (441a) vaṣṭi, and (442a) māṛṣṭi (816-818).

Consider now

(444) a. leṛhi b. leṛhum c. leṛha d. iliḍha e. leḥayati
For the same reasons that lead to positing viś as the base for (440) (817), one is led to adopting liḥ 'lick' as the base for (444); cf. also the passive liḥyate. In addition, related forms, such as lekṣyati, alıkṣat are like ṅekeṣyati, advikṣat and vekeṣati, avikṣat, so that one might consider a rule whereby -ś would replace the -h of liḥ. This will not do, however, given that (444a,b,d) leṛhi, leṛhum, iliḍha do not match (439a,b,d) dveṣṭi, dveṣṭum, dviṣta or (440b,d) veṣṭum, viṣṭa. Now, dveṣṭi, dveṣṭum, and dviṣta clearly should be derived from dviṣ-ti, dviṣ-tum, and dviṣ-ta. The suffixes ti (tip), tum (tumun) condition guṇa substitution in stems, and the initial dental stops of these and ta (kta) is replaced by ṭ after ś (A 8.4.41 [574]). Similarly, leṛhi, leṛhum, iliḍha should
be derived from *lih-ti, lih-tum, lih-ta*. This requires replacing the base-final consonant by one after which the dental stop of the suffixes will undergo retroflexion. *aili*, the imperfect corresponding to (444a) *leghi*, shows -ṭ (≠ -ḍ'), so that the substitute should be a retroflex stop. Other evidence indicates that the replacement should also be an aspirated stop. Thus,

(445) a. naḥyatī b. naddhum c. naḥana d. naḍḍha
    e. naḥayati

shows a base *naḥ* 'gird, bind' whose -ḥ is replaced by a dental stop before a consonant other than a semivowel. In order that (445b,d) and related forms be appropriately accounted for, the substitute should be -dh (A 8.2.34 [544]). This is subject to deaspiration and devoicing (A 8.4.53, 55 [577-578]) and conditions the replacement of ṭ- by dh- (A 8.2.40 [547]): nah-sya-ti > nadh-sya-ti > nad-sya-ti > natsyati, nah-tum > nadh-tum > nadh-dhum > naḍḍhum, naḥ-ta > ... naḍḍha. Therefore, it is justifiable to let the -ḥ of *lih* be replaced by -ḍh (A 8.2.31 [544]), after which -ṭ- is replaced by -dh-, subject to retroflexion: leh-ti > leḍh-ti > ṭeḍh-dhi > ṭeḍh-ḍhī, leh-tum > ... leḍh-dhum, lih-ta > ... līḍh-ḍha. Of course, other operations are necessary to account for the final forms in question. All that need be done to derive *leḍhī, leḍh-dhum* from *leḍh-ḍhī, leḍh-dhum* is to delete one of the contiguous consonants -ḍh- (A 8.3.13 [556]). Now recall that sequences such as (234) *agni rākṣāṃsi* ... (235) ... *punā raktam* are accounted for by deleting -ṛ before ṛ- and replacing with a long vowel the vowel that originally precedes ṛ- (705-706). Similarly, Pāṇini provides (A 6.3.111 [523]) that a long vowel substitutes for one originally followed by ḗḥ subject to deletion: līḍh-ḍha > ṭi-ḍha > ṭīḍha. Having provided that -ḥ of bases like *lih* is replaced by -ḍh in pada-final position and before consonants other than semivowels and nasals, Pāṇini must also let -k substitute for -ḍh before -s- of an affix in pada-interior position (A 8.2.41 [548]) in order to account for forms like *leksyati*, just as -ṣ must be replaced by -k in the same context to account for *dvēksyati*, from (439) *dvīṣ* (816).
The bases of

(446) a. dahanit b. dagdhum c. dahana d. dagdha
e. dāhāyatī

(447) a. doghīh b. dogdhum c. dohāna d. dugdha
e. dohayatī

must, for reasons discussed already, be posited as dah 'burn' and
duh 'milk'. (446b, d) and (447b, d) show, however, that -h
in such bases is to be replaced by -gh instead of -gh (A 8.2.32
[544]). In addition, there are verbs whose -h replaced by
either -gh or -gh (A 8.2.33), such as dreh 'wish III, wish to
harm':

(448) a. druhyatī b. droghum / d rogdhum c. drohāna
d. drūgḥal / drugdha e. drohayatī

The future forms dhaksya it, dhoksya it, dhroksya it
(alternating with drohiṣyāti), the imperfect adhok, and the
aorists adhāksit, adhukṣat, from (446) dah, (447) duh, and (448)
dreh have not only a final velar stop before affixal -ṣ- (< s-)
but also a base-initial aspirated stop dh-, which appears also
in the second plural middle aorist adhugdhām. Similarly,

(449) a. budhytate b. boddhum c. bodhana d. buddha
e. bodhayatī

has budh-, bodh-, but bhot- occurs in the future bhotsyate, the
precative bhutsiṣṭa has bhut-, and abhuddhām shows abhudh-
Variants with initial aspirated and unaspirated stops also
appear in nominal derivates of these verbs:

(450) a. godhug / godhuk b. godhā b. godhugbhīh
d. godhukṣu 'cow milker'

(451) a. mitradhrug / mitradhruk b. mitradrūhā
c. mitradhrugbhīh d. mitradhrukṣu 'violater of a
friendship, one who wishes III to a friend'

(452) a. uṣarbhud / uṣarbhuṭ b. uṣarbudhā
c. uṣarbhubdhi b. uṣarbhubtus 'awakening at
dawn'

For reasons discussed in 701, 703, 708, the bases posited for
(209)-(210), (223), (238), (239)-(240) are tvīṣ, dvīṣ, viṣ,
virudh, vāc, and sraj. tvīṣ / tvīṣ, dvīṣ / dvīṣ, viṣ / viṣ, virud
/virut, vāg/ vāk, and srag/srak are accounted for through replacements. Similarly, the verbal bases in (413)-(414), (421)-(422), (439)-(440) are pac, yaj, sic, muc, dviṣ, viṣ (808, 810, 816-817). That is, the variants found before vowels, semivowels, and nasals within padas are to be considered basic. By the same token, dāh, duh, druḥ, and budh 'awaken, be aware, perceive' are posited as the bases for (446)-(449).

Now, godhug-, mitradhrug-, usarabdug- of (450)-452 occur at pada-boundaries, including such boundaries between the bases and endings like bhis, sup. Similarly, adhog/adhok, the imperfect corresponding to dogdhi, has -dhog at a pada boundary. One might consider, then, letting a pada boundary occur before such affixes as -sya-. Forms like dhokṣyati would thus be accounted for in the same ways as adhog/adhok. However, this procedure cannot be adopted. If sya were treated as separated from its stem by a pada boundary, one would allow forms like *nansyati instead of namṣyati from (430) nam (813), since pada-final -m of a verb is regularly replaced by -n (A 8.2.64 [550]). Similarly, the desiderative of nam is nināṁsa, not *ninansa, so that it is not licit to have a pada boundary before the desiderative suffix sa to account for a derivative like babhutsa. Nor is it acceptable to posit a word boundary between bases and affixes to derive forms like abhutsi, abhuddhavam. The first singular aorist corresponding to amaṁsta 'thought' is amaṁsi, not *amanśi, which would be allowed if a word boundary were posted before -s- to account for abhutsi. Moreover, instead of alikṣi, this procedure would also allow *aliṣi, with -t as in abhraliṣu from abhralin- (see 756). By the same token, instead of allhan, one would allow *allghvam as second plural middle imperfect (< alih-dhvam) and aorist (<alih-sa-dhvam: A 7.3.73 [444]) forms of lih.

Accordingly, a special rule has to be formulated to account for dhakṣyati and so on. Not only is base-final -h replaced by aspirated stops at a pada boundary (A 8.2.31-34 [544]), the unaspirated stops of base syllables like dagh- thus
gotten are replaced by the corresponding aspirated stops, and this applies also before -s- and -dhv- (A 8.2.37 [545]).

\[823\]

as\(\text{is}rj\)at and as\(\text{is}c\)icat are aorist forms related to the causatives (419e) sarj\(\text{ay}t\)i and (421e) sec\(\text{ay}t\)i (809-810), from the bases \(srj, sic\). In as\(\text{is}rj\)at, -\(srj\)- follows -\(si\)-; but in as\(\text{is}c\)icat the same segment is followed by -\(sic\)-, with a retroflex spirant instead of a dental. That is, the \(s\)- of some verbs is subject to retroflex substitution after particular sounds and the \(s\)- of other verbs is exempt from such replacement. Clearly, the verbs in question have to be distinguished from others. It is not possible to do this, however, simply by setting up two subgroups of verbs in the dhātupātha. For example, \(s\)i\(\text{se}v\)a and \(s\)i\(\text{se}c\)a are perfects of (438) s\(\text{i}\)v (815) and (421) s\(c\)i. The \(s\)- of both verbs is replaced by \(s\)- after -\(i\)-; but the bases must be assigned to different major groups in the dhātupātha, in order to allow for the different affixes in (438a) s\(\text{i}\)v\(\text{ay}\)t\(\text{i}\) and (421a) s\(c\)i\(\text{c}c\)at\(\text{i}\). Hence, Pāṇini distinguishes such verbs by giving them different primitive forms. Some bases are taught with \(s\); others with \(s\)-. The \(s\)- of a verb is unconditionally replaced by \(s\)- (A 6.1.64 [135]), but \(s\)- which has replaced \(s\)- is generally subject to retroflexion, from which primitive \(s\)- is exempt (see A 8.3.59 [563]). Similarly, in order to segregate them according to operations, Pāṇini lists some verbs with \(n\); which is unconditionally replaced by \(n\)- (A 6.1.65 [135]), others with primitive \(n\)-.

Remarks.

\[824\]

1. As I have shown in 800, there are good reasons for Pāṇini’s positing \(as\) instead of \(s\). There is evidence that not all ancient Indian grammarians proceeded in the same way. In his vārttika on A 1.3.22, Kātyāyana notes that ātmanepada affixes are to be allowed after \(s\)thā used with the preverb \(ā\)t in the sense of accepting, adopting (आँठ: स्थ: प्रतिज्ञाने). In his
comments on this vārttika, Patañjali illustrates the usage with examples according to which some one adopts s as the verb instead of as and lets a, ā of forms like asti, āsīt be treated as augments or modifications (Bh. 1.280.23-24: अस्ति सकारमातिष्ठते|आगमोगुणवृद्धि आतिष्ठते|विकारोगुणवृद्धि आतिष्ठते!). Later commentators inform us that it was the grammarian Āpiśall who followed this procedure. See the paper referred to in 787.

2. As shown in 819, the regular past participle of vrasc is vrkna. The dhātupātha as handed down lists the verb with a marker o (ovrascu), showing that the t- of kta and ktavatu is replaced by n- after it (A 8.2.45 [549]). The derivation of vrkna by Pāṇinian rules as received, however, is problematic. In accordance with A 8.2.1 (109), this derivation should proceed as follows: vrasc-ta > ... vrsc-ta (A 6.1.16 [388]) > vrc-ta (A 8.2.29 [543]) > vrś-ta (A 8.2.36 [544]) > vrśna > *vrśna (A 8.4.1 [570]). In order to allow for deriving vrkna, Kātyāyana proposes (A 8.2.6 vt. 7: निधातेष: हृतस्वरप्रत्येकेऽविधिषं) that A 8.2.45 not be suspended with respect to A 8.2.36, and later Pāṇiniyas accept this. That is, they accept that A 8.2.30 applies to give vrk-ta (< vrc-ta) and then disallow the suspension of A 8.2.45 with respect to A 8.2.36, so that the -k of vrk-ta is not replaced by -s. The procedure in question does not accord with what Pāṇini explicitly says. Moreover, this procedure assumes that A 8.2.30 would apply to replace the -c of vrc- in vrc-ta with -k, although A 8.2.36, as an exception to this general rule of velar substitution, should block its application. At present, I cannot add anything definitive to the issue and leave possible suggestions for the future.
APPENDIX

I. The status and purposes of grammar.

826 Grammar (vyākaraṇam) is one of the vedāṅgas (lit. 'limbs of the Veda'), ancillaries which serve to maintain and allow the appropriate ritual applications of Vedic texts. There are six vedāṅgas: Metrics (chandah, chandovicitṛih), which supplies instruction on the metrical structures of mantras; kalpa, which gives instructions concerning Vedic rites and the proper use of Vedic texts at certain times in ritual performances; astrology (jyotīṣam, jyotiṣām ayanam), which allows one to know the proper times for performing ritual acts; nirukta, which serves to explain etymologically difficult words of Vedic texts; phonetics (Śīkṣā), which teaches the production of sounds and their correct pronunciation; grammar, which imparts knowledge of correct speech forms (see 827). These vedāṅgas are respectively said to be the feet, hands, eyes, ears, nose, and mouth or face of the Veda, and only one who has studied the Veda complete with all these members is said to be magnified in the world of Brahman. [E.g., PŚ (Rudraprasāda's edition) 41-42: छन्दः पादी तु वेदस्य हस्ती कल्पोश्च पठथे। ज्योतिषामयानं चक्षुर्निर्हक्तं श्रोतमुच्यते॥ शिक्षा धारण तु वेदस्य मुखं व्याकरणं स्पृतम् तत्समास्नानंधीत्यैव ब्रह्मलोकं महीयते॥] mukham refers not only to the face or mouth but also to the chief limb. Patañjali unequivocally asserts that grammar is the principal ancillary among the six vedāṅgas and that an effort made with respect to this bears fruit. [Bh. I.1.19-20: प्रधानतः षट्स्वर्णेषु व्याकरणम् प्रधाने च कृतो यतः: फलवान्नभवति।]

827 Pāṇini's grammar is said to be a śabdānuśāsana, a means of teaching correct speech forms (Sabda). Thus, the opening of the Mahābhāṣya is अथ शब्दानुशासनम् 'Now the śabdānuśāsana.' Patañjali explains that atha is used here in the
sense of introduction (adhikārārtha): a particular śāstra, namely śabdānuṣāsana, should be understood to be introduced. [Bh. 1.1.2-3: अयेत्यं शब्दोषधिकारार्थः प्रयुज्यते। शब्दानुषासनं शास्त्रमधिकृतं बेदितन्यम्] As Kalyaṇa remarks, śabdānuṣāsana is an etymologically analyzable name (anvartham nāma 'name in accordance with the meaning [of its components]) for grammar. [Pr. 1.3: व्याकरणाश्चेत्यमन्वर्थः नाम शब्दानुषासनमिति।] Moreover, śabda- in śabdānuṣāsana refers to correct (śādhu) speech forms. Indeed, elsewhere in the Mahābhāṣya Patañjali explicitly refers to Pāṇini's work as a śādhvanuṣāsana śāstra. [Bh. 1.39.14: ... साधवनुषासनेशर्माश्वस्तें ...] śāstra is a derivate formed from the verb śās 'instruct', from which anusāsana also derives, with the unāḍi suffix śtran (US 4.158: सर्वधातुभोण्ड: ष्ट्रन् [sarvadhātuḥbhyaḥ śtran]). Pāṇini's work is thus a means of teaching (anusāsanam) correct speech form (śabdānām, sādhvanuṣādānām). See also 845.

In the introductory section of the Mahābhāṣya, Patañjali considers the compelling reasons for a śabdānuṣāsana (śabdānuṣāsanasya pravojanāni), reasons for which grammar is to be studied (adhyeyam vyākaraṇam). Five reasons are given to begin with:

1. In order to preserve the Vedas (raksārtham vedānām): Only one who is is informed about deletion (Iopa 'absence': A 1.1.60 [79]), augments (āgama: see 19), and sound modifications (varṇavikāra) will properly preserve the Vedas by virtue of understanding forms that are accounted for by means of these.

2. In order to carry out the contextual modification (ūhaḥ) of Vedic mantras required in the course of certain rituals. These mantras are not recited in the Veda with all gender distinctions and all endings, and they require at times to be modified by one who has undertaken a ritual act, in accordance
with the context of the particular rite. One who does not know grammar (avaiyākaranāḥ) cannot modify the mantras as required.

3. There is a traditional injunction, that a Brāhmaṇa should study and know the Veda accompanied by its six ancillaries (śadāṅgo vedaḥ) as a duty (dharmaḥ), without regard to any immediate purpose, and grammar is the principal vedāṅga (see 826).

4. A Brāhmaṇa, whose proper vocation is teaching, must know correct speech forms in order to carry out this duty, and these cannot be known through any brief means except grammar, so that grammar is to be studied for the sake of brevity (laghvartham).

5. Finally, grammar is to be studied in order to eliminate possible ambiguities. Ritualists say one should offer a cow dedicated to Agni and Varuṇa, and the text in which this is said uses sthūlapṛṣatim as a qualifier. There is a possible doubt about what kind of cow is meant, whether one which is big and spotted (sthūḷā cāsaḥ pṛṣati ca) or one with big spots (sthūḷāni pṛṣanti yasyāḥ). One who does not know grammar cannot determine from the accent that sthūlapṛṣatim refers to one or the other. If the original accentuation of the first component of the compound is retained, sthūlapṛṣatim is a bahuvrīhi compound referring to a cow with big spots, but if the final vowel of the compound is high-pitched, this is a tatpuruṣa that refers to a cow that is big and spotted (see A 6.1.223, 6.2.1 [602-603]). [Bh 1.1.14-2.2: कानि पुनः शब्दानुशासनस्य प्रयोजनानि। रक्षोहागमल्लभसन्देहाः प्रयोजनम्। रक्षार्थं बेदानामध्ये न्याकरणम्। लोपागमवर्णविकारः हि सम्यक्केदानः परिपालितः। उः खल्चपि न सर्वार्थभूक्तिभिः मन्त्रा निगविदतः। ते चावस्यं यज्जगतेन यथायथं विपरितमणिपत्त्या। तान्नावैयाकणं शक्नोति यथा-
The Mahābhāṣya goes on to give additional reasons for studying grammar, and one of these is to avoid speaking like barbarians (mlecchā mā bhūma ‘lest we be barbarians’). Patañjali alludes to a legend that the Asuras were vanquished after they said he'layo he'layaḥ in calling out to the gods as enemies. This call contains several possible faults (see Dīpikā 9.17-21, Pr. 1.11-12, RaPr. 1.41, Chāyā 29a), including the use of / instead of r: alayāḥ for arayāḥ. The statement that the Asuras were vanquished thus is considered to show that such barbaric usage is censurable. Hence, says Patañjali, a Brāhmaṇa should not use a barbarism (na mlecchitavai), that is, he should not use incorrect speech forms (nāpabhāṣitavai).

[Bh. 1.2.7-9: तेसुराः। तेसुराः हेलयो हेलय इति कुर्वन्तः परावम्। (cf. ŚBr. 3.2.1.23-24) तस्माद ब्राह्मणेन न म्लेच्छति । नापभाषितवाः। म्लेच्छो ह वा एष यदपश्चः। म्लेच्छः मा भूमेत्त्वथ्येयं व्याकरणम्।]
Mahābhāṣya (see 827), Kaiyāṭa remarks that Patañjali here states the immediate reason (sākṣātprayojanam) for grammar: As a sābdaṇusāsana, grammar serves to teach correct speech forms, so that it has to be studied in order to know such forms. In addition, notes Kaiyāṭa, there are reasons connected with this immediate one, namely the reasons given above under 1–5 of 828, which are given later on in the Bhāṣya: Knowing grammar and thereby recognizing correct usage allows a Brāhmaṇa to maintain the Vedas without fault, to use Vedic mantras properly in rituals, to conform to his sacred duty, to function properly as a teacher of traditional lore, and to avoid misinterpretations. [Pr. I.2: भाष्यकारो योकरणस्य साक्षात्प्रयोजनमाह अथ शब्दनुसासनमिति प्रयोजनप्रयोजनानि तु रक्षोहादीनि पश्चाद्भक्ष्यन्ते] Nāgęśa specifies that the immediate purpose of grammar is the precise understanding of correct speech forms through derivation. [Ud. I.2: भाववांस्तु साक्षात्प्रयोजनं शब्दनुपत्तिपतिलक्षणं वव्वतीत्याह भाष्यकारं इति, similarly, Udd. I.7: अनुशासनं प्रकृतिप्रत्ययाविभागेन न्युप्त्यातनमं तद् योकरणेन साक्षात्क्रियतं इति साक्षात्प्रयोजनम्]

Beyond this, moreover, there is an ultimate motive. One should avoid using incorrect speech forms not only to avoid being like a barbarian but also in order to gain merit. From earliest times, Paninīyas stress this goal. Kātyāyana puts it as follows in his very first vārttika (सिद्धेश्वरार्थसम्बन्धे लोकतोर्थप्रयुक्ते शब्दप्रयोगे शास्त्रेण धर्मनियम: यथा लौकिकवैदिकके:): It is given from every day communication in the world that there is an established relation between words and meanings; it is also given that the use of a word is prompted by a meaning in that one uses words in order to convey meanings. This being so, a restriction intended for
merit (dharmaniyamah) is established by the grammar.

Kātyāyana says such a restriction has parallels in everyday life and in practices based on Vedic lore. Two examples that Patañjali gives will suffice to illustrate. Smṛti texts provide that certain animals may be eaten and that others may not be eaten. It is forbidden, for example, to eat a domestic fowl or pig. Now, one consumes something in order to do away with hunger, and this can be done by eating anything, including dog meat. A restriction is set down, then: such and such may be eaten, such and such may not be eaten. In ritual practice, a sacrificial pole is used; an animal being offered is tied to this pole. The animal may be tied to any piece of wood, which one may set erect or not. A restriction is established, whereby the sacrificial pole is not only to be erected but is to be made of Bilva or Khadira wood. [Bh. I.8.10—12, 16—18: लोके तावत अभक्षयो ग्राम्यकुक्कुटोश्वभक्षयो ग्राम्यशूकर इत्युच्यते। भक्षयन्याना नाम श्रुतत्वतीधातार्थमुपादीयते। शाक्यन्याचानेन श्वमांसाशिविरिपि श्रुत्तत्वतीः हन्तुम्। तत्र नियमः क्रियते इत्वं भक्षयमिदमभक्षयमिति ... तथा बैलच: खादिरो वा युपः स्वादिष्ट्युत्त्यते। युपचन्याना नाम पशुनुब्नांत्यार्थमुपादीयते। शाक्यन्याचानेन किंचिदेव कार्यमु- निर्माणार्थं च वा भुसुनुब्नांगुरुम्। तत्र नियमः क्रियते। cf. GDhS 17.8—38, Manu 5.16—21, YSm. I.177, AiBr. 2.1]

Patañjali goes on to show how the same situation obtains with respect to language use. Both a correct speech form (śabdenna) and an incorrect speech form (apaśabdenna) serve to produce the same understanding of a meaning (samānayām arthagatau). A restriction intended for merit is made in the grammar. The meaning in question should be conveyed only by a correct speech form, not by an incorrect one. And usage in conformity with this restriction produces felicity, prosperity. [Bh. I.8.20—22: एवमिहापि समानायामर्थतो। शाब्देन चापाश्बादेन च धर्मनियमः क्रियते। शाब्दनैवार्थोनिर्मित्यो नापाश्बादनेन्ति। एवं
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क्रियमाणम्युदक्षर्कारि भवतीति। As typical examples of correct and incorrect usage, Patañjali elsewhere cites go (nom. sg. gauḥ) 'cow, ox' and several corrupt forms (apabhramśāh) that correspond to this: gāvi, goni, gotā, gopatalikā 'cow'. [Bh. 1.2.24-25: गौरित्यस्य शब्दस्य गावी गोणी गोटा गोपोतलिकेत्येवमादयोषप्रभेषाः; similarly, Bh. 1.5.21-22.]

831 In varttikā 9 of the Paspaśā (वार्त्तिका 11 in the Rohatak edition), Kātyāyana also remarks that the use of correct speech forms, preceded by a knowledge of (the) grammar (śāstrapūrvaṇa prayoge) results in felicity (abhyudayaḥ [absence of sin, according to some interpreters]). [Paspaśā vṛt. 9: शास्त्रपूर्वके प्रयोगेः स्थात्स्ततल्ये बेदशब्देना।] In addition, the Mahābhāṣya on A 6.1.84 cites a traditional passage giving a reason for the knowledge and use of correct speech forms: A single correct speech form (ekah sabdaḥ) precisely known in accordance with what grammar teaches (samyag jñātah śāstrasvāntiḥ) is a wish-granting cow in heaven. [Bh. III.58.13-15: तथा शब्दस्यापि ज्ञाने प्रयोगे प्रयोजनमुक्तम्... एक: शब्द: सम्यक्ज्ञात: शास्त्रान्वित: समप्रकटः स्वर्गे लोके कामधुभवतीत।] Moreover, among the additional reasons Patañjali gives for studying grammar (cf. 828) is the following: in order that we attain unity with the great deity that is speech. [Bh. 1.3.22: महता देवेन न: साम्य यथा स्थायित्वाध्येयं व्याकरणम्।] This is said in the context of interpreting RV 4.58.3: चुत्वारिः शुद्धा त्रयोः अस्य पादः द्वे शीर्षे सप्त हस्तासि अस्या तिथ्या ब्राह्मणो वृषभो रोरबीति महो देवो मर्यादा आ विवेरः। 'It has four horns, three feet, seven hands; bound in three ways, the bull roars; the great divine one entered mortals.' This verse has been interpreted in various
ways in different traditions, for example in the Nirukta (13.7), and Patañjali gives it an interpretation that accords with tenets of grammarians. The four horns are the four types of words (padajātāni): nominals, verb forms, preverbs, and particles. The three feet are past, future, and present time. The two heads are the two aspects of speech, eternal or perennial (nityāh) and speech that is produced (kāryāh). The seven hands are the seven nominal vibhaktis (cf. A 1.4.104 [65, 67]). The bull is tied up at the three general areas where speech is produced: the chest, the throat, and the vault of the oral cavity. He is called vrṣabha by virtue of his pouring out (urine and semen). He roars, that is, produces sounds. The great god is correct speech (sābdah). [Bh. I.3.17-21: चत्वारि शुक्लाणि चत्वारि पदजातानि नामार्थायातोपसर्गनिपातात्स्य। त्रयो अस्य पादस्त्रय: काल: भूतविध्वंद्वसनानां:। द्वे शीर्षें हौ शन्वात्मानौ नित्यः कार्यस्य। सप्त हस्तासो अस्य सप्त विभवक्तय:। त्रिधा बद्रस्त्रियु स्थानेषु बद्ध: उरसि कण्ठे शिरसीति। व्रृषभो वर्षा तात् रोरवती शब्दं करोति। कुत एतत्। रौति: शाब्दकर्मा। महो देवो मर्त्याः आ विवेशेिति। महान्वेदः। शब्द:]

Early Pāṇiniyas such as Patañjali thus view grammar not merely as a means of knowing correct speech forms but, through this, also as a means of acquiring merit and ultimate felicity. This point of view continues to be maintained by later Pāṇiniyas, and it is set forth most completely by Bhartrhari in the context of an elaborated philosophical view. There are, says Bhartrhari, correct speech forms (sādhavaḥ), which are permanently established (siddhāḥ) and come down through an uninterrupted tradition (āgamāt) from the śiṣṭas (śiṣṭebhyāḥ, see 834). Such usage is a means for acquiring merit (dharma-sādhanam). Incorrect (asādhaḥ) speech forms are contrary (viparītāḥ) to correct ones in that they are not established in
the tradition of śiṣṭas and are not means to merit, although there is no difference between the two with respect to conveying meanings (arthapratyāyanābhede). [VP 1.27: 

Grammatical realizations of these ideas are not always clear, and the doorways to ultimate release (dvāram apavargasya), the curative for the stains which affect speech (vāṁmalānaṁ cikitsitam). [VP 1.14ab: तत् द्वारमपवर्गस्य वाङ्गमतान् 

As Āyurveda is the remedy for faults of the body, so is grammar the remedy for faults of speech, since one who knows grammar does not use corrupt speech form (apabhramśān na prayunkte), which are like causes of sin. [Vṛtti on VP 1.14 (48.3-4): वाङ्गमतान् चिकित्सितम् आयुर्वेद 

The Vṛtti on VP 1.14 also speaks of one attaining union with the great being which is speech after having manifested in one a particular merit (abhiyaktadharmavīśeṣaḥ) which arises from the use of correct speech forms (sādhuprayogāt). [Vṛtti 47.6-7: साधुप्रयोगाचार्यत्तदर्मिन्द्रविशेषो महान्त्म शब्दा 

Bhartrhari is by no means the first to consider that incorrect usages can be likened to causes of sin (Vṛtti 48.4: pratyāyahetuhbūtān [see 832]). Earlier Pāṇiniyas also considered that incorrect speech could produce demerit (adharma). Thus, for example, in the Paspaśā the argument is presented that, as there is merit in the knowledge of correct speech forms (sabda jñāne dharmaḥ), there is demerit in the knowledge of incorrect speech forms (apasaSabda jñānepy adharmaḥ). Indeed, the demerit in the latter is greater than the merit in the former, since there are more incorrect forms
than correct ones; for each correct speech form there are many incorrect ones, as, for example, gāvi, goni, and so on correspond to gauḥ (see 830). [Paspāśa vt. 6: ज्ञाने धर्म इति चेततथाधर्मः। Bh. 1.10.6-8: ज्ञाने धर्म इति चेततथाधर्मः प्राप्तति। यो हि शब्दान्वितात्वशष्यवद्यानथायो जानाति। यथैव शब्दान्वि धर्म एवमपशष्यवद्याययथाधर्मः। अथवा भूयानधर्मः। प्राप्तति। भूपांसोशष्यवद्या अत्योपयासः। शब्दाः। एकाकर्स्य शब्दस्य बहवोपप्रभूतः।] Similarly, Bh. 1.2.22-24] This presupposes that a person who knew correct usage as described in Pāṇini’s grammar also knew “corruptions” of such usage, that is, vernacular Middle Indic forms like gāvi, and Patañjali explicitly says this: yo hi śabdān jānāty apaśabdān apy asau jānāti ‘For, one who knows correct speech forms also knows incorrect ones.’

The argument concerning the knowledge of correct speech forms and incorrect ones is buttressed with an appeal to Vedic lore, which shows that there is a restriction (niyamah) with respect to verbal behavior (ācāre), the use and not merely the knowledge of forms: The Veda relates how the Asuras were vanquished when they used incorrect speech (see 828), thereby showing that one must use only correct speech. [Paspāśa vt. 7: आचारे नियमः। Bh. 1.10.11-12: आचारे पुनःर्षिनियमः वेदयते। तेस्सुरा हेलयो हेलय इति कुर्वत्। पराभुवोरितः।]

Later on in the same context, however, Patañjali makes an important point concerning the use of correct and incorrect speech forms: The restriction concerning this applies to ritual acts (yājñē karmani), not to every day behavior, where the use of vernacular forms does not entail demerit. In support of this, Patañjali alludes to a traditional story concerning a group of sages (ṛṣayaḥ) referred to as yarvāna and tarvāna because they used such forms as yarvānas and tarvānas — with -r- for -d- (cf. Skt. dvādaśa, Prakrit bārasa, bāraha
'twelve') --- instead of *yad vā naḥ 'what is ours' and *tad vā naḥ 'that is ours'. These sages, says Patañjali, did not use such incorrect forms in rituals, so that they suffered no ill because of it, but the Asuras uttered incorrect speech in the course of a rite, so that they were vanquished. [Bh. I.11.10-14: यदप्युच्यत आचारे नियम इति याहे कर्मणि स नियमः। एवं हि श्रूयो। यर्भाणस्तत्तवाणो नामर्यो बभुवः ... ते तत्रभवन्तो यद्वानस्तवान इति प्रयोक्तंपि यर्भाणस्तत्तवाण इति प्रयुक्तं पियाहे पुनः कर्मणि नापभाषन्तो। तैः पुनरसुरैयाँज्ञे कर्मण्यपपथायितम् तत्तस्ते पाराभूतः।]

It is thus clear that by the times of Kātyāyana and of Patañjali, who composed his Mahābhāṣya in the middle of the second century B.C., there was a general use of at least two sorts of Indo-Aryan: a more formal and "correct" speech used for purposes such as ritual performance and a more vernacular speech with Middle Indic characteristics.

Pāṇiniyas also recognized certain speakers as the models for correct usage as described in Pāṇini's grammar. These are the Śiṅgas. In the Mahābhāṣya on A 6.3.109: पृषोदरादीनि यथोपविष्टम् (prṣodarādīni yathopadītam), Patañjali discuss-

ses how these model speakers are characterized and the relation between their speech and the Asṭādhyāyī.

a. A 6.3.109 provides that certain derivates, referred to by prṣodarādīni are accepted as taught (yathopadītam). In the traditional Pāṇiniya interpretation, prṣodarādīni contains ādī used in the sense 'kind' (prṣodaraprakārāni [see 204, 210]), so that this refers to items of the type prṣodara 'spotted-belly'. The items in question are all of the same kind in that they are treated as derived elements and their derivation involves deletion, augmenting, and sound replacement, but Pāṇini does not state these operations explicitly for them in the Asṭādhyāyī. [Bh. III.173.19-174.1:
For example, prṣodara is treated as a compound equivalent to prṣad udaram yasya 'some one whose belly is spotted'. This presupposes that the -t of prṣat- in prṣat-udara is dropped, so that -a and u- are contiguous (prṣa-udara) and susceptible to replacement by -o- (A 6.1.87 [528]). But no sūtra of the Āṣṭādhya explicitly provides for deleting -t here. Instead, Pāṇini gives prṣodara as a ready-made item in A 6.3.109.

b. This sūtra says yathopadiṣṭam, using upadiṣṭam. According to Pāṇiniyās, this means 'uttered' (uccarita): The verb diś, with the preverb upa, denotes the act of uttering, as when, after uttering sounds, one says 'These sounds have been uttered,' using upadiṣṭān [Bh. III.174.2-3: अथ किमिव-मुपविष्टानिति। उच्चरितानि। कुत एतत्। दिशितुष्णाभारणक्रियः। उच्चार्य हि वर्णानाहोपविष्ट्टा इमे वर्णा इति।] The question then arises, uttered by whom? --- to which the answer is: by the śiṣṭas. [Bh. III.174.4: कै: पुनरपविष्ट्टा। शिष्टै:।] A 6.3.109 is thus understood to provide that items of the type prṣodara are accepted as uttered, that is, as used, by the śiṣṭas. Another question immediately comes up: Who are the śiṣṭas? [Bh. III.174.4: कै: पुन: शिष्टै।।] Patañjali proceeds to identify these model speakers by different characteristics.

c. He first suggests that the śiṣṭas are grammarians (vaiyākaraṇāh), who have received instruction (śiṣṭih) that is preceded by a work that imparts such instruction (śāstra-pūrvikā). It is grammarians who know such a work (śāstrajñāh). [Bh. III.174.4-5: वैयकरण:। कुत एतत्। शास्त्र-पूर्विका हि शिष्टेऽयाकरणायुष्माण्य शास्त्रज्ञा।।] This suggestion obviously relies on the connection between śiṣṭa 'instructed',

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derived from śās 'instruct' (śiśṭa < śās-ta: A 6.4.34, 8.3.60, 8.4.41 [447, 563, 574]), and śāstra, derived from the same verb (see 827). It also involves circularity: The śiśṭas are grammarians, whose instruction presupposes a śāstra, and this śāstra presupposes the very instruction which allows for the śiśṭas to be instructed ones, grammarians. Such mutually dependent reasonings are not in order. [Bh. III.174.5-6: यदि
ताहिं शास्त्रपूर्विका शिष्टि: शिष्टिपूर्वकच्च शास्त्रम् तदात्तरा
मरण्यं भवति। इतरेतराश्रयपाणि च न प्रकटपनि।] d. Patañjali therefore goes on to characterize the śiśṭas not by their instruction in grammar but by their dwelling place (nivāsataḥ) and their behavior (ācārataḥ). These model speakers are Brāhmaṇas who dwell in Āryavarta, the country of the Āryas in the north-center of the subcontinent, where alone their exemplary behavior is found. Brāhmaṇas who dwell in this abode of the Āryas and have only as much grain as they can carry in a small pot, are not greedy for honor, following established rules of correct behavior without having to be given any immediate cause for this, and who have attained total expertise in some traditional area of learning without explicit instruction, these honorable ones are the śiśṭas. [Bh.
III.174.6-10: एवं ताहिं निवासत आचारतस्या स चाचार
आर्यावर्त एव ... अतिसमन्नार्येनिवासे वे ब्राह्मणे: कुम्भीधान्या
अलोलुपा अगृह्यमाणकारणा: किन्निचतुर्वेण कस्यास्चिद्
विद्याया: पारगास्त्रभवन्तः शिष्टा।] e. The śiśṭas' being models is thus not made dependent on their having received instruction in grammar, but another question arises: If the śiśṭas characterized as shown are the authority with respect to correct usage, what purpose does the Aṣṭādhyāyī serve? The Aṣṭādhyāyī is then said to have for its purpose to make known the śiśṭas, as follows. Some one who is studying the Aṣṭādhyāyī sees that another person,
although he is not studying this grammar, nevertheless uses the correct speech forms that are provided for therein. He then reasons: It is either this man's favor of fate or his nature that, although he does not study the Aṣṭādhyāyī, he still uses the correct speech forms that are provided for in this grammar; certainly he knows other such correct speech forms also. [Bh. III.174.10-15: यदि तहिः शिष्टा: शब्देषु प्रमाणं किमष्टाध्याय्या क्रियते। शिष्टाध्यानार्थोष्टाध्याय्याय। कथं पुनरष्टाध्याय्या शिष्टा: शक्या विज्ञातुम्। अष्टाध्याय्यीमधी-यानोसंयपस्य तष्टाध्याय्यायान्यं ये सत्र विहिता: शब्दास्तान् प्रयुज्ञानम्। स पश्यति नूनमस्य दैवानुग्रहः स्वभावो वा योस्यं न चाष्टाध्यायीमधीते ये चात्र विहिता: शब्दास्तांस्य प्रयुज्ञक्ते। अर्धे नूनमय्यलिपि जानता। एवमेषा शिष्टाध्यानार्थोष्टाध्याय्याय।]

f. In sum, according to Patañjali, the Aṣṭādhyāyī describes the usage of model speakers, the Śiṣṭas, and items like prṣodara are given in A 6.3.109 as correct derivates because these model speakers use terms of this sort. The precise boundaries of Āryāvartta, which Patañjali gives (Bh. III.174.7-8, I.475.3), do not remain the same at all times (cf., for example, Manu 2.22 and see the Rohata edition of the Mahābhāṣya II.849 note 1, IV.652 note 2), but later Pāṇinīyas continue to stress the importance of the Śiṣṭas and also say that Pāṇini’s grammar serves to make something known about them. Thus, Bhartrhari speaks of the grammar as allowing one to infer that certain speakers are Śiṣṭas, those who, without instruction, are established in the śadbrahman pure and devoid of corrupt elements. Because the grammar thus provides a knowledge of the Śiṣṭas, it serves to convey that items of the type prṣodara are correct since they are part of Śiṣṭa usage. [Vṛtti on VP I.12 [43.7-9]: उपवेश्वर्यचान्तरेषां [642]
PĀṇINi

संस्कारवति निरप्फ्रेशे शब्दक्रमणि लघुप्रतिष्ठानां
शिष्टानामनुमानम् शिष्टक्रान्ताच्छ प्रौढप्रकाराणां शिष्ट-
प्रयोगत्वात् साधुत्वप्रतिपादने निर्मित्व न्यायकरणम्

g. Of course, Pāṇini was from the northwest of the
subcontinent, not from the north-central area (see 5).
Nevertheless, it is reasonable to consider that he too
described a language current within a certain social stratum,
the language of an élite. In this context, it is worth
reiterating the famous passage from the Kauśitakibrāhmāṇa in
which the speech of the north is said to be held in particular
esteem: In the north, speech is uttered particularly clearly, so
that people go north to learn this speech, and any one who hails
from this area is attended to respectfully. [KBr. 7.7.36-39:
तस्मादुद्वीच्याः विशि प्रज्ञाततरा बागुधते। उदयच उ एव यन्ति
वाचं शिष्कितम् यो वा तत आगच्छति तस्य वा शुभिष्न्यत इति ह
स्माहाः]

It is clear from what I have pointed out that to Pāṇinlyas
grammar served more than a purely descriptive purpose. A
grammar like Pāṇini's teaches the formation of correct speech
forms, and the use of such correct speech together with a
knowledge of how the grammar accounts for it leads to merit;
indeed, the grammar is considered to establish a restriction
such that one should use only correct speech forms in order to
gain merit (see 830-831). Still, Pāṇinlyas accept that the
immediate purpose of a treatise like Pāṇini's is to account for
correct speech forms (see 829).

It is reasonable to consider that Pāṇini himself also
considered his work to serve not only an immediate but also an
ultimate purpose. He was, of course, a product of his society,
and as such he would be expected to observe certain religiously
significant acts, as would any authoritative teacher. Thus,
Patañjali speaks of the teacher (ācāryaḥ) Pāṇini as one who
has achieved authority (pramāṇabhūtaḥ) and says that he sat

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facing east in a pure place, with a ring of darbha grass around
his right ring finger, and composed his set of sūtras with
great effort [Bh. 1.39.10-11: प्रमाणभूत आचार्यों दर्मधविनन-
पाणि: शुचाववकामो प्राप्तमुख उपविश्य महता यत्नेन सूत्र
प्रणयति स्म] It is not possible to prove the point beyond any
doubt whatever, but such an authoritative teacher in the social
environment of late Vedic India could be expected to view
language usage in very much the same way as Kātyāyana,
Patañjali, and other Pāṇinīyas. Although the immediate
purpose of the Aṣṭādhyāyi is to account for a language, then,
Pāṇini may well have viewed his treatise as describing an élite
speech segregated from less correct vernacular speech.

This does not necessarily imply, however, that within the
domain it treats, the Aṣṭādhyāyi is fully prescriptive. In fact,
with respect to this domain there is nothing at all particular
prescriptive about the Aṣṭādhyāyi. By granting status to
various dialectal features (see 2), Pāṇini recognizes that the
language he describes is not fixed. He does not legislate that
the usage of one dialect area alone, even the much praised
northern speech (see 834g), shall alone be deemed acceptable.
On the contrary, he simply accounts for such speech by means
of his derivational system.

Pāṇinīyas too recognize that the grammar is a means of
explaining (anyākhyaṇam) usage. Indeed, they go farther than
this and maintain that grammar merely explains data of
perennial usage. Consider, for example, a discussion that
concerns derives formed by A 3.2.1 (295). The sūtra as
formulated allows not only for items like kumbhakāra but also
for derives such as ādityadarśa 'one who looks at, sees the
sun'. Even if such a derivate is not actually used in the speech
of a particular time, it is grammatically well formed:
ādityadarśaḥ corresponds to ādityam paśyati as kumbha-
kāraḥ corresponds to kumbhān karoti. From what Kātyāyana
says, we know that ādityadarśa was indeed not used in his
speech. For, in his fifth vārttika on A 3.2.1 (अनभिधानात्त liberties), Kātyāyana says derivatives like this are not allowed because they are not used to convey the meanings (anabhidhānāt) of corresponding phrases such as ādityāṃ paśyati. Kaiyāṭa explains what is meant as follows: A 3.2.1 is nothing more than an explanation of perennially used words, and in the world of every day communication items such as ādityadarśa are not used to convey the meanings of phrases like ādityāṃ paśyati, so that the sūtra does not serve to allow inferring that ādityadarśa and comparable derivatives are correct. [Pr. III.221:

अनभिधानादिति। नित्यानां शब्दानामिदमन्वारुणयानमात्रम् न चादित्यं पस्यतीत्यादिभ्रष्टप्रतिपदनायादित्यदार्शायां] म शब्दां लोके प्रयुज्यत तत्त शास्त्रेणापि साधुल्लेन नानुमास्यतृं इत्यादि।] Much earlier, Patañjali says, in the Bhāṣya on vārttika 16 to A 1.1.44, that one who holds that words are perennial merely explains the correctness of speech forms by means of grammatical rules. [Bh. I.104.22-23: यस्य पुनः नित्याः

शब्दः प्रयुक्तानामसौ साधुल्लेन नानुमास्यतृं] Under an extreme version of this viewpoint, one can maintain that all forms of this perennial speech must be valid for all speakers, so that sūtras which specify particular places and persons cannot provide for usage exclusive to the dialects of these areas and people. Details concerning this are considered in part III.1 of my work, under A 1.1.44. For the present it is sufficient to say that, even if one took the position that rules of a grammar like the Aṣṭādhyāyī indeed are meant to account for speech forms that are perennial, one would not have also to adopt this extreme position. The speech in question could indeed have dialectal variation.

In brief, so far as the immediate purpose of the Aṣṭādhyāyī is concerned, it cannot be deemed strictly prescriptive. This grammar accounts for usage which is
accepted as the speech of model speakers. There can be no
doubt whatever that Pāṇini had native control of this language.
Nor can one reasonably doubt that Kātyāyana and Patañjali also
had a native command of the language described. Kātyāyana and
Patañjali could say without hesitation that a derivate such as
ādityadarśa was not used in their speech (see §36), and
Patañjali could distinguish between what should obtain
(prāṇott, prāpti) by rule and what is desired (iṣyate, iṣṭi) in
the speech of his time and place (e.g., Bh. I.488.18-20).

Later on, when Sanskrit had ceased to be truly a current
language, the Aṣṭādhyāyī could indeed serve as a restrictive
and prescriptive guide, but even then great writers such as
Kālidāsa were not afraid to use forms that are strictly
speaking un-Pāṇinian.

II. Terms for the language described and for the
grammar and its components.

A. saṁskṛ, saṁskṛta, saṁskāra.

I have used ‘Sanskrit’ with reference to the Indo-Aryan
language Pāṇini describes, although he himself does not use
saṁskṛtam with reference to this language (see §7). In the
Sundarakāṅḍa of the Rāmāyana, saṁskṛtā vāk (acc. sg.
saṁskṛtām vācam) is used, probably for the first time in
Sanskrit literature, with reference specifically to a language.
Hanumān here considers in what language he should address
Sītā: if I speak saṁskṛtā vāk, as though I were a twice-born,
he says, Sītā will be frightened, thinking I am Rāvaṇa. This
blameless Sītā cannot be consoled by me otherwise, so that I
must speak in the language of men (mānasām vākyam ‘human
utterance’), with meaning (and nothing else). [Rāmāyana
5.28.18-19: यदि वाच्य प्रदास्यापि द्विजातिरिव सङ्क्रृताम् रावण
मन्यमाना मां सीता भीता भोक्ष्यति। अवस्यमेव वक्तन्त्र्यं मानुषं
वाक्यमर्थवतः मया सान्तविष्यतुं शक्या नान्यथेयमनिन्दितः॥] A

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contrast is made here between saṃskṛtā vāk and mānuṣyarām vākyam 'utterance of ordinary men'. The latter, characterized by having meaning (arthavat’), is the vernacular. Of course, saṃskṛtā vāk too must have meaning, but it also has something else. The term saṃskṛta used in this context has connotation which merit some brief comments.

saṃskṛta is the past participle of kṛ with the preverb sam. Pāṇini explicitly provides for the augment suṭ before the k of kṛ used with the preverbs sam, pari in the meanings 'adorn', 'form a group' (A 6.1.137–138 [527]). He also recognizes the use of saṃskṛta in the sense 'prepared'. Thus, A 4.4.3 (339) allows for derivates such as dādhika, used of food that has been prepared with curds. Similarly, A 4.2.16: संस्कृतं

भक्षा: (तत्र) (saṃskṛtam bhakṣāh [tatra 14]) provides for introducing taddhita affixes after a P1, which has a seventh-triplet ending and refers to something in which edibles (bhakṣāḥ) are prepared; e.g., bhṛṣṭra refers to foods prepared in a frying pan (bhṛṣṭre saṃskṛtā bhakṣāḥ). In its comments on these sūtras, the Kāśikāvṛtti notes that the act denoted by saṃskṛ (saṃskāraḥ) here consists in heightening the quality of something, and the Bālamanoramā on SK 1217 (= A 4.2.16) remarks that this consists in imparting a particular quality (gūnaviśeṣādhānam) to something by means of cooking and such. [Kāś. I.367, 438: सत उत्कर्षाधानं संस्कारं। Bāl. II.349: संस्कारो नाम पाकादिनां गुणविशेषाधानम्।] Similarly, in the course of pointing out that gūna has various meanings, Patañjali remarks that this word is used in the sense of saṃskāra, as when food which is prepared (saṃskṛtam annam) is referred to as gūnavat'possessing a quality'. [Bh. II.367.6–7: अर्थसंस्कारे वर्तिताः तद्धथा संस्कृतमन्न गुणविशेषत्वाः।] saṃskāra also is used of acts connected with the body (śarīrasaṃskāra ), that is, enhancing ones body through bathing, anointing, and such. For example, the
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Yājñavalkyasmṛti (1.84: क्रहििं शरीरसंस्कारं समाजोत्सव- 
दर्शनम् हास्यं परमुऽहं यानं त्यजेत्तथणित्भूक्तकाम) says a 
woman whose husband is away should avoid games, enhancing 
her body (सश्रिरसंस्कारं), seeing large groups of people and 
festivals, laughing, and going to some one else’s home.

The sanskāra of the body may also be for ritual purposes. 
For example, in the course of the Jyotiṣṭoma rite, the 
Yajamāna has his hair and beard cut (केशस्माश्रु वपते) and 
his nails clipped (नखानि नि कणत). In a brāhmaṇa passage 
from the Taittiriya-samhitā, it is explained that the Yajamāna 
does this in order to become ritually pure. The hair and beard 
are dead matter, hence improper for a ritual; by ridding 
himself of the dead skin that is improper for a ritual, the 
Yajamāna becomes appropriately eligible to participate in the 
rite before he enters into this ritual. [TS 6.1.1.2: केशस्माश्रु 
बप्ते नखानि नि कणते मूता वा एषा त्यजेत्तथणित्भूक्त 
मृतामेव त्यजेत्तथणित्भूक्त मृतामेव मृतामेव मृतामेव मृतामेव 
मृतामेव मृतामेव मृतामेव मृतामेव मृतामेव मृतामेव ...] The 
acts in question are referred to in ritual literature as 
sanskāras; see, for example, JS 3.8.2.3-4 (संस्कारस्तुपुरुष- 
सामथ्येय यथावेदं कर्मवध्यविधिथे रना यज्ञाणास्तु तत्त्वान- 
वातं कर्मवत), JMV 3.8.3.4-5 (संस्कारावपनाधार: किमधवयोः: 
स्वामिनिश्चय: अध्वयीस्तट: शक्तवात्लित्वे कर्तावर्ण तस्य ते 
संस्काराविधयं प्राप्त्य स्वकार्य कर्तामुहितज: क्रीणात्यत: क्रिया 
तेषा संस्कृया यज्ञाणागाल:), which take up the question 
whether the sanskāras in question pertain to the officiating 
priest (the Adhvaya) or to the Yajamāna.

Another example from a brāhmaṇa passage of the 
Taittiriya-samhitā, where this text itself uses sanskr, is 
5.6.6.3-4: शरीरं वा एवद्वैदर्शणित्भूध्यमात्र बैश्वानरो यथिच्छते 
बैश्वानरं जुष्मिति शरीरमेव संस्कृयाम्यात्मारमहि शरीरं वा
The altar that is to be formed by heaped bricks is the body of Agni, Vaiśvānara is (Agni's) self. By offering the Vaiśvānara cake on the heaped altar (the Yajamāna) mounts (Agni's) body after ritually preparing it. The Yajamāna ritually prepares his own body by heaping up the fire altar; by offering the Vaiśvānara cake on the heaped altar, he mounts it with himself after ritually preparing it. Therefore, one does not cut (the Vaiśvānara cake). Since the fire altar is formed by heaping up bricks, samśkṛtya in śārīram evā samśkṛtya 'after ... the very body' can indeed mean 'after putting together'. On the other hand, when the text subsequently speaks of the Yajamāna mounting (abhyārohāti) his own body with the self (ātmānā) --- that is, entering the physical body --- after preparing this body (śārīram evā samśkṛtya), it is best to consider that this concerns ritual preparation.

Such ritual preparation is, of course, well known, and there is a series of other acts called saṃskāra, one of which is the initiation ceremony --- the upanayana --- whereby a young man is made fit for sacred study. In the Paspaśa, Patañjali talks about what used to be normal in an earlier age: At that time, Brāhmaṇas would study grammar (vyākaraṇaṃ smādhīyate) immediately after their saṃskāra (saṃskārottara-kālam). [Bh. 1.5.6-76: पुराकल्य एतद्विविद्रोहशः विशेषायः विशेषायः सम्बन्धिताः अवशः जगत्तिः] As Nāgėśa notes (Ud. 1.23: संस्कारः उपनयनम्), by saṃskāra Patañjali here means the upanayana ceremony. In the Mahābhāṣya on A 6.1.84, on the other hand, Patañjali remarks that the upanayana ceremony, performed in accordance with the teaching that a Brāhmaṇa is to undergo this rite in his eighth year after conception, has saṃskāra as its purpose (upanayanaṃ saṃskārārtham). And having undergone this ceremony once (sākṛc cāsāv upaniṭhā),

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says Patañjali, he becomes saṁskṛta (saṁskṛto bhavati), that is, he is ritually prepared for sacred study [Bh. III.57.27-58.1: तथा गर्भिष्टमे ब्राह्मण उपनेय इत्यपनयनं संस्कारार्थम् सकृत्च्यासावपनीतं संस्कृतं भवति] Here saṁskāra clearly refers to the ritual preparation which results from the upanayana ceremony and which makes a Brāhmaṇa eligible for sacred study.

In still another passage, Patañjali speaks of a saṁskāra as a procedure whereby a vessel becomes pure. The discussion concerns the term anirvasitānām of A 2.4.10 (325). In the opinion of Patañjali, and also later Paniniyas, śūdrānām anirvasitānām refers to Śūdras who are not excluded from using a twice-born's vessel to eat in: Śūdras are not thus excluded (te'nirvasitāḥ) if a vessel from which they have eaten (yair bhukte pātram) becomes pure through a saṁskāra (saṁskāreṇa śūdhyati); Śūdras are excluded if a vessel from which they have eaten is not rendered pure even by a saṁskāra. [Bh. I.475.8-10: एवं तत्रं रात्रादनिरवसितानाम् यैैर्भुक्ते यात्र संस्कारों शुद्ध्यति ते सनिरवसिता: यैैर्भुक्ते यात्र संस्काराणापि न शुद्ध्यति ते निरवसिता:]

Saṁskṛta is used with reference not only to some person or utensil which has been prepared, made ritually pure, but also to a language (see 836). Speech which is saṁskṛta (saṁskṛta vāk, saṁskṛta gīt) is characterized by its saṁskāra, and the epithet saṁskāravatī which has saṁskāra' is used of such speech. For example, in Kumārasambhava 1.28cd (संस्कारंतवेव गीता मनीषी तथा स पृतः विशृविवत्त्वाि), Kālidāsa describes Himavat as purified and adorned (pūtaś ca vibhūṣitā ca) by Pārvatī as a learned man is by speech that possesses saṁskāra (saṁskāravatyeva gīrā mānīṣī), that is, by speech which possesses purity and thereby constitutes an adornment for the speaker. In Kumārasambhava 7.90 (दिव्या
In the two passages cited, Kālidāsa uses sāṃskāra with reference to purity and the means of achieving this purity, just as Patañjali used the term with these two values much earlier (see 840). As shown, in his commentary on Kumāramābhava 7.90, Mallinātha explains that Sanskrit is speech which has been purified (puṭena vāṁmayena) by a particular sāṃskāra, namely the grammatical explanation whereby speech is purified (sāstravyutpattya puṭena), the division into bases and affixes, whereby speech is rendered pure (prakṛtī-pratyayavibhāgaśuddhena). In his commentary on Kumāra-sambhava 1.28, Mallinātha explains that the sāṃskāra found in the speech referred to is the purity (śuddhiḥ) which is produced by grammar (vyākarana-janyā). [संस्कारो न्याकरण-जन्या शुद्धिस्तुत्त्वा गिरा जाता] The view that grammar serves to purify speech goes back to a considerably earlier time.

In consonance with what Patañjali said earlier, the Vṛtti on VP 1.12 says that the grammar, as a set of rules concerning what is general and what is particular, serves as the cause of attaining, through a brief means, unity with the ultimate being, whose essence is speech, the ṣabdabrahman. [Vṛtti 43.6-7:
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सामान्यविशेषविधि लक्षणं ... शब्दसंस्कारः कृत्सनस्य
लघुनोपायेन समधिगमनिनित्तम् ( see also 831-832 )] The
Vṛtti on VP I.12 goes on to speak of the sadabrahman as devoid
of corruptions (nirapabhramśe ) and possessed of saṁskāra
(saṁskāravati, see 834r). That is, the sadabrahman is kept
pure. This purity consists in its being established in its quality
of correct speech. Elsewhere, Bhartṛhari speaks of a speech
purification (saṁdasamākāraḥ ) as a means of attaining the
ultimate being ( siddhiḥ paramātmajat ). [VP I.144ab: तस्मादः
शब्दसंस्कारः सा सिद्धिः परमात्मजः || That is, as the Vṛtti
explains, when the speech-essence is purified (saṁskriyamāne
saṁdatattve ) so as to be established in its quality of correct
speech, the harmful impediments of incorrect speech are done
away with, so that a particular merit is manifested as one
uses correct speech, and felicity is thereby assured. [Vṛtti
201.8-202.1: न्यवस्थितसाधुभावेन हि रूपेण संक्रियामाणे
शब्दतत्त्वशपंथशेषोपघातापगमादादिभृते धर्मविशेषे नियतोः
भयूदयः ||] The paddhaki on the passage just cited explicitly
says that grammar (vyākaraṇam ) purifies the speech-essence
(saṁdatattvam saṁskaroti ). When grammar carries out this
purification, remarks Vyākhaṇḍevā, one who has studied
grammar avoids incorrect speech forms (apabhramśān
parihrata ) and uses correct ones (saṁdūmś ca prayukte).
A particular merit is manifested in the user as a result of this
correct usage, whence arises felicity. [Paddhaki 202.6-8: यदा
हि न्याकारणं शब्दतत्त्वं संस्करोति ततोःयमधीतन्याकारणो
शपंथवश्यपरिहरति साधूंच प्रयुक्तेऽति ततः ... साधु-
प्रयोगाद्वर्तिविशेष आविभेदविति ततोऽभयूदयः इति।]

Clearly, this harks back to what Kātyāyana said about
grammar establishing a restriction concerning usage, intended
for merit (see 830). And the purification (saṁskāra ) of speech
is none other than the grammatical explanation of correct speech forms segregated from incorrect ones. Thus, Bhartṛhari says that the wise declare grammar to be the primary ancillary to the Veda (prathamān chandasām anāgam āhur vyākaraṇān budhāḥ, cf. 326), the highest form of austerity (tapasām uttamām tapāḥ), closest to Brahman, the ultimate being in the form of speech. [VP 1.11: आसन्नं ब्रह्मणस्तस्य तपसामुतम तपः। प्रथमं छन्दसामुप्चार्याकरण बुधाः॥] He goes on to explain that grammar is thus qualified as the ancillary which directly contributes to the Veda, the one whereby Brahman in the form of speech receives a purification of its form, its essence (svarūpasamāskāraḥ). The purpose of this samāskāra is to convey the correctness of this Brahman in speech form. [Vṛtti 40.1-2: तस्य शब्दब्रह्मो हि यतः स्वरूपसंस्कारः साधुत्प्रतिपत्त्यथः तवासन्नं साधुद्वपकारिः] The context here is the Veda, which is considered an evolute of śabdabrahman and is accepted as being eternal and immutable. Hence, the samāskāra in question cannot be the purification of anything possibly impure. It is, instead, as Vṛṣabhadēva notes, the explanation (anvākhyāna) of divided elements of correct speech, carried out in grammar by positing bases, affixes, and so on. [Paddhati 40.7: न विशेषत्वितत्र संस्कारः अपि तु प्रकृतिप्रतिपत्यविभिर्भागान्वयायानम्] Again, in the verse where Bhartṛhari says grammar is the remedy for stains which affect speech (VP 1.14, see 832), he calls grammar the purifying means of all sciences (paviṭram sarvavidyaṇām), and the Vṛtti comments that this is so because grammar is the necessary condition for the samāskāra of speech. [Vṛtti 48.6: पवित्रं सर्वविद्यानामं तन्मिततवात्संस्कारस्या।] As Vṛṣabhadeva remarks, this is so because it is in grammar that all correct speech forms are explained in terms of divisions into bases and so on. [Paddhati
A grammar such as Pāṇini's is, as I pointed out in 827, a means whereby correct speech forms are taught (anuśīṣyante), that is, explained through derivation (vyutpādyante). In the course of explaining why the grammar is called a śabdānuśasana, Jhendrabuddhi not only uses anuśīṣyante and vyutpādyante but explicitly shows that samāskriyante is used synonymously with these, using samāskriyante to explain anuśīṣyante, which in turn is paraphrased with vyutpādyante. [Nyāsa 1.7: अनुशिष्यन्ते संस्कृतन्ते न्यूपद्धन्ते|नेन शब्दा इत्यनुशासनम्|शब्दानाम-नुशासनं शब्दानुशासनम्] This use of samāskṛt is not only reflected also in Mallinātha's commentary on Kumārasambhava 7.90 (see 841), it goes back to a much earlier time.

In the Mahābhāṣya passage cited in 225, Patañjali says samāskṛtya samāskṛtya padāny utsṛjjyante 'padas are let go once they have been ...' and uses the absolutive samāskṛtya. Nāgeśa remarks that by samāskṛtya Patañjali means 'after explaining as correct' (sādhutvenānvākhyāya). [Ud. 1.129: संस्कृत्येति नाधुलतेनार्थाय यथायत्यतः] That is, Patañjali has used samāskṛtya with reference to the grammatical explanation of correct words as derived by Pāṇinian rules. Yāska (Nir. 1.12, 1.14, 2.1) also uses samāskṛt and saṃskāra in a comparable manner, although the passages in question involve exegetical details whose proper discussion require so much space that I omit dealing with them here. Suffice it to note that Yāska uses svarasamāskārau with reference to accents (svara) and the derivational formation of words from bases and so on and that in Nirukta 2.1 he says one should emphatically not refrain from giving etymological explanations (na tvṣa na nirbrōyāt) in cases where the structures are not transparent. One should not
necessarily respect the grammatical explanation of words (na saṃskāram ādriyeta). In addition, the Vājasaneyiṣṭāśākhyā begins (1.1: स्वरसंस्कारयोः छन्दवसि नियम:।) by saying that in the language of sacred Vedic literature (chandasi) there is a restriction with respect to accents and saṃskāra; the text uses svarasāṃskārayoḥ, just as Yāska uses svarasāṃskārayau.

In sum, according to Pāṇinīyas, speech called saṃskṛta (saṃskṛtam, saṃskṛtā vāk, saṃskṛtā gṝ̣h) is the pure, correct speech of model speakers, described in a grammar like Pāṇinī's Aṣṭādhyāyī. The very description provided in such a work is viewed as a saṃskāra in two ways: as a derivational explanation of correct speech forms (śabda, sādhuśabda) and as a purification of speech, since correct speech forms are thereby segregated from corrupt ones (apaśabda, apabhramśa, asādhuśabda).

B. Saṃdānuśasana, vyākaraṇa, śāstra, sūtra, yoga, lākṣaṇa

Saṃdānuśasananam, equivalent to Saṃdānām anuśasananam (see, e.g., Nyāsa 1.7 [843]), contains the noun anuśasana, a derivate, formed with the suffix łyuṭ following sās ‘instruct’, with the preververb anu. This derivate can signify the act of instructing or a means whereby instruction is imparted (see A 3.3.115, 117 [291, 293]), and the object of this instruction is correct speech forms (śabda). In accordance with the generally held view that a grammar such as Pāṇinī’s serves to teach correct usage as opposed to incorrect speech, Pāṇinīyas also stress that Saṃdānuśasana refers to a śāstra by means of which correct speech forms (sādhaṇaḥ śabdaḥ), divided into bases and so on, are made known (jñāpyante, bodhyante) as discriminated from incorrect speech forms (viviktāḥ, vivicya = asādhubhyo vibhajya ‘after discriminating, [that is,] after separating [them] from incorrect ones’). [PM 1.7: विविक्ता: साधन: शब्दः प्रकृत्यादिविभागो ज्ञाप्यते येन तच्छास्त्रमत्र]
Given what Pāṇinīyas say about śabdañuṣāsana, it will be useful briefly to consider how vy-ā-kr 'separate, discrimi-
nate, explain' is used in early texts and how this relates to the Pāniniya conception of grammar.

a. A variety of the new moon ceremony involves milking six cows. To do this, the Adhvaryu priest brings together the calves with their mothers, then touches one cow at a time with a branch, separating each from its mother, and this is accompanied by the mantra वायव स्थ (e.g., VS.1.1) 'You are the winds'. After separating them ( vyākṛtya ), the Adhvaryu touches one of the mothers, again with the branch, and this is accompanied by the mantra देवो वः सब्धिता प्रार्थयतु ... (e.g., VS 1.1) 'May god Savitṛ make you reach (good pastures ...)'. In the Śatapathabrāhmaṇa and Kātyāyana’s śrautasūtra, vy-ā-kr is used with reference to the separating. [ŚBr. 1.7.1.4: अथ मानृणामेकं शाख्योपस्मृति वत्तेन न्याकृत्या, KŚS 4.2.7-9: मानृभिवित्सान् संसृजय वत्तं शाख्योपस्मृतिः वायव स्थेति ... देवो व इति मानृणामेकं न्याकृत्या] Other texts use apā-kr in the same context. [E.g., BhVŚS 1.2.12: तया ... वत्तसानपाकरोति वायव स्थोपायव स्थेति (TS 1.1.1.1), ĀpŚS 1.2.3: वायव स्थोपायव स्थेति ... वत्तसानपाकरोति]

b. In the Vājasaneyīsamhitā it is said that Prajāpati saw the different forms (drṣṭvā rūpē) of what is true and false, and discriminated the true and the false ( vyākarot satyāṅrte ). He put faith in the first, lack of faith in the second. [VS 19.77: द्रष्ट्वा रूपे न्याकरोतस्तत्त्वानृते प्रजापति:। अष्ट्र्याममन्तेःवंधाच्छ लुब्धा सुन्ये प्रजापति:।] Here, vy-ā-kr signifies the act of discriminating, differentiating between two things. The verb is frequently used of keeping apart two things. For example, in the Śatapathabrāhmaṇa, the Upāmśu and Antaryāma libations are said to be the prāṇa and udāna breaths of the Soma rite. One makes these libations at different times: the Antaryāma when the sun has risen, the Upāmśu before it rises. This is
done in order to set the prāṇa and udāna apart (prānodānayor vyākṛtyai): One thereby sets apart the prāṇa and udāna breaths (prānodānavevaitad vyākaroti). In addition, the two libations mentioned are are said to be day and night connected with the Soma rite, so that one is offered when the sun has risen, the other before then. This is done to set apart day and night; one thereby sets these apart. [ŚBr. 4.1.2.11-12: प्राणोदानां ह वा अस्येतु ग्रहीत् त्योसंतिते स्यतं ज्ञोत्तर-नुदिते स्यतरम् प्राणोदानयोग्यिकृते। प्राणोदानावेवैतत्त्यष्टिकथिता तत्समावेत समानावेत सन्तो नानेवाचक्षे प्राण इति चोदान इति च। अंहोरात्रे ह वा अस्येतु ग्रहीत् त्योसंतिते स्यतं ज्ञोत्तर-नुदिते स्यतरमहाराजयोग्यिकृते। अंहोरात्रे एवैतत्त्यष्टिकथित।] The text cited uses vyākaroti; in his commentary on ŚBr. 4.1.2.11, Sāyaṇa appropriately paraphrases this with vibhaktau karoti ‘makes separate: One makes the two breaths separate through this difference in time. [अनेन हि काल-भेदे तावुभौ विभक्तौ करोति]

Now, night and day are absolutely distinct. The breaths called prāṇa and udāna, however, are not. They are both upward moving breaths, and differ only in that the first is said to move in the mouth and nose, up to the areas of the heart, and navel, while the udāna operates up to the top of the head.

[E.g., YSBh. on YS 3.39 (p. 162): प्राणे मुखनासिकागतिराहस्यवृत्ति: ... उन्नयनातुवान आशिरोबृति।] See also the Tattvavaiśāradi and Nāgėsa’s comments on this.] Hence, in the passage just cited from the Śatapathabrāhmaṇa, the text says: Therefore, one calls these two by different names, prāṇa and udāna, as though they were distinct (rānevācaksate), although they are absolutely similar (samānāveva sāntau). In addition, vy-ṣ-kr is used with reference to one single entity, which was not previously differentiated, becoming or being made
differentiated. For example, the Brhadāraṇyakopaniṣad speaks of this world being at one time undifferentiated (avyākṛtam), then becoming differentiated (vyākriyata) according to name and form, such that one could speak of individual entities bearing certain names and having certain forms or colors, and it is now thus differentiated (vyākriyate). [BĀU 1.4.7: तद्वैं
तन्त्रन्यायाकृतमासीति नामस्पाध्यामेव व्याक्रियतासौ नामायमिन्द्रुप्त इति। तद्विदमप्रयत्तिहि नामस्पाध्यामेव व्याक्रियतेःसौ नामायमिन्द्रुप्त इति ...]

Further, vy-ā-kr can signify the act of dividing. For example, the Satapathabṛahmana relates that Indra and Viṣṇu once divided up a thousand cows three ways. One was left over, so that they created from her three cows of different sorts. Even today, concludes the text, if one divided (vyākuryāt) a thousand three ways, there would be one left over. [ŚBr. 3.3.1.13: सा या बभुः पिण्डशी सा सोमक्रणी। यत्र वा इन्द्राविष्णुं तेषा सहस्रं व्यैर्येतां तदेकाययिच्चेत। तां खेधा प्राजन्यताम तस्माद्विष्णुप्रयत्तिहि खेधा सहस्रं व्याकुयातीकौवतिच्चेत।]

c. vy-ā-kr is also used in the sense of explaining, making something clear. Thus, in the Udyogarvan of the Mahābhārata, Sanatsujāta teaches Dhṛtarāṣṭra that a true sage is called vaiyākarana because he makes all things clear (sarvārthānāṃ vyākaraṇā). [MBh. 5.43.36ab: सर्वार्थानां व्याकरणप्राचार्यकरणं उच्चतत्।] In his commentary on this passage (5.43.61ab in the Citrasālā edition), Nīlakaṇṭha glosses vyākaraṇāt with prakāṭikaraṇāt 'because of making clear'.

This use of vy-ā-kr also appears in more specifically grammatical discussions. Consider first what Bhaṭṭṛhari says in his commentary on a passage from the Paspaśā where Patañjali completes the discussion of what one should consider
a word to be. The word (śabdaḥ) go'cow, ox', he says, is that which, when uttered (yenoccāritena), serves as a means whereby there is a comprehension (sampratyayaḥ bhavati) of things with a dewlap, a tale, a hump, hooves, and horns. [Bh. 1.1.10-11: येनोच्चारितेन सार्नालाङ्कुलककुद्कुरविषाणिनाः समप्रत्ययो भवति स शब्दः।] Immediately after this, however, he goes on to remark that śabda is a term whose meaning is known (pratītapadārthakaḥ) in the world of every day usage (loke), where a sound (dhvaniḥ) is called śabda (dhvaniḥ śabda ity ucyate), as when someone says śabdam kuru 'Make a sound', mā śabdam kārṣṭa 'Don't make a sound. Don't make noise.' [Bh. 1.1.11-13: अथवा प्रतीतपदार्थको लोके ध्वनिः शब्द इत्युच्छयते। तद्यथा शब्दं कुरु मा शब्दं कार्ष्ठः: ... तस्माद ध्वनिः: शब्दः।] In his commentary on this passage, Bhartrihari contrasts a vyākaraṇa ('explanation') and an apākaraṇa ('rejection') in the context of questions and answers. Suppose A asks B, 'How many sons do you have?' (kati bhavataḥ putrāḥ). If, now, B does have sons, he can answer this question regarding the number of sons by explaining that he has one, two, or many sons. On the other hand, if B has no sons, he can reject the question as inapplicable, saying 'I have none at all' (ekopi me nāsti), meaning thereby that the question concerning the number of sons should not be asked at all (apākaroty eva praśnam naivāyam praṣṭavyaḥ). [Dīpikā 4.11-14: किमर्थ पुनरिवद्वृत्तिः। निर्णयस्य व्याकरणापापकरणाभ्यां प्रकरणपूर्वतिदर्शनात्। तद्यथा कति भवत: पुत्रा इति: ... संख्यामुच्यादयं प्रक्ते कृते तस्य निर्णयो व्याकरणेनापकरणेन वा। कस्चिद्वात् एको हौ बहव इति। एकोस्पष्टे मे नासिः। अयमपाकरोत्येव प्रक्तम् नैवायं प्रष्टत्वं इति।] I have adopted the reading praśne kṛte of Swaminathan's edition instead of prakṛta of Abhyankar and Limaye's edition. The first answer
is an explanation (vyākaraṇa), the second a rejection (apākaraṇa). Indeed, vy-ā-kr is used in the sense of giving an explanation in response to questions, and in this meaning the verb can be construed with forms of praśna. Thus, for example, Yāśka gives katham hi vyākarisyati 'How indeed will he ...?' to illustrate the use of the particle hi with the connotation of envy, not tolerating another, detracting from a person (asūyāyām, Nir. 1.5. कथं हि व्याकरिष्यति इत्य-सूयायाम). Skandaswamin-Maheśvara’s commentary explains as follows (1.62): Some one tells another person, ‘Devadatta will ... questions in the assembly’, to which the person thus addressed, intolerant of Devadatta, says ‘How indeed will ..., since he lacks the knowledge?’ [असूया अक्षमा अर्थं:। देव-दत्तः। सभायां प्रक्षान्यवाकरिष्यतीत्युक्त अक्षममणा:। कर्तिवदाह कथं हि व्याकरिष्यत्यकृतवित्य इति।] The commentary uses praśnān vyākarisyati ‘will informatively answer questions’.

In the Bhāṣya on Yogasūtra 3.17, Vyāsa explains that one has to separate out padas in utterances and each such abstracted pada is to be explained (vyākaraniyam), showing whether it signifies an action or a kāraka (kriyāvācakāṁ vā kārakavācakāṁ vā, see 214). Otherwise, if this were not done, Vyāsa goes on to say, how could a word like bhavati, aśvah, or ajāpayah be explained (vyākriyeta) as signifying an act or a kāraka, since the nominal forms bhavati (voc. sg. fem., as in (15) [see 218, 226]), aśvah (nom. sg.) ‘horse’, ajāpayah ‘goat’s milk’, and the verb forms bhavati ‘is, becomes’, aśvah (2sg. aor.), ‘reached’, ajāpayah (2sg. impfct. caus. of ji, see A 6.1.48 [392]) are homophonous (nāmākhyātasārūpyāt), so that what they refer to is not known from their forms alone. [YSBh. 146: तत्र वाक्ये पदपदार्थाभिन्यकितस्तत: पदं प्रविभज्जय व्याकरणीयं क्रियावचाकं वा कारकवचाकं वा अन्यथा भवत्यथ्योजापय इत्येवमादिषु नामार्थव्यातसारूप्यादनिः इति कथं [661]
On such ambiguous forms see also Kumārila's Ślokavārttika, Vākyādhiṣṭhāna 169-178.) That is, a grammatical explanation such as found in Pāṇini's Aṣṭādhyāyī shows the differences among these by deriving homophonic padas in different ways: The vocative bhavati is derived from bhavati-s (see A 6.1.69, 7.3.107 [467, 483]), but the present form bhavati is derived from bhū-a-ti (see A 3.1.68, 7.3.84, 6.1.78 [157, 127, 524]); aśvaḥ 'horse' is derived from aśva-s; in which the ending su (A 2.3.46 [240]) follows the nominal base aśva, but the aorist form aśvaḥ is derived from the verb śvi, with the vikaraṇa aṇi and the verb ending s (ṣip); ajāpayāḥ referring to an object is derived from ajāpayas-am (see A 7.1.23 [495]), but the verb form ajāpayaṅ is derived from ajā-p-i-a-s. When Vyāsa uses vyākaranīyam with reference to such padas, he clearly means they are to be explained through such grammatical derivation on the basis of posited bases, affixes, and augments. And Vācaspatimiśra explicitly glosses vyākaranīyam with anvākhāyayam 'to be explained'. [Tattvavaiśāradī p. 146.14-15: ... तत्त्वं प्रकृत्याविदी
विभागकल्पनया व्याकरणीयम् अन्वाख्येययम्]}

A very famous passage from the Taittirīyasamhitā relates that speech (vāk) used to be undifferentiated (āvyākṛtā). The gods asked Indra to make their speech differentiated (imāṁ no vācām vyākuru). Indra then entered this speech and differentiated it (tām ... vyākarot), whence it is that this speech we use is uttered differentiated (tāsmād iyāṁ vyākṛtā vāg udyate). [TS 6.4.7.3-4: वाचे पराच्य-
व्याकृतावदत्ते तेवा इन्द्रमबवजनिना नो वाच्य व्याकृतिः ...
तामिन्नेत् मध्यतोऽवत्क्रम्य व्याकरोत तस्मादियं व्याकृतां
वागुद्धाते ...] Sāyana comments on this passage in his commentary on TS 1.4.4 (Valdika Saṁśodhana Maṇḍala edition, 1.538). According to him, vāk refers here to speech in the
form of Vedic mantras. At one time, this speech was ‘turned away’ (pārācī) in that it could not be used effectively in ritual, since it behave staff-like, being unitary like the sound of the ocean. It lacked division into discrete parts such that a particular stretch is an utterance, which contains discrete paddas that in turn have bases and affixes. Hence, this speech was manifested (avadat ‘spoke’) as an undifferentiated whole. Indra entered into it and split it up into such discrete parts.

[येंयं वैदिकमन्त्ररूपा वाक्सा पूर्व पराची समुद्रघोषवदेक्यरूपेण दण्डायमाना तत्स्यां वाच्ययेताबदेकं वाक्यम् तस्मिन् वाक्येऽ स्येताबदेकं पदम् तस्मिन् पदेश्चीयं प्रकृतिर्यं प्रत्ययं इत्येवं विभज्य सर्वत्: करणं व्याकरणम् तदनन्ततवादयन्यकृतवादवद्द्र प्रवृत्ता। तामिन्द्रो मध्यतोऽवक्रम्य वाक्यादिरूपेण तत्र तत्र विचित्त्व विभिन्नां कृतवान्।] As can be seen, Sāyaṇa here interprets vyākarana as an action noun and links vi to a verb that is to be understood, namely bhaj (vi-bhaj ‘divide’, vibhajya ‘after dividing’). That is, vyākarana signifies the full division of speech into discrete parts.

e. Other texts also use vācaṁ vy-ā-kr, but with a meaning different from the one this has in the Taittirīyasamhitā passage just dealt with. For example, Aitareyāranyaka 2.6.1, Aitareyopanishad 5.1 considers identifying the self (ātman) with different faculties and organs: is it that by which one sees (yena vā paśyati), or that by which one hears (yena vā śrṇoti), or that by which one smells odors (yena vā gandhānā jighrati) or that by which one ... speech (yena vā vācaṁ vyākaroti), or that by which one knows what is sweet from what is not sweet (yena vā svādu cāsvādu ca virānāti)?

[कोषयमालये वक्तमुपासमहे कंतरः स आत्मा। येन वा पत्यति येन वा श्रुणोति येन वा गन्धानानिरूढति येन वा वाचं न्याकरोति येन वा स्वादु चास्वादु च विजानाति।] In the
Aitareyabrähmana, the tenth day (daśamam ahaḥ) of a Soma rite is identified with various faculties and organs: First, it is identified with that by which one ... speech and that by which one knows what is sweet from what is not sweet (atha yenaiva vācam vyākaroti yena svādu cāsvādu ca vi jānāti tad daśamam ahaḥ); then it is identified with that by which one has sensations of smells (atha yenaiva gandhān vi jānāti), with the pupil of the eye, that by which one sees (atha yaśva kaninikā yenaiva paśyati), with that by which one hears (atha yenaiva śṛṇoti). [AIBr. 5.22: ... अथ येनैव बाच्य व्याकरोति येन स्वादु चास्वादु च विज्ञानाति तद्समस्महं ... अथ येनैव गन्धान विज्ञानाति तद्दस्मस्महं ... अथ येनैव कर्तिकाम येन पक्ष्यति तद्समस्महं ... अथ येनैव श्रुणोति तद्समस्महं। ...

Clearly, the first passage concerns the possible identification of the self with sight, hearing, smelling, speech, and taste, together with the organs that function in seeing, hearing, and so on, and the second passage concerns the identification of the tenth day with these, as commentators have noted. The most immediate and obvious interpretation of yena (yenaiva) vācam karoti, then, is 'that by which one utters speech', and in his commentary on the Aitareyabrähmana passage, Śāyāna indeed glosses vācam vyākaroti with śabdām uccārayati 'utters sound'. [येनैव बाणिज्ययेन बाच्य व्याकरोति शब्दमुच्चारयति] This is compatible with the uses of vṛtrā-kṛ illustrated in c.

On the other hand, in his commentary on AIIU 5.1, Śaṅkara takes vācam vyākaroti to refer to discriminating between correct and incorrect speech items, in particular nominal forms like gaup 'cow, ox', aśvah 'horse'. [येन वा वाक्करणभूतेत्वाच्य नामातिकाम व्याकरोति गौरस्व इत्येवमाद्यां साध्वसाधिवित च] This is compatible with uses of vṛtrā-kṛ illustrated under d.
The passage from the Taittirīyasamhitā considered in 847d shows *vy-ā-kr* meaning 'divide, differentiate' and has speech as the object of this action. It is also certain that at one time early Indian grammarians did indeed analyze utterances and words to arrive at components. It is equally certain that such analysis, reflected in padapāthas such as the one elaborated by Sākalya for the Rgveda, had already been carried out before Pāṇini’s time (cf. 709). Pāṇini’s Aṣṭādhyāyī patently does not serve as a means for analyzing words and utterances. On the contrary, this grammar assumes as given particular basic forms of bases and affixes and serves to derive padas and utterances from these. As a śabdānuśāsana, the Aṣṭādhyāyī is a means of explaining utterances and their component padas through a derivational system. As can be seen from the very term śabdānuśāsana, the object of this explanation is correct speech forms (see 845). Since, śabdānuśāsana and vyākaraṇa are equivalent terms, then, the object of the action denoted by *vy-ā-kr* also is correct speech forms. This is made explicit in the Yogasūrabhāsya passage considered in 847c. Moreover, the Mahābhāṣya on Paspaśā værttika 12 says, in the text adopted in the Nirñayasāgara Press edition (I.78a) and the Rohatak edition (I.44), that a vyākaraṇa is that by means of which correct speech forms are explained (न्याक्रियन्ते शब्दः अनेनेति न्याकरणम्). To be sure, in Kielhorn’s edition the reading *vyākriyateṇeneti vyākaraṇam* is accepted (see 850b), and this is supported by manuscripts, but there can be no doubt whatever, in view of the evidence considered, that the object of the action signified by *vy-ā-kr* is correct speech forms, and the variant reading indeed is found in other testimonia (e.g., Nyāyasudhā III.269: न सूत्रस्य न्याकरणतः युक्तं नापि शब्दस्य न्याक्रियन्ते शब्दः अनेनेति न्याकरणमिति न्युहर्थानुपपत्ते: ...).

These speech forms are also said to be set apart from incorrect ones (see 845). Indeed, although commentators
attribute the meaning 'teach after discriminating' to anu-śās (e.g., PM 1.7-8: अनुपूर्वो हि शास्त्रिन्वितच्य झाप्ने हष्टः), similarly ŚK 1.3) and support this with textual references, the meaning 'discriminate' is more easily directly attributed, in the present context, to vy-ā-kr, as can be seen from passages such as those considered in 847b.

In brief, a grammar (vyākaraṇa, śabdānusāsana) such as Pāṇini's is traditionally viewed as a meanings of explaining, making known (vy-ā-kr, anu-śās), through a derivational system, correct speech forms (śabda) as discriminated from incorrect speech forms.

Grammar is a śāstra (see 827). Now, śāstra can be used with reference to any teaching, as, for example, when the Bhagavadgītā uses guhyatamaṁ śāstram 'most secret teaching' with reference to what Kṛṣṇa teaches. [Gītā 15.20ab: इति

gubhutame śāstraṁ vinormukten māyanādai] More specifically, śāstra is used of a consecrated number of teachings, including grammar. For example, in his Uṇādikāśa on Uṇādisūtra 4.158 (827), Mahādeva says śāstra refers to the revealed lore (śruti'), that is, the Veda, to man-made lore (smṛti'), the Purāṇas, and the six philosophical systems of Nyāya and so on. [Uṇādikāśa verse 653ab: śrutiśmatipu-rāṇṇoṁ śāstraṁ nāyāvatātśāsti paḥ] Grammar is traditionally reckoned among the smṛtis, as the one which teaches correct speech. [e.g., VP 1.29cd: तस्मानिनवयन्ते

शिष्टे: साधुत्वविषया स्मृति: (cf. 1.43), 1.158: साधुत्वज्ञान-विषया सेरं न्याकरणस्मृति:। अविच्छेदेन शिष्टानांनिदिः

स्मृतिनिनवन्धनम्।।] śāstra can also refer to a particular work. For example, in his vārttika on Nyāyasūtra 1.1.1, Uddyotakara explains the composition of Gautama's work, which is a śāstra. The śāstra is a group of words characterized by a particular arrangement (vyūnahavisīṣṭah) and stating such things as means of knowing rightly
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(pramāṇādi vācakapada samūhah). A word (padam) is a group of sounds (vārṇasamūhah), and a group of words constitutes a sūtra; a group of sūtras makes up a section (prakaraṇam); a group of sections constitutes an āhṇika; a group of āhṇika makes up a chapter (adhyāyaḥ); and the śāstra is a group of five chapters (pañcādhyāyī).

[NV I.6.5-7: śāstra pūnya pramāṇādvācakapada samūhe vyūhaviśeṣaḥ. Padya pūnaḥvśeṣaḥ]

Pāṇini’s śabdaṁuṣāsana also is referred to as a śāstra (see 827).

In addition, individual sūtras of the Aṣṭādhyāyī are called śāstra. Thus, in the Bhāṣya on A 1.1.1, Patañjali says that the teacher Pāṇini, intent on auspiciousness, uses vṛddhi— which in ordinary usage means ‘growth’ --- at the beginning of the great multitude of śāstras (mahataḥ śāstraḥgaṇasya) for the sake of auspiciousness, and Nāgeśa rightly notes that Patañjali here speaks of a multitude of śāstras because each single sūtra is a śāstra. [Bh. I.40.6-7: māntrikātāmaṁ māhāt: śāstraḥgaṇaḥ vṛddhaṁvadāntaḥ: puṇya-katvā, Ud. I.132: ekaṁ ca sūtraṁ śāstramāṇi śāstraḥgaṇȯyaḥyaktaṁ]

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As was shown in 849, sūtra refers to an individual statement in a treatise such as Gautama’s work on Nyāya or Pāṇini’s grammar. Indeed, Patañjali explicitly speaks of a sūtra of a grammar: vyākaranasya sūtram (e.g., Bhāṣya I.11.17, see a below). Accordingly, vaiyākaraṇa ‘one who studies or knows vyākaraṇa’ (see A 4.2.59 [337]) can refer to some one who is studying individual statements of the grammar. In addition, however, sūtra can be used with reference to an entire work such as the Aṣṭādhyāyī. In this context, it is worthwhile to consider briefly a discussion in the Paspaśa concerning what vyākaraṇa denotes.

a. The first position taken is that vyākaraṇa refers to the
entire corpus of sūtras. This meets with two objection, the first of which is as follows. The meaning of a sixth-triplet ending, as in vyākaraṇasya of vyākaraṇasya sūtram, is now not justified. Such an ending signifies a relation between two distinct entities (see A 2.3.50 [251]). What, then, would that vyākaraṇa be, distinct from the sūtra, to which the sūtra would be related? [Bh. I.11.15, Paspaśa vt. 10, Bh.I.11.17-18: 

अथ न्याकरणमेत्यस्य शब्दस्य कः पवार्थः। सूत्रम् सूत्रे 

न्याकरणे स्थानवर्ध्योऽनुपपन्नः॥१०॥ सूत्रे न्याकरणे स्थानवर्ध्योऽ 

नोपपदते न्याकरणस्य सूत्रमिति। किं हि तदन्यत्सूत्राद्वै 

न्याकरणं यस्याद् सूत्रं स्मतः।] The objection is obviously based on assuming that sūtra refers to the entire set of sūtras that constitutes the Āstādhyāyī. If, on the other hand, sūtra referred to part of this text, any individual rule, the objection would not be valid. [Pr. I.43: 

शब्दवर्धय इति 

द्वाभ्यमपि शब्दाभ्यामष्टाद्याय्या: प्रतिपादनाण्वयति करारायां। 

... यदा त्वष्टाद्याय्यं येकरिदेशः सूत्रशब्द्योजनस्य तदा शब्दाय्योऽ 

स्थानवर्ध्योऽनुपपदते:। Dipikā 38.23-39.1: ... यदा तु न्याकरणशब्दः 

समुदायवृत्ति: सूत्रशब्दः कालसंशोधनय्ये वृत्त उपादीयते ... 

तदा शब्दवर्धयोऽनुपपन्नः॥] sūtra referring to the entire corpus of rules is also used in the Mahābhāṣya passage considered below, under b.

b. It is then suggested that vyākaraṇa denotes the correct speech (sabdaḥ) that is described. This meets with two sorts of objections. To begin with, the term vyākaraṇa is then not properly accounted for by the grammar. vyākaraṇa should be derived with the suffix lyuṭ introduced to signify an instrument, and this meaning is now not justified. That is, vyākaraṇa should refer to something by means of which one explains, and the correct speech forms to be accounted for are not such a means; what serves to explain is a set of sūtras, by
means of which correct speech forms are accounted for. [Bh. 1.11.24, Pasopaṣa ā v. 12, Bh. 1.11.26-27: एवं ताहि शब्दः। शब्दे
ल्युहर्थः॥१२॥ यदि शब्दो न्याकरणं ल्युहर्थो नोपपद्यते
न हि शब्देन किंचिद्
न्याकितए॥ कोन ताहि। सूत्रे॥ See 848 for a variant reading.]

In addition, under the proposed interpretation, two types of
derivatives with taddhita suffixes are not justified. One should
have vaiyākarana, with the affix ant, in the sense of 'located in
...' (tatra bhavaḥ: A 4.3.53 [344]), so as to account for a usage
like vaiyākarana yogaḥ with reference to a rule (yogaḥ)
located in the vyākaraṇa (vyākaraṇe bhavo yogaḥ). But a rule
is located in the corpus of rules (sūtre), not in the correct
speech described by this set of rules. Moreover, a meaning
'enunciated, propounded by ...' (tena proktam: A 4.3.101) for the
suffixes in pāṇiniyam, āpiṣalam ('enunciated by Āpiṣali'),
kāṣakṛtsnam ('enunciated by Kāṣakṛtsna') is not justified
under the proposal being considered: Pāṇini did not enunciate
the correct speech forms he described; he enunciated the
corpus of rules that account for such forms. [Pasopaṣa ā v. 13,
Bh. 1.12.1-2, 5-6: भवे प्रोक्तादयुच्च तद्भिता॥१३॥ भवे च
tadbhuhu noapadhyate। न्याकरणे भवे योगो वैयाकरण इति। न हि
शब्दे भवे योगः। कव ताहि। सूत्रे। प्रोक्तादयुच्च तद्भिता
नोपपद्यते। पाणिनिन प्रोक्तं पाणिनि यम्। आपिसलम्
काषकृतस्मिनिमि। न हि पाणिनिन शब्दः। प्रोक्ता॥ किं ताहि।
सूत्रम्।]

c. Finally, the suggestion is made that the speech which is
to be characterized by rules of the grammar and these rules
(lakṣyālakṣaṇe) together constitute what vyākaraṇa refers to.
[Pasopaṣa ā v. 14, Bh. 1.12.16: लक्ष्यलक्षणे न्याकरणम॥१४॥
लक्ष्यच च लक्षणचैतत्समुदितं न्याकरणं भवति।] Paññali
goes on first to explain what lakṣya and lakṣana designate here: The correct speech is the lakṣya, and the corpus of rules is the lakṣana. [Bh. 1.12.16-17: किं पुनर्दक्षयं लक्षणचतुः शब्दो
लक्ष्यः सूत्र लक्षणम्] This suggestion also meets with an objection: The term vyākaraṇa now is considered to refer to two things together, so that, under the proposal made, it is not justifiably used with reference to one of these alone. Yet it is desirable that vaivākaraṇa be used also of a person who is studying, learning only the sūtras, not also the speech these account for. [Bh. 1.12.17-18: एवमप्रयः दोषः समुदाये
व्याकरणशब्दः प्रवृत्तोस्ववये नोपपध्याये। सूत्राणि चाप्यथ्यधीयान
इष्यते वैयाकरण इति].

Patañjali goes on to argue that the faults brought up can be circumvented. In the present context, it is not necessary to consider these arguments. It is sufficient to have shown how pertinent terms are used in the Bhāṣya passages dealt with.

The term sūtra, which in ordinary Sanskrit means 'thread', is used, as shown, with reference to a rule or a corpus of rules. According to a traditional verse, a sūtra has the following characteristics: it has few syllables (alpākṣaram), without inserted meaningless, useless terms (astobham), and contains what is essential (sāravat), yet applies with reference to the most instances possible (viśvatomukham), and is not subject to doubt (asāndīgdham); it is without fault (anavadyam).

अल्पाक्षरसन्दिग्ध्य सारवद्वियसतोमुखम्
असतोभमवद्यधीयच सूत्र सूत्रविद्वो विदुः॥

Patañjali speaks of a yoga found in the grammar (Bh. 1.12.2 (850b)), that is, a rule within the corpus of rules that makes up the entire grammar. It is patent that yoga thus used refers to an individual rule of the grammar, a sūtra. Similarly, in his first vārttika on A 1.3.11 (115), Kātyāyana says (अधिकारः
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that a heading is formulated in order that one not have to state in rule after rule (prati-yogam) what is given in the heading, and he uses yoga to refer to individual rules.

The immediate object of a grammar like Pāñini's is to describe correct speech forms (śabda), which are referred to as lakṣya (see 850c), that is, as "targets", which are to be characterized by means of grammatical rules. The rules that serve this purpose are, then, referred to as lakṣana. According to Pāñiniyas, a sūtra is called lakṣana because it is that by means of which correct speech is characterized (lakṣyate), that is, explained (anvākhyāyate). [Darpaṇa 97: लक्ष्यतेः न्वार्थायायणं साधुशब्दोऽनेनेति लक्षणं सूत्रम्]

As sūtra can refer to a corpus of rules, so can lakṣana. In the Paspaśā, Patāñjali considers and rejects the possibility that the grammar should teach correct speech forms individually. Instead, he says, a set of rules is to be set into play which contain what is general and particular — that is, general rules and exceptions (utsargāpavādau, cf. 624) whereby one may, with a minimum of effort, obtain knowledge of great masses of correct speech forms. [Bh. 1.6.3-4: किन्निच्चासामान्यविशेषवल्लक्षणं प्रकार्य येनाल्येन यतेन महतं महतं: शब्दान्यप्रतिपद्यरन् किं पुनस्तात् उत्सर्गापवादार्]

There can be little doubt that sāmānyaviśeṣavat lakṣaṇam 'a lakṣaṇa with what is general and particular' here refers to the grammar in general. And indeed, the Vṛttī on VP 1.159 speaks not only of this lakṣaṇa which has what is general and particular but also says that it is a grammar (asmīṃ lakṣane vyākaraṇākhye). [Vṛttī 221.4: ... सामान्यविशेष-वल्लक्षणे व्याकरणार्थे ...]

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