In Pāṇini We Trust

Discovering the Algorithm for Rule Conflict Resolution in the Aṣṭādhyāyī

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Rishi Rajpopat

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-Rishi Rajpopat

Abstract

If two rules are simultaneously applicable at a given step in a Pāṇinian derivation, which of the two should be applied? Put differently, in the event of a 'conflict' between the two rules, which rule wins?

In the *Aṣṭādhyāyī*, Pāṇini has taught only one metarule, namely, 1.4.2 *vipratiṣedhe paraṁ kāryam*, to address this problem. Traditional scholars interpret it as follows: 'in the event of a conflict between two rules of equal strength, the rule that comes later in the serial order of the *Aṣṭādhyāyī*, wins.'

Pāṇinīyas claim that if one rule is *nitya*, and its simultaneously applicable counterpart is *anitya*, or if one is *antaraṅga* and the other *bahiraṅga*, or if one is an *apavāda* (exception) and the other the *utsarga* (general rule), then the two rules are not equally strong and consequently, we cannot use 1.4.2 to resolve the conflict between them. The *nitya*, *antaraṅga* and *apavāda* rules are stronger than their respective counterparts and thus win against them.

But this system of conflict resolution is far from perfect: the tradition has had to write numerous additional metarules to account for umpteen exceptions. In this thesis, I propose my own solution to the problem of rule conflict which I have developed by relying exclusively on Pāṇini's *Aṣṭādhyāyī*. I replace the aforementioned traditional categories of rule conflict with a new classification, based on whether the two rules are applicable to the same operand (Same Operand Interaction, SOI), or to two different operands (Different Operand Interaction, DOI).

I argue that, in case of SOI, the more specific i.e., the 'exception' rule, wins. Additionally, I develop a systematic method for the identification of the 'more specific' rule – based on Pāṇini's style of rule composition. I also argue that, in order to deal with DOI, Pāṇini has composed 1.4.2, which I interpret as follows: 'in case of DOI (*vipratiṣedha*), the right-hand side (*para*) operation (*kārya*) prevails.' I support my conclusions with both textual and derivational evidence.

I also discuss my interpretation of certain metarules teaching substitution and augmentation, the concept of *aṅga*, and the *asiddha* and *asiddhavat* rules and expound on not only their interaction with 1.4.2 but also their influence on the overall functioning of the Pāṇinian machine.

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Chapter One

1.1 Introduction to the *Aṣṭādhyāyī*

Pāṇini[1] composed the *Aṣṭādhyāyī* around 350 BC[2] in North-Western South Asia.[3] The *Aṣṭādhyāyī* is a *samāhāra* 'collection' of *aṣṭa*(*n*) 'eight' *adhyāya*s 'books', hence the name *Aṣṭa-adhyāy(a)-ī*. Each book of the *Aṣṭādhyāyī* has four *pāda*s 'chapters' that are made up of *sūtra*s 'rules'. In all, the *Aṣṭādhyāyī* comprises about 4000 rules. The *Aṣṭādhyāyī* is a comprehensive grammar of the Sanskrit language as known to its author Pāṇini. It stands out for doing more than merely describing its object language: the *Aṣṭādhyāyī* is a full-fledged machine which helps construct grammatically correct Sanskrit words and sentences through a step-by-step derivation[4] process. In the *Aṣṭādhyāyī*, Pāṇini does not give us a general introduction to his work, nor does he discuss the theoretical principles that have been used to construct his *sūtra*s. He conveys whatever has to be said, through his *sūtra*s alone.

The first two books are mainly composed of *saṁjñā sūtra*s 'definition rules' and *paribhāṣā sūtra*s 'metarules'[5]. The remaining books mainly consist of *vidhi sūtra*s 'operational rules'. Books three to five teach the addition of both inflectional and derivational affixes to bases. Book three teaches the addition of various affixes to verbal roots and stems, and books four and five teach the addition of different affixes to nominal stems. Books six, seven and eight teach various morpho-phonological operations that should be performed on both bases and

[1] There are many disagreements about the dates, and what I mention here are the dates agreed upon by much recent scholarship.

[2] Cardona 1976: 267-268.

[3] I say 'composed' and not 'wrote' because scholars disagree on whether he used the aid of writing to create his grammar. In recent times, Vergiani (2020) has present strong arguments in favour of the proposition that Pāṇini did use written means to put together his magnum opus. Writing or not, it is known that, just as happened with the Vedas, the *Aṣṭādhyāyī* too was orally transmitted from one generation to the next.

[4] In the modern literature on the Pāṇinian grammatical tradition, it is customary to use the verb 'to derive' and its derivatives (e.g., derivation) to simply mean 'to construct'. The verb 'to derive' is used in the context of not only derivational but also inflectional morphology. I shall abide by this convention in this thesis.

[5] Metarules teach us how rules should be interpreted, how certain operations should be undertaken, and how rules interact with one another.

affixes. Different kinds of rules from multiple books are required to derive a word using Pāṇini's method.

To truly understand the *Aṣṭādhyāyī*, one needs to familiarize oneself with the methodology used by Pāṇini to compose and arrange rules in his work. Pāṇini's style is not entirely self-evident, and one faces challenges at multiple levels when attempting to unravel the enigma that is the *Aṣṭādhyāyī*. Firstly, it is not easy to determine the exact meanings of Pāṇini's rules because the *sūtra* style in which they are composed is very concise and compact. Much information is often packed into a few words, thereby making it considerably difficult to comprehend their exact purport. Consider 6.1.9 *sanyaṅoḥ*, which teaches that a verbal base[6], which has not undergone reduplication, undergoes reduplication in the presence of affixes *saN*[7] and *yaṄ*, the desiderative and intensive markers, respectively.[8] The question about whether *sanyaṅoḥ* is a genitive dual or a locative dual is a crucial one, and has important implications for how we conceptualize *prakriyā* 'the (derivational) procedure'.[9]

Secondly, to make sense of any given rule, it is essential to take into account the contents of preceding rules. This is because Pāṇini uses a device called *anuvṛtti* 'continuation into the following rules' to economically express his observations: to understand the complete and correct meaning of a rule, certain words from preceding *sūtra*s may need to be borrowed into that rule by *anuvṛtti*. But there is no universal convention as to which terms are supposed to or can become *anuvṛtta* 'continued' into a certain rule. For example, consider 1.1.33 *prathamacaramatayālpārdhakatipayanemāś ca*, which teaches that certain words are called *sarvanāma*. But it is difficult to determine whether or not the words from the previous rule 1.1.32 *vibhāṣā jasi* should be continued into this rule. If they are continued into 1.1.33, then

[6] Note that the whole base does not undergo reduplication. Instead, only one syllable does. See 6.1.1 *ekāco dve prathamasya* and 6.1.2 *ajāder dvitīyasya*.

[7] In this thesis, I use capital letters in Pāṇinian morphemes to represent *itsaṁjñaka*s (taught in 1.3.2 *upadeśe'j anunāsika it* and following *sūtra*s). Such *it*s (commonly called *anubandha*s in post-Pāṇinian grammatical literature) are used to mark certain properties of the item to which they are added, and are not actually part of the item. Their unconditional deletion is taught by 1.3.9 *tasya lopaḥ*.

[8] Note that, in this thesis, I have used English translations of Pāṇini's rules by Sharma (1987-2003) and Katre (1987), for many but not all rules. I have taken the liberty to edit their translations as required. For the remaining rules, I have presented my own translations.

[9] Cardona 1997: xvii, Kiparsky 1982: 85-86.

this would restrict 1.1.33 only to those cases where these stems are followed by the nominative plural affix *Jas*, and would also make 1.1.33 optional.[10]

Thirdly, even after the meaning of the rule has been understood, it does not become patently obvious how to use it. This is because Pāṇini's rules are placed together on the basis of topical and functional categories, and not according to the derivations in which they participate.[11] Thus, one cannot easily ascertain the order in which rules apply or select the step at which they become applicable. For example, consider the rule 3.1.33 *syatāsī lṛluṭoḥ*, which teaches that the affixes *sya* and *tāsI* should be added to the left of *LṚ* (*LṚṬ* and *LṚṄ*) and *LUṬ* respectively. But the question that has troubled both traditional and modern scholars is: should and can this rule apply before the *lakāra*s are replaced with finite verb endings (3.4.77 *lasya*; 3.4.78 *tip-tas-jhi*…[12])?[13]

Fourthly, after one has come to a conclusion about where to apply a given rule, one is often faced with situations in which two rules become applicable at the same step. In many such cases, one rule blocks the other, or both rules block each other. This is called 'rule conflict'. According to the tradition, a metarule taught by Pāṇini, namely 1.4.2 *vipratiṣedhe paraṁ kāryam* addresses this issue. However, it seems unable to give the right answer when applied to certain cases of conflict.

We can conclude that the *Aṣṭādhyāyī* is a very sophisticated grammar, and that to operate its grammatical machine, we have to understand it at multiple levels. What would an early grammarian or linguist have done in order to interpret the *Aṣṭādhyāyī* independently? With negligible access to any commentary on the text, and with limited or no guidance of a teacher well-versed in the *Aṣṭādhyāyī*, a scholar would have taken notes for himself in order to comprehend, analyse and corroborate the teachings of the *Aṣṭādhyāyī*. He would have started by paraphrasing the contents of the *Aṣṭādhyāyī* to establish what they exactly mean, both independently and in the context of the preceding rules.

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[10] Bloomfield 1927: 61-70.

[11] Besides, it is not possible to arrange rules on the basis of the derivations in which they participate because most rules participate in umpteen different derivations.

[12] *Tip-tas-jhi-sip-thas-tha-mib-vas-mas-t(a)-ātāṁ-jha-thās-āthāṁ-dhvam-iḍ-vahi-mahiṅ.*

[13] Roodbergen 1991: 293-299.

To ensure that he had understood such a complex grammar correctly, or to confirm that the grammar accurately describes the structure of the language, a scholar would have tried to verify the validity and accuracy of different rules against spoken language or attested literature. He would have gradually developed his own ideas about where rules should apply, and how derivations should proceed. He would have noticed how rules interact amongst themselves and would have come up with ways to classify and deal with such interactions. He would also have suggested certain changes to these rules to make them more precise, to help them better characterize their object language and/or to help them function more consistently with other rules within the Pāṇinian system.

This is presumably what happened in the Indian grammatical tradition when Kātyāyana understood the meanings and functions of Pāṇinian rules on the basis of his independent study of the *Aṣṭādhyāyī*.[14] Then as a teacher, he also taught them to his pupils using his notes on the *Aṣṭādhyāyī* as pedagogical aid. His students taught the *Aṣṭādhyāyī* to their students using Kātyāyana's work and also commented on Kātyāyana's writings, thereby sharing their own opinions, interpretations and analyses with their students and readers. Successive generations participated in this process of knowledge processing, production and transmission, thereby giving birth to the Pāṇinian grammatical tradition.

The texts of the Pāṇinian grammatical tradition have played a dominant role in influencing and shaping our understanding of, and opinions about the *Aṣṭādhyāyī*. They also give us significant insights into the evolution of different ideas in the Pāṇinian tradition. Below I introduce the texts that I shall refer to in the rest of the thesis and briefly discuss the history of the Pāṇinian tradition with special reference to metarules.

1.2 Metarules in the Pāṇinian Grammatical Tradition

Early grammatical thought in the Indian subcontinent, as represented by the works called *Prātiśākhya*s, was intended to assist the recitation of Vedas by explaining the pronunciation of accents and dissolution of *sandhi*s. Their objective was merely descriptive, that is, to make grammatical observations and offer clarifications where necessary. But a number of

[14] I think that there was a break in the transmission of the *Aṣṭādhyāyī* between Pāṇini and Kātyāyana, since Kātyāyana seems to be in the process of understanding the *Aṣṭādhyāyī* without much help from anyone else. I shall furnish evidence to support this statement in chapter 6.

independent and full-fledged grammars emerged subsequently which sought to 'derive' language rather than simply 'describe' it: they built mechanistic systems which perform various operations on bases and affixes in order to produce correct word forms and, using these fully derived words, to construct meaningful sentences.

While Pāṇini himself mentions many of his predecessors in his *sūtra*s, his work, the *Aṣṭādhyāyī*, remains the oldest surviving derivational grammar of Sanskrit. Composing such a grammar required Pāṇini to meticulously design every aspect of the derivational procedure, which explains why Pāṇini made significant efforts in formulating his *paribhāṣā sūtra*s 'metarules'. These metarules play a pivotal role in the correct interpretation and application of *vidhi sūtra*s 'operation rules' at every step of the derivation, thereby ensuring that the derivational machine produces the grammatically correct output.

Given the *Aṣṭādhyāyī*'s remarkable exhaustiveness and accuracy, it is not surprising that Kātyāyana, around 250 BC[15], undertook a systematic analysis of what must have been for him an unprecedented and extraordinary treatise. Kātyāyana recorded his thoughts and findings in the form of *vārttika*s, which are short statements seeking to explain, examine, criticize and sometimes integrate Pāṇini's rules with additions. Without overlooking the more specific and individual aspects of the grammar, Kātyāyana sought to develop a broad perspective about the functioning of the *Aṣṭādhyāyī* as an integrated machine. This involved interpreting the metarules of Pāṇini's grammar, providing examples and counterexamples to determine their verity, and composing new metarules to help the Pāṇinian system run even more smoothly.

Around 150 BC, Patañjali wrote the *Mahābhāṣya*, which is a commentary on Kātyāyana's *vārttika*s.[16] It records the arguments and counter-arguments that must have transpired between Patañjali and his pupils about the contents of the *vārttika*s. Patañjali too approached the *Aṣṭādhyāyī* with his independent perspective about its derivational system, and skilfully wove Kātyāyana's *vārttika*s into his own presentation of the Pāṇinian machine. In doing so, he both established his independent interpretation of Pāṇini's and Kātyāyana's metarules, and wrote new metarules to afford us greater clarity to the *Aṣṭādhyāyī*'s derivational procedure.

In the course of time, some Pāṇinīyas took it upon themselves to compile and comment on all such metarules from Patañjali's *Mahābhāṣya*. They also came up with new metarules to fill the

[15] Cardona 1976: 267-268.

[16] The two major commentaries on the *Mahābhāṣya* are the *Pradīpa* of Kaiyaṭa and the *Uddyota* of Nāgeśa.

knowledge gaps that they thought existed in the tradition. They came to be known as *paribhāṣākāra*s 'authors of *paribhāṣā*s', and the literature composed by them, as *paribhāṣā* literature. *Paribhāṣā* texts have been written over many centuries – from around[17] (or soon after) Patañjali's time, if not before him, to the 18th century. Among the *paribhāṣā* texts of the Pāṇinian tradition, the most popularly studied, quoted and commented upon in modern times is the relatively recent *Paribhāṣenduśekhara* of Nāgeśa Bhaṭṭa, which was written in the eighteenth century.

A rich tradition of *paribhāṣā* literature has long existed in other schools of Sanskrit grammar too (e.g., *Kātantra, Haima, Cāndra*).[18] Both Pāṇinian and non-Pāṇinian *paribhāṣākāra*s were especially interested in certain topics, for example, rule conflict. In Nāgeśa's work, the section containing *paribhāṣā*s 38 to 70 deals exclusively with rule conflict and is thus called *bādhabīja*.[19] Similarly, in the *Kātantra* system, *paribhāṣā sūtra*s are actually divided into *balābala sūtra*s 'metarules dealing with comparison of rule strength' and others which do not deal with this topic.[20] A significant exchange of ideas took place between Pāṇinian and non-Pāṇinian traditions due to mutual borrowing of *paribhāṣā*s.

Circa 7th century AD, Jayāditya and Vāmana wrote the *Kāśikā*, which consists of *vṛtti*s on each rule.[21] A *vṛtti* paraphrases the rule, teaches metarules that help us correctly apply that rule, gives examples of its application, and justifies the existence of each word of that rule. *Vṛtti*s borrow a significant proportion of their contents from Patañjali's *Mahābhāṣya*. They are unique in that they do not comprise new metarules, yet by quoting some metarules from Patañjali's *Mahābhāṣya* and ignoring others, they present an evolved perspective about the mechanistic aspects of Pāṇinian derivations – often quite different from Patañjali's.

Lastly, let us talk about *kaumudī* texts, which explicitly envision the *Aṣṭādhyāyī* as a grammatical machine. The *kaumudī* tradition which began in the fifteenth century with

[17] Abhyankar 1967: 12.

[18] K.V. Abhyankar has edited and compiled many Pāṇinian and non-Pāṇinian *paribhāṣā* treatises in his *Paribhāṣāsaṁgraha* (1967).

[19] Abhyankar 1967: 12.

[20] Ibid., 3.

[21] The two major commentaries on the *Kāśikā* are the *Nyāsa* of Jinendrabuddhi and the *Padamañjarī* of Haradatta.

Rāmacandra's *Prakriyākaumudī*[22], reorders the *sūtra*s of the *Aṣṭādhyāyī* to reflect their derivational roles: in any *Kaumudī* text, a rule is introduced when the first derivation involving it is taught. The *Kaumudī* texts first introduce *saṁjñā* and *paribhāṣā* rules, then teach *sandhi* rules, then introduce nominal and verbal inflections in the order in which forms appear in paradigms, and then teach derivatives and compounds. The most celebrated text in this genre is Bhaṭṭojī Dīkṣita's *Siddhāntakaumudī* written in the seventeenth century.[23] By reordering the *Aṣṭādhyāyī*'s rules, the *Kaumudī* not only gives us a glimpse of how Pāṇini's derivational mechanism actually works, but also tells us which metarules apply where, and how these metarules enable the us to perform derivations uniformly.

Even though the traditional texts discussed above broadly agree on most derivational technicalities, they present different perspectives on the nature and characteristics of the machine.

1.3 Modern Perspectives on the Functioning of the *Aṣṭādhyāyī*

Before we explore how modern scholarship perceives the *Aṣṭādhyāyī*, let us very briefly consider what the tradition, and more specifically Kātyāyana and Patañjali say, about the meaning and purpose of *vyākaraṇa*. In vt. 14 of the *Paspaśāhnika*[24], Kātyāyana says: *lakṣyalakṣaṇe vyākaraṇam* 'grammar (stands for the combination of) *lakṣya* i.e., words (and sentences)' and *lakṣaṇa* 'rules'. This is true of any grammar, not just the *Aṣṭādhyāyī*. But does the *Aṣṭādhyāyī* have certain mechanistic properties which set it apart from conventional grammars? Below we will look at modern perspectives on this topic. According to Patañjali[25], *vyākaraṇa* serves the following purposes: *rakṣohāgamalaghvasandehāḥ* "*rakṣā* 'protection of the Vedas', *ūha* 'adapting inflected forms in Vedic mantras as required during rituals', *āgama*

[22] The earliest reordered commentary was the *Rūpāvatāra* of Dharmakīrti (10th century), but its influence on the later *kaumudī* literature is uncertain.

[23] It is accompanied by Bhaṭṭojī's auto-commentary on the *Siddhāntakaumudī* called *Prauḍhamanoramā*. Two commentaries on the *Siddhāntakaumudī* are widely used to study it, namely Vāsudeva Dīkṣita's elaborate and beginner (lit. *bāla* 'child') -friendly *Bālamanoramā*, and Jñānendra Sarasvatī's concise and advanced *Tattvabodhinī* (Cardona 1976: 285-286).

[24] Mbh I.12.15. Note that Mbh I.12.15 stands for Volume I of *Mahābhāṣya* edited by Kielhorn, page number 12, line number 15.

[25] Mbh I.1.14.

'following Vedic injunctions', *laghu* 'brevity i.e., easy of learning the language', and *asandeha* 'resolution of doubts'". These certainly are some of the factors that must have motivated Pāṇini to write his grammar. But was Pāṇini also aiming to build a somewhat mechanistic model for deriving Sanskrit words (and subsequently, sentences)? Let us look at what modern scholarship tells us about topics like rule conflict and order of rule application in Pāṇinian derivations, and therefore, about the status of the *Aṣṭādhyāyī* as a 'machine'.

Let us start by looking at Bronkhorst's work on this topic. Bronkhorst (2004) shows that Patañjali prefers a linear reading of the *Aṣṭādhyāyī*, that is, Patañjali believes that in order to decide which rule should apply at any step in a derivation, one need not know the outcomes of previous or following steps. He says, "It is clear from the above that Patañjali tries both to avoid looking back and looking ahead in explaining grammatical derivations."[26] Bronkhorst also points out that the *Paribhāṣenduśekhara* teaches the metarule *pūrvaparanityāntaraṅgāpavādānām uttarottaraṁ balīyaḥ* (*paribhāṣā* 38) 'Of [these five kinds of rules, - viz.] a preceding [rule], a subsequent [rule][27], a *nitya* [rule][28], an *antaraṅga* [rule][29], and an *apavāda* [rule][30], - each following [rule] possesses greater force [than any one of, or all, the rules which in this *paribhāṣā* are mentioned before it].'[31] He concludes: "…(this)[32] clearly shows that, according to the traditional view, decisions concerning the continuation of

[26] Bronkhorst 2004: 37.

[27] 1.4.2 *vipratiṣedhe paraṁ kāryam* 'The rule that comes later in the serial order of the *Aṣṭādhyāyī* wins the rule conflict between two equally powerful rules.'

[28] Let us say that there is a conflict between rules A and B. A is called *nitya* with respect to B if A is applicable (both before and) after the application of B (cf. Pbh 117 *kṛtākṛtaprasaṅgī yo vidhiḥ sa nityaḥ*, *Vyāḍiparibhāṣāpāṭha*). B is called *anitya* with respect to A if B is applicable before, but not after the application of A. The *nitya* rule A is stronger than, and defeats the *anitya* rule B.

[29] *Paribhāṣenduśekhara*, describes *antaraṅga* as follows: *antarmadhye bahiraṅgaśāstrīyanimittasamudāyamadhye' ntarbhūtāny aṅgāni nimittāni yasya tad antaraṅgam.* Kielhorn translates it as follows: '*antaraṅga* is (a rule) the causes (of the application) of which lie within (or before) the sum of the causes of a *bahiraṅga* rule'. See Abhyankar's reprint (second edition) of Kielhorn's work (1960: 221-222).

[30] An *apavāda* 'exception' is stronger than, and thus defeats, the *utsarga* 'general' rule in case of conflict.

[31] Abhyankar (ed.) 1960: 185.

[32] The contents in brackets have been added by me.

a grammatical derivation at any particular point are taken on the basis of the situation at hand. More specifically, no information about the earlier or later phases of the derivation is required to make a correct decision at any stage."[33]

Bronkhorst states that he is unconvinced by Patañjali's evidence suggesting that the *Aṣṭādhyāyī* functions linearly. He thinks that Pāṇini did not intend for the *Aṣṭādhyāyī* to be approached linearly, and attempts to establish that at least for some derivations, the knowledge of the derivation's history and/or its future course is essential to select the right rule at a given step.[34]

One of the reasons Bronkhorst thinks looking ahead into the derivation is required is to determine the order in which two rules should apply with respect to each other.[35] Roodbergen has a different opinion on this subject. [36] He recommends some changes to the traditional order in which the following processes occur: the replacement of *lakāra*s 'tense and mood proxies' with *tiṄ* 'verbal endings' and the introduction of *vikaraṇa*s 'affixes placed between verbal roots and *lakāra*s/the endings that replace *lakāra*s'. This shows that Roodbergen does believe in reading the *Aṣṭādhyāyī* linearly but disagrees to some extent with the tradition's order of rule application. And he thinks that this topic is not related to rule conflict and its resolution: 'this ordering principle has nothing to do with a feeding relation between rules in which the application of one rule is made dependent on the effect of the application of another rule. It has nothing to do either, with the question of conflict of rules. To solve a conflict, other principles apply: *paratva*, *siddha*/*asiddha*[37] and *utsarga*/*apavāda*.'

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[33] Bronkhorst 2004: 6. Patañjali says that *para* may mean *iṣṭa* 'desirable' in his commentary on 1.4.1 (*iṣṭavācī paraśabdaḥ. vipratiṣedhe paraṁ yad iṣṭaṁ tad bhavati*; Mbh I.306.9-10). According to Bronkhorst, by *iṣṭa*, Patañjali means 'the rule that he thinks should be applied'. I disagree with Bronkhorst's interpretation. I think by *iṣṭa,* Patañjali means 'the rule that should be applied so as to get the correct final form.' This means that, in order to determine which rule is *iṣṭa*, one is required to know the final form. And to know the final form, one needs to look ahead into the derivation. So, in my opinion, this is an instance where Patañjali repudiates his linear reading of the *Aṣṭādhyāyī.*

[34] Bronkhorst 2004: 6.

[35] Ibid., 16-17.

[36] Roodbergen 1991: 313.

[37] A is *siddha* with respect to B if B recognizes the existence of A. Likewise, A is *asiddha* 'not *siddha*' with respect to B if B does not recognize the existence of A.

Scholars working on rule conflict have peripherally addressed the topic of linearity. Cardona says that 'the derivational prehistory of a form is pertinent to the operations which apply to it.'[38] Joshi and Kiparsky think that it is important to look ahead into a derivation. They propose the extended *siddha* principle which they claim governs Pāṇinian derivations and which 'scans entire candidate derivations…'[39] thanks to its 'global (trans-derivational) "lookahead" condition on derivations'[40] '…and chooses the one in which *siddha*-relations (bleeding and feeding)[41] are maximized'[42]. So, both Cardona and Joshi & Kiparsky, do not support an exclusively linear reading of the *Aṣṭādhyāyī*.

According to Houben[43], 'a comparison between Pāṇini's grammar and "a machine" may be useful in demonstrating some of the features and procedures it incorporates, but the comparison has now and then been carried too far.' He continues: 'in fact, in the practice of Pāṇinīyas through the ages up to the present, no-one can ever have produced a correct form through Pāṇini's system that was not already his starting point, or among his starting options … the system is therefore not well characterized as "synthetic", even if synthetic procedures are central and most visible; rather the system is to be called "reconstitutive" - which implies the presence of a user, a preliminary statement, and the application of both analytic and synthetic procedures to the words in it … aiming at the best possible, *saṁskṛta* form of his preliminary statement.'[44] He attributes the reception of Pāṇinian grammar as a machine to Bhaṭṭojī Dīkṣita's *Siddhāntakaumudī* and Nāgeśa's *Paribhāṣenduśekhara*: 'in order to provide the desired solid authoritative basis to Sanskrit grammar it was moreover necessary to posit it as a closed system of rules and metarules – something it had never been in a true sense of this term for around two millennia, although Kātyāyana's and Patañjali's investigations on selected *sūtra*s had prepared

[38] Cardona 1970: 41.

[39] Joshi and Kiparsky 2005: 7.

[40] Ibid.

[41] The contents in brackets have been added by me. Rule A bleeds rule B if B, which was applicable before the application of A, is no longer applicable after the application of A. A feeds B, if B, which was not applicable before the application of A, becomes applicable after the application of A.

[42] Joshi and Kiparsky 2005: 7.

[43] Houben 2003: 50.

[44] Ibid., 53.

the ground for such an approach. The culmination in this trend came only a few generations later with Nāgeśa Bhaṭṭa's *Paribhāṣenduśekhara*…'[45]

Let us summarize what we have surveyed so far. Houben is not in favour of perceiving the *Aṣṭādhyāyī* as a derivational machine, thereby also implicitly dismissing both the concept of linearity and consistent conflict-resolution procedures. Roodbergen believes that the *Aṣṭādhyāyī* is a derivational machine, proposes his own version of a linear reading of the *Aṣṭādhyāyī*. Roodbergen also argues that the order of rule application and resolution of rule conflict are not related or associated with each other. Bronkhorst claims that the existence of *paribhāṣā* 38 of the *Paribhāṣenduśekhara*, which creates a hierarchy of conflict resolution tools (in addition to Patañjali's statements), indicates that the tradition prefers a linear reading of the *Aṣṭādhyāyī*. In doing so, Bronkhorst establishes a correlation between consistent rule conflict resolution procedures and a linear reading of the *Aṣṭādhyāyī*. Bronkhorst rejects the linear approach. On the other hand, Joshi & Kiparsky and Cardona seem to think that their rejection of a strictly linear reading of the *Aṣṭādhyāyī* does not substantially undermine the mechanistic prowess of the Pāṇinian system, and devote much of their scholarly attention to solving rule conflict.

While the functioning of the *Aṣṭādhyāyī* remains the primary focus of this thesis, we shall also look at its interactions with the structure of the *Aṣṭādhyāyī*. Let me first outline how the *Aṣṭādhyāyī* is structured. The rules of the *Aṣṭādhyāyī* are organized on the basis of their purpose: rules teaching certain *saṁjñā*s are grouped together, rules about a certain substitute are placed together and so on and so forth. In most such groups, the *apavāda sūtras* 'exception rules' are listed immediately after the *utsarga sūtra*s 'general rules'. These groups of rules are themselves placed in one of the eight books depending on their role: *saṁjñā sūtra*s 'definition rules' and *paribhāṣā sutra*s 'metarules' are generally placed in the first two *adhyāya*s, rules teaching affixation in the following three, and rules teaching morpho-phonological changes in the last three.

The structure and organization of the *Aṣṭādhyāyī*, that is, the general arrangement and serial order of rules in the *Aṣṭādhyāyī*, have an influence on its functioning in different ways. In the opinion of the tradition, 1.4.2 *vipratiṣedhe paraṁ kāryam* teaches that in the case of conflict between two equally powerful rules, the rule that appears later in the *Aṣṭādhyāyī*'s serial order

[45] Houben 2015: 6.

wins, which implies that the serial order of rules in the *Aṣṭādhyāyī* has a direct impact on rule conflict resolution.

Pāṇini has ingeniously composed three *asiddha* sections, headed respectively by 6.1.86 *ṣatvatukor asiddhaḥ*[46], 6.4.22 *asiddhavad atrābhāt* and 8.2.1 *pūrvatrāsiddham*. 6.4.22 teaches us that two rules treat each other as *asiddhavat* 'as if suspended' when both lie within 6.4.22-129[47], which helps avoid certain undesirable instances of rule conflict. 8.2.1 teaches us that from there onwards, a preceding rule treats any following rule as *asiddha* 'suspended', which helps facilitate or avoid the application of certain rules. Here too, the position of one rule with respect to other rules has a significant impact on Pāṇinian derivations or the functioning of the *Aṣṭādhyāyī*.

Interestingly, the functioning of the *Aṣṭādhyāyī* may have had an impact on its structure too. Roodbergen argues that 'the word building process proceeds in what is visually a left-to-right direction'.[48] According to Roodbergen, this direction of word-building which underlies the functioning of the *Aṣṭādhyāyī*, impacts its structure, that is, the positioning of rules in different books and chapters of the *Aṣṭādhyāyī*: 'rules dealing with left-side elements are introduced earlier [in earlier sections of the *Aṣṭādhyāyī*][49] than rules dealing with right-side elements'[50].

We have seen what the existing literature on the subject says about the functioning of the *Aṣṭādhyāyī* and its connection with its structure. In this thesis, I share my research on rule interaction, and then go on to show how these findings shed light on the functioning of the *Aṣṭādhyāyī*. I conclude that Pāṇini did intend for the *Aṣṭādhyāyī* to be interpreted linearly and as a closed grammatical machine. Before I share my understanding of rule interaction, let us first look at the tradition's views on this subject.

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[46] A single replacement of the preceding and the following sounds is suspended (*asiddha*) with respect to rules teaching replacement with *ṣ* (*ṣatva*) and the introduction of augment *tUK*.

[47] According to the *Kāśikā*, and broadly, the tradition, the scope of 6.4.22 continues up to the end of 6.4. I will discuss this in detail in chapter 5.

[48] Roodbergen 1991: 313.

[49] The contents in brackets have been added by me to clarify what the author means.

[50] Roodbergen 1991: 313. However, note that the positioning of rules teaching compounds in the *Aṣṭādhyāyī* poses a challenge to Roodbergen's proposition.

1.4 The Traditional View on Rule Conflict

As will be shown in chapter 6, the views of the tradition have gradually evolved on the topic of rule conflict. But here, I shall introduce the topic by outlining those ideas on rule conflict that today's traditional scholars hold true. To achieve this, I will present the views of the *Kāśikā* and *paribhāṣā* texts on this topic. 1.4.2 *vipratiṣedhe paraṁ kāryam* is the only metarule in the *Aṣṭādhyāyī* which explicitly deals with rule conflict. Here is Vasu's English translation of the rule 1.4.2 of the *Aṣṭādhyāyī* which is in keeping with the *Kāśikā*'s interpretation: 'when rules of equal force prohibit each other, then the last in the order herein given is to take effect.'

On this rule, the *Kāśikā* says:

virodho vipratiṣedhaḥ. yatra dvau prasaṅgāv anyārthāv ekasmin yugapat prāpnutaḥ sa tulyabalavirodho vipratiṣedhaḥ. tasmin vipratiṣedhe paraṁ kāryaṁ bhavati. utsargāpavādanityānityāntaraṅgabahiraṅgeṣu tulyabalatā nāstīti nāyam asya yogasya viṣayaḥ, balavataiva tatra bhavitavyam. apravṛttau paryāyeṇa vā pravṛttau prāptāyāṁ vacanam ārabhyate.

Here is my translation of this passage, which represents the traditional interpretation of 1.4.2:

'The word *vipratiṣedha* means "conflict". When two operations which can be applied at other sites become simultaneously applicable at one [and the same site], this is called a conflict of equal strength or *vipratiṣedha.* In the event of *vipratiṣedha*, the rule that comes later [in the serial order of the *Aṣṭādhyāyī*] prevails.[51] A general rule (*utsarga*) and its exception (*apavāda*), or a *nitya* rule and an *anitya* rule, or an *antaraṅga* and a *bahiraṅga* rule, are not rules of equal strength. These pairs do not fall under the jurisdiction of this rule. In these cases, the stronger rule wins. When both rules are unable to apply, or when they are only able to apply alternatively, this rule comes into play.'

Then the *Kāśikā* gives us an example:

ato dīrgho yañi supi cety asyāvakāśaḥ. vṛkṣābhyāṁ plakṣābhyāṁ bahuvacane jhaly et ity asyāvakāśaḥ vṛkṣeṣu plakṣeṣu ihobhayaṁ prāpnoti. vṛkṣebhyaḥ plakṣebhyaḥ iti. paraṁ bhavati vipratiṣedhena.

This is explained by Vasu as follows:

[51] I have translated *para kārya* as understood by the tradition.

‘As an example of rules of equal force, see 7.3.102 and 7.3.103. The first rule declares, when a case-affix beginning with a letter of *yaÑ pratyāhāra* follows, the long vowel is substituted for the final of an inflective base ending in a short *a*. As *vṛkṣa* + *bhyām* = *vṛkṣābhyām*. The next rule declares:- When a plural case-affix beginning with a letter or [*sic*][52] *jhaL pratyāhāra* follows, *e* is the substitute for the final *a* of an inflective base. As *vṛkṣa* + *su* = *vṛkṣeṣu*. But when the plural case-affix *bhyas* follows, what rule are we to apply? For the letter[53] *bha* belongs both to *pratyahāras yaÑ* and *jhaL*. Are we to lengthen the short *a* or substitute *e*? The present *sūtra* gives the reply, *e* is to be substituted because 7.3.103 ordaining *e* follows next to 7.3.102. Thus *vṛkṣa* + *bhyaḥ* = *vṛkṣebhyaḥ*.’[54]

The *Kāśikā* teaches us that when two conflicting rules are not of equal force, 1.4.2 is not applicable to the conflict between them. The *paribhāṣā* tradition throws light on conflicts between rules which are not of equal strength:

a. Between a *nitya* and an *anitya* operation, a *nitya* rule is more powerful.

Nityānityayor nityo vidhir balavān (*Paribhāṣā* 118, *Vyāḍiparibhāṣāpāṭha*).[55]

b. Between an *antaraṅga* and a *bahiraṅga* operation, an *antaraṅga* operation is more powerful.

Antaraṅgabahiraṅgayor antaraṅgo vidhir balīyān (*Paribhāṣā* 115, *Vyāḍiparibhāṣāpāṭha*).[56]

c. Between an *apavāda* and an *utsarga* operation, an *apavāda* operation is more powerful.

Utsargāpavādayor apavādavidhir balavān (*Paribhāṣā* 85, *Bhojaparibhāṣāsūtra*).

The more powerful rule wins. The following *paribhāṣā*, which has been popularized by the *Paribhāṣenduśekhara*, creates a hierarchy of importance between four tools of rule conflict resolution namely *paratva*, *nityatva*, *antaraṅgatva* and *apavādatva*[57]: *pūrva-para-nitya-*

[52] Of.

[53] Perhaps Vasu intended to say ‘sound’ and not ‘letter’.

[54] This example in the *Kāśikā* is borrowed from *Mahābhāṣya* on 1.4.2 (Mbh I.304.15).

[55] Another version of this *paribhāṣā* is *balavan nityam anityāt* (92, *Bhojaparibhāṣāsūtra*).

[56] Another version of this *paribhāṣā* is (*balavad*) *antaraṅgaṁ bahiraṅgāt* (93, *Bhojaparibhāṣāsūtra*), where *balavat* is *anuvṛtta* from the previous *paribhāṣā*.

[57] It is not clear why the word *pūrva* has been mentioned in the *paribhāṣā*.

antaraṅga-apavādānām uttarottaraṁ balīyaḥ (Pbh 38, *Paribhāṣenduśekhara*). We have already mentioned this *paribhāṣā* before. Below I will clarify its implications.

Paribhāṣā 38 of the *Paribhāṣenduśekhara* says that a *para sūtra* is stronger than a *pūrva sūtra*; a *nitya sūtra* is stronger than a *para sūtra*; an *antaraṅga sūtra* is stronger than a *nitya sūtra*; and an *apavāda sūtra* is stronger than an *antaraṅga sūtra*. In practical terms this translates into the following procedure.

First try establishing the relationship taught in step a:

a. *apavāda>utsarga*: an *apavāda* (exception) *sūtra* is more powerful than, and wins when competing with, an *utsarga* (general rule) *sūtra*.

If and only if this step does not yield the correct result, try establishing the relationship taught in step b:

b. *antaraṅga>bahiraṅga*[58]: an *antaraṅga sūtra* is more powerful than, and wins when competing with, a *bahiraṅga sūtra*.

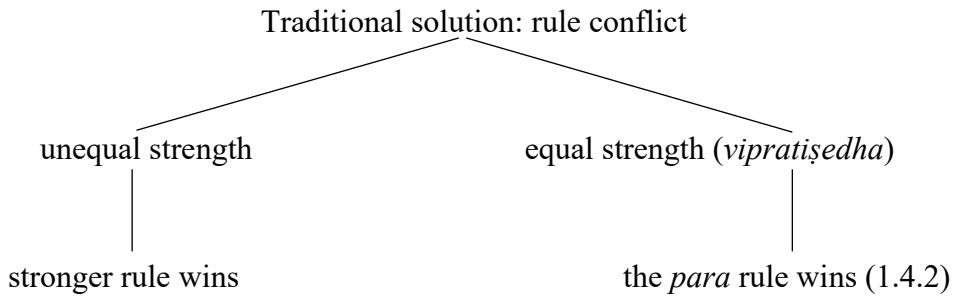
If and only if this step does not yield the correct result, try establishing the relationship taught in step c:

c. *nitya>anitya*: a *nitya* rule is more powerful than and wins when competing with an *anitya* rule.

If and only if this step does not yield the correct result, apply 1.4.2 *vipratiṣedhe paraṁ kāryam*, which we call step d here:

d. *para>pūrva*: a *para sūtra* (a later rule in the *Aṣṭādhyāyī*'s serial order) is more powerful than, and wins when competing with, a *pūrva sūtra* (which appears before the *para sūtra*).

[58] Patañjali and Nāgeśa hold the *antaraṅga paribhāṣā* true for both conflict and other situations. See the *Mahābhāṣya* on 1.4.2 (Mbh I.309.24 onwards) and *paribhāṣā* 50 of the *Paribhāṣenduśekhara*, *asiddham bahiraṅgam antaraṅge.*



1.5 Analysis of the Traditional Perspective

Let us look at 1.4.2 *vipratiṣedhe paraṁ kāryam* again. Pāṇini does not explain the meaning of *vipratiṣedha* in the *Aṣṭādhyāyī*. The *Kāśikā* claims that *vipratiṣedha* means *tulyabalavirodha* 'conflict between two equally powerful rules.' This is a plausible assumption because, in Sanskrit literature, the term has been used to mean 'the opposition of two courses of action which are equally important, the conflict of two even-matched interests'[59]. But which conflicts qualify as *tulyabala* 'having equal strength'? The *Kāśikā* says that rule pairs which are not *nitya-anitya*, *antaraṅga-bahiraṅga*, *apavāda-utsarga* are *tulyabala* 'having equal strength'.

Let us try to understand why the tradition felt the need to come up with these tools. According to the tradition, *para* in 1.4.2 means 'the rule that appears after another in the serial order of the *Aṣṭādhyāyī*'. Thus, in the case of a conflict (*vipratiṣedha*) between two rules, the operation prescribed by the later rule should prevail. However, if one assumes that any rule conflict can be called *vipratiṣedha*, and therefore applies 1.4.2 uniformly to every instance of such a conflict, in many cases one gets the wrong answer at the end of the derivation. Let us consider a few examples: *tud* is a 6th class root which can take both *parasmaipada* 'active' and *ātmanepada* 'middle' endings.

When deriving its present third person singular form, two rules become applicable at the step *tud* + *tiP*. One is 7.3.86 *pugantalaghūpadhasya ca* (*sārvadhātukārdhadhātukayoḥ guṇaḥ*)[60], which teaches that the penultimate light vowel *iK* (*i, u, ṛ, ḷ*) is replaced with *guṇa* (*a, e, o*) when followed by a *sārvadhātuka* or *ārdhadhātuka* affix. The other is 3.1.77 *tudādibhyaḥ śaḥ* (*sārvadhātuke kartari*), which teaches the addition of affix *Śa* after roots belonging to the class starting with *tud* in the *Dhātupāṭha*, when the root is followed by a *sārvadhātuka* affix in an

[59] See the entry on *vipratiṣedha* in Apte's Sanskrit dictionary.

[60] The terms in brackets are *anuvṛtta* 'continued' from previous *sūtra*s.

active construction. Note that, since 7.3.86 comes after 3.1.77 in the serial order of the *Aṣṭādhyāyī*, according to the traditional understanding of 1.4.2 it should win, but applying 7.3.86 would give the wrong answer: *tod* + *tiP* (7.3.86) → *tod* + *Śa* + *tiP* (3.1.77) → **todati*.

Notice that 3.1.77 is applicable after 7.3.86 applies, as seen in the derivation above. On the other hand, if 3.1.77 applies first, we get: *tud* + *Śa* + *tiP*. Since *Śa* is marked with a *Ś*, it is *sārvadhātuka* by 3.4.113 *tiṅśit sārvadhātukam*, and being a *sārvadhātuka* which is not marked with a *P*, it is treated as if marked by *Ṅ* by 1.2.4 *sārvadhātukam apit* (*ṅit*). By 1.1.5 *kṅiti ca* (*na iko guṇavṛddhī*), the *guṇa* replacement of *u* in *tud* by 7.3.86 is no longer possible. So 7.3.86 is not applicable once 3.1.77 has applied.

Thus, 3.1.77 and 7.3.86 are *nitya* and *anitya* respectively. If the *nitya* rule, i.e., 3.1.77 wins, we get: *tud* + *Śa* + *tiP* (3.1.77) → *tudati*, which is the correct answer. In this example, relying on *paratva* gives the wrong answer, but using *nityatva* gives the right answer. We shall come back to this after we look at a few more examples.

Consider the next example: to derive *syona* 'a sack, something stitched', *na* is added to *siv* 'to sew, stitch': *siv* + *na* (3.3.1 *uṇādayo bahulam*).[61] First, by 6.4.19[62] *chvoḥ śūḍ anunāsike ca* (*kvijhaloḥ kṅiti*), *v* of *siv* is replaced with *ū*: (*siū*) + *na*. Now, two rules are simultaneously applicable here: 6.1.77 *iko yaṇ aci*, which is caused by *ū* and prescribes the replacement of *i* with *y*, and 7.3.86 *pugantalaghūpadhasya ca*, which is caused by *na* and prescribes the replacement of *i* of *si* with its corresponding *guṇa* (i.e., *e*). Since 7.3.86 comes after 6.1.77 in the serial order of the *Aṣṭādhyāyī*, by 1.4.2 it should win. But applying 7.3.86 gives us the wrong answer.

According to the *Paribhāṣenduśekhara*, '*antaraṅga* is (a rule) the causes (of the application) of which lie within (or before) the sum of the causes of a *bahiraṅga* rule'. So, in the case of *siū* + *na*, *ū*, the cause of 6.1.77, lies before (i.e., to the left of) *na*, the cause of 7.3.86. Thus, 6.1.77

[61] This is one of only two *sūtra*s that refer to an ancillary text known as *Uṇādisūtra*s, which provide for introducing certain affixes after verb roots to derive nominal bases (Cardona 1976: 170). There is no clear consensus about whether or not Pāṇini himself wrote the *Uṇādisūtra*s (Cardona 1976: 174). I personally do not think he did, and so I do not consider this derivation 'Pāṇinīya'. But because the commentarial tradition uses this as an example in the present context, I discuss it nonetheless. The relevant *Uṇādi sūtra* here is 289 *siveṣ ṭer yū ca.*

[62] I am aware that the tradition reads this rule as *cchvoḥ…* and not as *chvoḥ…*. However, I think that the original version must have been *chvoḥ*. See Kiparsky 1982: 89.

is *antaraṅga* whereas 7.3.86 is *bahiraṅga*. Using the *antaraṅgatva* tool, 6.1.77 wins. We get *syū* + *na* → *syo* + *na* (*sārvadhātukārdhadhātukayoḥ*) → *syona*, which is the correct answer. Relying on *paratva* gives the wrong answer, while using *antaraṅgatva* gives the right answer.

Let us look at one more example. Two rules, namely 1.4.16 *siti ca* (*padam*) and 1.4.18 *yaci bham* (*svādiṣv asarvanāmasthāne*) lie in the *ekā saṁjñā* section (1.4.1 *ā kaḍārād ekā saṁjñā*). 1.4.1 teaches that up to 2.2.38 *kaḍārāḥ karmadhāraye*, any item can take only one *saṁjñā* 'technical designation'. 1.4.16 *siti ca* (*padam*) teaches that an item is called *pada* when an affix marked with *S* follows, and 1.4.18 *yaci bham* (*svādiṣv asarvanāmasthāne*) teaches that an item is called *bha* when a *y*- or vowel-initial, non-*sarvanāmasthāna* affix belonging to the class starting with *sU* follows. Consider the example *ūrṇā* + *yuS*.[63] Here *ūrṇā* can potentially take two *saṁjñā*s: *pada* by 1.4.16 and *bha* by 1.4.18. However, since both rules lie within the jurisdiction of 1.4.1, *ūrṇā* can take only one of the two *saṁjñā*s. By 1.4.2, the *para* rule i.e., 1.4.18 should win. But if *ūrṇā* takes the *bha saṁjñā*, then *ā* of *ūrṇā* gets deleted by 6.4.148 *yasyeti ca* (*bhasya lopaḥ taddhite*), which teaches that the final *i* or *a* (both short and long) of an item which is termed *bha* are deleted when followed by an *ī* or a *taddhita* affix. This gives us the wrong *taddhita* stem **ūrṇyu.* The *Kāśikā* says that 1.4.16 is an *apavāda* of 1.4.18 without justifying this claim.[64] If the *apavādatva* tool is used, 1.4.16 wins, which gives the correct stem *ūrṇāyu*. Using *paratva* gives the wrong answer, while using *apavādatva* gives the right answer.

In all three examples discussed above, using *paratva* gives the wrong answer, but using *nityatva*, *antaraṅgatva* and *apavādatva* respectively leads to the correct answer. Below, I present an abridged version of how I think the current method of solving rule conflict has gradually evolved. Having realized that treating all rule conflicts as *vipratiṣedha* and applying

[63] 5.2.123 *ūrṇāyā yus* 'The *taddhita* suffix *yuS* occurs to denote the sense of *matUP* after syntactically related nominal stem *ūrṇā* "wool"'.

[64] I agree with Cardona's (1970: 46) explanation for this: "Consider now 1.4.16. There are only four affixes marked with *S* in Pāṇini's grammar: *ghaS* (→ *iya* by 7.1.2) introduced by 5.1.106, *chaS* (→ *īya*, 7.1.2) by 4.2.114-5, *yaS* (*ya*) by 5.2.138, and *yuS* (→ *aka*, 7.1.1) by 5.2.123, 138, 140. For example, *ṛtviya*- 'tempestivus' (<*ṛtu* 'appropriate time, season') contains *ghaS*. All such affixes are *taddhita* (4.1.76: *taddhitāḥ*), included among the affixes referred to in 1.4.17-8, and all also begin with *y* or a vowel. Hence, items occurring before these are eligible for being *bha* by 1.4.18." With the help of this information, we can infer that 1.4.18 is applicable wherever 1.4.16 is applicable, but 1.4.16 is not always applicable where 1.4.18 is. 1.4.16 is more specific than 1.4.18 and thus wins.

1.4.2 uniformly to every instance of such a conflict gives the wrong answer in many cases, the Pāṇinīyas:

(1) claimed that they found *jñāpaka*s 'hints or clues' in Pāṇini's *sūtra*s which authorised them to devise new tools like *nityatva, antaraṅgatva*, *anavakāśatva,* etc., for the purpose of solving rule conflicts;

(2) restricted the jurisdiction of rule 1.4.2 by declaring that *vipratiṣedha* implies only *tulyabala* conflicts, i.e., conflicts between equally powerful rules; and

(3) declared that rule pairs like *nitya-anitya*, *antaraṅga-bahiraṅga*, and *anavakāśa-sāvakāśa* were to be called *atulyabala* 'not equally powerful'.

This allowed them to exclude the *atulyabala* rule pairs, namely *nitya-anitya, antaraṅga-bahiraṅga* etc., from the jurisdiction of 1.4.2, thereby containing the problems caused by their interpretation of 1.4.2 to a smaller number of cases. Gradually, the Pāṇinīyas also constructed the hierarchy taught in *paribhāṣā* 38 of *Paribhāṣenduśekhara* above to determine which tool takes precedence over which other tools.

However, these post-Pāṇinian tools are not without flaws, to compensate for which umpteen other *paribhāṣā*s have been written by Pāṇinīyas. Many of these *paribhāṣā*s address very specific cases[65] or even single examples of conflict, thereby defeating the entire purpose of writing metarules, which is to arrive at broad generalizations that can govern the application of and interactions between the whole body of rules. And even after this, the Pāṇinīyas are not able to solve every case of conflict correctly: every time they falter, they find one tortuous explanation or the other to justify that 'exception'.

I do not think that all *paribhāṣā*s taught by the Pāṇinīyas should be rejected. Many post-Pāṇinian *paribhāṣā*s accurately capture how the Pāṇinian machine functions, and thus they are of great importance to us. They are mostly descriptive in nature and make insightful observations about the *Aṣṭādhyāyī*. However, we also find post-Pāṇinian *paribhāṣā*s that teach us tools for rule conflict resolution, such as *nityatva* and *antaraṅgatva*, which Pāṇini would

[65] For example, consider Pbh 52 of the *Paribhāṣenduśekhara*, *antaraṅgān api vidhīn bahiraṅgo lug bādhate* 'A *bahiraṅga* rule teaching *LUK* deletion defeats an *antaraṅga* rule [in case of conflict]', which is an exception of Pbh 50 *antaraṅge bahiraṅgam asiddham* 'An *antaraṅga* rule treats a *bahiraṅga* rule as suspended.'

certainly not have left unstated if he actually wanted to teach them, and which impose post-Pāṇinian ideas onto the *Aṣṭādhyāyī*. Thus, the validity of this set of *paribhāṣā*s is questionable.

1.6 Modern Scholarship on 1.4.2

The tradition thinks that 1.4.2 applies to *tulyabala* conflicts between any two rules of the *Aṣṭādhyāyī*. But many modern scholars, starting with Faddegon (1936), have tried to restrict the scope of 1.4.2 further, to include only those rules that lie between 1.4.2 and 2.2.38: they argue that since 1.4.2 lies within the *ekā saṁjñā adhikāra* (cf. 1.4.1 *ā kaḍārād ekā saṁjñā* 'up to 2.2.38 *kaḍārāḥ karmadhāraye*, each item can take only one *saṁjñā*'), the jurisdiction of 1.4.2 too should be suspended at 2.2.38.[66] Kiparsky comes up with his own justification for this interpretation, in which he argues that the alternate version of 1.4.1 mentioned by Patañjali is proof of the fact that 1.4.2 only governs rules between 1.4.2 and 2.2.38. Let us look at Patañjali's commentary first, and then consider Kiparsky's argument based on it. On 1.4.1, Patañjali suggests that Pāṇini has taught two different versions of 1.4.1 to his pupils:

kathaṁ tv etat sūtram paṭhitavyam. kiṁ ā kaḍārād ekā saṁjñeti. āhosvit prāk kaḍārāt paraṁ kāryam iti. kutaḥ punar ayaṁ sandehaḥ. ubhayathā hy ācāryeṇa śiṣyāḥ sūtraṁ pratipāditāḥ. kecid ākaḍārād ekā saṁjñeti. kecit prāk kaḍārāt paraṁ kāryam iti. kaś cātra viśeṣaḥ.

tatraikasaṁjñādhikāre tadvacanaṁ (vt. 2)

tatraikasaṁjñādhikāre tadvaktavyam. kim. ekā saṁjñā bhavatīti. nanu ca yasyāpi paraṁkāryatvaṁ tenāpi paragrahaṇaṁ kartavyam. parārtham mama bhaviṣyati. vipratiṣedhe ca iti. mamāpi tarhy ekagrahaṇam parārthaṁ bhaviṣyati. sarūpāṇām ekaśeṣa ekavibhaktau iti.[67]

[66] On this, Joshi (1998: 58) makes an interesting remark: 'in his 1936 publication on Pāṇini's grammar (p. 26-27) B. Faddegon casually notes that P. 1.4.2 is a *paribhāṣā*, and that it is valid up to the end of P. 2.2, as if there never had been any doubt. Compare further Cardona 1976, p. 190.'

[67] Mbh I.296.11-18.

"But how should this rule be read? Is it *ā kaḍārād ekā saṁjñā*[68] or *prāk kaḍārāt paraṁ kāryam*[69]? But how [does] this doubt [arise]? Because the students have been taught this rule in both ways by the teacher. Some [have been taught] *ā kaḍārād ekā saṁjñā* [and] some *prāk kaḍārāt paraṁ kāryam*. And what is the difference [between these alternative readings] here?

In that section where one name applies, the statement of that [must be made]. (vt. 2)

In that section where one name applies, that should be stated. What [should be stated]? That only one *saṁjñā* applies [per item]. However, one who [believes that] the following rule [prevails] has to include the word *para* too. It will [serve] another [purpose] for me later [that is, by continuation, in] *vipratiṣedhe ca*. For me too then, the mention of *eka* will [serve] another [purpose], in *sarūpāṇām ekaśeṣa ekavibhaktau.*[70]"[71]

The two versions of the rule pair 1.4.1-2 are: 1.4.1 *ā kaḍārād ekā saṁjñā*, 1.4.2 *vipratiṣedhe param kāryam*; and 1.4.1 *prāk kaḍārād param kāryam*, 1.4.2 *vipratiṣedhe ca*. The former version is found in the available manuscripts of the *Aṣṭādhyāyī*, while the latter version is first mentioned by Patañjali himself. In the case of the latter, Patañjali only indirectly hints at what I have called 1.4.2, when explaining how he could use *para* from 1.4.1 *prāk kaḍārād paraṁ*

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[68] Up to 2.2.38 *kaḍārāḥ karmadhāraye*, each item can take only one *saṁjñā.*

[69] Up to 2.2.38 *kaḍārāḥ karmadhāraye*, the rule that comes later in the *Aṣṭādhyāyī*'s serial order prevails.

[70] In the *Aṣṭādhyāyī*'s serial order, 1.2.64 *sarūpāṇām ekaśeṣa ekavibhaktau* comes before 1.4.1 *ā kaḍārād ekā saṁjñā.* So, one may wonder how Patañjali would be able to continue *ekā* from 1.4.1 into 1.2.64 by *anuvṛtti*. I want to clarify here that Patañjali is proposing to reorder the rules such that *ā kaḍārād ekā saṁjñā* comes before *sarūpāṇām ekaśeṣa ekavibhaktau*, so that he may be able to continue *ekā* from the former into the latter by *anuvṛtti*. I do not see how doing this would be justified or useful.

[71] Note that there is no evidence that Kātyāyana was aware of these two versions. Vt. 2 *tatraikasaṁjñādikāre tadvacanaṁ* (Mbh I.296.15) has been written in context of the first *vārttika*, and not in the context of these supposedly different versions of 1.4.1 (and 1.4.2). The first *vārttika* reads: *anyatra saṁjñāsamāveśān niyamārthaṁ vacanam* "Because names co-apply elsewhere, the statement is for the sake of making a restriction." (Mbh I.296.3). And so, the second *vārttika* continues to discuss this topic: *tatraikasaṁjñādikāre tadvacanaṁ* 'In that section where one name applies, the statement of that [must be made].' As is peculiar of Patañjali, he skilfully weaves Kātyāyana's *vārttika*s into his own discourse. But it must be borne in mind that, as far as we know, the idea of two different versions of 1.4.1 (and 1.4.2) is Patañjali's alone.

kāryam later in the following rule (1.4.2) *vipratiṣedhe ca* through *anuvṛtti*[72]. It logically follows that its co-referent *kāryam* too would be continued into 1.4.2 along with *paraṁ*.

1.4.1 *prāk kaḍārād* [*paraṁ kāryam*]

1.4.2 *vipratiṣedhe ca*

	Original version	Patañjali's alternate version
1.4.1	*ā kaḍārād ekā saṁjñā*	*prāk kaḍārāt paraṁ kāryam*
1.4.2	*vipratiṣedhe paraṁ kāryam*	*vipratiṣedhe ca* (*paraṁ kāryam*)

Note that both versions of 1.4.1 apply only to the section between 1.4.1 and 2.2.38, whereas both versions of 1.4.2 apply to the entire *Aṣṭādhyāyī*. Besides, while the two versions of 1.4.1 say different things (one says *ekā saṁjñā* and the other says *paraṁ kāryam*), the two versions of 1.4.2 essentially say the same thing.

So, what does the alternative version of 1.4.1 i.e., *prāk kaḍārāt paraṁ kāryam* exactly mean? It translates as: between 1.4.1 and 2.2.38 the later rule should be applied. But when? In which context or situation? This version of 1.4.1 is at best ambiguous. Secondly, it seems very unlikely that Pāṇini would teach two different versions of his own rules to his pupils. In the following chapter, I reinterpret the meaning of *para*, which makes it clear that the alternate version of 1.4.1 does not make sense. For all these reasons, I conclusively reject the alternate version.

On the other hand, Kiparsky assumes that the alternate version is the correct one, and uses this assumption to argue for restricting the scope of 1.4.2 to the section up to 2.2.38. He says, "A very suggestive piece of evidence that the domain of 1.4.2 is limited to 1.4-2.2 is that Patañjali actually records a variant reading of Pāṇini's rules in which that *must* be the interpretation. In discussing 1.4.1 Patañjali says, 'How then is this rule to be read: as *ā kaḍārād ekā saṁjñā* "up to *kaḍāra* (2.2.38) (everything gets only) one technical term" or as *prāk kaḍārāt paraṁ kāryam* "up to *kaḍāra* apply the last"? Why is this an issue? Because the teacher [Pāṇini] had his students recite both ways, some of the *ā kaḍārād ekā saṁjñā*, others *prāk kaḍārāt paraṁ*

[72] The presence of the word *ca* in 1.4.2 *vipratiṣedhe ca* hints at the fact that some words would become *anuvṛtta* from 1.4.1 into 1.4.2.

kāryam. Thus, these were still two versions of the rules in Patañjali's time. Not surprisingly, the version in which the domain of the *para* relation could be extended over the whole grammar eventually won out. But it seems reasonable to assume that the version in which the domain obviously *has* to be limited to 1.4 to 2.2 has a greater claim to authenticity.'[73]

In his analysis, Kiparsky conveniently ignores the part where Patañjali talks about 1.4.2 *vipratiṣedhe ca* (*param kāryam*). If 1.4.1 is *prāk kaḍārāt paraṁ kāryam*, 1.4.2 would be *vipratiṣedhe ca* (*param kāryam*), as mentioned by Patañjali himself. Thus, the *para* relation would still be applicable to the entire *Aṣṭādhyāyī* even if we accept the alternate version of 1.4.1-2 as being the actual or correct one. So, I conclude that contrary to Kiparsky's claim, both versions of the pair (1.4.1-2) allow the *para* relation to extend to the entire *Aṣṭādhyāyī*. Thus, his speculation about why the *ekā saṁjñā* version won out does not pass muster, and the argument that *paraṁ kāryam* does not hold beyond 2.2.38 too remains unsubstantiated.

Now going back to the general argument that 1.4.2 does not apply beyond 2.2.38, Faddegon and others reduced the scope of 1.4.2 with the objective of avoiding the application of 1.4.2 to those cases of conflict wherein applying 1.4.2 may give the wrong answer. But we have already seen in the derivation of *ūrṇāyu* that even within 1.4.1-2.2.38, the *pūrva* rule 1.4.16 *siti ca* prevails over the *para* rule 1.4.18 *yaci bham*. In other words, even within 1.4.1-2.2.38, 1.4.2 does not give the right answer.

Besides, those conflicts which we come across in 1.4.2-2.2.38, which are essentially conflicts between *saṁjñā* rules, can be successfully solved by choosing the specific rule (the exception) over the general one, thereby rendering Faddegon's restriction of 1.4.2's scope redundant anyway.[74] For example, 1.4.16 *siti ca*, as we have seen above, is more specific than and therefore an exception of 1.4.18 *yaci bham*. Thus 1.4.16 wins. Similarly, 1.4.11 *saṁyoge guru* (which teaches that a short vowel is called *guru* 'heavy' when followed by a consonantal conjunct) is more specific than 1.4.10 *hrasvaṁ laghu* (which teaches that a short vowel is called *laghu* 'light'). Thus, 1.4.11 wins.

[73] Kiparsky 1982: 114.

[74] While Joshi (1998: 45)'s overall view on this topic is very different from mine, he makes some observations which resonate with my findings: "the tradition in general is wrong…in thinking that *apavādatva* cannot take care of the designations introduced in the *ekā saṁjñā* section".

In the same way, 1.4.100 *taṅānāv ātmanepadam* (which teaches that *taṄ*, *ŚānaC* and *KānaC*, which replace *la*, take the *ātmanepada saṁjñā*) is more specific than and thus defeats 1.4.99 *laḥ parasmaipadam* (which teaches that the affixes which replace *la* take the *parasmaipada saṁjñā*'). Similarly, 1.4.46 *adhiśīṅsthāsāṁ karma* (which teaches that a *kāraka* which constitutes the locus of the action is called *karma* with the verbs *śīṄ* 'to lie down', *sthā* 'to stand', and *ās* 'to sit' occurring with preverb *adhi*) is more specific than and thus wins against 1.4.45 *ādhāro'dhikaraṇam* (which teaches that a *kāraka* which constitutes the locus of the action is called *adhikaraṇa*).[75] These examples satisfactorily prove that the *apavāda* tool is sufficient to identify the winning rule in the section 1.4.1-2.2.38.

Secondly, restricting the scope of 1.4.2 to 1.4.1-2.2.38 implies that Pāṇini has given us no instructions about the conflicts that lie beyond 2.2.38, which I think is a highly unlikely scenario. In any case, the few attempts that have been made to deal with conflicts beyond 2.2.38 by scholars such as Cardona (1970) and Joshi and Kiparsky (1979) address only certain types of rule conflict and fail to paint an overarching picture.[76]

1.7 My Opinion

In my view, firstly, Pāṇini did not expect us to create the categories '*tulyabala*' and '*atulyabala*'. Secondly, I think that he taught 1.4.2 as a metarule which, rather than being restricted to a particular section of the *Aṣṭādhyāyī*, is applicable to the entire *Aṣṭādhyāyī.*

More broadly, I do not agree with both the traditional and the modern perspectives towards this topic, because instead of trying to decipher the actual meaning of 1.4.2, these approaches try to brush 1.4.2 under the carpet, to make it less effective or to weaken its impact. One does it

[75] Besides, there are some cases which may appear to be conflicts between rules teaching *kāraka saṁjñā*s but which, according to me, are not conflicts at all. For example, whether one says *geham praviśati* (cf. 1.4.49 *kartur īpsitatamaṁ karma* → 2.3.2 *karmaṇi dvitīyā*) or *gehe praviśati* (cf. 1.4.45 *ādhāro'dhikaraṇam* → 2.3.36 *saptamy adhikaraṇe ca*) depends entirely on the non-linguistic feature that the speaker wishes to express - that is, whether he/she wants to express *kartur īpsitatama* or *ādhāra*. So, this choice lies outside the domain of Pāṇini's *Aṣṭādhyāyī.* In conclusion, in my opinion, rule conflict does not arise between 1.4.45 and 1.4.49.

[76] We shall look at limited blocking (Cardona) in chapter 4 and *siddha* principle (Joshi and Kiparsky) in Appendix E.

by excluding certain rule pairs from the scope of *vipratiṣedha*, and the other by reducing the jurisdiction of 1.4.2. This approach which seeks to undervalue Pāṇini's rule interaction mechanism and replaces it with self-invented methods of 'rule conflict resolution' can lead to some success for a limited set or specific type of examples, but does not allow us to understand and appreciate the larger picture.

To get instructions about dealing with rule interaction, I try to rely, as much as possible, upon 'internal metarules', that is, those metarules which Pāṇini has taught in his work, setting aside any 'external metarules', that is, those metarules that are not found in the *Aṣṭādhyāyī,* such as *nityatva*, *antaraṅgatva*, post-Pāṇinian *paribhāṣā*s from the *Paribhāṣenduśekhara*, *vārttikas* that discuss rule interaction etc. In this thesis, I have come up with my own interpretation of 1.4.2 and, using that, I have reinterpreted Pāṇini's derivational mechanism. I have attempted to show that Pāṇini's grammatical machine is self-sufficient, that is, its own (internal) metarules, are able to run it with remarkable perfection, and that no external metarules are able or required to aid this process.

Chapter Two

2.1 Two Types of Operational Rule Interaction

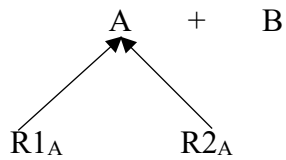
In the previous chapter, I have discussed how the tradition has misinterpreted 1.4.2 *vipratiṣedhe paraṁ kāryam*. In this section, I lay the conceptual foundation that will help us understand the actual meaning of 1.4.2 in the next section (2.2).

Over a period of time, I studied different examples in which two *vidhi sūtra*s 'operational rules' are simultaneously applicable at the same step of a derivation, from both traditional sources and modern literature. Henceforth, we will refer to such interaction between two simultaneously applicable operational rules as 'Same-Step Rule Interaction', or simply SSRI. I tried to divide these examples into different groups on the basis of the similarities between them.

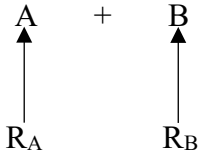
In my opinion, at any step in a derivation, even though two (or more) rules are applicable, only one rule applies. So, I attempted to determine if, of the two competing rules, a certain kind of rule always prevails over the other rule, in all the examples of that group. In other words, I came up with one generalization per group about the result of such competition between rules. The generalization that I made for one particular group of rules immediately caught my attention. In order to highlight the common property that binds together the examples of this group, first, I need to explain certain concepts, which I will do in this section. In section 2.2, I will discuss the said group of examples, and how this group of examples led me to discover the actual meaning of 1.4.2.

Consider the two types of SSRI:

Type 1:



Type 2:

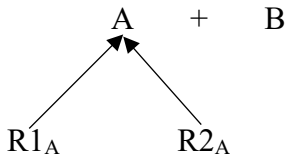


We will call Type 1 Same Operand Interaction - henceforth SOI - because both rules $R1_A$ and $R2_A$ are applicable to the same operand A at the same step. We will call Type 2 Different Operand Interaction - henceforth DOI - because the two rules R_A and R_B are applicable to two different operands A and B respectively at the same step.

In their efforts to understand the meaning of 1.4.2, both traditional and modern scholars have failed to make good use of this clear distinction between SOI and DOI.[1] Going further, we will see that this distinction plays a critical role in helping us understand Pāṇini's key rule 1.4.2 and, consequently, the entire derivational system of the *Aṣṭādhyāyī*.

As stated before, in my opinion, at any step in a derivation, even though two (or more) rules are applicable, only one rule applies. So, for both Type 1 and Type 2, we need to determine which of the two rules should be applied at the given step.

2.2 Solutions for Type 1 (SOI) and Type 2 (DOI)



Which one of the two rules $R1_A$ and $R2_A$ should we apply at this step? Pāṇini does not give us any explicit instructions about solving SOI. In my view, if two rules are applicable simultaneously to the same operand, the rule that is more specific, which we may call 'the special or exception rule', wins. Note that this is similar to the traditional notion that an *apavāda* 'exception' rule defeats an *utsarga* 'general' rule.

It is likely that Pāṇini did not deem it necessary to state explicitly that the exception rule defeats the general rule in case of SOI because the general-exception framework is not a feature of 'grammar' alone but more broadly, a feature of the *sūtra* style itself. Freschi and Pontillo (2013: 2) point out that "the basic framework of Sanskrit *śāstra*s 'systematic treatises' is based on the practical and effective opposition between general and specific rules".

[1] Cardona (1970: 48) does recognize this distinction: "the general condition for *vipratiṣedha* is, as noted…that two rules tentatively apply to provide operations which cannot possibly take place concurrently. The two operations can involve (a) a single operand or (b) different operands." But he does not develop this intuition, relying instead on the traditional approach to rule interaction.

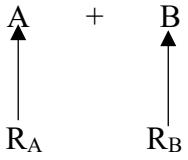
Note that the traditional approach is different from mine because:

(i) The tradition does not draw a clear distinction between SOI and DOI.

(ii) The tradition often ends up using tools other than *utsarga-apavāda* to resolve SOI.

(iii) The tradition has not developed a systematic procedure to determine which of the two rules involved in SOI is more specific.

I will develop such a procedure later in this chapter. Now, let us look at DOI.



The group of examples referred to in section 2.1 are those that involve DOI. I noticed that in the case of DOI, if we pick the right-hand side (henceforth, RHS) operation, that is, application of rule R_B to its operand B, over the left-hand side (henceforth, LHS) operation, that is, the application of rule R_A to operand A, we always get the correct answer. This led me to realize the meaning of *para* in 1.4.2: *para* stands for the RHS operation. And thus, *vipratiṣedha* 'mutual opposition' in 1.4.2 stands for DOI. I think it is apt to refer to DOI as *vipratiṣedha* 'mutual opposition' because only one of the two operations wins, so in that sense, the two operations oppose each other. In sum, 1.4.2 means: 'in the event of DOI (mutual opposition between the two operations), the RHS operation wins.'

Note that even though in the previous chapter I frequently used the phrase 'rule conflict' - which has acquired a very specific connotation in modern Pāṇinian scholarship - to discuss the traditional and modern interpretations of 1.4.2, I have not used this phrase in the context of my own interpretation of 1.4.2. I interpret *vipratiṣedha* 'mutual opposition' as 'DOI' and not as 'rule conflict'. DOI and rule conflict are different concepts. I will discuss this topic in detail later in this chapter.

2.3 Evidence for My Interpretation of *Para*

Before going further, let me provide more evidence to support my interpretation of *para*. The meaning of *para* in 1.4.2 can be confirmed by looking at the meaning of *para* in the rest of the *Aṣṭādhyāyī*. The term *para* has been used by Pāṇini on many occasions. Its occurrences can be classified into two groups:

Group A: 1.1.34, 1.4.109, 3.2.39, 3.3.138, 3.4.20, 4.3.5, 5.2.92, 5.3.29, 6.3.8.[2]

Group B: 1.1.47, 1.1.51, 1.1.54, 1.1.57, 1.1.70, 1.2.40, 1.4.2, 1.4.62, 1.4.81, 2.1.2, 2.2.31, 2.4.26, 3.1.2, 6.1.84, 6.1.94, 6.1.112, 6.1.115, 6.1.120, 6.2.199, 6.4.156, 7.3.22, 7.3.27, 7.4.80, 7.4.88, 7.4.93, 8.1.2, 8.1.56, 8.2.92, 8.3.4, 8.3.6, 8.3.26, 8.3.27, 8.3.35, 8.3.87, 8.3.110, 8.3.118, 8.4.28[3], 8.4.58.[4]

Let us consider an example from Group A. 1.1.34 *pūrvaparāvaradakṣiṇottarāparādharāṇi vyavasthāyām asaṁjñāyām* (*vibhāṣā jasi sarvanāmāni*) teaches that the terms *pūrva*, *para* etc. are called *sarvanāma* optionally when followed by *Jas*. In 1.1.34 and in the other rules belonging to Group A, *para* is used as an ordinary word of the object language Sanskrit. In these rules, it does not have any special technical connotation with respect to Pāṇini's derivational system. We are not interested in Group A, because 1.4.2 belongs to group B.

Let us consider some examples from Group B. 1.1.47 *mid aco'ntyāt paraḥ* teaches that an item marked with *anubandha M* is placed after, i.e., to the right-hand side of, the last vowel of the item to which it is added. 1.1.51 *ur aṇ raparaḥ* teaches that *r* is added after, i.e., to the right side of the vowels *a*, *i*, *u* when they are substitutes of *ṛ*. 1.1.54 *ādeḥ parasya* teaches that a substitute taught for the following or right-hand side item replaces its first sound. From these examples, it becomes clear that in the rules I have listed under group B, *para* is used to mean 'right-hand side' in the context of Pāṇinian derivations.

Furthermore, we also see that in the *Aṣṭādhyāyī* the term *pūrva*, the antonym of *para*, when used specifically in the context of Pāṇinian derivations, means LHS. For example, consider the pair of rules 1.1.66 *tasminn iti nirdiṣṭe pūrvasya* and 1.1.67 *tasmād ity uttarasya*. 1.1.66 teaches that when an item is taught (*nirdiṣṭe*) in the locative (*tasminn iti*), it means that the item to its left-hand side (*pūrvasya*) undergoes an operation, and 1.1.67 teaches that, when an item is

[2] Since our focus is not on this group, I have not listed certain rules in which we find compounds or secondary derivatives containing *para*. Examples include *parasmaipada*, *parokṣa*, *aparokṣa*, *parovara*, *parama*, and *paraspara*.

[3] The original rule is *upasargād anotparaḥ*, but Patañjali has suggested that it should be read as *upasargād bahulam*. We find the latter version in many recensions.

[4] See Appendix F for the list of *sūtra*s.

taught in the ablative (*tasmād iti*), it means that the item to its right-hand side (*uttarasya*)[5] undergoes the operation[6].

Let us confirm this by considering some rules which contain both *pūrva* and *para*. 6.1.84 *ekaḥ pūrvaparayoḥ* teaches that (in the following rules) a single sound replaces both the LHS sound and the RHS sound in case of *saṁhitā* 'immediate proximity'. Similarly, 1.1.57 *acaḥ parasmin pūrvavidhau* teaches that a substitute for a vowel, if it is conditioned by an RHS context, is treated like its substituendum with respect to an operation on an LHS element.

Besides, the word *kāryam* in 1.4.2 also gives us some crucial information. We know that in the *Aṣṭādhyāyī*, Pāṇini does not generally use finite verbal forms in his rules. For example, in 6.1.77, he does not say *iko yaṇ aci bhavati* / *kāryam*, but simply *iko yaṇ aci*. So, in the case of 1.4.2 too, we can safely interpret *kāryam* as a noun rather than interpreting it as an optative passive participle meaning 'should be done'. What does the noun *kārya* generally mean? It means 'operation', not 'rule'. If Pāṇini wanted to say what the tradition interprets him as saying, I think he would have simply said *vipratiṣedhe paraṁ sūtram* and not *vipratiṣedhe paraṁ kāryam*. All this corroborates my interpretation of *para* in 1.4.2.

Let me summarize this topic now. In ordinary speech, *para* means 'following, something that lies after'. Accordingly, in 1.4.2, *para* actually means 'that which comes after' in the left-to-right sense in the context of derivations. However, the tradition took it as 'that which comes after' in the top (first)-to-bottom (last) or beginning-to-end sense in the context of the serial order of rules. And so, while *para* in 1.4.2 refers to the operand or operation that lies after, or on the right-hand side relative to another operand or operation, the tradition misunderstood it as the rule which comes after the other rule in the serial order of the *Aṣṭādhyāyī.*

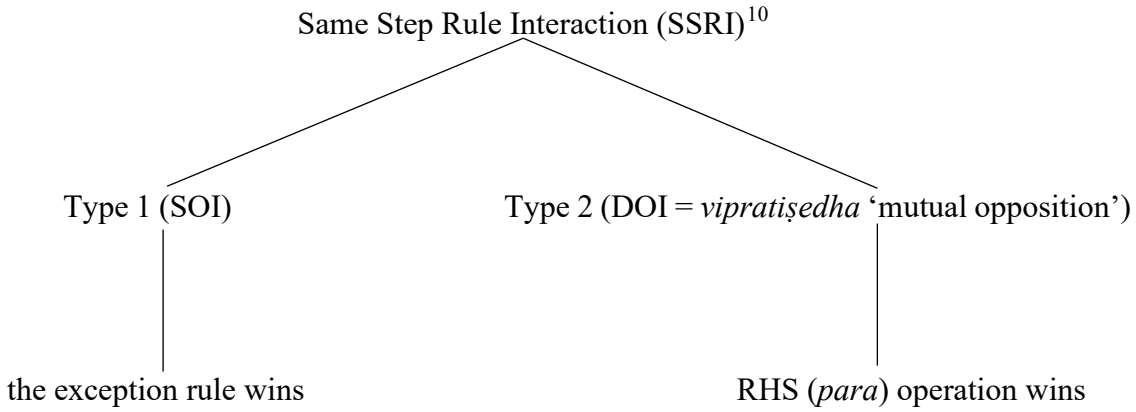
This leads to an important question: if traditional scholars interpreted *para* as 'RHS item/operation' in so many metarules as shown above, why did they interpret it as 'the following rule' in 1.4.2?[7] I think this misunderstanding possibly arose because another

[5] Here *uttara* is a synonym of *para*.

[6] These are the traditional interpretations of these two rules. I discuss my interpretations of them in Appendix B.

[7] While I will discuss this in detail in chapter 6, I must mention here that Kātyāyana mentions that *para* in 1.4.2 could mean 'RHS' in vt. 12 on 6.1.158 *anudāttaṁ padam ekavarjam.* He says: *śāstraparavipratiṣedhāniyamād vā śabdaparavipratiṣedhāt siddham* '[in the event of *vipratiṣedha* between two operations] because it has not been [explicitly] mandated that *paratva* of rules [alone

metarule, 8.2.1 *pūrvatrāsiddham*, uses *pūrva*, the opposite of *para*, to mean 'preceding rule'. 8.2.1 teaches that from 8.2.1 onwards, a preceding rule treats a following rule as suspended. This may have led Kātyāyana, the first scholar to comment upon Pāṇini's *sūtra*s, to think that, in *sūtra*s dealing with relationships between rules such as 8.2.1 and 1.4.2, *pūrva* and *para* mean preceding rule and following rule respectively. However, upon closer examination, one realizes that when Pāṇini wants to indicate that he is referring to the relationship between preceding and following rules rather than operands, he adds the affix *traL*[8] to the base: he says *pūrva-tra* in 8.2.1.[9] This topic deserves our meticulous attention, and we will discuss it in greater detail in chapter 5. Here is the summary of my comprehensive solution:



2.4 A Key Difference Between SOI and DOI

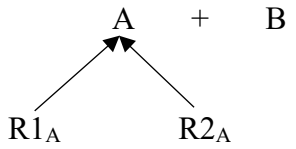
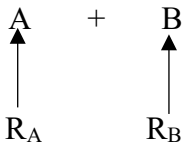
SOI and DOI have one prominent feature in common: in case of both SOI and DOI, two (or more) rules are simultaneously applicable at a certain step of the derivation. However, it is important to shed light on a key difference between SOI and DOI. This difference between SOI and DOI pertains to whether or not they involve competition between two operands.

should be used to resolve] *vipratiṣedha*, alternatively *paratva* of sounds [may also be used to] accomplish [the task of resolving] *vipratiṣedha*' (Mbh III.100.12).

[8] 5.3.10 *saptamyās tral*.

[9] *Pūrvatra* stands for 'with respect to a rule which comes earlier in the *Aṣṭādhyāyī*'s serial order'.

[10] As stated before, by 'rule', here I specifically mean *vidhi sūtra* 'operational rule'.

Type 1 (SOI)	Type 2 (DOI)
	

In case of DOI, we see that the two simultaneously applicable rules R_A and R_B compete for the sole position of the rule that applies at that step. But the two operands A and B too compete for the sole position of the operand that undergoes an operation at that step.

In case of SOI, the two simultaneously applicable rules $R1_A$ and $R2_A$ compete for the sole position of the rule that applies at that step. However, since both are applicable to the same operand A, we do not observe any competition between operands.

Because Pāṇini has not given any instructions about SOI, but has taught the metarule 1.4.2 for dealing with DOI, we can say that Pāṇini has given explicit instructions about how we must deal with competition between operands (which we see in DOI but not in SOI), but not about how we must deal with competition between rules (which we see in both DOI and SOI).

Thus, we must understand *vipratiṣedha* in 1.4.2 not as mutual opposition between rules but rather as mutual opposition between operands.

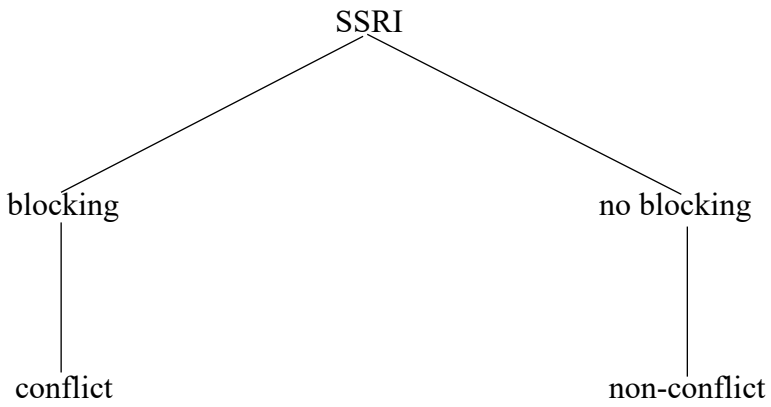
2.5 Pāṇinian and Post-Pāṇinian Approaches to Derivations

In order to determine why post-Pāṇinian (both traditional and modern) scholars have misinterpreted Pāṇini's rule 1.4.2, we need to understand that there is a fundamental difference between what I think are Pāṇinian[11] and post-Pāṇinian conceptions of, or perspectives towards, the derivational procedure itself. I will explain exactly what I mean by this statement by means of examining six representative examples of SSRI from both Pāṇinian and post-Pāṇinian perspectives below.

Let us start with the latter. But before we examine these representative examples from the post-Pāṇinian perspective, let me explain certain fundamental concepts which will help us

[11] When I make the distinction between Pāṇinian and post-Pāṇinian approaches in the following pages, it must be understood that by 'Pāṇinian approach', I mean 'my interpretation of the Pāṇinian approach'.

understand this perspective better. Let us divide SSRI into two categories, namely ‘conflict’ and ‘non-conflict’. In order to define conflict and non-conflict, we must first define blocking. Let us say that two rules X and Y are simultaneously applicable at step K[12]. We say that rule X blocks rule Y if Y will not be applicable at the following step (K+1) after the hypothetical application of X at the present step (K). Conflict is defined as an SSRI which involves some blocking. Non-conflict is defined as an SSRI which does not involve any blocking.

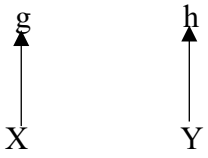


Note that, in my opinion, Pāṇini has not defined or discussed the categories ‘conflict’ and ‘non-conflict’ in any way whatsoever, and he does not expect us to know about or use them either. Traditional scholars too have not made an explicit distinction between conflict and non-conflict. In modern / western scholarship, the concept of ‘(rule) conflict’ has been widely used, but ‘non-conflict’ has not been used at all.

Then, the question arises: why have I made this distinction between conflict and non-conflict? I have done this to highlight that, for the most part, post-Pāṇinian scholarship has focused on conflict and has not paid much attention to non-conflict. Why is this the case? To answer this question, let us look closely at non-conflict, wherein the two rules X and Y do not block each other: if X applies at the present step, then Y is applicable at the following step, and if Y applies at the present step, then X is applicable at the following step. Before we go further, note that ‘being applicable’ is different from ‘applying’. Consider the following situation:

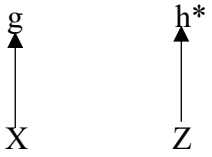
[12] In other words, let us say that there is an SSRI between X and Y.

Step 1:



Let us say Y applies at this step, changing h to h*. Now, at the following step, not only X but another rule Z too becomes applicable:

Step 2:



Suppose that Z, and not X, applies at step 2.

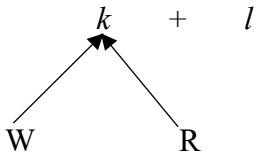
Here, we see that, if Y applies at step 1, X is applicable at the step 2.[13] However, X does not apply at the step 2. This is the difference between 'being applicable' and 'applying'.

Now, let us go back to our conversation about why post-Pāṇinian scholarship does not take much interest in non-conflict. In most cases of non-conflict, if X applies at the present step, then Y is not only applicable but also applies at the following step. Similarly, if Y applies at the present step, then X is not only applicable but also applies at the following step. Thus, regardless of the order in which the two rules apply, one gets the correct form at the end of the derivation. This explains why the tradition can afford to overlook such examples of non-conflict, which, as I said, constitute a huge majority of the set of all non-conflict examples.

However, there is a minority of examples of non-conflict wherein if Y applies at the present step, X is applicable at the following step, but does not end up applying at the following step. The tradition does take some interest in such examples of non-conflict, which constitute a very tiny minority of the set of all non-conflict examples.

Having defined both blocking and conflict, now let us look at how post-Pāṇinian scholarship views the following representative examples:

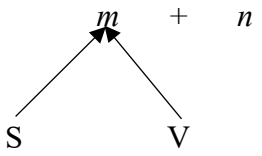
[13] So, going by the definition of blocking, Y does not block X.

1) 

If we apply R at this step, W will be applicable at the following step. R does not block W.

If we apply W at this step, R will not be applicable at the following step. W blocks R.

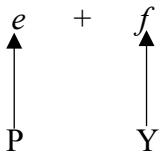
We call this a case of asymmetrical or unidirectional blocking. Since this interaction involves blocking, this is a case of conflict. Such examples are of interest to post-Pāṇinian scholars.

2) 

If we apply S at this step, V will not be applicable at the following step. S blocks V.

If we apply V at this step, S will not be applicable at the following step. V blocks S.

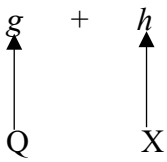
We call this a case of symmetrical or mutual blocking. Since this interaction involves blocking, this is a case of conflict. Such examples are of interest to post-Pāṇinian scholars.

3) 

If we apply P at this step, Y will be applicable at the following step. P does not block Y.

If we apply Y at this step, P will not be applicable at the following step. Y blocks P.

We call this a case of asymmetrical or unidirectional blocking. Since this interaction involves blocking, this is a case of conflict. Such examples are of interest to post-Pāṇinian scholars.

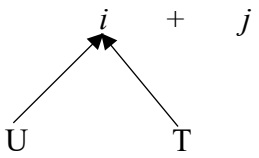
4) 

If we apply Q at this step, X will not be applicable at the following step. Q blocks X.

If we apply X at this step, Q will not be applicable at the following step. X blocks Q.

We call this a case of symmetrical or mutual blocking. Since this interaction involves blocking, this is a case of conflict. Such examples are of interest to post-Pāṇinian scholars.

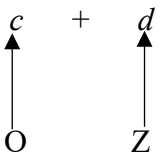
Post-Pāṇinian scholars are very interested in these four representative examples (REs). But one may ask: what about the remaining two REs? Let us look at them.

5) 

If we apply T at this step, U will be applicable at the following step. T does not block U.

If we apply U at this step, T will be applicable at the following step. U does not block T.

There is no blocking, so this is a case of non-conflict. The tradition does not think about or pay much heed to this kind of situation, for the most part.

6) 

If we apply O at this step, Z will be applicable at the following step. O does not block Z.

If we apply Z at this step, O will be applicable at the following step. Z does not block O.

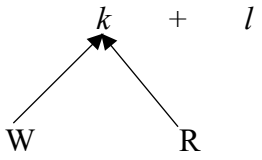
There is no blocking, so this is a case of non-conflict. The tradition does not think about or pay much heed to this kind of situation, for the most part.

Let us now summarize the relationship between blocking and conflict.

No blocking	Non-Conflict
Unidirectional blocking	Conflict
Mutual blocking	Conflict

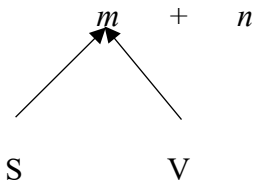
Before we continue discussing these six examples from the post-Pāṇinian perspective, let us consider the Pāṇinian perspective on them:

1)



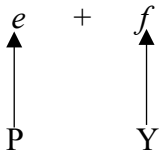
This is a case of SOI. Let us say W is more specific. Thus, W wins.

2)



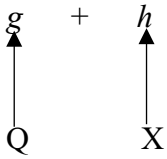
This is a case of SOI. Let us say V is more specific. Thus, V wins.

3)



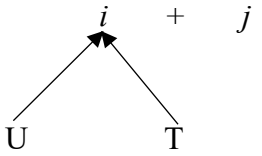
This is a case of DOI. By 1.4.2, the RHS rule Y wins.

4)



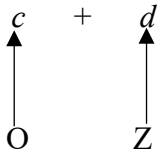
This is a case of DOI. By 1.4.2, the RHS rule X wins.

5)



This is a case of SOI. Let us say U is more specific. Thus, U wins.

6)



This is a case of DOI. By 1.4.2, the RHS rule Z wins.

Note that in all six representative examples discussed here, Pāṇini does not require us to worry about what happens to the losing rule, for instance, P, in example 3: we need not be concerned about whether or not P is applicable at the following step, or whether or not P actually applies at the following step. In other words, Pāṇini does not use concepts like blocking and conflict to give instructions about dealing with SOI and DOI.

Even though Pāṇini does not use concepts like 'conflict' to give instructions about SSRI, and even though the tradition makes no explicit distinction between SOI and DOI, let us discuss both Pāṇinian and post-Pāṇinian concepts under one umbrella to understand this topic better. I have included both SOI and DOI examples because Pāṇini deals with them separately and have included examples of both conflict and non-conflict because the post-Pāṇinian approach subconsciously makes this distinction by focusing on conflict alone. Here is a summary of the examples:

RE[14]	Type	Blocking	Conflict
1	SOI	unidirectional[15]	Yes
2	SOI	mutual	Yes
3	DOI	unidirectional	Yes
4	DOI	mutual	Yes
5	SOI	none	No
6	DOI	none	No

Representative examples 1, 2, 3 and 4 are of significant interest to post-Pāṇinian scholarship because they involve some kind of blocking, thereby constituting cases of conflict.

2.6 Traditional Solutions

Now let us look at how the tradition solves examples of conflict. As stated in the previous chapter, traditional scholars tried to use their interpretation of 1.4.2 (the rule that comes later in the serial order of the *Aṣṭādhyāyī* wins the conflict) to resolve such conflicts. This often gave them the wrong answer, so in order to reduce the challenges posed by their interpretation of 1.4.2, they significantly reduced the scope of applicability of 1.4.2.

They achieved this by restricting the meaning of *vipratiṣedha* to *tulyabalavirodha* 'conflicts between rules of equal strength'. So, 1.4.2 does not apply to pairs of conflicting rules if the two rules are not of equal strength. In the case of such pairs of unequal strength, the rule which is

[14] RE = 'Representative Example'.

[15] Only a minority of cases of SOI involve unidirectional blocking. Most cases of SOI involve mutual blocking.

stronger than the other wins. The tradition has come up with certain methods to identify these pairs of unequal strength. While we have already looked at some of them in the previous chapter, I will briefly discuss them below to outline which tool is used to deal with what kind of interaction (SOI / DOI) and what kind of blocking (unidirectional / mutual).[16]

1. *nitya* > *anitya*: in a conflict between two rules A and B, A is called *nitya* with respect to B if A is applicable (both before and) after the application of B. B is called *anitya* with respect to A if B is applicable before but not after the application of A. The *nitya* rule A is stronger than and defeats the *anitya* rule B. In other words, A wins against B if A unidirectionally blocks B.

2. *antaraṅga* > *bahiraṅga*: according to the *Paribhāṣenduśekhara*, '*antaraṅga* is (a rule) the causes (of the application) of which lie within (or before) the sum of the causes of a *bahiraṅga* rule'.[17] Note that this tool is seldom used to solve actual cases of conflict and is mostly only used to solve what I call cases of pseudo-conflict. We will delve into this in Appendix C.

3. *apavāda* > *utsarga*: an exception rule, or a more specific rule, defeats the general rule.

4. *pūrvavipratiṣiddha*: when applying 1.4.2 gives the wrong answer, Kātyāyana comes up with *pūrvavipratiṣiddha vārttika*s. These state that in certain cases, contrary to what is taught by the traditional interpretation of 1.4.2, it is not the *para* rule (the rule which comes after the other rule in the serial order of the *Aṣṭādhyāyī*), but instead the *pūrva* rule (the rule that comes before the other rule in the serial order of the *Aṣṭādhyāyī*) that wins. *Pūrvavipratiṣiddha* too has come to be used like a conflict resolution tool. Here are two well-known examples of such *vārttika*s (vt. 10 and 11[18] respectively on 7.1.96 *striyāṁ ca*):

[16] In the previous chapter I have discussed the hierarchy of these rules (Pbh 38 of the *Paribhāṣenduśekhara*), so I do not discuss it here again. This hierarchy is not of much consequence, practically speaking.

[17] See Abhyankar's reprint (second edition) of Kielhorn's work (1960: 221-222).

[18] Mbh III.275.23-276.12.

a. vt. 10 *guṇavṛddhyauttvatṛjvadbhāvebhyo num pūrvavipratiṣiddham*: in case of *vipratiṣedha*, the *pūrva sūtra*, which teaches the insertion of the augment *nUM*, takes precedence over *para sūtra*s which teach (i) *guṇa*[19], (ii) *vṛddhi*[20], (iii) *auttva*[21], (iv) *tṛjvadbhāva*[22].

b. vt. 11 *numaciratṛjvadbhāvebhyo nuṭ* (*pūrvavipratiṣiddham*): in case of *vipratiṣedha*, the *pūrva sūtra*, which teaches the insertion of the augment *nUṬ*[23] takes precedence over *para sūtra*s which teach (i) *numāgama* 'insertion of augment *nUM*'[24], (ii) replacement with *r* when followed by a vowel (*aC*)[25], (iii) *tṛjvadbhāva*[26].

5. *niravakāśa / anavakāśa > sāvakāśa*[27]: In his first *vārttika*[28] on 1.4.2, Kātyāyana defines *vipratiṣedha* as a conflict which arises between two *sāvakāśa* rules: *dvau prasaṅgāv anyārthāv ekasmin sa vipratiṣedhaḥ* '[When] two rules [which are] applicable elsewhere (i.e., in other derivations) [become applicable] at the same place, this [situation is called] *vipratiṣedha*'. But when one of the two rules is *niravakāśa*, that is, when it does not have scope to apply elsewhere, such a conflict is not called *vipratiṣedha*. In such cases, the *niravakāśa* rule is thought to be stronger than the *sāvakāśa* rule. The *niravakāśa* rule wins.

As discussed in the previous chapter, the tradition does not apply these tools consistently, and often, applying some of these tools gives the wrong form. Nonetheless, through the table presented below, I try to give a broad and general overview of the tools that are used to deal with different kinds of conflicts:

---

[19] 7.3.111 *gher ṅiti.*

[20] 7.2.115 *aco ñṇiti.*

[21] 7.3.119 *ac ca gheḥ.*

[22] 7.1.95 *tṛjvat kroṣṭuḥ.*

[23] 7.1.54 *hrasvanadyāpo nuṭ.*

[24] 7.1.73 *iko'ci vibhaktau.*

[25] 7.2.100 *aci ra ṛtaḥ.*

[26] 7.1.95 *tṛjvat kroṣṭuḥ.*

[27] *niravakāśā hi vidhayaḥ sāvakāśān vidhīn bādhante* '*niravakāśa* operations defeat *sāvakāśa* operations' (Pbh 11 of *Vyāḍiparibhāṣāpāṭha*).

[28] Mbh I.304.13.

RE	Type	Blocking	Tools
1	SOI conflict	unidirectional	*nitya* > *anitya*
2	SOI conflict	mutual	*niravakāśa* > *sāvakāśa*, *apavāda* > *utsarga*, *pūrvavipratiṣiddha*
3	DOI conflict	unidirectional	*nitya* > *anitya*
4	DOI conflict	mutual	*niravakāśa* > *sāvakāśa*, *pūrvavipratiṣiddha*

Lastly, alongside these tools, the tradition liberally uses (its interpretation of) 1.4.2 to deal with all kinds of conflict when it is necessary and / or desirable to do so.

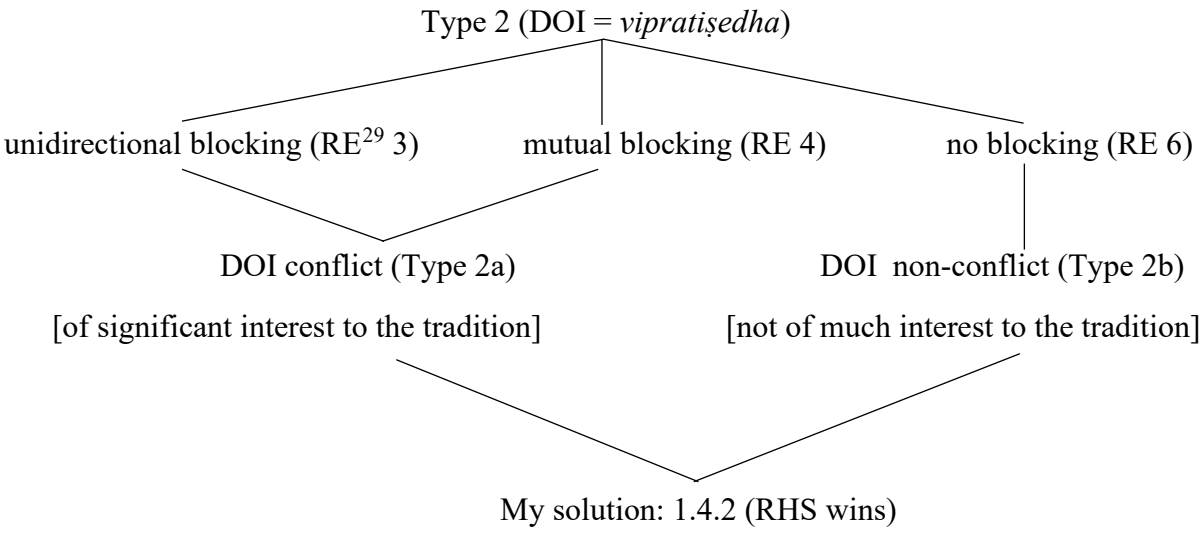
2.7 Examples of DOI

In my opinion, 1.4.2 *vipratiṣedhe paraṁ kāryam* means: in the event of DOI, the RHS rule wins. As stated before, I have not used the term 'rule conflict' in my interpretation of 1.4.2. This is because I think that Pāṇini does not require us to use such a concept to understand 1.4.2, and consequently, to perform derivations correctly.

However, as shown above, all post-Pāṇinian discussion pertaining to 1.4.2 has focused on conflict. So, I do need to deal with the topic of conflict to contextualize my findings in the contemporary discourse. In other words, I need to show that my interpretation of 1.4.2 correctly resolves examples of DOI conflict, which I will call Type 2a henceforth. For each example, I will first prove that the example involves conflict, then discuss my solution to it, and finally present the traditional solution to it.

Even though the tradition is not very interested in non-conflict, I will also show that 1.4.2 helps deal with examples of DOI non-conflict, which I will call Type 2b henceforth.

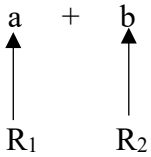
Before we start looking at examples, here is a diagram which summarizes this topic:



Note the difference between *vipratiṣedha*, as interpreted by me, and the concept of conflict, which is popularly discussed in modern post-Pāṇinian literature, in the diagram above.

In this section, I have chosen examples from nominal inflection.[30]

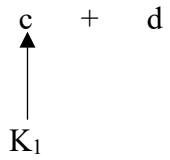
In all derivations performed in this thesis, I present *only* those steps diagrammatically at which multiple rules are simultaneously applicable. For example, at step a + b, if rules R_1 and R_2 are applicable to a and b respectively, then I draw the following kind of diagram to illustrate the same:



However, if only one rule K_1 is applicable (to c) at a given step c + d, then I do *not* draw diagrams of the following kind to represent this:

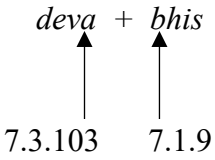
[29] RE = 'Representative Example'.

[30] Note that examples from nominal inflection are simpler than those from verbal inflection. One of the many reasons behind this is that, while nominal inflection involves only two items, i.e., a base and affix, verbal inflection generally involves at least three items, i.e., a base followed by two affixes. We will look at examples from verbal inflections as well as primary and secondary derivatives in the following chapters.



Instead, I simply describe this in words, or symbolically, as follows: c + d → c* + d (K_1).

(1) *deva* + *bhis* – 'God' (masculine), instrumental plural



7.3.103 *bahuvacane jhaly et* (*ataḥ supi*): an *e* replaces the final *a* of a nominal base when a plural declensional affix starting with *jhaL* (a non-nasal stop or a fricative) follows.

7.1.9 *ato bhisa ais*: *ais* replaces *bhis* when *bhis* occurs after an *a*-final base.

If *bhis* is replaced with vowel-initial *ais* by 7.1.9, then 7.3.103, which applies to only those bases which are followed by a *jhaL*-initial affix, will not be applicable at the following step. Similarly, if the *a* of *deva* is replaced with *e* by 7.3.103, then 7.1.9, which applies to affixes that are preceded by *a*-final bases, will not be applicable at the following step.

Therefore, 7.1.9 and 7.3.103 block each other. This is a case of mutual blocking, and thus of Type 2a (DOI conflict).

By my interpretation of 1.4.2, the RHS operation 7.1.9 wins, leading to the correct form: *deva* + *ais* → *devais* (6.1.88 *vṛddhir eci*) → *devair* (8.2.66 *sasajuṣoḥ ruḥ*) → *devaiḥ* (8.3.15 *kharavasānayor visarjanīyaḥ*).

In his comments on 7.1.9, Patañjali tries to solve this conflict by using *paratva* (the rule that comes later in the serial order of the *Aṣṭādhyāyī* wins) but that gives the wrong answer: **devebhis*. He then asserts that 7.1.9 is *nitya* and thus wins, giving the correct form: *devaiḥ*.[31] His explanation for calling 7.1.9 *nitya* is illogical at best, and we will not delve into it. Suffice it to say that the *nitya* tool, which can only solve cases of unidirectional blocking, cannot be applied to the present case of mutual blocking. *Pradīpa* and *Uddyota*, the two popular commentaries on the *Mahābhāṣya* suggest that the rule 7.1.9 is *anavakāśa* whereas 7.3.103 is

[31] Mbh III.244.13-21.

sāvakāśa. So, the former wins. The *anavakāśa* tool is simply a technical way of arguing the following:

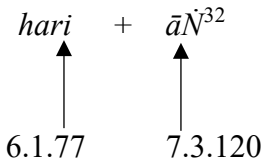
(i) 7.1.9 does not apply anywhere else.

(ii) Surely, Pāṇini must have composed 7.1.9 because it applies somewhere.

From (i) and (ii), the tradition concludes that it has to apply here.

For this and many other examples, instead of following a systematic procedure of rule conflict resolution, the tradition adopts a trial-and-error approach to come up with a justification for the application of the rule which leads to the correct form.

(2) *hari* + *āṄ* – 'green' (masculine), instrumental singular



6.1.77 *iko yaṇ aci*: *iK* (*i*, *u*, *ṛ*, *ḷ*) is replaced with *yaṆ* (*y, v*, *r*, *l*) when *aC* (any vowel) follows.

7.3.120 *āṅo nāstriyām*: *nā* replaces the affix *āṄ*, when it occurs after a non-feminine base termed *ghi* (a base ending in *i* or *u* except *sakhi*).

If the *i* of *hari* is replaced with *y* by 6.1.77, then 7.3.120 which applies only to bases ending in *i* or *u*, will not be applicable at the following step. And if *āṄ* is replaced with consonant-initial *nā*, then 6.1.77, which could have applied to the *i* of *hari* when it is followed by a vowel, will no longer be applicable. Thus, 7.3.120 and 6.1.77 block each other.

This is a case of mutual blocking, and thus of Type 2a (DOI conflict).

By my interpretation of 1.4.2, the RHS operation 7.3.120 wins, leading to the correct form: *hariṇā*.[33]

[32] The instrumental singular affix taught by 4.1.2 *sv-au-jas*… is *Ṭā* and not *āṄ*. The use of *āṄ* instead of *Ṭā* "is best understood as reflecting earlier traditions" (Cardona 1997: 51).

[33] *n* > *ṇ*, by 8.4.2 *aṭkupvāṅnumvyavāye'pi*.

To the best of my knowledge, the tradition does not discuss this conflict. But I would guess that it would have used its interpretation of 1.4.2 (the rule that comes later in the serial order of the *Aṣṭādhyāyī* wins) or *niravakāśatva* to solve it.

(3) *vāri* + *āṄ* – 'water' (neuter), instrumental singular

For reasons I will clarify below, let us look at the three rules which are applicable at this step without resorting to a diagram:

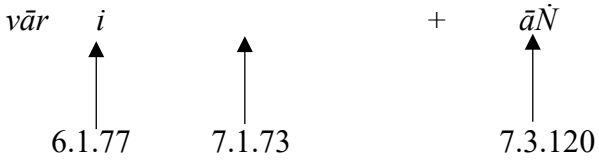
6.1.77 *iko yaṇ aci*: same as above.

7.1.73 *iko'ci vibhaktau* (*num napuṁsakasya*): augment *nUM* is attached to a neuter base ending in *iK* (*i, u, ṛ, ḷ*) when a vowel-initial declensional affix follows.

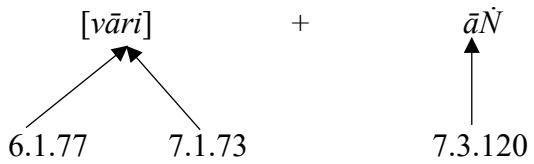
7.3.120 *āṅo nāstriyām*: same as above.

The important question to ask here is, how should we regard the interaction between 6.1.77 *iko yaṇ aci* and 7.1.73 *iko'ci vibhaktau*? Is it a case of SOI or that of DOI?

One could argue that it is a case of DOI. Let me explain why. 6.1.77 is applicable to *i* of *vāri*. On the other hand, by 1.1.47 *mid aco'ntyāt paraḥ* (which teaches that an item marked with *M* is placed after i.e., to the RHS of the last vowel of the morpheme), 7.1.73 is applicable, not to *i*, but instead to the (currently empty) position that is to the right-hand side of *i*. Additionally, note that 1.1.47 uses the term *para* which is also used in the rule governing DOI (cf. 1.4.2 *vipratiṣedhe paraṁ kāryam*). For these reasons, one could say that the two rules are applicable to two different operands. Here is the diagrammatic representation of the same:



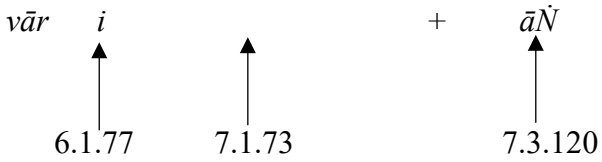
On the other hand, one could argue that the interaction between 6.1.77 and 7.1.73 is a case of SOI because the whole base *vāri* itself is the common operand of both 6.1.77 and 7.1.73. Here is the diagrammatic representation of the same:



In fact, we ought to answer other similar questions before moving forward: if there is an SSRI between a rule teaching the attachment of an augment marked with *Ṭ* (cf. 1.1.46 *ādyantau ṭakitau*[34]) to a given item and a rule teaching the substitution of the first sound of that item, then should that interaction be treated as an SOI or as a DOI? Similarly, if there is an SSRI between a rule teaching the attachment of an augment marked with *K* (cf. 1.1.46 *ādyantau ṭakitau*) to a given item and a rule teaching the substitution of the last sound of that item, then should that interaction be treated as an SOI or as a DOI?

Without looking at a large number of examples of SSRI involving augments marked with *M*, *Ṭ* or *K*, it would be difficult to decide which of the two positions is correct. In my thesis, I do not focus on augments and thus am not in a position to definitively answer the aforementioned questions. For the sake of this thesis, I have treated examples of the aforementioned kind involving *M*-marked augments as cases of DOI and those of the aforementioned kind involving *Ṭ*- or *K*-marked augments as cases of SOI. I have done this so that the reader may get exposure to both positions – one, that these are cases of SOI and the other, that these are cases of DOI. This will help set the stage for future research on this topic.

Coming back to the present example, this is a case of DOI between the three rules.



Now let us look at the relationships between these rules. We have already seen in the previous example that 6.1.77 and 7.3.120 block each other.

Let us look at the DOI interaction between 6.1.77 and 7.1.73. If *vāri* takes the augment *nUM* by 7.1.73, then we get *vārin* which does not end in vowel *i* and thus, 6.1.77 will not be applicable at the following step. If *i* of *vāri* is replaced with *y* by 6.1.77, then we get *vāry* which does not end in *i*, thus 7.1.73 will not be applicable at the following step. Thus, 6.1.77 and 7.1.73 block each other. This is a case of mutual blocking and thus of Type 2a (DOI conflict).

Now let us look at the DOI interaction between 7.1.73 and 7.3.120. If *vāri* takes the augment *nUM* by 7.1.73, thereby becoming consonant-final *vārin*, then 7.3.120, which applies only to

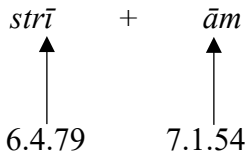
[34] Items marked with *Ṭ* and items marked with *K* should be attached to the beginning and end respectively.

those affixes that are preceded by *ghi* bases ending in *i* or *u*, will not be applicable at the following step. And if consonant-initial *nā* replaces *Ṭā* by 7.3.120, then 7.1.73 which only applies to certain bases followed by vowel-initial affixes will not be applicable at the following step. Thus, 7.3.120 and 7.1.73 block each other. This is a case of mutual blocking, and thus of DOI conflict.

By my interpretation of 1.4.2, we apply the right-most rule 7.3.120[35] and get the correct form: *vāriṇā.*[36]

We have already discussed the traditional position on the conflict between 6.1.77 and 7.3.120 in the previous example. I do not think the tradition discusses the conflict between 6.1.77 and 7.1.73. We can assume that it would use its interpretation of 1.4.2 (the rule that comes later in the serial order of the *Aṣṭādhyāyī* wins) or the *apavāda* tool to solve this conflict. As for the conflict between 7.1.73 and 7.3.120, the *Bālamanoramā* commentary on the *Siddhāntakaumudī* solves it using the traditional interpretation of 1.4.2.

(4) *strī* + *ām* – 'woman' (feminine), genitive plural



6.4.79 *striyāḥ* (*aci iyaṅ*): the final sound of the base *strī* is replaced with *iyAṄ* when a vowel-initial affix follows.

7.1.54 *hrasvanadyāpo nuṭ* (*āmi*): augment *nUṬ* is introduced to affix *ām* when it occurs after a nominal base which ends in a short vowel, or is termed *nadī* (feminine long *ī*- and *ū*-final bases), or has taken the feminine affix *ṬāP*.

If the *ī* of *strī* is replaced with *iyAṄ* by 6.4.79, thereby making it *striy,* then 7.1.54, which applies to *ām* when preceded by *nadī*-final vowels *ī* and *ū*, will not be applicable at the following step.

[35] Note that this is one of the rare cases in which even if we had applied another rule, namely 7.1.73, we would still have got the correct form.

[36] *n* > *ṇ*, by 8.4.2 *aṭkupvāṅnumvyavāye'pi.*

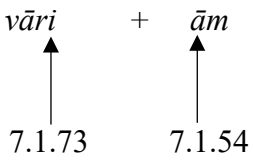
If the augment *nUṬ* is added to the affix *ām* by 7.1.54, thereby making it consonant-initial *nām*, then 6.4.79, which is only applicable to the base *strī* when it is followed by vowel-initial affixes, will not be applicable at the following step.

This is a case of mutual blocking, and thus of Type 2a (DOI conflict).

By my interpretation of 1.4.2, the RHS operation 7.1.54 wins, leading to the correct form: *strīṇām*.[37]

The *Bhaimī* commentary on the *Laghusiddhāntakaumudī* solves the conflict between 6.4.79 and 7.1.54 using the traditional interpretation of 1.4.2 (i.e., the rule that comes later in the serial order of the *Aṣṭādhyāyī* wins).

(5) *vāri* + *ām* – 'water' (neuter), genitive plural



7.1.73 *iko'ci vibhaktau* (*num napuṁsakasya*): augment *nUM* is attached to a neuter base ending in *iK* (*i, u, ṛ, ḷ*) when a vowel-initial declensional affix follows.

7.1.54 *hrasvanadyāpo nuṭ* (*āmi*): same as above.

If the augment *nUM* is attached to *vāri* by 7.1.73, thereby making it consonant-final *vārin* (1.1.47 *mid aco'ntyāt paraḥ*), then 7.1.54, which only applies to *ām* when it is preceded by certain vowel-final bases, will not be applicable at the following step.

On the other hand, if the augment *nUṬ* is attached to the affix *ām* by 7.1.54, thereby making it consonant-initial *nām*, then 7.1.73, which is only applicable to certain bases that are followed by vowel-initial affixes, will not be applicable at the following step.

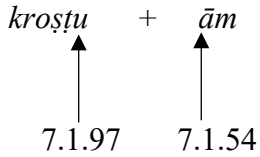
Both 7.1.54 and 7.1.73 block each other. This is a case of mutual blocking, and thus of Type 2a (DOI conflict).

[37] *n* > *ṇ*, by 8.4.2 *aṭkupvāṅnumvyavāye'pi.*

By my interpretation of 1.4.2, the RHS operation 7.1.54 wins, leading to the correct form: *vārīṇām*[38] (6.4.3 *nāmi*, 8.4.2 *aṭkupvāṅnumvyavāye'pi*).

The tradition resorts to Kātyāyana's *vārttika* '*numaciratṛjvadbhāvebhyo nuṭ pūrvavipratiṣiddham*' (vt. 11[39] on 7.1.96 *striyāṁ ca*) to solve this conflict. This *vārttika* teaches that even though the rule teaching the attachment of the augment *nUṬ* (7.1.54) comes before the rule teaching the attachment of the augment of *nUM* (7.1.73) in the serial order of the *Aṣṭādhyāyī*, the former wins. In this and other *pūrvavipratiṣiddha vārttika*s, Kātyāyana simply lists those conflicts which cannot be correctly solved using the traditional interpretation of 1.4.2.

(6) *kroṣṭu* + *ām* – 'jackal' (masculine), genitive plural



7.1.97 *vibhāṣā tṛtīyādiṣv aci* (*tṛjvat kroṣṭuḥ*): 'the base *kroṣṭu*, is treated as if ending in affix *tṛC* optionally, when a vowel-initial ending of the *tṛtīyā* triplet (instrumental) or any of the following triplets (namely dative, ablative, genitive or locative) follows.[40]

7.1.54 *hrasvanadyāpo nuṭ* (*āmi*): same as above.

If the *u* of *kroṣṭu* becomes *ṛ* by 7.1.97, then 7.1.54, which applies to *ām* when it is preceded by any of the short vowels, will be applicable to *ām* at the following step. But if the augment *nUṬ* is added to *ām* by 7.1.54, thereby making it (consonant-initial) *nām*, then 7.1.97, which applies to *kroṣṭu* only when it is followed by a vowel-initial *tritīyādi* affix, will not be applicable at the following step.

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[38] Note that both augments i.e., *nUM* and *nUṬ* essentially refer to the same sound *n*. However, if we applied the rule prescribing *nUM*, we would get *vārin* + *ām* (1.1.47 *mid aco'ntyāt paraḥ*). In such a situation, we would not be able to elongate the *ī* of *vārin* because 6.4.3 *nāmi* would not apply here.

[39] Mbh III.276.6.

[40] Note that this is not actually an operational rule, but an *atideśa sūtra* 'extension rule'. For the sake of studying conflict, we may treat it as an operational rule which teaches that the *u* of *kroṣṭu* changes to *ṛ*.

7.1.54 blocks 7.1.97, but 7.1.97 does not block 7.1.54. This is a case of unidirectional blocking, and thus of DOI conflict.

By my interpretation of 1.4.2, the RHS operation 7.1.54 wins, leading to the correct form: *kroṣṭūnām* (6.4.3 *nāmi*).

Since this is a case of unidirectional blocking, the tradition could have used the *nitya* tool to solve this conflict. However, it does not do so.[41] Instead, Kātyāyana has written the *vārttika* '*numaciratṛjvadbhāvebhyo nuṭ pūrvavipratiṣiddham*' (vt. 11[42] on 7.1.96 *striyāṁ ca*) to solve it. This *vārttika* teaches that even though the rule teaching the attachment of the augment *nUṬ* (7.1.54) comes before the rule teaching *tṛjvadbhāva* (7.1.97) in the serial order of the *Aṣṭādhyāyī*, the former wins.

(7) *kartṛ* + *sU* – 'doer' (neuter), nominative singular

7.1.94 *ṛduśanaspurudaṁso'nehasāṁ ca* (*asambuddhau anaṅ sau*): the final sound of a base ending in *ṛṬ* or of the bases *uśanas*, *purudaṁsas* and *anehas* is substituted with *anAṄ* when followed by non-vocative *sU*.

7.1.23 *svamor napuṁsakāt* (*luk*): affixes *sU* and *am* occurring after a neuter base are substituted with *LUK*.

If we apply 7.1.23, then 7.1.94, which applies only when followed by *sU*, will not be applicable at the following step. If we apply 7.1.94, then 7.1.23, which applies to any neuter base regardless of its final sound, will be applicable at the following step.

This is a case of unidirectional blocking, and thus of Type 2a (DOI conflict).

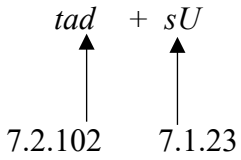
By my interpretation of 1.4.2, the RHS operation 7.1.23 wins, thereby giving the correct form: *kartṛ*.

[41] This is discussed in *Pradīpa* on vt. 11, 7.1.96.

[42] Mbh III.276.6.

To the best of my knowledge, the tradition does not discuss this conflict. However, I think it would use the *nitya* tool (the rule that unidirectionally blocks the other wins) to solve it.

(8) *tad* + *sU* – 'that' (neuter), nominative singular



7.2.102 *tyadādīnām aḥ* (*vibhaktau*): the final sound of a base belonging to the group headed by *tyad* 'that' is replaced with *a* when a declensional affix follows.

7.1.23 *svamor napuṁsakāt* (*luk*): same as above.

What kind of interaction occurs between the two rules? The tradition seems to be confused about this. So, let us start by looking at my solution.

This is a case of DOI. By my interpretation of 1.4.2, the RHS rule 7.1.23 wins, giving us the correct answer: *tad*.[43]

In his commentary[44] on 7.1.23, Patañjali first tries to use the traditional interpretation of 1.4.2 (the rule that comes later in the serial order of the *Aṣṭādhyāyī* wins) to determine which of the two rules he must apply. But he gets the wrong answer upon doing so. Then, he tries to use the *nitya* tool.

If we apply 7.1.23 at this step, 7.2.102 will not be applicable at the following step. On the other hand, if we apply 7.2.102 at this step, 7.1.23 will still be applicable at the following step. Thus, this is a case of unidirectional blocking, and of Type 2a (DOI conflict). Therefore, the *nitya* tool can be used here.

However, Patañjali then says that 7.1.23 is not *nitya* with respect to 7.2.102. This is because, after the hypothetical application of 7.2.102, 7.1.23 is not the only rule that will be applicable. 7.1.24 *ato 'm*[45] will also be applicable. Since 7.1.24 is an *apavāda* of 7.1.23, the former will win. So 7.1.23 will, despite being applicable, fail to apply, following the application of 7.2.102.

[43] Note that 7.2.102 is not applicable at this point, thanks to 1.1.63 *na lumatāṅgasya.*

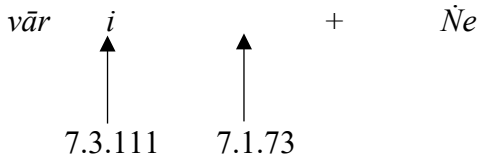
[44] Mbh III.248.23-249.2.

[45] Affixes *sU* and *am* occurring after a neuter base ending in *a* are replaced with *am*.

For this reason, Patañjali says that 7.1.23 cannot be called *nitya* with respect to 7.2.102. To deal with this problem, Patañjali suggests some changes in the wording of 7.1.23 *svamor napuṁsakāt*. We will not dwell on his argument, because it is beyond our scope.

Contrary to Patañjali's conclusion that 7.1.23 cannot be called *nitya*, according to *paribhāṣā* 47 of the *Paribhāṣenduśekhara*, 7.1.23 is *nitya* and thus should win. It reads: *yasya ca lakṣaṇāntareṇa nimittaṁ vihanyate na tad anityam*. Kielhorn translates it as follows: '(an operation [here 7.1.23]), the cause of which would, (after the taking effect of another operation [here, 7.2.102] that applies simultaneously), be removed by another (third) rule [here, 7.1.24], is not (on that account regarded as) *anitya.*'

(9) *vāri* + *Ṅe* – 'water' (neuter), dative singular



7.3.111 *gher ṅiti* (*guṇaḥ supi*): the final vowel of a *ghi* base (a base ending in *i* or *u*, except *sakhi*) is replaced with *guṇa* (here, *e* / *o*) when followed by a declensional affix marked with *Ṅ*.

7.1.73 *iko'ci vibhaktau* (*num napuṁsakasya*): augment *nUM* is attached to a neuter base which ends in *iK* (*i*, *u*, *ṛ*, *ḷ*), provided a vowel-initial declensional affix follows.

This is a case of DOI. If we apply 7.3.111 at this step, then 7.1.73 will not be applicable at the following step. If we apply 7.1.73 at this step, then 7.3.111 will not be applicable at the following step. This is a case of mutual blocking and thus of Type 2a (DOI conflict).

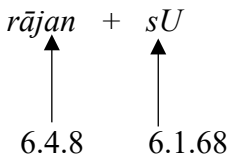
By my interpretation of 1.4.2, we apply the RHS rule 7.1.73 and get the correct form: *vāriṇe*.

The tradition uses the *vārttika*, *guṇavṛddhyauttvatṛjvadbhāvebhyo num pūrvavipratiṣiddham* (vt. 10[46] on 7.1.96 *striyāṁ ca*) to solve this conflict. This *vārttika* teaches that even though the rule teaching the attachment of the augment *nUM* (7.1.73) comes before the rule teaching *guṇa* (7.3.111) in the serial order of the *Aṣṭādhyāyī*, the former wins.

[46] Mbh III.275.23.

Having looked at examples of DOI conflict (Type 2a), now let us look at examples of DOI non-conflict (Type 2b).

(10) *rājan* + *sU* – 'king' (masculine), nominative singular



6.4.8 *sarvanāmasthāne cāsambuddhau* (*nopadhāyāḥ dīrghaḥ*): the penultimate sound of a base ending in *n* is replaced with its *dīrgha* 'long' equivalent when a non-vocative *sarvanāmasthāna* affix (*sU*, *au*, *Jas*, *am*, *auṬ* in non-neuter forms or *Śi*) follows.

6.1.68 *halṅyābbhyo dīrghāt sutisyapṛktaṁ hal* (*lopaḥ*): there is elision by *LOPA* of the finite verb affixes *ti* and *si*, when they consist of a single sound and follow a form which ends in a consonant, and of the nominative singular case affix *sU*, when it follows a form which ends in a consonant or the long final vowel of feminine affixes *Ṅī* or *āP*.

If 6.4.8 applies at step K, we get *rājān*, which still ends in a consonant. So 6.1.68 will be applicable at the step K+1. If *sU* is replaced with LOPA by 6.1.68 at step K, the properties of the affix *sU* still hold (cf. 1.1.62 *pratyayalope pratyayalakṣaṇam*), so 6.4.8 will be applicable at step K+1.

We see that 6.4.8 and 6.1.68 do not block each other. This is a case of Type 2b (DOI non-conflict).

By my interpretation of 1.4.2, the RHS rule 6.1.68 wins and we get *rājan*. Now thanks to 1.1.62 *pratyayalope pratyayalakṣaṇam*, we apply 6.4.8 and get *rājān*. At this juncture, we apply 8.2.7 *nalopaḥ prātipadikāntasya*[47], which teaches that *n* is replaced with *LOPA* at the end of a nominal stem which is termed *pada*, and get the correct form: *rājā*.

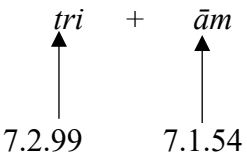
Note that even if we had applied 6.4.8 (the LHS rule) at the first step, we could have still applied 6.1.68 at the following step. And applying these two rules in this order too would have given us the correct form.

[47] 8.2.7 is *asiddha* with respect to 6.4.8 and 6.1.68 so it cannot be applied before them.

Why then did Pāṇini need to say anything about DOI non-conflict at all? Why did he prescribe that the RHS be applied in such cases (cf. my interpretation of 1.4.2)? We will answer this question while discussing the following examples.

The tradition is not interested in such cases of non-conflict.

(11) *tri* + *ām* – 'three' (feminine), genitive plural



7.2.99 *tricaturoḥ striyāṁ tisṛcatasṛ*: *tri* and *catur* are replaced with *tisṛ* and *catasṛ* respectively in the feminine.

7.1.54 *hrasvanadyāpo nuṭ* (*āmi*): augment *nUṬ* is introduced to affix *ām*[48] when it occurs after a nominal base which ends in a short vowel, or is termed *nadī* (feminine bases ending with *ī* and *ū*), or has taken the feminine affix *ṬāP*.

If we replace *tri* with *tisṛ* at this step, 7.1.54 will still be applicable at the following step because *tisṛ* ends in a short vowel. And if we apply 7.1.54 at this step, 7.2.99 will still be applicable at the following step, because its application does not depend on the affix.

Neither of the two rules blocks the other, and so this is a case of Type 2b (DOI non-conflict). By my interpretation of 1.4.2, we apply the RHS rule 7.1.54 and get *tri* + *nām*. Thereafter, we apply 7.2.99 *tricaturoḥ striyāṁ tisṛcatasṛ* and get the correct form: *tisṛṇām*[49].

In order to understand why Pāṇini has prescribed that we pick the RHS rule in cases of DOI non-conflict, let us perform this derivation again, this time by picking the LHS rule in case of DOI non-conflict.

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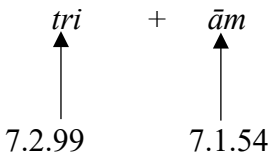
[48] The augment *nUṬ* is added at the beginning of *ām* by 1.1.46 *ādyantau ṭakitau*.

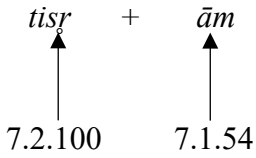
[49] The *ṛ* of *tisṛ* does not undergo elongation by 6.4.3 *nāmi* because this is prohibited by the following rule 6.4.4 *na tisṛcatasṛ*. The *n* of *nām* becomes *ṇ* in *tisṛṇām.* There is no rule in the *Aṣṭādhyāyī* which explicitly teaches this. However, there is a *vārttika* on 8.4.1 *raṣābhyāṁ no ṇaḥ samānapade* which correctly teaches this operation: *raṣābhyāṁ ṇatvam ṛkāragrahaṇam* 'it should be added that [not only] after *r* and *ṣ*, [but after] *ṛ* [too], [*n* is replaced with] *ṇ.*' (Mbh III.452.1-6).



7.2.99 *tricaturoḥ striyāṁ tisṛcatasṛ*: same as above.

7.1.54 *hrasvanadyāpo nuṭ* (*āmi*): same as above.

This is a Type 2b (DOI non-conflict). As stated above, as an experiment, we are going to apply the LHS rule 7.2.99 in this case (of DOI non-conflict). Upon applying 7.2.99, we get *tisṛ* + *ām*. Here, two rules are applicable:



7.2.100 *aci ra ṛtaḥ* (*vibhaktau tricaturoḥ tisṛcatasṛ*): a *r* replaces *ṛ* of the bases *tisṛ* and *catasṛ*, when a vowel-initial declensional affix follows.

7.1.54 *hrasvanadyāpo nuṭ* (*āmi*): same as above.

If *ṛ* is replaced with consonant *r* by 7.2.100, then 7.1.54, which applies to *ām* when it is preceded by certain vowel-final bases will not be applicable at the following step. And if *ām* takes augment *nUṬ* by 7.1.54, thereby becoming consonant-initial *nām*, then 7.2.100 which applies to *ṛ* when a vowel-initial affix follows will not be applicable at the following step.

Thus, 7.2.100 and 7.1.54 block each other. This is a case of mutual blocking, and thus of Type 2a (DOI conflict).

By my interpretation of 1.4.2, the RHS operation 7.1.54 wins, leading to the correct form: *tisṛṇām*.

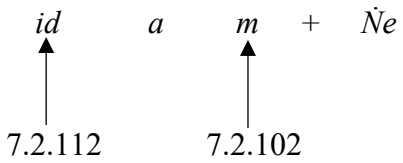
We have seen that, regardless of whether we pick the LHS or the RHS rule in case of Type 2b (DOI non-conflict) here, we get the same answer: *tisṛṇām.* However, the two derivational paths look different from each other. The first path, in which we pick the RHS rule at the first step (as taught by Pāṇini in [my interpretation of] 1.4.2), is significantly shorter than the second path, in which we pick the LHS rule at the first step. In other derivations too, I have noticed that the derivation looks relatively shorter when we pick the RHS rule in case of type 2b (DOI non-conflict) and relatively longer when we pick the LHS rule.

But is it merely to keep derivations compact that Pāṇini has prescribed the choice of the RHS rule in cases of DOI non-conflict? No. In the next example, we will see that we cannot get the correct answer without picking the RHS rule in case of DOI non-conflict.

How does the tradition perform this derivation? *Vārttika*s 11 to 14[50] on 7.1.96 *striyāṁ ca*, and Patañjali's comments on them, deal with this topic in detail and propose various tools like *pūrvavipratiṣiddha* and *apavāda* to solve this problem. We will not delve into this topic here.

(12) *idam* + *Ṅe* – 'this' (masculine), dative singular

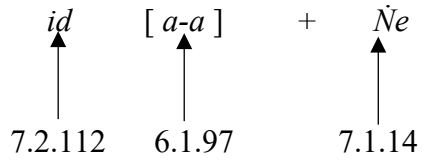
All cases of DOI in this derivation are of Type 2b (DOI non-conflict). I will not prove this at each step.



7.2.112 *an āpy akaḥ* (*vibhaktau idamaḥ idaḥ*): the *id* of *idam* is substituted with *an*, when it does not include a *k*, and when a declensional affix belonging to *āP*, i.e., any instrumental, dative, ablative, genitive or locative affix, follows.

7.2.102 *tyadādīnām aḥ* (*vibhaktau*): the final sound of a base belonging to the group headed by *tyad* 'that' is replaced with *a* when a declensional affix follows.

By my interpretation of 1.4.2, the RHS rule 7.2.102 wins, and we get: *ida-a* + *Ṅe.* Here, multiple rules are applicable:



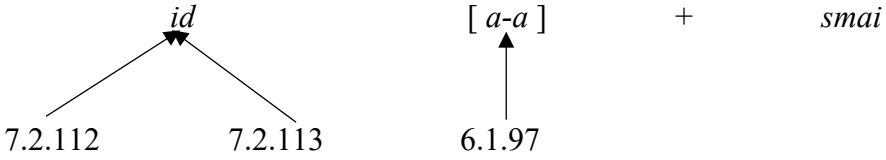
7.2.112 *an āpy akaḥ* (*vibhaktau idamaḥ idaḥ*): same as above.

6.1.97 *ato guṇe*: when a short *a*, which is not *pada*-final (word-final) is followed by a *guṇa* vowel i.e., *a*, *e*, or *o*, then both *a* and the following *guṇa* are replaced with the latter.

[50] Mbh III.276.6-22.

7.1.14 *sarvanāmnaḥ smai* (*ṅer yaḥ ataḥ*): the affix *Ṅe*, when occurring after a pronominal base ending in *a*, is replaced with *smai*.

By my interpretation of 1.4.2, we apply the right-most rule 7.1.14, and get *ida-a* + *smai*. Here, multiple rules are applicable:

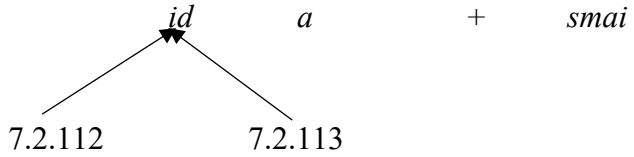


7.2.112 *an āpy akaḥ* (*vibhaktau idamaḥ idaḥ*): the *id* of *idam* is substituted with *an*, when it does not include a *k*, and when a declensional affix belonging to *āP*, i.e., any instrumental, dative, ablative, genitive or locative affix, follows.

7.2.113 *hali lopaḥ* (*vibhaktau idamaḥ idaḥ akaḥ*): the *id* of *idam* is replaced with *LOPA*, when it does not include a *k*, and when a **consonant-initial** declensional affix belonging to *āP*, i.e., any instrumental, dative, ablative, genitive or locative affix, follows.

6.1.97 *ato guṇe*: same as above.

By my interpretation of 1.4.2, we apply the RHS rule 6.1.97 and get *ida* + *smai.* Here multiple rules are applicable:



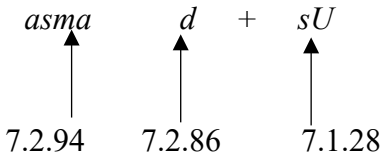
We see that there is a case of SOI between 7.2.112 and 7.2.113. Because 7.2.113 applies only when the base is followed by a consonant initial affix, it is more specific than, and defeats 7.2.112. Thus, we get the correct form: *asmai.*

At the very first step of this derivation, where we see the two rules 7.2.112 and 7.2.102 involved in DOI non-conflict, if we had chosen to apply the LHS rule 7.2.112 instead of the RHS rule 7.2.102, we would have got the wrong form at the end of the derivation: **anasmai.* The same can be said about the second step too: picking 7.2.112 at the second step instead of 7.1.14 too would have given us the wrong form: **anasmai*.

This shows that, even though whether we choose the LHS rule or the RHS rule may not matter in certain cases of DOI non-conflict (see examples 10 and 11 above), in cases of DOI non-conflict like this one, choosing the RHS rule alone gives the correct answer.

Finally, let us look at an example which involves cases of both DOI conflict and DOI non-conflict.

(13) *asmad* + *sU* – 'I' (any gender), nominative singular



7.2.94 *tvāhau sau* (*yuṣmadasmador maparyantasya vibhaktau*): the parts of *yuṣmad* and *asmad* extending up to *ma*[51] are replaced with *tva* and *aha* respectively when followed by the case affix *sU.*

7.2.86 *yuṣmadasmador anādeśe* (*vibhaktau āḥ*): the final sounds of *yuṣmad* and *asmad* are replaced with *ā* when followed by consonant-initial case affixes which have not undergone any substitution.

7.1.28 *ṅeprathamayor am* (*yuṣmadasmadbhyāṁ vibhaktau*): *Ṅe*, and nominative, accusative affixes are replaced with *am* when preceded by *yuṣmad* and *asmad*.

Let us determine the relationship between 7.2.94 and the two other rules.

If we apply 7.2.94 at this step, 7.2.86 will be applicable at the following step. Similarly, if we apply 7.2.86 at this step, 7.2.94 will be applicable at the following step. There is a Type 2b (DOI non-blocking) relationship between 7.2.94 and 7.2.86.

Similarly, if we apply 7.2.94 at this step, 7.1.28 will be applicable at the following step. If we apply 7.1.28 at this step, 7.2.94 will be applicable at the following step.[52] There is a Type 2b (DOI non-blocking) relationship between 7.2.94 and 7.1.28.

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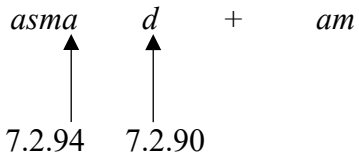
[51] The tradition translates *maparyantasya* as 'up to *m*' but I think that Pāṇini means 'up to *ma*'. Both interpretations lead to correct answers for all forms of *yuṣmad-asmad*. My interpretation makes derivations simpler and shorter.

[52] Given that *sU* has been replaced with *am*, how will 7.2.94 apply at the following step? This is because, by 1.1.56 *sthānivadādeśo'nalvidhau*, *am* is treated like *sU.* How do we know this is not an *aL-vidhi*? *asma* and *am* are not adjacent to each other (*d* sits in the middle of the two), and so this is not an *aL* operation.

Thus 7.2.94 has a Type 2b (DOI non-conflict) with the other two rules.

Now let us determine the relationship between 7.2.86 and 7.1.28. If we apply 7.2.86 at this step, 7.1.28 will still be applicable at the following step. However, if we apply 7.1.28 at this step, then the affix *sU* will undergo *ādeśa* 'substitution' with *am*. 7.2.86 can only apply to *asmad* when followed by a non-substituted, consonant-initial affix. Thus, 7.2.86 will not be applicable at the following step. This is a case of unidirectional blocking, and thus of Type 2a (DOI conflict).

By my interpretation of 1.4.2, we apply the right-most rule 7.1.28 and get: *asmad* + *am*. Here again, two rules are applicable:



7.2.90 *śeṣe lopaḥ*: the final sounds of *yuṣmad* and *asmad* are replaced with *LOPA* when followed by case affixes not listed in the preceding rules (7.2.86-89).[53]

If we apply 7.2.94 at this step, 7.2.90 will still be applicable at the following step. If we apply 7.2.90 at this step, 7.2.94 will be applicable at the following step. This is a case of no blocking, and thus of Type 2b (DOI non-conflict). By my interpretation of 1.4.2, we apply the RHS rule 7.2.90 and get *asma* + *am*. Lastly, we apply 7.2.94 and get *aha* + *am*, to which we apply 6.1.97 *ato guṇe*.[54] This gives the correct form: *aham*.

As stated in a footnote on 7.2.94, the traditional interpretation of 7.2.94 is different from mine. Thus, its derivational process is different and slightly longer. We will not delve into it here. I will simply say that the tradition would have resolved the DOI conflict in this example using the *nitya* tool.

[53] Note that, here, the affix *sU* has undergone *ādeśa* 'substitution' with *am*. So, 7.2.86, which can only apply to *asmad* when followed by a non-substituted and consonant initial affix, and which was applicable in the previous step, is no longer applicable at this step. Instead of that rule, 7.2.90 has become applicable.

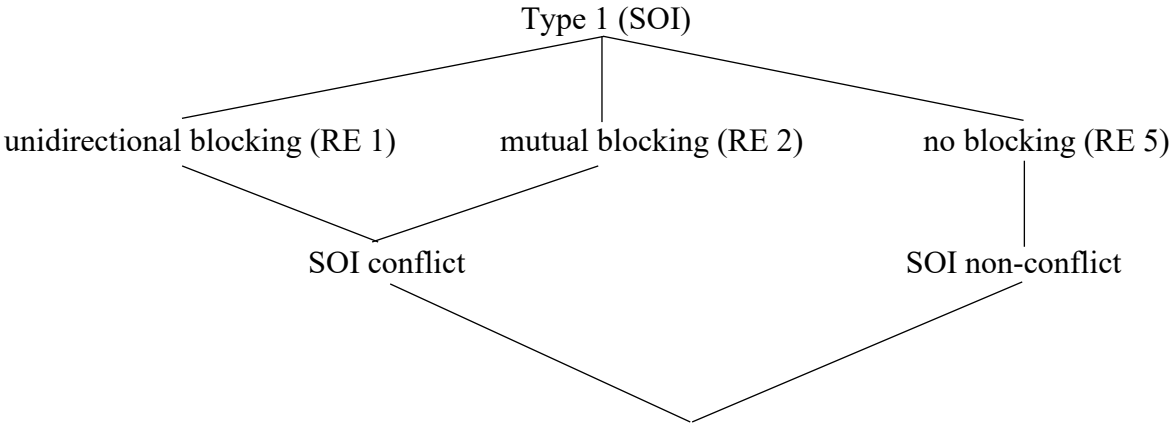
[54] An *a* which is not at the end of a *pada* and the *guṇa* vowel following it are both replaced with the latter.

This brings us to the end of examples of DOI in this chapter. We will, of course, study more examples of DOI conflict in later chapters. Before we go to the next section, here I want to emphasize that I have discussed blocking and conflict in these derivations only because post-Pāṇinian scholarship is interested in these topics. In other words, I have attempted to show that examples of conflict can be solved by my interpretation of 1.4.2.

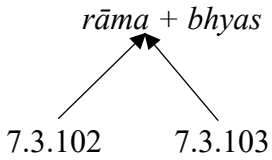
Note that, if we had simply avoided talking about blocking and conflict, we would have completed these derivations almost effortlessly, by simply picking the right-most rule (cf. my interpretation of 1.4.2) in every case of DOI, irrespective of whether or not the rules in question are involved in any kind of conflict.

2.8 Examples of SOI

Having discussed examples of DOI, I will now show, through the following examples, that my solution (i.e., the more specific rule wins) helps deal with cases of SOI. Note that we find very few examples of RE 5 (SOI non-conflict) in Pāṇinian derivations. These cases are neither particularly challenging nor of interest to the tradition. Thus, I will only discuss cases of conflict here. To avoid redundancy, I will refrain from reiterating or proving the existence of conflict in these examples. I will also develop a systematic procedure to identify which rule is more specific. At the end of each example, I will mention the traditional solution.



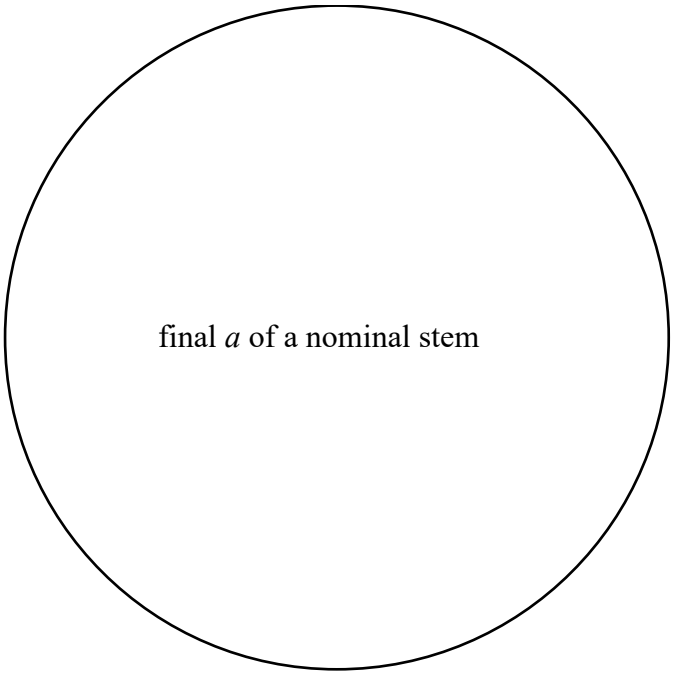
(1) *rāma + bhyas* – ‘Rāma’ (masculine), dative plural



7.3.102 *supi ca* (*ato dīrgho yañi*): the *a* at the end of a nominal base is replaced with its long equivalent when followed by a declensional affix starting with *yaÑ* (i.e., *y, v, r l*, *jh*, *bh* or any nasal).

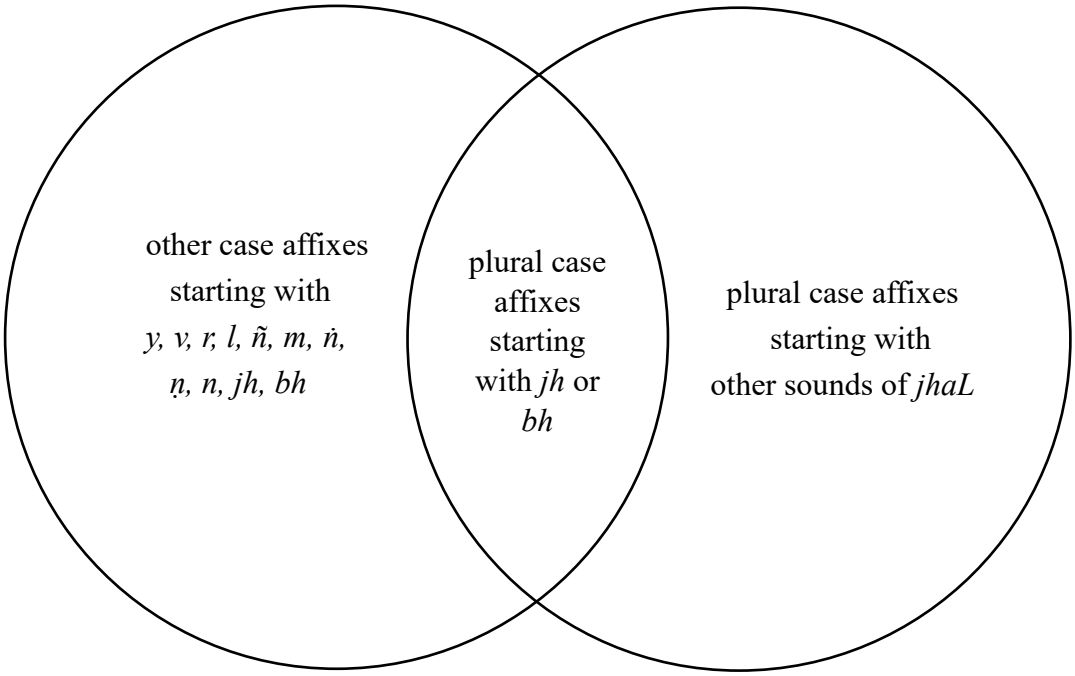
7.3.103 *bahuvacane jhaly et* (*ataḥ supi*): the *a* at the end of a nominal base is replaced with *e* when followed by a plural declensional affix starting with *jhaL* (any non-nasal stop or fricative).

Note that the sets of operands of both rules are exactly the same, namely the final *a* of a nominal stem.



operands of 7.3.102 = operands of 7.3.103

However, the sets of contexts of the two rules are different. Neither set is a subset of the other. Instead, the two sets intersect each other.



So how do we decide which rule is 'more specific?' Let us develop a procedure that we can use to deal with all examples of SOI.

Each Pāṇinian rule actually represents a collection of one or more sub-rules. For example, consider 7.3.102 which teaches that

$a^{\&} + yaÑ^{!} \rightarrow \bar{a}^{\&} + yaÑ^{!}$

[& = end of nominal stem; ! = beginning of case affix]

7.3.102 represents the following collection of sub-rules:

1. $a^{\&} + y^{!} \rightarrow \bar{a}^{\&} + y^{!}$

2. $a^{\&} + v^{!} \rightarrow \bar{a}^{\&} + v^{!}$

3. $a^{\&} + r^{!} \rightarrow \bar{a}^{\&} + r^{!}$

4. $a^{\&} + l^{!} \rightarrow \bar{a}^{\&} + l^{!}$

5. $a^{\&} + \tilde{n}^{!} \rightarrow \bar{a}^{\&} + \tilde{n}^{!}$

6. $a^{\&} + m^{!} \rightarrow \bar{a}^{\&} + m^{!}$

7. $a^{\&} + \dot{n}^{!} \rightarrow \bar{a}^{\&} + \dot{n}^{!}$

8. $a^{\&} + \dot{n}^{!} \rightarrow \bar{a}^{\&} + \dot{n}^{!}$

9. $a^{\&} + n^{!} \rightarrow \bar{a}^{\&} + n^{!}$

10. $a^{\&} + jh^{!} \rightarrow \bar{a}^{\&} + jh^{!}$

11. $a^{\&} + bh^{!} \rightarrow \bar{a}^{\&} + bh^{!}$

Pāṇini teaches these 11 sub-rules together in the form of the rule 7.3.102, using his *pratyāhāra* system, purely for the sake of brevity. Similarly, let us deconstruct 7.3.103 which teaches:

$a^{\&} + jhaL^{!\,\#} \rightarrow e^{\,\&} + jhaL^{!\,\#}$

[& = end of nominal stem; ! = beginning of case affix; # = plural]

7.3.103 can be represented by the following collection of sub-rules:

1. $a^{\&} + jh^{!\,\#} \rightarrow e^{\,\&} + jh^{!\,\#}$

2. $a^{\&} + bh^{!\,\#} \rightarrow e^{\,\&} + bh^{!\,\#}$

3. $a^{\&} + gh^{!\,\#} \rightarrow e^{\,\&} + gh^{!\,\#}$

4. $a^{\&} + ḍh^{!\,\#} \rightarrow e^{\,\&} + ḍh^{!\,\#}$

5. $a^{\&} + dh^{!\,\#} \rightarrow e^{\,\&} + dh^{!\,\#}$

…and so on.

Note that two sub-rules from the collection represented by 7.3.102 namely 11 and 12, which I have underlined, look similar to their respective underlined counterparts in the collection represented by 7.3.103. The actual SOI takes place between these two pairs of sub-rules. In fact, when I say that the more specific rule prevails in case of SOI, I mean, the more specific 'subrule' prevails.

The other (non-underlined) subrules just happen to be represented by 7.3.102 and 7.3.103 respectively and are actually completely irrelevant to the SOI at hand.

We know that *jh* is not present at the beginning of any case affix, so we will focus on the sub-rules which apply to the final *a* of nominal stems when they are followed by *bh*-initial case affixes.

Relevant subrule of 7.3.102	Relevant subrule of 7.3.103
11. $a^{\&} + bh^{!} \rightarrow \bar{a}^{\&} + bh^{!}$	2. $a^{\&} + bh^{!\,\#} \rightarrow e^{\,\&} + bh^{!\,\#}$

Note that we find an extra # symbol in case of sub-rule 2 under 7.3.103. This # stands for plural. Therefore, we conclude that subrule 2 under 7.3.103 is more specific than sub-rule 11 under 7.3.102 and thus wins. Henceforth, I shall take the liberty to rephrase this as '7.3.103 is more specific than 7.3.102 and thus wins'.

I will discuss this detailed procedure for the next example too. But after that, to avoid redundancy, I will present this procedure in an abbreviated form for all examples of SOI in this thesis. I will now present the abbreviated form of the procedure discussed above for the present example.

Let us consider the conditions in which each of the two rules 7.3.102 and 7.3.103 apply. Note that here I draw a distinction between a rule and a condition: a rule can apply in multiple conditions. This clarification is important insofar as the exact conditions in which a rule applies can vary, as I will show below.

7.3.102 applies to:

base ending in *a* + declensional affix starting with *bh*

base ending in *a* + declensional affix starting with any other sound of *yaÑ*

7.3.103 applies to:

base ending in *a* + declensional affix starting with *bh* (plural)

base ending in *a* + declensional affix starting with any other sound of *jhaL* (plural)

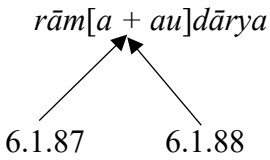
Notice that I write sounds, for example, *a*, *bh*, *yaÑ*, *jhaL* etc., outside of brackets and all their characteristics such as being a plural affix, being a neuter base etc. inside brackets. I treat sounds and their characteristics as two distinct sources of information. Broadly speaking, I will follow this convention for all examples of SOI discussed throughout this thesis.

In every case of SOI, only one condition per rule is relevant to the conflict. I mark the relevant conditions by writing them in bold fonts, as can be seen above. I will do the same for the rest of the examples. We compare the two and determine which one is more specific.

Here the rule including the condition 'in the plural' (*bahuvacane*) is more specific than the other rule, which has no restriction based on number. So, the rule teaching the operation reserved for the plural, that is rule 7.3.103, wins, leading to the correct form: *rāmebhyaḥ*.

The *Mahābhāṣya*[55] on 7.3.103 and the *Kāśikā* on 1.4.2 state that both 7.3.102 and 7.3.103 are *sāvakāśa*: 7.3.102 applies in derivations of forms like *vṛkṣābhyām* and *plakṣābhyām*, and 7.3.103 applies in derivations of forms like *vṛkṣeṣu* and *plakṣeṣu*. As stated before, Kātyāyana teaches that *vipratiṣedha* takes place between two *sāvakāśa* rules. Thus, by the traditional interpretation of 1.4.2 *vipratiṣedhe paraṁ kāryam*, the rule which comes later in the serial order of the *Aṣṭādhyāyī*, namely 7.3.103, wins.

(2) Now let us consider the *sandhi* between the two words of the compound *rāmaudārya* 'Rāma's generosity'. We will not look at how this compound is formed, confining ourselves to the relevant step of the derivation:



6.1.87 *ād guṇaḥ* (*aci*): *guṇa* (*a, e, o*) replaces both *a* and the vowel immediately following it.

6.1.88 *vṛddhir eci* (*āt*): *vṛddhi* (*ā, ai, au*) replaces both *a* and the *eC* vowel (*e*, *o*, *ai*, *au*) immediately following it.[56]

6.1.87 which teaches that

a + *aC* → *a* / *e* / *o*

can be rewritten as the following collection of sub-rules:

a + *a* → *a*

a + *i* → *e*

a + *u* → *o*

a + *ṛ* → *a*

[55] Mbh III.340.1-5.

[56] Note that both 6.1.87 and 6.1.88 belong to the *ekādeśa-adhikāra* i.e., the section headed by the *sūtra* 6.1.84 *ekaḥ pūrvaparayoḥ* which teaches that both the LHS and the RHS item are replaced with a single substitute.

a + *ḷ* → *a*

a + *e* → *e*

a + *o* → *o*

a + *ai* → *e*

a + *au* → *o*

6.1.88 which teaches that

a + *eC* → *ā* / *ai* / *au*

can be rewritten as the following collection of sub-rules:

a + *e* → *ai*

a + *o* → *au*

a + *ai* → *ai*

a + *au* → *au*

Note that the four underlined subrules under 6.1.87 correspond with the four underlined subrules under 6.1.88 respectively. However, both groups of underlined sub-rules are applicable in exactly the same four conditions, namely *a* + *e*, *a* + *o*, *a* + *ai* and *a* + *au*, respectively. In such a case how can we decide which one is more specific? Since we cannot use sub-rules alone to make this decision, we need to look at the rules themselves. Even though 6.1.87 already deals with these four conditions, among other conditions, Pāṇini composed 6.1.88 exclusively to deal with these four conditions. This tells that Pāṇini wants us to apply 6.1.88, and not 6.1.87 in this example.

In the remaining examples I will present only abbreviated versions of this procedure, as follows:

6.1.87:

a* + *e/ai/o/au

a + any other vowel

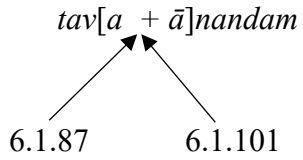
6.1.88:

a* + *e/o/ai/au

Unlike example 1, where one condition was slightly different from the other (by virtue of being marked with the grammatical restriction 'plural'), in this example, both conditions highlighted in bold are exactly the same i.e., *a + e/ai/o/au.* In such a case, we go a step further and compare the two rules themselves. 6.1.88 applies only to *a + e/ai/o/au* whereas 6.1.87 also applies to *a* + any other vowel. Thus 6.1.88 is more specific and wins the SOI, giving us the correct form: *rāmaudārya.*

On 6.1.88, the *Kāśikā* says that 6.1.88 is an *apavāda* of, and thus wins against, 6.1.87. Even though the tradition does not explicitly define *apavāda*, I think that the tradition uses the *apavāda* tool in cases of SOI, when, for example, the conditions in which one rule, here 6.1.88, applies (cf. *a + e/ai/o/au*), clearly constitute a subset of the conditions in which the other rule, here 6.1.87, applies (cf. *a* + any vowel). In many such cases, the *apavāda* rule is taught in the close vicinity of, and often immediately after, the *utsarga* rule, in the serial order of the *Aṣṭādhyāyī*. For example, the *apavāda sūtra* 6.1.88 is taught right after the *utsarga sūtra* 6.1.87.

(3) Let us look at the *sandhi* between two *pada*s, i.e., words, *tava* 'your' and *ānandam* 'happiness'. This example is similar to example 2. Two rules are simultaneously applicable to *a + ā*:



6.1.87 *ād guṇaḥ* (*aci*): *guṇa* (*a, e, o*) replaces both *a* and the vowel immediately following it.

6.1.101 *akaḥ savarṇe dīrghaḥ*: a long vowel replaces both *aK* (*a*, *i*, *u*, *ṛ*, *ḷ*) and the immediately following *savarṇa* 'homogeneous' vowel.

6.1.101:

a + savarṇa

i / u / ṛ / ḷ + savarṇa

6.1.87:

a + savarṇa

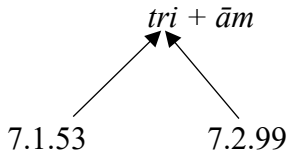
a + any other vowel

Here too, like in example 2, the conditions highlighted in bold are exactly the same. So, we have to compare the two rules themselves.

However, here, this too seems difficult. Thus, we have to eliminate those conditions which are completely irrelevant to the SOI at hand, namely '*i / u / ṛ / ḷ* + *savarṇa*'. It is likely that Pāṇini combined this condition with '*a* + *savarṇa*' purely for the sake of brevity. So, we omit it from the comparison.

6.1.101 applies only to cases of '*a* + *savarṇa*' whereas 6.1.87 applies to '*a* + any other vowel' as well. Thus, we conclude that 6.1.101 is more specific and wins, thereby leading to the correct form: *tavānandam*.[57] To the best of my knowledge the tradition does not mention this conflict. I suppose it would use its interpretation of 1.4.2 to resolve it.

(4) Now let us consider an example similar to example 2. We will derive the genitive plural of the feminine form of *tri* 'three'.



[57] I must admit that my method is able to tackle other examples with greater ease as compared to this one. Here, I am compelled to add an extra step i.e., that of excluding the condition '*i / u / ṛ / ḷ* + *savarṇa*' from the comparison. Perhaps we could attach greater value to Pāṇini's use of the term *savarṇa* and characterize this SOI as follows:

6.1.101:

***a* + vowel (*savarṇa*)**

i / u / ṛ / ḷ + vowel (*savarṇa*)

6.1.87:

***a* + vowel**

I have written the conditions that are relevant to the conflict in bold. 6.1.101 is applicable only when the following vowel is a *savarṇa*. Thus, it is more specific and wins.

7.1.53 *tres trayaḥ* (*āmi*): the base *tri* is replaced with *traya* when *ām* follows.

7.2.99 *tricaturoḥ striyāṁ tisṛcatasṛ* (*vibhaktau*): *tri* and *catur* are replaced with *tisṛ* and *catasṛ* respectively in the feminine when a declensional affix follows.

7.1.53:

tri* + *ām

7.2.99:

tri* (feminine) + *ām

tri (feminine) + any other declensional affix

catur (feminine) + any declensional affix

I have written the conditions that are relevant to the conflict in bold. 7.2.99 is applicable only to the feminine *tri* base, whereas 7.1.53 is applicable to the base in all genders. 7.2.99 is more specific and thus wins, thereby giving us the correct form: *tisṛṇām*.

To the best of my knowledge the tradition does not mention this conflict. I suppose it would use its interpretation of 1.4.2 to resolve it.

Note that in the four examples above, (1) and (4) are similar to each other, and (2) and (3) are similar to each other.

In both (1) and (4), the two conditions (in bold) involved in the SOI are not exactly the same. One operation is conditioned by a grammatical specification (‘plural’ in example 1 and ‘feminine’ in example 4), while the other is not. The operation conditioned by the grammatical specification (which is often morphological) wins.

On the other hand, in the case of examples (2) and (3), the conditions highlighted in bold are exactly the same, and thus we have to go a step further and compare the two rules themselves.

For clarity, let us give names to these two types: we will call examples 1 and 4 SOI-L and examples 2 and 3 SOI-M. The primary definition of SOI-L is that it can be resolved at the first step of comparison: the conditions highlighted in bold are not exactly the same, and so the one which has a specific restriction or marker (e.g., plural) wins. The choice of the winning rule can be made at the first step of comparison itself, i.e., by comparing conditions.

On the other hand, SOI-M cases are defined as those where the conditions highlighted in bold are exactly the same, and so we cannot decide which one is more specific. We need to go a step further and compare the two rules themselves to determine the winning rule.

(5) Now let us look at the *sandhi*-related step of the derivation of the compound *bhānūdaya* 'sunrise':

bhānu + *udaya*

Here the following two rules are applicable:

6.1.77 *iko yaṇ aci*: *iK* (*i*, *u*, *ṛ*, *ḷ*) is replaced with *yaṆ* (*y, v*, *r*, *l*) when *aC* (any vowel) follows.

6.1.101 *akaḥ savarṇe dīrghaḥ* (*aci*): a long vowel replaces both *aK* (*a*, *i*, *u*, *ṛ*, *ḷ*) and the following *savarṇa* 'homogeneous' vowel.

However, the problem is that they do not have exactly the same operand. Here I use round brackets to indicate the operand of 6.1.77 and square brackets to indicate the operand of 6.1.101:

bhān[(*u*) + *u*]*daya*

The operand of 6.1.77 is inside the operand of 6.1.101. How do we solve such an example? I propose that we treat *u* + *u* as the operand of both rules. This means that we have to reanalyse rule 6.1.77: instead of saying that *iK* is replaced with *yaṆ* when *aC* follows, we say that *iK* + *aC* is replaced with *yaṆ* + *aC*.[58]

Now that both rules have the same operand, we can choose the rule that is more specific.

6.1.77:

u* + *savarṇa

u + any other vowel

i / *ṛ* / *ḷ* + any vowel

[58] Another way of comparing the two rules is to simply compare the RHS item of each. For example, for 6.1.77, the RHS item is *aC* (any vowel) while for 6.1.101, it is specifically a *savarṇa* sound. This leads us to the correct conclusion that 6.1.101 is more specific than 6.1.77.

6.1.101

u* + *savarṇa

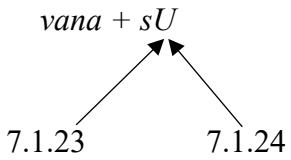
a / i / ṛ / ḷ + *savarṇa*

The conditions in bold are exactly the same. This is a case of SOI-M. Thus, we need to compare the two rules.

Note that the conditions '*i / ṛ / ḷ* + any vowel' (under 6.1.77) and '*a / i / ṛ / ḷ* + *savarṇa*' (under 6.1.101) are not relevant here because our operand is *u* + *u.* So, we won't take these conditions into account. 6.1.77 applies to cases in which *u* is followed by any vowel. On the other hand, 6.1.101 applies only to those cases in which *u* is followed by a *savarṇa*. 6.1.101 is more specific and thus wins, leading to the correct form: *bhānūdaya*.

To the best of my knowledge the tradition does not mention this conflict. I suppose it would use its interpretation of 1.4.2 to resolve it.

(6) *vana* + *sU* – 'forest' (neuter), nominative singular



7.1.23 *svamor napuṁsakāt* (*luk*): affixes *sU* and *am* occurring after a neuter base are replaced with *LUK*.

7.1.24 *ato'm* (*svamor napuṁsakāt*): affixes *sU* and *am* occurring after a neuter base ***ending in a*** are replaced with *am*.

7.1.23

-a* (neuter) + *sU / am

- any other sound (neuter) + *sU / am*

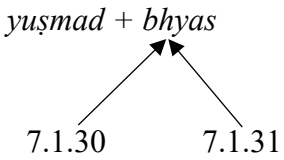
7.1.24

-a* (neuter) + *sU / am

The conditions in bold are exactly the same. This is a case of SOI-M. Thus, we now compare the rules. Both rules are meant for *sU* and *am* affixes added to neuter bases, but 7.1.24 is specifically meant for those cases in which *sU* and *am* are preceded by a base ending in *a.* 7.1.24 is more specific and thus wins, leading to the correct form: *vanam*.

On 7.1.24, the *Kāśikā* says that 7.1.24 is an *apavāda* of, and thus wins against, 7.1.23.

(7) *yuṣmad* + *bhyas* – 'you' (any gender), ablative plural



7.1.30 *bhyaso bhyam* (*yuṣmadasmadbhyām*): the affix *bhyas* which occurs after the bases *yuṣmad* and *asmad* is replaced with *bhyam*.

7.1.31 *pañcamyā at* (*yuṣmadasmadbhyām bhyaso*): the ***ablative*** affix *bhyas* which occurs after the bases *yuṣmad* and *asmad* is replaced with *at*.

7.1.30

yuṣmad / asmad + bhyas

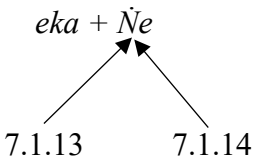
7.1.31

***yuṣmad / asmad + bhyas* (ablative)**

Note that *bhyas* is a plural affix used for both dative and ablative forms. 7.1.31 is specifically about the ablative *bhyas*. This is a case of SOI-L. 7.1.73 is more specific because it mentions the ablative, and thus wins, leading to the correct form: *yuṣmat*.

On 7.1.31, the *Nyāsa* says that 7.1.31 is an *apavāda* of, and thus wins against, 7.1.30.

(8) *eka* + *Ṅe* – 'one' (masculine), dative singular



7.1.13 *ṅer yaḥ* (*ataḥ*): the affix *Ṅe*, when occurring after a base ending in *a*, is replaced with *ya*.

7.1.14 *sarvanāmnaḥ smai* (*ṅer yaḥ ataḥ*)[59]: the affix *Ṅe*, when occurring after a ***pronominal*** base ending in *a*, is replaced with *smai*.

7.1.13

a* + *Ṅe

7.1.14

a* (pronoun) + *Ṅe

This is a case of SOI-L. 7.1.14 concerns only pronominal bases. Thus, it is more specific and wins, leading to the correct form: *ekasmai*.

To the best of my knowledge the tradition does not mention this conflict. I suppose it would use the *apavāda* tool to solve it.

(9) *hari* + *au* – 'green' (masculine) nominative dual

hari + au

The two rules that are applicable here are:

6.1.77 *iko yaṇ aci*: *iK* (*i*, *u*, *ṛ*, *ḷ*) is replaced with *yaṆ* (*y, v*, *r*, *l*) when *aC* (vowel) follows.

6.1.102 *prathamayoḥ pūrvasavarṇaḥ* (*aci akaḥ dīrghaḥ*): *aK* (*a*, *i*, *u*, *ṛ*, *ḷ*) and the following vowel which constitutes the first sound of nominative and accusative affixes, are both replaced with a long vowel which is homogeneous with the sound on the left-hand side.

Note that, here too, like in example 5 of this section, the operand of one rule is inside the operand of another. We overcome this problem just as we did in example 5.

6.1.77

***i* / *u*/ *ṛ* / *ḷ* + any vowel**

[59] The base *eka* is listed in the *sarvādigaṇa*, referred to in 1.1.27 *sarvādīni sarvanāmāni*.

6.1.102

a + any vowel (nominative / accusative)

***i / u/ ṛ / ḷ* + any vowel (nominative / accusative)**

This is a case of SOI-L. 6.1.102 is more specific and thus wins, leading to the correct form: *harī.*

To the best of my knowledge the tradition does not mention this conflict. I suppose it would use its interpretation of 1.4.2 to solve it.

(10) *vāri* + *Ṅi* – 'water (neuter)' locative singular

Let us look at the rules that apply:

7.3.116 *ṅer ām nadyāmnībhyaḥ*

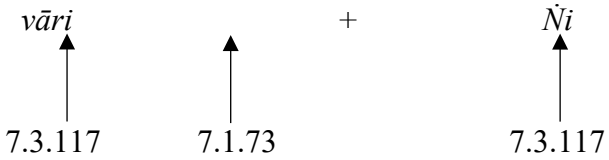
7.3.117 *idudbhyām*

7.3.118 *aut*

7.3.119 *ac ca gheḥ*

Kielhorn[60] shows that 7.3.117-7.3.119 together originally constituted one *sūtra*: *idudbhyām aud ac ca gheḥ.* Kātyāyana split it into two: *idudbhyām* and *aud ac ca gheh*, and Patañjali further split the latter into two: *aut* and *ac ca gheḥ*. I accept the original version taught by Pāṇini himself: 7.3.117 *idudbhyām aud ac ca gheḥ.*

Now, in *vāri* + *Ṅi*, two rules are applicable:



7.1.73 *iko'ci vibhaktau* (*num napuṁsakasya*): augment *nUM* is attached to a neuter *iK*-final (ending in *i, u, ṛ, ḷ*) base when a vowel-initial declensional affix follows.'

[60] See Staal's 'A Reader on the Sanskrit Grammarians' (1972: 115).

7.3.117 *idudbhyām aut ac ca gheḥ* (*ṅer*): after *ghi* bases, *Ṅi* is replaced with *au*, and the final sound of the base is replaced with *a*.

Note that 7.3.117 is unusual because it teaches two operations together. And curiously, we can say that the operand of 7.1.73 lies between the two operands of 7.3.117. We cannot treat this as a case of DOI, so we have to treat this as a case of SOI.

7.1.73 applies to:

i/u* (neuter) + *Ṅi

i/u (neuter) + other vowel initial affixes

ṛ/ḷ (neuter) + vowel initial affixes

7.3.117 applies to:

i/u* + *Ṅi

This is a case of SOI-L and the condition which is marked 'neuter' is more specific and thus wins, giving us the correct form *vāriṇi*.

The tradition uses the *vārttika*, *guṇavṛddhyauttvatṛjvadbhāvebhyo num pūrvavipratiṣiddham* (vt. 10[61] on 7.1.96 *striyāṁ ca*), to solve this conflict. This *vārttika* teaches that even though the rule teaching the attachment of the augment *nUM* (7.1.73) comes before the rule teaching *auttva* (7.3.117 *idudbhyām aud ac ca gheḥ*) in the serial order of the *Aṣṭādhyāyī*, the former wins.

[61] Mbh III.275.23.

Chapter Three

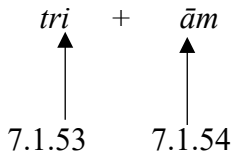
3.1 Challenges[1]

In the previous chapter, I introduced my solution to the problem of rule interaction at the same step. In this chapter, I will discuss the relationship of my solution with other aspects of the functioning of the *Aṣṭādhyāyī.*

Let us look at two examples of DOI from nominal inflection which pose a challenge to my interpretation of 1.4.2. In these two cases, it can be argued that the *Aṣṭādhyāyī*'s derivational machine does not follow its own algorithm.[2]

Like in the previous chapter, I will first prove that the example involves conflict, given the interest of the post-Pāṇinian discourse in the subject of conflict, and will also discuss both my solution and the traditional solution thereafter.

(1) *tri* + *ām* – 'three' (masculine), genitive plural



7.1.53 *tres trayaḥ*: *tri* is replaced with *traya* when *ām* follows.

7.1.54 *hrasvanadyāpo nuṭ*: augment *nUṬ* is introduced to affix *ām* when it occurs after a base which ends in a short vowel (*hrasvānta*), or in a form which is termed *nadī* (*nadyanta*), or else, ends in the feminine affix *āP* (*ābanta*).

If we apply 7.1.53 at this step, we get *traya* + *ām*, to which 7.1.54 will be applicable. If we apply 7.1.54 at this step, we get *tri* + *nām*, to which 7.1.53 will not be applicable. This is because 7.1.53 is applicable to *tri* if it is followed by *ām*, not *nām*.

This is a case of unidirectional blocking, and thus of Type 2a (DOI conflict).

By my interpretation of 1.4.2, the RHS rule 7.1.54 wins and we get: *tri* + *nām* (7.1.54) → *trīnām* (6.4.3 *nāmi*) → **trīṇām* (8.4.2 *aṭkupvāṅnumvyavāye'pi*), which is not the correct form.

[1] In this chapter, and in the following chapters, I will not provide *anuvṛtta* 'continued' terms in brackets (unless necessary), even though I did this in the previous chapters.

[2] These are the only two exceptions of my interpretation of 1.4.2 known to me.

To get the correct answer, we must apply 7.1.53 here: *traya* + *ām* (7.1.53) → *traya* + *nām* (7.1.54) → *trayānām* (6.4.3 *nāmi*) → *trayāṇām* (8.4.2 *aṭkupvāṅnumvyavāye'pi*).

To the best of my knowledge, the tradition does not say anything on this matter.

As seen above, my interpretation of 1.4.2 does not give us the correct answer here. I have not found a convincing way to explain this phenomenon. However, below, I present a purely speculative and unsubstantiated explanation. Further research needs to be done to understand this issue better.

We know that Pāṇini was familiar with the form *trayāṇām* because he uses it in his rule 7.4.75 *nijāṁ trayāṇāṁ guṇaḥ ślau* "a *guṇa* vowel replaces the *abhyāsa* of a base constituted by the list of three roots beginning with *nijIR* 'to cleanse, nourish' when *ŚLU* follows". However, he may also have been familiar with the form *trīṇām*: even though *trīṇām* is not to be found in classical Sanskrit, it is in fact used in Vedic Sanskrit: *trīṇām api samudrāṇām* 'also of the three oceans'[3]. It is possible that when Pāṇini composed the *Aṣṭādhyāyī,* or at least its first layer of rules, both *trīṇām* and *trayāṇām* were acceptable as genitive plural form of *tri* (masculine) in *bhāṣā* 'everyday Sanskrit'. So, even though he uses the form (*trayāṇām*) in his *sūtra*, perhaps he wanted to teach the derivation of the other acceptable form (*trīṇām*).

In the course of time, as the language underwent further change, *trīṇām* got fully replaced with *trayāṇām*.[4] And to accommodate this change, it is possible that a later scholar added the *sūtra* 7.1.53 *tres trayaḥ* to the *Aṣṭādhyāyī*. This scholar may not have known the actual meaning of 1.4.2 *vipratiṣedhe paraṁ kāryam*, which is perhaps why he did not realize that this would create a problem.

In fact, we do find a very similar and related example of language change reflected in Pāṇini's own rules. Consider the genitive plural of *tri* (feminine): *tri* + *ām*. As shown in example 2 of section 2.3, after performing some operations, we get *tisṛ* + *nām*. Here, 6.4.3 *nāmi*, which teaches the elongation of *ṛ*, is not applicable, thanks to 6.4.4 *na tisṛcatasṛ*, which forbids us from applying 6.4.3 vis-à-vis *tisṛ* and *catasṛ*. However, the next rule 6.4.5 *chandasy ubhayathā* teaches that, when constructing the Vedic form, one can optionally elongate *ṛ* in the genitive

[3] This example has been given in the *Kāśikā* on 7.1.53. Another example is: *mahi trīṇām avo'stu dyukṣam mitrasyāryamṇaḥ* (*Maṇḍala* 10, *Sūkta* 185, *Ṛk* 1).

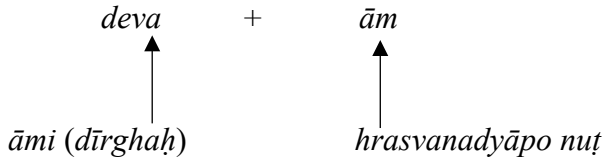
[4] Observe its similarity with *trayaḥ*, the nominative plural form of *tri* (masculine). It is likely that the presence of *traya* here rubbed off on the genitive plural.

plural of *tri* (feminine). This gives us two acceptable Vedic forms: *tisṛṇām* and *tisṝṇām*. It is likely that when Pāṇini composed the *Aṣṭādhyāyī*, the older version, *tisṝṇām* was becoming obsolete and simultaneously making way for the newer version *tisṛṇām*.

Similarly, it seems plausible that, in order to register the change from *trīṇām* to *trayāṇām* in the *Aṣṭādhyāyī*, or put differently, to update the *Aṣṭādhyāyī*, someone added the *sūtra* 7.1.53 *tres trayaḥ* to it. 7.1.53 *tres trayaḥ* must have been placed after 7.1.52 *āmi sarvanāmnaḥ suṭ* to continue *āmi* into 7.1.53 by *anuvṛtti*. But observe how oddly located it is – a substitution rule in the midst of augment insertion rules.

Number	Content	Topic
7.1.50	*āj jaser asuk*	*asug-āgama*
7.1.51	*āśvakṣīravṛṣalavaṇānām ātmaprītau kyaci*	*asug-āgama*
7.1.52	*āmi sarvanāmnaḥ suṭ*	*suḍ-āgama*
7.1.53	*tres trayaḥ*	*tri* → *traya*
7.1.54	*hrasvanadyāpo nuṭ*	*nuḍ-āgama*
7.1.55	*ṣāṭcaturbhyaś ca*	*nuḍ-āgama*
7.1.56	*śrīgrāmaṇyoś chandasi*	*nuḍ-āgama*
7.1.57	*goḥ pādānte*	*nuḍ-āgama*

We also have another reason to believe that 7.1.53 might be an interpolation. Consider Pāṇini's rule 6.4.3 *nāmi* (*dīrghaḥ*). If he had said *āmi dīrghaḥ* instead of *nāmi dīrghaḥ*, then in *deva* + *ām*, two rules would have been simultaneously applicable:



Both rules would block each other. This is a Type 2a interaction (DOI conflict). By my interpretation of 1.4.2, the RHS rule would win leading to *rāmanām* → **rāmaṇām* (8.4.2 *aṭkupvāṅnumvyavāye'pi*), which is not the correct form. It is for this reason that Pāṇini said *nāmi* and not *āmi*, thereby requiring us to add the *nUṬ* augment first and to lengthen the vowel after doing so. Since Pāṇini was careful enough about this derivation, he would also have been careful about the derivation of *trayāṇām* – that is, if he had wanted to derive this form – which also deals with *ām* and *nuḍāgama*.

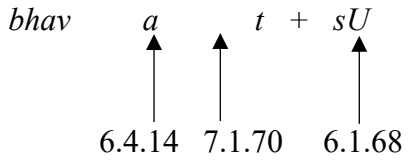
If Pāṇini had wanted to derive the word *trayāṇām*, I think he would have come up with a rule similar in style to 6.4.3 *nāmi* (*dīrghaḥ*): *tres trayaḥ nāmi*. The derivation would have proceeded

as follows: *tri* + *ām* → *tri* + *nām* (7.1.54 *hrasvanadyāpo nuṭ*). At this juncture there would arise an SOI conflict between 6.4.3 *nāmi* and *tres trayaḥ nāmi*. The latter would win by virtue of being more specific, and we would get the correct form: *trayāṇām* (8.4.2 *aṭkupvāṅnumvyavāye'pi*). This suggests that Pāṇini may not be the composer of 7.1.53 *tres trayaḥ.*

To conclude, as stated before, it is possible that when Pāṇini composed the *Aṣṭādhyāyī,* or at least its first layer of rules, both *trīṇām* and *trayāṇām* were acceptable as genitive plural form of *tri* (masculine) in *bhāṣā* 'everyday Sanskrit'. It is possible that Pāṇini, despite using the form *trayāṇām* in his rule, taught us the derivation of *trīṇām*, while a later scholar added the rule 7.1.53 *tres trayaḥ* to the *Aṣṭādhyāyī* to facilitate the derivation of *trayāṇām.*

However, I admit it is odd that Pāṇini would use one form (*trayāṇām*) in his *sūtra* but would teach the derivation of the other acceptable form (*trīṇām*), therefore this matter will require further consideration.

(2) *bhavatU + sU* – 'Sir' (masculine), nominative singular



6.4.14 *atvasantasya cādhātoḥ*: the vowel, which is the penultimate sound of a base which ends in *atU* or *as* but is not a verbal root, is replaced with its long counterpart when the non-*sambuddhi* ending *sU* follows.

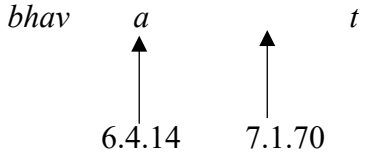
7.1.70 *ugidacāṁ sarvanāmasthāne'dhātoḥ*: augment *nUM* is introduced to a base which is not a verbal root but is marked with *UK* (*U, Ṛ, Ḷ*), and also to a base constituted by verbal root *añcU*, when an affix termed *sarvanāmasthāna* follows.

6.1.68 *halṅyābbhyo dīrghāt sutisyapṛktaṁ hal*: there is elision by *LOPA* of the finite verb affixes *ti* and *si*, when they consist of a single sound and follow a form which ends in a consonant, and of the nominative singular case affix *sU*, when it follows a form which ends in a consonant or the long final vowel of feminine affixes *ṄīṄ* or *āP*.

If we apply 6.1.68 at this step, both 6.4.14 and 7.1.70 will potentially be applicable at the following step, thanks to 1.1.62 *pratyayalope pratyayalakṣaṇam*[5]. Similarly, even after 6.4.14 and 7.1.70 have been applied, the stem will still end in the consonant *t*, so 6.1.68 will be applicable at the following step. So, 6.1.68 neither blocks nor is blocked by the other two rules, and thus shares a Type 2b (DOI non-conflict) relationship with them.

Now let us look at the relationship between 6.4.14 and 7.1.70. If we apply 6.4.14 at this step, then 7.1.70 which introduces *nUM* after the last vowel, will still be applicable at the following step. But if we apply 7.1.70 at this step, then *a* will no longer be the penultimate sound and so 6.4.14 will not be applicable at the following step. This is a case of unidirectional blocking, and is classified as Type 2a (DOI conflict).

By my interpretation of 1.4.2, we apply the right-most rule 6.1.68 and get: *bhavat*. At this step, thanks to 1.1.62 *pratyayalope pratyayalakṣaṇam*, two rules are applicable:



As seen above, there is a Type 2a (DOI conflict) relationship between them. By my interpretation of 1.4.2, the RHS rule 7.1.70 wins and we get *bhavant*. Here, 6.4.14 is not applicable. We apply 8.2.23 *saṁyogāntasya lopaḥ* which teaches *LOPA* deletion of the second consonant of a *pada*-final conjunct. This gives us **bhavan* which is not the correct answer.[6] To get the correct answer, we have to apply 6.4.14 first, and then apply 7.1.70: *bhavat* + *sU* → *bhavat* (6.1.68) → *bhavāt* (6.4.14) → *bhavānt* (7.1.70) → *bhavān* (8.2.23).

The tradition too takes cognizance of this problem, because even the application of its own conflict resolution tools gives the wrong form. 7.1.70 is both *nitya* (the rule which unidirectionally blocks the other rule) and *para* (the rule which comes after the other rule in the serial order of the *Aṣṭādhyāyī*) with respect to 6.4.14. And yet 6.4.14 has to prevail for us to get the correct answer. On 6.4.14 the *Kāśikā* says: *atra kṛte dīrghe numāgamaḥ kartavyaḥ. yadi hi paratvān nityatvāc ca nuṁ syāt, dīrghasya nimittam atūpadhā vihanyeta* 'Here, the

[5] An operation conditioned by an affix applies even if the affix has been replaced with *LOPA*.

[6] Note that we cannot replace the penultimate *a* of *bhavan* at this stage with *ā* by 6.4.14 because 6.4.14 treats 8.2.23 as *asiddha* and thus cannot see that *t* has been deleted by 8.2.23. So 6.4.14 still sees the form as *bhavant*, to which it cannot apply.

augment *nUM* should be inserted [only] after lengthening [the vowel]. If *nUM* wins, because it is *para* and *nitya*, then the cause of lengthening [namely] the status of *a* as the penultimate sound is finished.'

Returning to the topic at hand, this example too seems to invalidate my interpretation of 1.4.2. I have not found a fully satisfactory way to overcome this problem. Nonetheless, I present here, which I think might explain why this happens. Let us write down the group of rules to which 6.4.14 belongs, along with those words (in box brackets) which are continued by *anuvr̥tti*.

(Please go to the next page)

08	*sarvanāmasthāne*	*cāsambuddhau*	[*dīrghaḥ nopadhāyāḥ*]					
09	[*sarvanāmasthāne*	*cāsambuddhau*	*dīrghaḥ nopadhāyāḥ*]	(*vā ṣapūrvasya nigame*)				
10	[*sarvanāmasthāne*	*cāsambuddhau*	*dīrghaḥ nopadhāyāḥ*]	x	*sāntamahataḥ*	*saṁyogasya*		
11	[*sarvanāmasthāne*	*cāsambuddhau*	*dīrghaḥ upadhāyāḥ*]	x	*aptṛntṛcsvasṛnaptṛ…*[7]	x		
12	*śau*	x	[*dīrghaḥ upadhāyāḥ*]	x	*inhanpūṣāryamṇām*	x		
13	*sau*	[*cāsambuddhau*	*dīrghaḥ upadhāyāḥ*	x	*inhanpūṣāryamṇām*]	x	*ca*	
14	[*sau*	*cāsambuddhau*	*dīrghaḥ upadhāyāḥ*]	x	*atvasantasya*	!!!	*ca adhātoḥ*	

If a term A in rule number ‘n’ does not have an equivalent term B in rule number n+1, then A becomes *anuvṛtta* from rule n to n+1, *if* it is relevant in rule n+1.[8] For example, *inhanpūṣāryamṇām* of 6.4.12 is the equivalent of *aptṛntṛcsvasṛnaptṛ…* of 6.4.11 so *aptṛntṛcsvasṛnaptṛ…* is not continued by *anuvṛtti* from 6.4.11 to 6.4.12. The phrase *vā ṣapūrvasya nigame* makes the concerned operation optional in a certain context and does not get continued into the following rules[9].

Note that *cāsambuddhau* ‘and not in vocative singular[10]’ which is *anuvṛtta* from 6.4.8 into 6.4.9, 6.4.10 and 6.4.11 does not become *anuvṛtta* in 6.4.12 *śau inhanpūṣāryamṇām* because *Śi* is never seen in *sambuddhi* ‘vocative singular’ forms. So, it is irrelevant there and does not get continued into 6.4.12. The next rule is 6.4.13 *sau ca*, and we know that *sU* is added to bases to derive both vocative and non-vocative forms. *cāsambuddhau* is relevant in 6.4.13, because it can play the role of restricting 6.4.13 to only non-vocative cases of *sU*, and thus, gets *anuvṛtta* in 6.4.13. This is one of many examples in the *Aṣṭādhyāyī* in which a term displays what is called *maṇḍukapluti* ‘frog jump’, i.e., it becomes *anuvṛtta* from rule number ‘n’ to rule number ‘n+2’ without becoming *anuvṛtta* in rule number ‘n+1’, thereby jumping like a frog from one rule in which it is relevant to the next rule in which it is relevant, skipping, on its way, those rules in which it would be irrelevant.

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[7] *aptṛntṛcsvasṛnaptṛneṣṭṛkṣattṛhotṛpotṛpraśāstṝṇām.*
[8] Joshi-Bhate 1984: 48.
[9] For more on the *anuvṛtti* of optional terms see Joshi-Bhate (1984: 70).
[10] 2.3.49 *ekavacanaṁ sambuddhiḥ.*

Now let us look at *saṁyogasya* of 6.4.10.

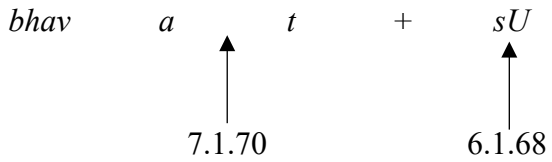
6.4.10 *sāntamahataḥ saṁyogasya*: a substitute long vowel replaces the short vowel that is penultimate with respect to a *n* which is part of a stem-final conjunct either ending in *s* or constituting part of the pre-affixal stem *mahat-* 'great' when a *sarvanāmasthāna* affix other than *sambuddhi* follows.

saṁyogasya is not relevant in 6.4.11, 6.4.12 and 6.4.13 because those bases do not end in a *saṁyoga* 'conjunct'. In the table above I have put 'x' marks under *saṁyogasya* to indicate this. What about 6.4.14? The tradition does not continue *saṁyogasya* into 6.4.14. However, I think that *saṁyogasya* is relevant in 6.4.14, so I propose to read *saṁyogasya* by *anuvṛtti* in 6.4.14 (See '!!!' sign). Like *cāsambuddhau*, *saṁyogasya* too displays the trait of *maṇḍukapluti*.

Now 6.4.14 reads:

6.4.14 *atvasantasya cādhātoḥ* (*saṁyogasya sau cāsambuddhau dīrghaḥ upadhāyāḥ*): a substitute long vowel replaces a short vowel that is penultimate with respect to the stem-final conjunct of a non-verbal stem ending in *atU* or with respect to the last sound of a non-verbal stem ending in *as*, when a non-*sambuddhi* ending *sU* follows.

Note that *saṁyogasya* is only relevant to *atU* and not to *as*. Now, let us perform the derivation again, bearing this new meaning of 6.4.14 in mind:



Note that 6.4.14, as interpreted by me, is not applicable here because *bhavat* does not end in a conjunct. 7.1.70 and 6.1.68 do not block each other. This is a Type 2b (DOI non-conflict) interaction.

By my interpretation of 1.4.2, we apply the RHS rule 6.1.68 and get *bhavat*. Now by 1.1.62 *pratyayalope pratyayalakṣaṇam*, 7.1.70 applies and we get *bhavant.* Since *bhavant* ends in a *saṁyoga* 'conjunct', my interpretation of 6.4.14 applies here: *bhavānt.* Finally, we apply 8.2.23 *saṁyogāntasya lopaḥ* and get the correct form: *bhavān*.

Admittedly, this is a weak explanation because, in order to facilitate the *anuvṛtti* of *saṁyogasya* in 1.4.14, I had to split the compound *atvasantasya* into two, the *at* part, which is compatible with *saṁyogasya*, and the *vas* part, which is not. Despite the helpful work done by Joshi and

Bhate (1983, 1984) on the subject of *anuvr̥tti*, this is still a hitherto poorly understood topic. As of now, we do not have sufficient evidence suggesting that it is acceptable to split a *samāsa* in this manner to accommodate items continued by *anuvr̥tti*. Further research needs to be done on this topic.

3.2 DOI in the Inflection of *Taddhita, Samāsa* and *Kr̥danta* Nominal Bases

So far, we have looked at cases of DOI in the inflection of simple (i.e., underived) nominal bases (cf. 1.2.45 *arthavad adhātur apratyayaḥ prātipadikam*). Now let us look at some cases of DOI in the inflection of complex (i.e., derived) nominal bases such as *kr̥t* 'primary derivative', *taddhita* 'secondary derivative', and *samāsa* 'compound' (cf. 1.2.46 *kr̥ttaddhitasamāsāś ca*).

Generally speaking, as compared to the inflection of simple nominal bases, which we have seen in the previous chapter and in this chapter, and verbal inflection and primary derivatives, which we will see in the following chapters, we find a smaller number of examples of conflict in *taddhita* derivations, and even fewer examples in *samāsa* derivations. I will explain why this is the case towards the end of chapter 4.

We will see that the tradition manages to avoid dealing with conflict in the first four examples. However, it has to rely on certain external (post-Pāṇinian) metarules to correctly derive these four forms. I will show that my solution for DOI (my interpretation of 1.4.2) can help us perform these derivations without relying on such external metarules. In the following four examples, we do find cases of conflict. Here too, I use my solution for DOI (cf. my interpretation of 1.4.2) to get the correct answer and also mention the traditional solution where it is known.

(1) Consider the genitive singular form of *prati-ac*[11] 'turned towards, facing': *pratīcas*. By 2.2.18 *kugatiprādayaḥ*, *prati-ac* is a *tatpuruṣa* compound made of *prati*, which takes the technical designation *gati* by 1.4.60 *gatiś ca* and *ac*, which is derived as follows: *añcU + KvIN*

[11] I use the '+' sign between a base and an affix. Since *ac* is not an affix with respect to *prati*, I put a '–' instead of a '+' between *prati* and *ac*.

(3.2.59 *ṛtvigdadhṛksragdiguṣṇigañcuyujikruñcāṁ ca*[12]) → *ac* + *v* (6.4.24 *aniditāṁ hala upadhāyāḥ knīti*[13]) → *ac* (6.1.67 *ver apṛktasya*[14]).

The *Siddhāntakaumudī* (SK) completes all the operations within the base before adding the genitive singular affix *Ṅas*[15]: *prati-ac* (2.4.71 *supo dhātuprātipadikayoḥ*) → *pratyac* (6.1.77 *iko yaṇ aci*). If the derivation is stopped at the addition of the genitive affix *Ṅas* to *pratyac*, that does not give the correct answer: *pratyac* + *Ṅas* → **pratyacaḥ*.

The tradition has found a way to work around this. In *pratyac* + *Ṅas*, *pratyac* takes the designation *bha* by 1.4.18 because it is followed by a non-*sarvanāmasthāna* affix beginning with a vowel. Then, 6.4.138 *acaḥ* teaches that the *a* of verbal base *ac* (from *añc*), when designated as *bha*, is replaced with *LOPA*: *pratyc* + *Ṅas*. To get the correct form, it takes recourse to the metarule *nimittābhāve naimittikasyāpy abhāvaḥ*[16], which teaches that when the cause of an operation is lost, the impact or effect of that operation too is lost. In other words, if X causes A to change to B, upon the deletion of X, B becomes A again. Thanks to this *paribhāṣā*, since the cause of the operation 6.1.77 *iko yaṇ aci*, namely *a*, has been deleted, the preceding *y* will go back to its original form *i*. Thus, we get *pratic* + *Ṅas*. At this step the tradition applies 6.3.138 *cau*, which teaches that, the final *aṆ* of the preceding *pada* in a compound is replaced with its *dīrgha* equivalent when *c* (from *añc*) follows. This gives the correct form: *pratīcaḥ*.

Another Pāṇinian *paribhāṣā,* which makes this very argument in terms of *antaraṅga* and *bahiraṅga* operations, is cited by the *Siddhāntakaumudī*[17] when discussing this derivation: *akṛtavyūhāḥ pāṇinīyāḥ* 'The Pāṇinīyas do not insist that a rule should take effect if its causes disappear'. Nāgeśa (Pbh 56, *Paribhāṣenduśekhara*), while discussing this *paribhāṣā* in *antaraṅga* and *bahiraṅga* terms, says: *bahiraṅgeṇāntaraṅgasya nimittavināśe paścāt*

[12] Among other things, this rule teaches that *KvIN* occurs after the root *añcU* 'to bend' when this root co-occurs with a *pada* ending in *sUP*.

[13] *LOPA* replaces the penultimate *n* of a verbal base ending in a consonant and not marked with *I* [in the *Dhātupāṭha*] when an affix marked with *K* or *Ṅ* follows.

[14] Affix *vI* unaccompanied [by any other sound] is replaced with *LOPA*.

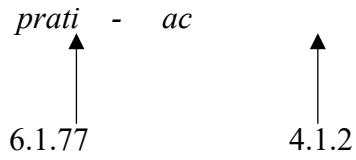
[15] We know this because of a *paribhāṣā* it mentions, will I will discuss below.

[16] Another version of this, which we occasionally find in *paribhāṣā* texts, is *nimittāpāye naimittikasyāpy apāyaḥ.*

[17] SK 417 (6.3.138 *cau*).

sambhāvite antaraṅgaṁ neti yāvat 'An *antaraṅga* operation (here, 6.1.77 *iko yaṇ aci*) should not be undertaken if its cause would disappear later due to the *bahiraṅga* operation (here, 6.4.138 *acaḥ*)'.

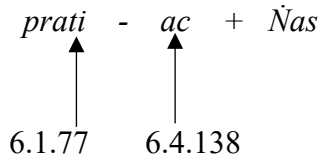
These two *paribhāṣā*s require one to go a step back into the derivation and undo a previous operation. This runs contrary to the idea that derivations should move in one direction, and that each operation should take us one step forward (rather than backward) into the derivation. Besides, if Pāṇini wanted us to use these metarules, he would have taught them explicitly in the *Aṣṭādhyāyī.* For these reasons, I do not accept these two *paribhāṣā*s. Now I will derive this form using my method. Two rules are simultaneously applicable to *prati - ac*:



4.1.2 *svaujasamauṭchaṣṭābhyāmbhisṅebhyāmbhyasṅasibhyāmbhyasṅasosāmṅyossup*[18]

6.1.77 *iko yaṇ aci*: *iK* (*i*, *u*, *ṛ*, *ḷ*) is replaced with *yaṆ* (*y, v*, *r*, *l*) when *aC* (vowel) follows.

This is a case of DOI. By my interpretation of 1.4.2, we apply the RHS rule 4.1.2 and get *prati - ac + Ṅas.* Here two rules are applicable:



6.1.77 *iko yaṇ aci*: same as above.

6.4.138 *acaḥ*: the *a* of *ac* which has taken the technical designation *bha* is replaced with *LOPA*.

This is a case of DOI. By my interpretation of 1.4.2, the RHS rule 6.4.138 wins, and we get: *praticaḥ* → *pratīcaḥ* (6.3.138 *cau*), which is the correct form.

[18] This rule teaches all the declensional affixes. The affix that is applicable here is the genitive singular *Ṅas*.

(2) Let us derive the genitive singular of the perfect participle of *sad* 'to sit', namely *sad* + *vas* 'one who had sat'. The *Siddhāntakaumudī* attaches the declensional affix *Ṅas* to the base only after the base is fully ready.[19] The base is derived by replacing *LIṬ* with *KvasU*: *sad* + *LIṬ* → *sad* + *KvasU* (3.2.108 *bhāṣāyāṁ sadavasaśruvaḥ*[20]). Now, (i) by 6.1.8 *liṭi dhātor anabhyāsasya*, (which teaches that the un-reduplicated root undergoes reduplication when followed by *LIṬ*), (ii) by 6.1.1 *ekāco dve prathamasya* (which teaches that the first syllable of the root undergoes reduplication) and (iii) by 1.1.56 *sthānivad ādeśo'nalvidhau* (which teaches that the substitute should be treated like the substituendum except when an operation relative to the original sound is to be performed), we get *sadsad* + *vas*. By 7.4.60 *halādiḥ śeṣaḥ*, which teaches that all but the first consonant of the *abhyāsa* (first half of *sadsad*) are deleted, we get *sasad* + *vas.* Now, by 6.4.120 *ata ekahalmadhye'nādeśāder liṭi*[21], we get *sed* + *vas*. At this point, 7.2.67 *vasv ekājādghasām* is applicable, which, according to the tradition[22], teaches that the augment *iṬ* should be attached to *vasU* when it occurs after a root which, after doubling, consists of a single syllable, or a root ending in *ā*, or *ghas* 'to eat'. By applying this rule, we get the base *sedivas*, but, if at the next step we add the genitive singular affix *Ṅas*, we get **sedivasaḥ*, which is the incorrect answer.

Here, again, the tradition uses the two *paribhāṣā*s discussed above to circumvent this problem. In *sedivas* + *Ṅas*, *sedivas* takes the designation *bha* because it is followed by a non-*sarvanāmasthāna* affix beginning with a vowel (cf. 1.4.18 *yaci bham*). To this, the tradition applies 6.4.131 *vasoḥ samprasāraṇam*, which teaches that the semivowel of the affix *vasU* in an item termed *bha* is replaced with the corresponding vowel *u*. This gives *sediuas*, and the augment *i* in *sedivas*, which is attached to *vas* by 7.2.67 *vasv ekājādghasām*, is lost, because its cause *v* no longer exists (cf. *akṛtavyūhāḥ pāṇinīyāḥ* and *nimittāpāye naimittikasyāpy apāyaḥ*). Then, the *a* of *seduas* is deleted by 6.1.108 *samprasāraṇāc ca* which teaches that both the

[19] We know this because of the use of the *paribhāṣā*, *akṛtavyūhāḥ pāṇinīyāḥ* on SK 435 (6.4.131 *vasoḥ samprasāraṇam*). I will discuss this later in the example.

[20] The affix *LIṬ* is optionally replaced with *KvasU* in classical Sanskrit after the roots *sadA* 'to sit', *vasA* 'to inhabit' and *śru* 'to listen' when the action has taken place in the past.

[21] An *a*, which occurs in between two single consonants of a verbal base whose initial sound has not undergone replacement, is replaced with *e*, when a *LIṬ* affix marked with *K* or *Ṅ* follows. In such cases, the *abhyāsa* (i.e., the first of the two reduplicated syllables) is also deleted.

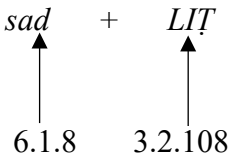
[22] I interpret this rule differently. I will discuss my interpretation later in this example.

samprasāraṇa replacement and the vowel following it are together replaced with the former. This gives us *sedus + Ṅas* → *seduṣaḥ*, which is the correct form.

Again, like in the previous example, I reject the use of these two *anitya paribhāṣā*s. I perform this derivation as follows. I add the affix *LIṬ* to *sad* by the following rule:

3.2.115 *parokṣe liṭ*: affix *LIṬ* occurs after a verbal root when an unwitnessed (*parokṣa*) action which is not current (*anadyatana*) is denoted in the past (*bhūta*).

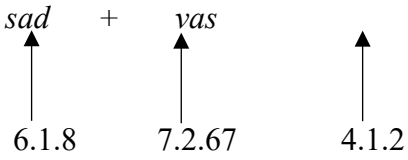
Then, the following rules become applicable:



6.1.8 *liṭi dhātor anabhyāsasya*: an un-reduplicated root undergoes reduplication when followed by *LIṬ*.[23]

3.2.108 *bhāṣāyāṁ sadavasaśruvaḥ*: the affix *LIṬ* is optionally replaced with *KvasU* in classical Sanskrit after the roots *sadA* 'to sit', *vasA* 'to inhabit' and *śru* 'to listen' when the action has taken place in the past.

This is a case of DOI. By my interpretation of 1.4.2, the RHS rule 3.2.108 wins and we get *sad + vas.* Multiple rules are applicable here:



6.1.8 *liṭi dhātor anabhyāsasya*: same as above.

7.2.67 *vasv ekājādghasām*: (my interpretation) augment *iṬ* is introduced to *vasU* when it occurs after a root which either consists of a single syllable, or ends in *a*, or else, is constituted by *ghas* 'to eat'.[24]

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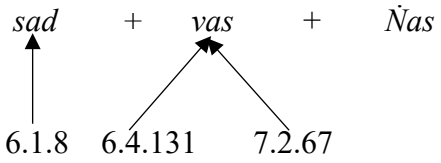
[23] Note that, the whole base does not undergo reduplication. Instead, only one syllable does. See 6.1.1 *ekāco dve prathamasya* and 6.1.2 *ajāder dvitīyasya*.

[24] The tradition interprets this rule as follows: augment *iṬ* is introduced to *vasU* when it occurs after a root which, after doubling, either consists of a single syllable, or ends in *a*, or else, is constituted by *ghas* 'to eat'. Note that Pāṇini does not say 'after doubling' anywhere in his rule, and 'after doubling'

4.1.2 *svaujasamauṭchaṣṭābhyāmbhisṅebhyāmbhyasṅasibhyāmbhyasṅasosāmṅyossup*[25]

This is a case of DOI. By my interpretation of 1.4.2, the right-most rule 4.1.2 wins and we get *sad* + *vas* + *Ṅas.* Multiple rules are applicable here:



6.1.8 *liṭi dhātor anabhyāsasya*: same as above.

7.2.67 *vasv ekājādghasām*: same as above.

6.4.131 *vasoḥ samprasāraṇam*: *vasU* of an item termed *bha* undergoes *samprasāraṇa.*[26]

There is an SOI between 6.4.131 and 7.2.67. Let us find out which rule is more specific.

6.4.131:

monosyllabic root / *ākārānta* root / *ghas* + *vas* (termed *bha*)

other bases + *vas* (termed *bha*)

7.2.67

monosyllabic root / *ākārānta* root / *ghas* + *vas*

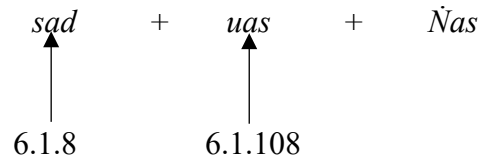
The conditions highlighted in bold are relevant to this SOI. Since 6.4.131 has been taught specifically for a *bha-saṁjñaka vas*, it is more specific and thus wins.

Now let us consider the DOI relationship between 6.1.8 and 6.4.131. By my interpretation of 1.4.2, the RHS rule 6.4.131 wins and we get: *sad* + *uas* + *Ṅas*. Here, again, two rules are applicable:

cannot be inferred by *anuvṛtti* either. The tradition takes the liberty to read this phrase into this rule purely on the basis of certain derivational considerations. I do not think we should make such assumptions and therefore I do not include 'after doubling' in my interpretation.

[25] 1.2.46 *kṛttaddhitasamāsāś ca.*

[26] 1.4.18 *yaci bham*.



6.1.8 *liṭi dhātor anabhyāsasya*: same as above.

6.1.108 *samprasāraṇāc ca*: both the *samprasāraṇa* replacement and the vowel following it are together replaced with the former.

This is a case of DOI. By my interpretation of 1.4.2, the RHS rule 6.1.108 wins and we get *sad + us + Ṅas*. Thereafter, the derivation proceeds as follows: *sadsad + us + Ṅas* (6.1.8 *liṭi dhātor anabhyāsasya*) → *seduṣaḥ* (6.4.120 *ata ekahalmadhye'nādeśāder liṭi*), which is the correct form.

(3) Let us derive the nominative plural of 'descendant of *garga*', first through the traditional method and then through mine.

The tradition[27] adds the declensional affix only after the base is ready. As per the traditional method, we first add the affix *yaÑ* to *garga + Ṅas* by 4.1.105 *gargādibhyo yañ*[28]; then by 2.4.71 *supo dhātuprātipadikayoḥ*[29], *Ṅas* is deleted, which gives us *garga + yaÑ*. At this juncture, 7.2.117 *taddhiteṣv acām ādeḥ* prescribes the *vṛddhi* substitution of the first vowel of *garga* given that the following affix is marked with *Ñ*. Thus, we get *gārga + yaÑ*. The *a* of *gārga* is deleted by 6.4.148 *yasyeti ca*, which teaches that the final *i* or *a* of a *bha* item is deleted when it is followed by *ī* or a *taddhita* affix. Thus, we get our base *gārgya*.

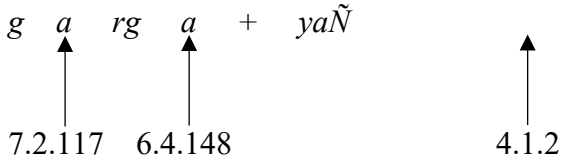
At this point, the tradition prescribes the addition of the affix *Jas* to the base *gārgya*: *gārgya + Jas.* This leads to the application of 2.4.64 *yañañōś ca*, which teaches that the *gotra* affixes *yaÑ* and *aÑ* are replaced with *LUK* when the following declensional affix denotes plural, except when the base is feminine. Stopping here gives us the incorrect form: **gārgaḥ*.

[27] I give a reference later in the example.

[28] The *taddhita* affix *yaÑ* is added to the syntactically related genitive form of any base included in the list starting with *garga* to construct a form which means *gotra*-descendant of that individual.

[29] A *suP* undergoes *LUK* deletion when it occurs inside a *dhātu* 'verbal base' or a *prātipadika* 'nominal base'.

On 2.4.64, the *Bhaimī* commentary on the *Laghusiddhāntakaumudī* suggests the metarule, *nimittāpāye naimittikasyāpy apāyaḥ*, which we have discussed in the previous two examples, to solve this problem: because *yaÑ* is deleted, the *vṛddhi* of the first vowel (cf. 7.2.117) and the deletion of the final *a* (6.4.148), which were caused by *yaÑ*, also must be undone, thereby giving us the correct form: *garga* + *Jas* → *gargāḥ*. However, I do not accept this metarule, as stated above. I perform this derivation as follows. Upon adding the affix *yaÑ* to *garga*, the following rules are applicable:

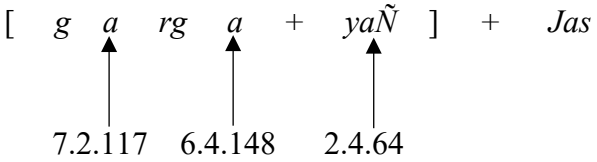


7.2.117 *taddhiteṣv acām ādeḥ*: the first vowel of the base undergoes *vṛddhi* when an affix marked with *Ñ* or *Ṇ* follows in *taddhita* derivations.

6.4.148 *yasyeti ca*: the final *i* or *a* of a *bha* item is deleted when it is followed by *ī* or a *taddhita* affix.

4.1.2 *svaujasamauṭchaṣṭābhyāmbhisṅebhyāmbhyasṅasibhyāmbhyasṅasosāmṅyossup*

This is a case of DOI. By my interpretation of 1.4.2, the right-most rule 4.1.2 applies and we get *gargya* + *yaÑ* + *Jas*. Here multiple rules are applicable:



7.2.117 *taddhiteṣv acām ādeḥ*: same as above.

6.4.148 *yasyeti ca*: same as above.

2.4.64 *yañañoś ca*: *LUK* replaces the *gotra* affixes *yaÑ* and *aÑ* introduced after a nominal stem when that nominal stem ending in these affixes itself denotes plurality and is not followed by a feminine affix.

This is a case of DOI. By my interpretation of 1.4.2, we apply the right most rule 2.4.64 and get: *garga* + *Jas* → *gargāḥ* (6.1.102 *prathamayoḥ pūrvasavarṇaḥ*[30]), which is the correct form.

[30] The *a*, *i* or *u* at the end of the base and the following vowel, which constitutes the first sound of nominative and accusative affixes, are together replaced with the long equivalent of the former.

Note that, at this point, 7.2.117 and 6.4.148 no longer have a chance to apply. So, unlike the traditional solution, mine does not require us to go backwards to undo the application of rules like 7.2.117 and 6.4.148. Therefore, my solution is more acceptable than the one provided by the tradition.

(4) Now let us derive the nominative plural of 'a *kṣatriya* descendent of the country of the *pañcālas*' first through the traditional method, and then through mine. The tradition first derives the base and then adds the declensional affix at the end. Consider the following rule:

4.1.168 *janapadaśabdāt kṣatriyād añ*: the *taddhita* affix *aÑ* is added to a syntactically related base ending in the genitive which stands for both a *janapada* and its class of *kṣatriya*s, in order to denote the sense of *apatya* 'descendent'.

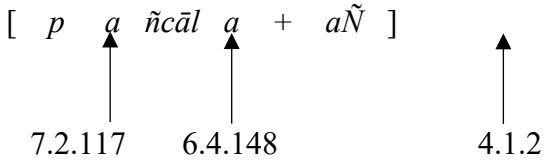
The tradition[31] starts by adding the affix *aÑ* to *pañcāla* + *ām* by 4.1.168: [*pañcāla* + *ām*] + *aÑ*. *ām* is deleted by 2.4.71 *supo dhātuprātipadikayoḥ*. At this juncture, 7.2.117 *taddhiteṣv acām ādeḥ* teaches that the first vowel of *pañcāla* undergoes *vṛddhi* given that the following affix is marked with *Ñ*. Upon applying this rule, we get: *pāñcāla* + *aÑ*. The *a* of *pāñcāla* is deleted by 6.4.148 which teaches that the final *i* or *a* of a *bha* item is deleted when it is followed by *ī* or a *taddhita* affix. Thus, we get our base *pāñcāla*.

At this point, the tradition prescribes the addition of the affix *Jas* to the base *pāñcāla*: *pāñcāla* + *Jas*. By 4.1.174 *te tadrājāḥ*, the *taddhita* affixes, including *aÑ*, which occur after a syntactically related genitive to indicate a '*kṣatriya* descendent of the *kṣatriya*s of a *janapada*' take the technical designation *tadrāja*. Thus 2.4.62 *tadrājasya bahuṣu tenaivāstriyām* becomes applicable here: it teaches that *LUK* replaces a *tadrāja* affix introduced after a nominal stem when it denotes plurality if that plurality is expressed by the stem ending in that affix except when followed by a feminine affix.

If the derivation stops here, we get *pāñcāl* + *Jas* → **pāñcālaḥ*, which is not the correct answer. On 2.4.62, the *Bhaimī* commentary on the *Laghusiddhāntakaumudī* suggests the metarule *nimittāpāye naimittikasyāpy apāyaḥ*, which we have discussed above, to solve this problem: because *aÑ* is deleted, the *vṛddhi* of the first vowel (cf. 7.2.117) and the deletion of the final *a* (6.4.148), which were caused by *aÑ*, also must be undone, thereby giving us the correct form:

[31] I give a reference later in the example.

pañcāla + *Jas* → *pañcālāḥ*. However, I do not accept this metarule, as stated above. I perform this derivation as follows.

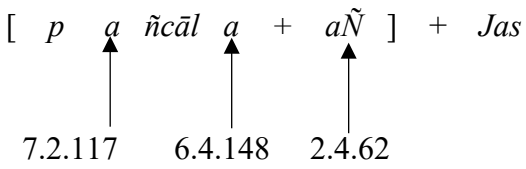


7.2.117 *taddhiteṣv acām ādeḥ*: same as above.

6.4.148 *yasyeti ca*: same as above.

4.1.2 *svaujasamauṭchaṣṭābhyāmbhisṅebhyāmbhyasṅasibhyāmbhyasṅasosāmṅyossup*

This is a case of DOI. By my interpretation of 1.4.2, the right-most rule 4.1.2 applies and we get *pañcāla* + *aÑ* + *Jas*. Here multiple rules are applicable:



7.2.117 *taddhiteṣv acām ādeḥ*: same as above.

6.4.148 *yasyeti ca*: same as above.

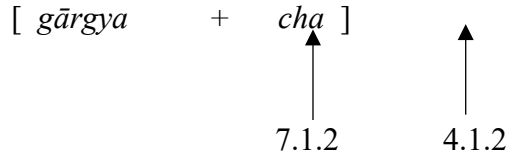
2.4.62 *tadrājasya bahuṣu tenaivāstriyām*: same as above.

This is a case of DOI. By my interpretation of 1.4.2, the right-most rule 2.4.62 wins and we get: *pañcāla* + *Jas* → *pañcālāḥ* (6.1.102 *prathamayoḥ pūrvasavarṇaḥ*) which is the correct form. As in the previous example, at this point 7.2.117 and 6.4.148 can no longer apply. This shows that my solution is better than the traditional one.

(5) Now let us derive the nominative plural of 'the student of *gārgya*', or in other words, the student of the descendent of *garga*'. To derive this form, *cha* is added to [*gārgya* + *Ṅas*] by the following rule:

4.2.114 *vṛddhāt chaḥ*: affix *cha* is added to a syntactically related item termed *vṛddha* (cf. 1.1.73 *vṛddhir yasyācām ādis tad vṛddham*) in the remaining senses.

In *gārgya + Ṅas + cha*, *Ṅas* is deleted by 2.4.71 *supo dhātuprātipadikayoḥ* and we get *gārgya + cha*.[32] Let us look at my solution first. I will only highlight the cases of conflict here. The following rules are applicable:

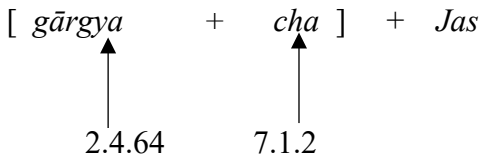


7.1.2 *āyaneyīnīyiyaḥ phaḍhakhacchaghāṁ pratyayādīnām*: the sounds *ph, ḍh, kh, ch* and *gh*, when occurring at the beginning of the affix, are replaced with *āyan, ey, īn, īy* and *iy* respectively.

4.1.2 *svaujasamauṭchaṣṭābhyāmbhisṅebhyāmbhyasṅasibhyāmbhyasṅasosāmṅyossup*

The two rules do not block each other.

By my interpretation of 1.4.2, we apply the RHS rule 4.1.2 and get: *gārgya + cha + Jas.* Here, multiple rules are applicable:



7.1.2 *āyaneyīnīyiyaḥ phaḍhakhacchaghāṁ pratyayādīnām*: same as above.

2.4.64 *yañañoś ca*: *LUK* replaces the *gotra* affixes *yaÑ* and *aÑ* introduced after a nominal stem when that nominal stem ending in these affixes itself denotes plurality and is not followed by a feminine affix.

If we apply 2.4.64 at this step, 7.1.2 will be applicable at the following step. If we apply 7.1.2 at this step, thereby replacing *ch* of *cha* with *īy* (which gives us *gārgya + īya*), then 4.1.89 *gotre'lug aci* comes into play:

[32] Note that, in all the derivations that I have performed using my method in this chapter, I apply 2.4.71 *supo dhātuprātipadikayoḥ* before actually starting the derivation. I do this to avoid making the derivations unnecessarily lengthy and to avoid monotony. I take this liberty because the correctness of the form we get at the end of the derivation does not depend on the step at which we apply 2.4.71. Ideally, one should apply this rule only when it ought to be applied.

4.1.89 *gotre'lug aci*: *LUK* does not replace a *taddhita* affix denoting a *gotra* descendant, when the following affix begins with a vowel and is introduced in the *prāgdīvyatīya* section[33].

Therefore, 2.4.64, which teaches *LUK*, will not be applicable at the following step. 7.1.2 blocks 2.4.64. This is a case of unidirectional blocking, and thus of Type 2a (DOI conflict).

By my interpretation of 1.4.2, the RHS rule 7.1.2 wins and we get *gārgya* + *īya* + *Jas*. Here by applying 6.4.148 *yasyeti ca*, we get *gārgy* + *īya* + *Jas*. At this stage, 6.4.151 applies:

6.4.151 *āpatyasya ca taddhite'nāti*: a *y* which occurs after a consonant and is part of a *taddhita affix* signifying an *apatya* 'off-spring' which is in turn part of an item termed *bha*, is replaced with *LOPA*, when a *taddhita* affix not beginning with *a*, follows.

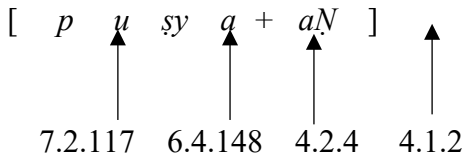
This gives us the correct form: *gārgīyāḥ*.

Even though Patañjali does discuss this derivation in his commentary on vt. 2[34] on 4.1.89 *gotre'lug aci,* he does not discuss this conflict.[35]

(6) Let us now derive the nominative singular of *puṣya* 'a moon (which is) in conjunction with the constellation Puṣya' of the sentence *adya puṣyaḥ* 'today the moon is in conjunction with constellation *puṣya*. We start by adding the affix *aṆ* to *puṣya* + *Ṭā* by 4.2.3:

4.2.3 *nakṣatreṇa yuktaḥ kālaḥ*: the *taddhita* affix *aṆ* is introduced after a nominal form which signifies a particular constellation (*nakṣatra*) and ends in *tṛtīyā* 'instrumental', to denote the time when the moon is in conjunction with that constellation.

By 2.4.71 *supo dhātuprātipadikayoḥ*, *Ṭā* is deleted, leading to *puṣya* + *aṆ*. Here, the following rules are applicable:



[33] 4.1.83 prāg dīvyato'ṇ - 4.4.2 tena dīvyati khanati jayati jitam.

[34] Mbh II.240.14.

[35] He focuses on the question: should the *ya* of *gārgya* be deleted by 2.4.64 *yañañoś ca* before a plural declensional affix is introduced to the derivation? I think this question is invalid because, in my view, 2.4.64 should only apply to a base when a plural affix is present.

7.2.117 *taddhiteṣv acām ādeḥ*: same as above.

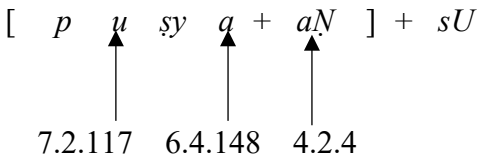
6.4.148 *yasyeti ca*: same as above.

4.2.4 *lub aviśeṣe*: a *taddhita* affix introduced after a nominal stem ending in *tṛtīyā* and denoting a constellation is replaced with *LUP* when the time of conjunction is not qualified with specifications.[36]

4.1.2 *svaujasamauṭchaṣṭābhyāmbhisṅebhyāmbhyasṅasibhyāmbhyasṅasosāmṅyossup*

Let us look at the relationship of 4.2.4 with the two rules 6.4.148 and 7.2.117. If we apply 4.2.4 at this step, thereby deleting the affix which triggers rules 7.2.117 and 6.4.148, neither of these two rules will be applicable at the following step. However, if we apply any of these two rules at this step, 4.2.4 will still be applicable at the following step. So, 4.2.4 unidirectionally blocks 6.4.148 and 7.2.117 and is thus in conflict with both of them.

By my interpretation of 1.4.2, the right-most rule 4.1.2 applies and we get *puṣya + aṆ + sU*. Here multiple rules are applicable:



By my interpretation of 1.4.2, the right-most rule 4.2.4 applies and we get: *puṣya + sU* → *puṣyaḥ*, which is the correct form.

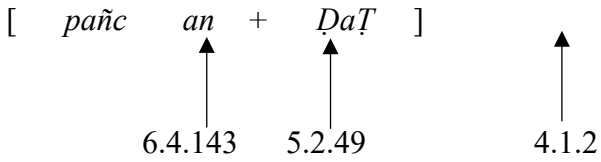
The *Bhaimī* commentary on the *Laghusiddhāntakaumudī* does not mention this conflict. However, after applying 4.2.4 at this step, it does say that by 1.1.63 *na lumatāṅgasya*, 7.2.117 and 6.4.148 fail to apply at the following step.

[36] Note that our sentence is *adya puṣyaḥ* wherein the time mentioned is *adya* which is not specific (unlike for example, *rātri*, which is specific); thus 4.2.4 is applicable here.

(7) Let us now derive the nominative singular form of 'fifth'. We add *ḌaṬ* to *pañcan + Ṅas* by the following rule:

5.2.48 *tasya pūraṇe ḍaṭ*: the *taddhita* affix *ḌaṬ* occurs to denote the sense of *pūraṇa* 'that by which something is brought to completion, ordinal number' after a syntactically related nominal stem which signifies number and ends in *ṣaṣṭhī* 'genitive'.

In *pañcan + Ṅas + ḌaṬ*, *Ṅas* is deleted by 2.4.71 *supo dhātuprātipadikayoḥ*, so we get *pañcan + ḌaṬ*. Thereafter, the following rules become applicable:



6.4.143 *ṭeḥ*: the *ṭi* (cf. 1.1.64 *aco'ntyādi ṭi*) of an item termed *bha* is replaced with *LOPA* when an affix marked with *Ḍ* follows.

5.2.49 *nāntād asaṁkhyāder maṭ*: the augment *mAṬ* is attached to the *taddhita* affix *ḌaṬ* when used to denote its ordinal, after a *n*-final nominal stem which ends in *ṣaṣṭhī* 'genitive' and does not have a number as its initial constituent.

4.1.2 *svaujasamauṭchaṣṭābhyāmbhisṅebhyāmbhyasṅasibhyāmbhyasṅasosāmṅyossup*

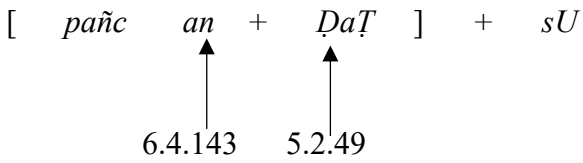
4.1.2 neither blocks nor is blocked by the other two rules.

Now let us look at the relationship between 5.2.49 and 6.4.143. If we apply 5.2.49 at this step, then *ḌaṬ* will take the augment *mAṬ*. As a result, it will begin with a consonant. This implies that *pañcan* is no longer followed by an affix beginning with a vowel or *y*, and therefore it cannot be called *bha*. Thus, 6.4.143, which applies only to items termed *bha*, will not be applicable to *an* at the following step.

If we apply 6.4.143 at this step, *an* gets deleted, so *ḌaṬ* will no longer be preceded by an item ending in *n*. Therefore, 5.2.49 will not be applicable at the following step.

Both rules block each other. This is a case of mutual blocking, and of Type 2a (DOI conflict).

By my interpretation of 1.4.2, we apply the right-most rule 4.1.2 and get *pañcan + ḌaṬ + sU.* Here two rules are applicable:



6.4.143 *ṭeḥ*: same as above.

5.2.49 *nāntād asaṁkhyāder maṭ*: same as above.

This is a case of DOI. By my interpretation of 1.4.2, we apply the RHS rule 5.2.49 and get: *pañcan + ma + sU.* By 1.4.17 *svādiṣv asarvanāmasthāne*[37], *pañcan* takes the technical designation *pada*, and so by 8.2.7 *nalopaḥ prātipadikāntasya*, the *n* of *pañcan* gets deleted. Thus, we get the correct form: *pañcamaḥ*.

On 5.2.49, *Nyāsa* says that 5.2.49 is *antaraṅga* with respect to 6.4.143 and thus wins.

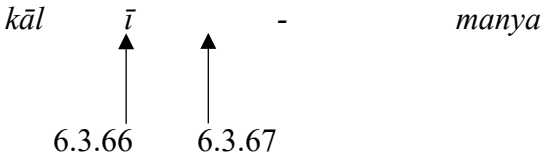
(8) Let us now look at the derivation of *kālimmanyā* 'a woman who considers herself to be *Kālī*'. This is the feminine version of the *upapada* compound made of the two *pada*s *kālī* and *manya*. *manya* is derived by adding *KHaŚ* to the verbal root *man* 'to consider' by the following rule:

3.2.83 *ātmamāne khaś ca*: affixes *KHaŚ* and *ṆinI* are added to the verbal root *man* when the root co-occurs with a *pada* which ends in a *sUP* and the derivate denotes *ātmamāna* 'thinking about one's own self'.

Now, because *KHaŚ* is marked with *Ś*, it is a *sārvadhātuka* affix by 3.4.113 *tiṅśit sārvadhātukam*. Here, 3.1.69 *divādibhyaḥ ŚyaN* instructs us to add the affix *ŚyaN* between the root *man*, which belongs to the fourth class of verbal roots, and *KHaŚ*, which is a *sārvadhātuka* affix used in the active sense. This gives us *manya + a*. By 6.1.97 *ato guṇe*, both *a* and the *guṇa* sound following it are replaced with the latter. This gives us *manya.*

[37] A form is termed *pada* when a *svādi* (affixes enumerated under 4.1.2 *svaujas...* through 5.4.151 *uraḥ prabhṛtibhyaḥ kap*) affix which is not a *sarvanāmasthāna* (*sU, au, Jas, am, auṬ*; see 4.1.2 *svaujas...*) follows.

Now let us build the compound: [*kālī Ṅas manya*][38]. By 2.4.71 *supo dhātuprātipadikayoḥ*, *Ṅas* is deleted. Here two rules are simultaneously applicable:



6.3.66 *khity anavyayasya*: the final vowel of the first member of a compound, except indeclinables, is replaced with a short vowel, when a constituent marked with *KH* combines to follow.

6.3.67 *arurdviṣadajantasya mum*: augment *mUM* is introduced to *arus*, *dviṣat* and word ending in a vowel, except indeclinables, when a constituent marked with *KH* combines to follow.

If we apply 6.3.66 at this step, 6.3.67 will be applicable at the following step. But if we apply 6.3.67 at this step, *ī* will no longer be the final sound of the *pūrvapada*. Thus, 6.3.66 will not be applicable at the following step.

This is a case of unidirectional blocking and thus of Type 2a (DOI conflict).

By my interpretation of 1.4.2, the RHS rule 6.3.67 wins, and we get: **kālīmmanya*, which is the wrong form. To get the correct form, we first need to apply 6.3.66, thereby shortening *ī* or *kālī*, and only then introduce the augment *mUM*, which gives us the correct form: *kālimmanya*. After this we add the feminine affix *ṬāP* by 4.1.4 *ajādyataṣ ṭāp* to get *kālimmanyā*.

On this topic, the *Kāśikā* says: *mumā hrasvo na bādhyate, anyathā hi hrasvaśāsanam anarthakaṁ syāt* 'shortening is not blocked by the *mUM*. Otherwise, the instruction about shortening would be futile'.

Coming back to the problem, how do we explain this anomaly? Notice that these rules have been taught one after another. Let us look at them along with words that have been continued into them by *anuvṛtti*.

6.3.66 *khity anavyayasya* (*uttarapade hrasvaḥ*)

6.3.67 (*khity anavyayasya uttarapade*) *arurdviṣadajantasya mum*

[38] One could argue that this should be [*kālī am manya*]. For a detailed discussion on this topic, see Scharf (2016).

While the tradition continues *khity*, *anavyayasya* and *uttarapade* from 6.3.66 into 6.3.67 by *anuvṛtti*, it does not continue *hrasvaḥ* into 6.3.67 by *anuvṛtti*. I think that Pāṇini intended for *hrasvaḥ* too to be continued into 6.3.67 by *anuvṛtti*. To facilitate its case agreement with *anavyayasya*, *hrasvaḥ* should be read not in the nominative but instead in the genitive, as *hrasvasya*, in 6.3.67. This gives us the following meaning of 6.3.67: 'augment *mUM* is introduced to *arus*, *dviṣat* and a word ending in a short vowel, except indeclinables, when a constituent marked with *KH* combines to follow.'

Let us see how the derivation proceeds if we accept my interpretation of 6.3.67. At the step *kālī - manya*, only 6.3.66 is applicable. Upon its application, we get: *kāli - manya*. Now, 6.3.67 applies and we get *kālimmanya*. Upon adding the feminine affix *ṬāP*, we get the correct form: *kālimmanyā*.

3.3 SOI in *Taddhita* derivations

The cases of SOI which we find in *samāsa* derivations are few and fairly simple. I will not be discussing them in this thesis. In *taddhita* derivations, we come across examples of SOI between rules teaching affixation. Consider the derivation of *autsa* 'male offspring of *utsa*' (cf. 4.1.92 *tasyāpatyam* 'his offspring'). Three rules teach the addition of three different affixes:

4.1.83 *prāg dīvyato'ṇ*: the *taddhita* affix *aṆ* is added to denote senses taught in rules from here up to 4.4.2 *tena dīvyati khanati jayati jitam*.

4.1.86 *utsādibhyo'ñ*: the *taddhita* affix *aÑ* is added to denote senses taught in rules from here up to 4.4.2 *tena dīvyati khanati jayati jitam* after forms of stem belonging to the list headed by *utsa*.

4.1.95 *ata iñ*: the *taddhita* affix *iÑ* is added to denote 'his offspring' after forms of nominal stems ending in *a.*

Now let us write down the conditions in which these rules apply. Remember that, as always, we write the sounds outside brackets and their characteristics inside brackets.

4.1.83

-ending in *a*

-ending in any other sound

4.1.86

-ending in *a* (*utsādi* class)

-ending in any other sound (*utsādi* class)

4.1.95

-ending in *a*

Upon comparing the conditions written in bold, we see that 4.1.86 is more specific that the other two rules, on account of the condition '*utsādi* class'. We get the correct form: [*utsa* + *Ṅas*] + *aÑ* → *autsa* 'offspring of *utsa*' (2.4.71 *supo dhātuprātipadikayoḥ*, 7.2.117 *taddhiteṣv acām ādeḥ*, 6.4.148 *yasyeti ca*).

On 4.1.86, the *Kāśikā* says *aṇas tadapavādānāṁ ca bādhakaḥ*, implying that this rule is an exception of both 4.1.83 and exceptions of 4.1.83 such as 4.1.95.

The other examples in the *taddhita* section are quite similar to this one, so we shall not look at them.[39]

This brings us to the end of this chapter, and also to the end of our study of examples of conflict from *sandhi, subanta, taddhita* and *samāsa* derivations. In the following chapter, we shall look at examples from *tiṅanta* and *kṛdanta* derivations.

[39] For a detailed study, see Deo (2007).

4.1 *Aṅgādhikāra*

Before I examine examples of rule interaction at the same step in *tiṄ* and *kṛt* derivations, I will examine rules 6.4.1 *aṅgasya* and 1.4.13 *yasmāt pratyayavidhis tadādi pratyaye'ṅgam* which play a pivotal role in running Pāṇini's grammatical machine.

6.4.1 *aṅgasya* is an *adhikāra* (heading) *sūtra*, the jurisdiction of which continues all the way up to the end of 7.4. Pāṇini defines the term *aṅga* in 1.4.13 *yasmāt pratyayavidhis tadādi pratyaye'ṅgam*. Sharma translates this as follows: 'a form beginning with that after which an affix is introduced is termed *aṅga* when the affix follows'.

I think that the tradition has not correctly understood these rules, as a result of which it faces multiple problems in performing certain derivations. In this section, I will present my interpretations of these rules, and show how my interpretations enable us to perform these derivations correctly.

In my opinion, only one item can be called an *aṅga* with respect to a certain *pratyaya* in a derivation. I must admit that I am unable to support this statement using Pāṇini's rules. However, through the examples discussed in section 4.2 of this chapter, I will show that it is not possible to correctly perform certain derivations without accepting this assumption.

Let me discuss an example from verbal inflection to explain what I mean. Consider the derivation of the present-tense third-person singular form of *cit* 'to think': *cit* + *LAṬ* (3.2.123 *vartamāne laṭ*[1]) → *cit* + *tiP* (3.4.77 *lasya*, 3.4.78 *tiptasjhi…*[2]). According to the tradition[3], *cit* is an *aṅga* with respect to *tiP*. Then, after we add the *vikaraṇa ŚaP* by 3.1.68 *kartari śap*[4], we get *cit* + *ŚaP* + *tiP*. According to the tradition, *cit* + *ŚaP* too is an *aṅga* with respect to *tiP*.

[1] Affix *LAṬ* occurs after a verbal root when the action is denoted at the current time (*vartamāna*).

[2] *Tip-tas-jhi-sip-thas-tha-mib-vas-mas-ta-ātāṁ-jha-thās-āthāṁ-dhvam-iḍ-vahi-mahiṅ.*

[3] Though the tradition does not explicitly state this, it becomes clear from the derivations we will examine below that such is indeed the case.

[4] Affix *ŚaP* occurs after a verbal root when a *sārvadhātuka* affix which denotes *kartṛ* 'agent' follows.

Thereafter, we apply 7.3.86 *pugantalaghūpadhasya ca*[5] to *cit* and get *cet* + *ŚaP* + *tiP* i.e., *ceta* + *tiP*. According to the tradition, *ceta* too can be called an *aṅga* with respect to *tiP*.

So, *cit*, *cit* + *ŚaP* and *ceta* can all be called *aṅga* with respect to *tiP*, in the tradition's opinion. I disagree with the traditional perspective: in my opinion, we can have only one *aṅga* per affix per derivation[6]. So, which one of the three options, namely *cit*, *cit* + *ŚaP* and *ceta*, should be called an *aṅga* with respect to *tiP*? I think *ceta* alone can be called an *aṅga* with respect to *tiP*.

I will present my arguments to support this claim below. But before we proceed, I must admit that I am unable to provide any strong evidence from Pāṇini's rules to justify the arguments I make below. Nonetheless, I will discuss some derivations in section 4.2 of this chapter which will prove that if we accept any other item but *ceta* as the *aṅga* with respect to *tiP*, we risk getting the wrong form at the end of the derivation. That said, now let us consider all three possibilities, namely *cit*, *cit* + *ŚaP* and *ceta*.

Let us first look at *cit*. If Pāṇini wanted us to treat *cit* as an *aṅga* with respect to *tiP*, he could have simply said *yasmāt pratyayavidhis tad pratyaye'ṅgam* 'a form after which an affix is introduced is termed *aṅga* when the affix follows.' Thus, I do not think that we should call *cit* an *aṅga* with respect to *tiP*. This leaves us with two options: *cit* + *ŚaP* and *ceta*. Let us closely consider 1.4.13 in the context of this derivation to decide which of the two should be called an *aṅga* with respect to *tiP*.

yasmāt – to (lit. after) *cit*

pratyayavidhis – (upon the) addition of *tiP*

tadādi – that which begins with *cit*

pratyaye – when *tiP* follows

aṅgam – (is called) *aṅga*.

---

[5] *Guṇa* replaces the *iK* of a verbal base which ends in the augment *pUK* or which has a *laghu* 'light' vowel as its penultimate sound when a *sārvadhātuka* or *ārdhadhātuka* affix follows.

[6] I must clarify that, in my view, the modified version of an *aṅga* too can be called an *aṅga*, thanks to 1.1.56 *sthānivad ādeśo'nalvidhau*, which teaches that the substitute is treated like the substituendum, except when an operation relative to the original sound is to be performed. So, for example, in *deva* + *bhyām*, *deva* is an *aṅga* with respect to *bhyām*. By applying 7.3.102 *supi ca*, we get *devā* + *bhyām*. *devā* too can be called an *aṅga* with respect to *bhyām* by 1.1.56 *sthānivad ādeśo'nalvidhau*.

'Upon the addition of *tiP* to *cit*, that which begins with *cit* is called *aṅga* when *tiP* follows.'

The form which begins with *cit* is an *aṅga* with respect to *tiP*. Can we say that *cit* + *ŚaP* begins with *cit*? I do not think so. I think *cit* + *ŚaP* is still just a string of two separate items, namely the root *cit* and the *vikaraṇa* affix *ŚaP*. Only when they are fused into a single form that begins with *cit*, that form can be called an *aṅga* with respect to *tiP*. When can we fuse *cit* and *ŚaP* into a single form? I think we can do that after applying all possible rules to *cit* and *ŚaP*, except those that are triggered by *tiP*.

So here, we apply 7.3.86 *pugantalaghūpadhasya ca* to *cit* (an operation triggered by *ŚaP*, not by *tiP*) and get *cet* + *ŚaP* + *tiP*. Note that *cet* and *ŚaP* cannot undergo any other operations which are not triggered by *tiP*, so we can fuse *cet* + *ŚaP* into a single form, i.e., *ceta. Ceta* begins with *cet* and is followed by *tiP*, so it can be called an *aṅga* with respect to *tiP*. I summarize this information in this table:

Step	Question	Traditional opinion	My opinion
cit + *tiP*	Is *cit* an *aṅga* w.r.t.[7] *tiP*?	Yes	No
cit + *ŚaP* + *tiP*	Is *cit* + *ŚaP* an *aṅga* w.r.t. *tiP*?	Yes	No
ceta + *tiP*	Is *ceta* an *aṅga* w.r.t. *tiP*?	Yes	Yes

In my opinion, through 6.4.1 *aṅgasya*, Pāṇini teaches that, for any P + Q, a rule R_P taught in the *aṅgādhikāra* which is triggered by Q is applicable to its intended operand P only if P is an *aṅga* with respect to affix Q. Similarly, a rule R_Q taught in the *aṅgādhikāra* which is triggered by P is applicable to its intended operand Q only if P is an *aṅga* with respect to affix Q.

Also, note that I agree with the tradition that *cit* is an *aṅga* with respect to *ŚaP*. So, at the step *cit* + *ŚaP* + *tiP*, 7.3.86 *pugantalaghūpadhasya ca*, which belongs to the *aṅgādhikāra* and which is triggered by *ŚaP*, is applicable to *cit*.

Before we go further, note that, we find *vikaraṇa*s only in *tiṅanta* and *kṛdanta* derivations. So, in the rest of the derivations, it is very easy to determine what we should call an *aṅga* with respect to the affix. For instance, in *deva* + *bhis* (example 1 of section 2.7, chapter 2), *deva* is an *aṅga* with respect to *bhis* simply because the affix *bhis* has been added to *deva*. Similarly, in *sad* + *vas* + *Ṅas* (example 2 of section 3.2, chapter 3), *sad* + *vas* is an *aṅga* with respect to

[7] w.r.t. = with respect to.

Ṅas simply because the affix *Ṅas* has been added to *sad* + *vas*. In derivations involving *vikaraṇa*s, because we add affix C to base A and then add another affix B between base A and affix C, the process of identifying the *aṅga* with respect to affix C becomes somewhat complicated, as observed above.

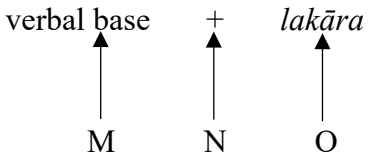
4.2 Examples of Application of 1.4.13 and 6.4.1

Now I will discuss some examples through which I will show that my interpretation of 1.4.13 and 6.4.1 alone can help us derive the correct final form. But first, let me offer a clarification.

In many of the examples discussed in this chapter, the derivation should begin with: verbal base + *lakāra*. At this stage, there are two possibilities:

(i) only one rule, i.e., the rule which teaches the replacement of the *lakāra* is applicable, and this rule applies.

(ii) multiple rules, including the rule which teaches the replacement of the *lakāra* are applicable.



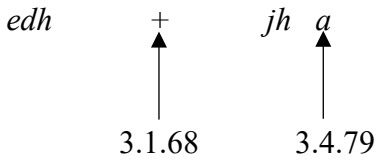
The rule O, which teaches the replacement of the *lakāra* is the right-most. Thus, by my interpretation of 1.4.2, we apply rule O.

Note that, in both cases (i) and (ii), the rule that replaces the *lakāra* applies at the first step. So, in order to simplify the presentation, in all the examples where the derivation should start with verbal base + *lakāra*, I simply start it with verbal base + *tiṄ* (one of the eighteen finite replacements of the *lakāra*s) instead. For instance, in the first derivation discussed in this section, technically the derivation should proceed as follows: *edh* + *LAṬ* (3.2.123 *vartamāne laṭ*) → *edh* + *jha* (3.4.77 *lasya*, 3.4.78 *tiptasjhi…*). However, I start with *edh* + *jha*, purely for the purpose of avoiding redundancy.

(1) *edh* + *jha* – 'to grow', present third-person plural[8]

As stated in section 4.1 of this chapter, we cannot call *edh* an *aṅga* with respect to *jha*. Consequently, at this step, rules taught in the *aṅgādhikāra* (6.4 – 7.4), such as 7.1.3 *jho'ntaḥ* (which teaches that a *jh* which is the initial sound an affix is replaced with *ant*) or 7.1.5 *ātmanepadeṣv anataḥ* (which teaches that a *jh*, which is the initial sound of an *ātmanepada* affix preceded by a verbal base that does not end in *a*, is replaced with *at*) cannot apply to *jh.*

Here, only two rules are applicable:



3.1.68 *kartari śap*: same as above.

3.4.79 *ṭita ātmanepadānāṁ ṭer e*: the part that begins with the last vowel (*ṭi*)[9] of an *ātmanepada* replacement of a *lakāra* marked with *Ṭ* is replaced with *e*.

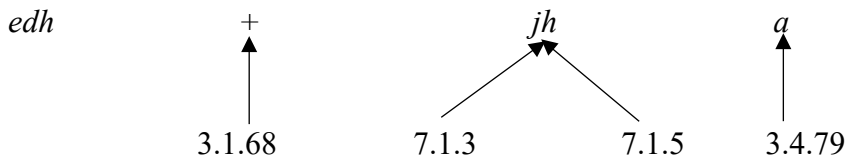
By my interpretation of 1.4.2, we apply the RHS rule 3.4.79 and get: *edh* + *jhe*. At this stage too, we cannot call *edh* an *aṅga* with respect to *jhe*. Thus, 7.1.3 and 7.1.5 are not applicable here. Only one rule, namely 3.1.68 is applicable. Upon applying it, we get *edh* + *ŚaP* + *jhe*. At this step, *edh* and *ŚaP* cannot undergo any further operations which are not triggered by *jhe*, so we can simply write *edh* + *ŚaP* as *edha*. *edha* is an *aṅga* with respect to *jhe*. At this stage, of the two aforementioned rules which belong to the *aṅgādhikāra*, 7.1.3 is applicable but 7.1.5 is not. We apply 7.1.3, and get *edha* + *ante*. By 6.1.97 *ato guṇe*[10], we get the correct form: *edhante.*

To the best of my knowledge, the tradition does not discuss this example. However, let us consider what would have happened if we had not accepted my interpretations of 1.4.13 and 6.4.1 respectively. At the step *edh* + *jha*, four rules would become applicable:

[8] Unless I explicitly state that the form being derived is passive, it must be assumed that it is active.

[9] 1.1.64 *aco'ntyādi ṭi*.

[10] When a short *a*, that is not *pada*-final (word-final) is followed by a *guṇa* vowel i.e., *a*, *e*, or *o*, then both *a* and the following *guṇa* are replaced with the latter.



Note that all the DOI relationships here are of Type 2b (DOI non-conflict). As stated before, the tradition is not interested in non-conflict and mostly applies rules in a haphazard order in such cases.

There is an SOI between 7.1.3 *jho'ntaḥ* and 7.1.5 *ātmanepadeṣv anataḥ*. 7.1.5 is more specific than and thus wins against 7.1.3 *jho'ntaḥ*. If the tradition applies 7.1.5, which replaces *jh* with *at* first and applies 3.1.68 *kartari śap* at a later step, that gives **edhate*, which is not the correct form.

My interpretations of 1.4.13 *yasmāt pratyayavidhis tadādi pratyaye'ṅgam* and 6.4.1 *aṅgasya* respectively ensure that *jh* replacement, which is taught in the *aṅgādhikāra*, takes place only after the application of 3.1.68 *kartari śap*, which is taught outside the *aṅgādhikāra.* After the application of 3.1.68, 7.1.5 *ātmanepadeṣv anataḥ*, which is an exception of 7.1.3 *jho'ntaḥ*, is no longer applicable to *jh*, and thus 7.1.3 *jho'ntaḥ* applies to *jh*. This gives the correct form, *edhante.*

(2) *dhā* + *jhi* – 'to place', present third-person plural

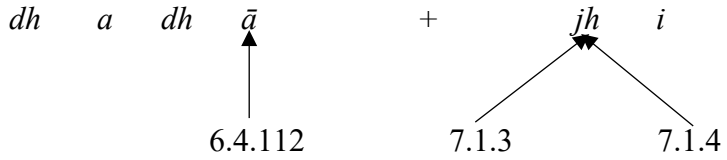
As stated before, *dhā* cannot be called an *aṅga* with respect to *jhi*. Consequently, rules taught in the *aṅgādhikāra* (6.4 – 7.4) cannot apply to *dhā* or *jhi*. For example, 7.1.3 *jho'ntaḥ* cannot apply here. The derivation proceeds as follows: *dhā* + *ŚaP* + *jhi* (3.1.68 *kartari śap*) → *dhā* + *ŚLU* + *jhi* (2.4.75 *juhotyādibhyaḥ śluḥ*[11]) → *dhādhā* + *ŚLU* + *jhi* (6.1.10 *ślau*[12]) → *dhadhā* + *ŚLU* + *jhi* (7.4.59 *hrasvaḥ*[13]). At this point, we notice that *dhadhā* and *ŚLU* cannot undergo any other operations which are not triggered by *jhi.* So, we can write *dhadhā* + *ŚLU* as *dhadhā*.

[11] When the affix *ŚaP* is preceded by any verbal root belonging to the list headed by *hu* 'to perform sacrifice', it is replaced with *ŚLU* (cf. 1.1.61 *pratyayasya lukślulupaḥ*).

[12] A verbal base which has not already undergone reduplication undergoes reduplication when it is followed by *ŚLU.* (Note that, the whole base does not undergo reduplication. Instead, only one syllable does. See 6.1.1 *ekāco dve prathamasya* and 6.1.2 *ajāder dvitīyasya*. Unless necessary, I will not repeat this clarification in this chapter).

[13] The vowel of the *abhyāsa* 'first of two reduplicated syllables' is replaced with its short counterpart.

In *dhadhā + jhi*, *dhadhā* can be called an *aṅga* with respect to *jhi.* Therefore, the following rules from the *aṅgādhikāra* are applicable here:



6.4.112 *śnābhyastayor ātaḥ*: the *ā* of the affix *Śnā* or the *ā* at the end of a reduplicated verbal base is replaced with *LOPA* when a *sārvadhātuka* affix marked with *K* or *Ṅ* follows.

7.1.3 *jho'ntaḥ*: a *jh* which is the initial sound an affix is replaced with *ant.*

7.1.4 *ad abhyastāt*: when preceded by a reduplicated base, a *jh* which is the initial sound an affix is replaced with *at.*

By my interpretation of 1.4.2, we perform the RHS operation. But there is an SOI between 7.1.3 and 7.1.4, both of which apply to the RHS operand. Because 7.1.4 has been taught for *jh* when it is preceded by a reduplicated base, it is more specific and wins. Thus, we get: *dhadhā + ati*. Here 6.4.112 *śnābhyastayor ātaḥ* applies and we get *dhadh + ati*. Now that all the possible rules from the *sapādasaptādhyāyī* have applied, a rule from the *tripādī* section applies[14]:

8.4.54 *abhyāse car ca*: in an *abhyāsa* (first of two reduplicated syllables), *jhaL* (a non-nasal stop or a fricative) is replaced with *caR* (*c, ṭ, t, k, p, ś, ṣ, s*) or *jaŚ* (*j, b, g, ḍ, d*).

Thus, we get *dhadhati* → *dadhati*, which is the correct answer.

Let us now look at how the tradition tackles this problem. Like in the previous example, in this example too, there are no cases of DOI conflict, and so the tradition chooses to apply rules in a random order. But some sequences of rule application can give the wrong answer. For example: *dhā + jhi* → *dhā + ŚaP + jhi* (3.1.68) → *dhā + ŚaP + anti* (7.1.3) → *dhā + ŚLU + anti* (2.4.75) → **dadhanti* (6.1.10 *ślau* etc.). In sum, if *jh* undergoes replacement before the reduplication of *dhā*, we get the wrong answer. To address this issue, the tradition has come up

[14] 8.2.1 *pūrvatrāsiddham* teaches that from this rule onwards, a following rule is *asiddha* 'suspended' with respect to a preceding rule. So, if 8.4.54 and any rule that precedes it in the *Aṣṭādhyāyī*'s serial order are simultaneously applicable, then the latter will not acknowledge 8.4.54 and will thus apply at that step. 8.4.54 can apply only after this. I will demonstrate this more elaborately in the following chapter which is devoted to the concepts *asiddha* and *asiddhavat*.

with the following ideas. Consider *paribhāṣā*s 62 and 63 of the *Paribhāṣenduśekhara* and their translation by Kielhorn:

pūrvaṁ hy apavādā abhiniviśante paścād utsargāḥ (62).

'*apavāda*s, it is certain, are considered first (in order to find out where they apply); afterwards the general rules (are made to take effect in all cases to which it has thus been ascertained that the *apavāda*s do not apply)'.

prakalpya vāpavādaviṣayaṁ tata utsargo'bhiniviśate (63).[15]

'Or (we may say that) first all (forms) which fall under the *apavāda* are set aside, and that subsequently the general rule is employed (in the formation of the remaining forms)."

Let us see what happens if we follow these *paribhāṣā*s at the first step (*dhā + jhi*). At this step, 7.1.4 *ad abhyastāt*, which is the *apavāda* of 7.1.3 *jho'ntaḥ*, is not applicable. Since the *apavāda* is not applicable, we go ahead and apply the *utsarga* 7.1.3. But this gives us the wrong form **dadhanti*. Taking cognizance of this problem, the tradition has come up with the following metarule:

upasaṁjaniṣyamāṇanimitto'py apavāda upasaṁjātanimittam apy utsargaṁ bādhata iti (64).

'An *apavāda* supersedes, even though the causes of its (application) are still to present themselves, a general rule the causes (of the application) of which are already present.'

In other words, this *paribhāṣā* teaches that even though 7.1.3 is applicable to *jh* from the beginning of the derivation, one must not replace *jh* until the *apavāda* 7.1.4 becomes applicable. This gives the correct answer, *dadhati*.

As stated in the first chapter, the tradition often comes up with a new *paribhāṣā* to address individual problems like this one. *Paribhāṣā* 64 is a good case in point.

My method ensures that the replacement of *jha*, which is taught in the *aṅgādhikāra*, takes place after the reduplication of *dhā*, which is taught outside the *aṅgādhikāra*. Therefore, 7.1.3 *jho'ntaḥ* does not become applicable until 7.1.4 *ad abhyastāt*, its exception, also becomes applicable. 7.1.4 wins, thereby giving the correct form *dadhati*. My method is able to tackle

[15] *Paribhāṣās* 62 and 63 are found mentioned together on numerous occasions in the *Mahābhāṣya* (See Bronkhorst 2004: 18, footnote 11 for details).

this issue without relying on *paribhāṣā*s like Pbh 64, which require us to look ahead into the derivation.

Before we move on to discussing other examples, note that Pāṇini teaches most substitutions and other operations pertaining to the eighteen finite affixes from 3.4.77 to 3.4.112. For example, 3.4.87 *ser hy apic ca*[16], 3.4.101 *tasthasthamipāṁ tāṁtaṁtāmaḥ*[17] etc. He teaches the substitution of *jhi* from 3.4.108 *jher jus* to 3.4.112 *dviṣaś ca*. However, the three rules teaching the replacement of *jh*, i.e., 7.1.3 *jho'ntaḥ*, 7.1.4 *ad abhyastāt*, and 7.1.5 *ātmanepadeṣv anataḥ* are found in the *aṅgādhikāra*, and not in the section 3.4.77-3.4.112. This strongly suggests that Pāṇini wants us to treat 7.1.3-7.1.5 differently, that is, he wants us to apply them only when *jh* is part of an affix which is preceded by what I define as an *aṅga*.

(3) *hā* + *tas* – 'to abandon', present third-person dual

hā is not an *aṅga* with respect to *tas*. So here, we cannot apply rules from the *aṅgādhikāra*, such as 6.4.116 *jahāteś ca* (see translation below). The derivation proceeds as follows: *hā* + *tas* → *hā* + *ŚaP* + *tas* (3.1.68 *kartari śap*) → *hā* + *ŚLU* + *tas* (2.4.75 *juhotyādibhyaḥ śluḥ*) → *hāhā* + *ŚLU* + *tas* (6.1.10 *ślau*). Here, two rules are applicable, which are from the *aṅgādhikāra*, but which are not triggered by *tas*:

h	*ā*	*hā*	+	*ŚLU*	+	*tas*
↑	↑					
7.4.62	7.4.59					

7.4.62 *kuhoś cuḥ*: a consonant of the *k*-series (*kU*), or a *h*, that is part of the *abhyāsa* (first of two reduplicated syllables) is replaced with a consonant of the *c*-series (*cU*).

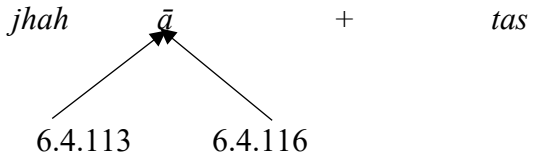
7.4.59 *hrasvaḥ*: the vowel of the *abhyāsa* (first of two reduplicated syllables) is replaced with its short counterpart.

By my interpretation of 1.4.2, we apply the RHS rule 7.4.59 and get *hahā* + *ŚLU* + *tas*. To this, we apply 7.4.62 and get *jhahā* + *ŚLU* + *tas*. Now, *jhahā* and *ŚLU* cannot undergo any further operations which are not triggered by *tas*, so we can write *jhahā* + *ŚLU* as *jhahā*. Now,

[16] A *siP* replacement of *LOṬ* is replaced with *hi* and is treated as if not marked with *P*.

[17] The *tas*, *thas*, *tha* and *miP* replacements for any *lakāra* marked with *Ṁ*, are replaced with *tām*, *tam*, *ta* and *am*, respectively.

jhahā is an *aṅga* with respect to *tas*. Thus, the following rules from the *aṅgādhikāra*, which are triggered by *tas*, become applicable:



6.4.113 *ī haly aghoḥ*: the final *ā* of a base which ends in *Śnā*, or of a reduplicated stem (*abhyasta*) excluding those termed *ghu*, is replaced with *ī* when a *sārvadhātuka* affix beginning with a consonant and marked with *K* or *Ṅ* follows.

6.4.116 *jahāteś ca*: the final *ā* of *hā* 'to abandon', is optionally replaced with *i*, when a *sārvadhātuka* affix beginning with a consonant and marked with *K* or *Ṅ* follows.

There is an SOI relationship between 6.4.113 and 6.4.116. Since 6.4.116 has been taught specifically for *hā*, it wins, as a result of which we get *jhahitas*. Finally, since all rules from the *sapādasaptādhyāyī* have been applied, we apply 8.4.54 *abhyāse car ca* from the *tripādī* and get *jhahitaḥ* → *jahitaḥ*, which is the correct answer.

Note that 6.4.116 *jahāteś ca* is an optional rule. If we do not implement[18] it, 6.4.113 *ī haly aghoḥ* applies, giving us *jahītaḥ*, which is also correct.

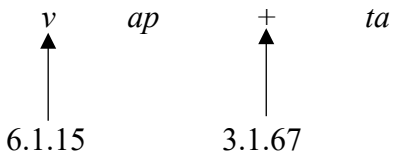
To the best of my knowledge, the tradition has not discussed this problem. But, since this derivation does not involve any DOI conflicts, the tradition would have applied rules in any haphazard order. Let us look at one of the possible paths this derivation would have taken if we had not accepted my interpretations of 1.4.13 and 6.4.1 respectively: *hā + tas* → *hā + ŚaP + tas* (3.1.68 *kartari śap*) → *hā + ŚLU + tas* (2.4.75 *juhotyādibhyaḥ śluḥ*) → *hi + ŚLU + tas* (6.4.116 *jahāteś ca*) → **jihitaḥ* (6.1.10 *ślau* etc).

The possibility of getting such a wrong answer is completely eliminated by following my interpretations of 1.4.13 and 6.4.1 respectively. This is because, my method ensures that 6.4.116, which is taught in the *aṅgādhikāra* and replaces *ā* of *hā* with *i*, applies only after the reduplication of root *hā* by 6.1.10 *ślau*, which is taught outside the *aṅgādhikāra*.

[18] Note that I will use the word 'implement' henceforth in relation with optionality.

(4) *vap* + *ta* – 'to sow', imperfect passive third-person singular

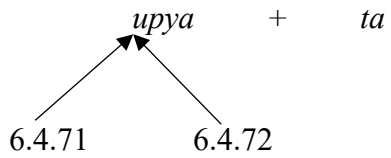
Note that *vap* is not an *aṅga* with respect to *ta*, so rules like 6.4.71 *luṅlaṅlṛṅṣv aḍ udāttaḥ* (see translation below) which are part of the *aṅgādhikāra*, cannot apply at this step. The following rules are applicable to *vap* + *ta*:



6.1.15 *vacisvapiyajādīnām ca*: roots *vac* 'to speak', *svap* 'to sleep', and those headed by *yaj* 'to perform sacrifice' undergo *samprasāraṇa* when an affix marked with *K* follows.[19]

3.1.67 *sārvadhātuke yak*: affix *yaK* occurs after a verbal root when a *sārvadhātuka* affix which denotes *bhāva* or *karman* follows.

By my interpretation of 1.4.2, the RHS rule 3.1.67 applies, and we get: *vap* + *yaK* + *ta*. Thereafter the derivation proceeds as follows: *vap* + *yaK* + *ta* → *uap* + *yaK* + *ta* (6.1.15) → *up* + *yaK* + *ta* (6.1.108 *samprasāraṇāc ca*[20]). Since *up* and *yaK* cannot undergo any other operations which are not triggered by *ta*, we can write *up* + *yaK* as *upya*. In *upya* + *ta*, *upya* is an *aṅga* with respect to *ta*. Thus, the following rules from the *aṅgādhikāra* which are triggered by *ta* become applicable:



6.4.71 *luṅlaṅlṛṅṣv aḍ udāttaḥ*: the *udātta* 'high-pitched' augment *aṬ* is attached to a verbal base when affixes *LUṄ*, *LAṄ* and *LṚṄ* follow.

6.4.72 *āḍ ajādīnām*: the *udāttaḥ* 'high-pitched' augment *āṬ* is attached to a verbal base which begins with a vowel (*aC*) when affixes *LUṄ*, *LAṄ* and *LṚṄ* follow.

[19] Note that this rule is applicable because *ta*, by virtue of being an *apit sārvadhātuka*, can be treated as marked with *K*, by 1.2.4 *sārvadhātukam apit*.

[20] A *samprasāraṇa* vowel and the following vowel, are together replaced with the former.

This is a case of SOI. 6.4.72 has been taught specifically for bases which begin with a vowel and thus wins, thereby giving us the correct form *ā-upya + ta* → *aupyata* (6.1.90 *āṭaś ca*[21]).

Let us now consider how the tradition deals with this example. Like in the previous examples, here too, we do not find any instances of DOI conflict. Therefore, the tradition applies rules in a random order. If the attachment of the augment had been undertaken before *samprasāraṇa*, we would have got the incorrect form: *a-vapyata* (6.4.71 *luṅlaṅlṛṅṣv aḍ udāttaḥ*) → *a-uapyata* (6.1.15 *vacisvapiyajādīnām ca*) → **opyata* (6.1.108 *samprasāraṇāc ca*, 6.1.78 *eco'yavāyāvaḥ*). In order to overcome this problem, the *Kāśikā*, on 6.4.72 *āḍ ajādīnām*, suggests that there is a conflict between augment addition and processes such as replacement of *LAṄ* and introduction of the *vikaraṇa yaK*, and by *nityatva* and *antaraṅgatva* respectively these two processes defeat the addition of the augment *aṬ*.[22]

We may conclude that the tradition comes up with a tailored solution to this problem. In contrast with this, my method eliminates the need to rely on post-Pāṇinian tools and *paribhāṣā*s. My respective interpretations of 1.4.13 and 6.4.1 ensure that the addition of the augment, which is taught in the *aṅgādhikāra*, takes place only after *samprasāraṇa*, which is taught outside the *aṅgādhikāra*. As a result of this, 6.4.71 *luṅlaṅlṛṅṣv aḍ udāttaḥ* does not become applicable until 6.4.72 *āḍ ajādīnām*, which is its exception, also becomes applicable. 6.4.72 wins, thereby giving the correct form *aupyata*.

In sum, these four examples prove that my interpretations of 1.4.13 and 6.4.1 respectively are correct. In all four derivations, the tradition applies rules in a haphazard order, as a result of which it often gets the wrong form at the end of the derivation. It is forced to come up with individual solutions for each of these problems.

It is also noteworthy that in cases of the type 'base + affix (1) + affix (2)', Pāṇini teaches those processes which contribute towards the construction of the *aṅga* with respect to affix (2) before

[21] A single *vṛddhi* vowel replaces both *āṬ* and the vowel following it.

[22] *Iha aijyata, aupyata, auhyata iti laṅi kṛte lāvasthāyām aḍāgamād antaraṅgatvāl lādeśaḥ kriyate, tatra kṛte vikaraṇo nityatvād aḍāgamaṁ bādhate* 'Here [with reference to the derivation of the forms] *aijyata*, *aupyata*, *auhyata*, after the addition of the affix *LAṄ*, in that state of the *lakāra*, by *antaraṅgatva*, the substitution of the *lakāra* is done [rather than] the addition of the augment *aṬ*, and thereafter, by *nityatva*, the [addition of] *vikaraṇa* defeats [the insertion of] augment *aṬ*.'

6.4.1, in the *Aṣṭādhyāyī*'s serial order. For example, he teaches the addition of *vikaraṇa*s in *pāda* 3.1 and vowel *sandhi*, reduplication and *samprasāraṇa* in *pāda* 6.1.

4.3 Examples of DOI Conflict

Now I will discuss examples of DOI conflict, which are of interest to the tradition, and show how my interpretation of 1.4.2 is able to solve these cases. I will also consistently apply my interpretations of 1.4.13 and 6.4.1 respectively in all these examples.

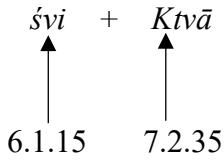
In each example, I will prove the existence of DOI conflict and apply my interpretation of 1.4.2 to solve it. As stated in chapter 2, generally speaking, to deal with examples of DOI conflict, the tradition uses *nityatva* (for cases of unidirectional blocking), *niravakāśatva* or its interpretation of 1.4.2, as per convenience. To avoid repetition, I will not mention the traditional solution for each example below.

Note that almost all cases of DOI conflict in derivations of finite verbs and primary derivatives involve unidirectional, and not mutual blocking. We will investigate this further later in this chapter.

Lastly, also note that *kṛdanta* forms are *prātipadika*s by 1.2.46 *kṛttaddhitasamāsāś ca* and thus they can take *suP* affixes by 4.1.1 *ṅyāpprātipadikāt*. However, in the examples I have discussed in this section, I have not added *suP* affixes to *kṛdanta* forms. This is purely to avoid repetition and redundancy. This does not affect the derivations discussed in this chapter.[23] For example, the first derivation *śvi + Ktvā* should actually begin in the following manner: *śvi + Ktvā* → *śvi + Ktvā + sU* (4.1.2 *su-au-jas…*)→ *śvi + Ktvā* (1.1.40 *ktvātosunkasunaḥ*, 2.4.82 *avyayād āpsupaḥ*). Here onwards, the derivation proceeds as follows:

[23] I have included the *kṛdanta* derivation *sad + KvasU + Ṅas* in the previous chapter because there, nominal inflection plays a crucial role in helping us obtain the correct form.

1. *śvi* + *Ktvā* – ‘to swell’, absolutive



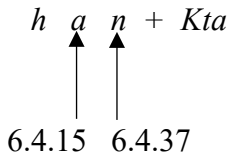
6.1.15 *vacisvapiyajādīnām kiti*: roots *vac* ‘to speak’, *svap* ‘to sleep’, and those headed by *yaj* ‘to perform sacrifice’ undergo *samprasāraṇa* when an affix marked with *K* follows.

7.2.35 *ārdhadhātukasyeḍ valādeḥ*: augment *iṬ* is attached to an *ārdhadhātuka* affix beginning with *vaL* (any consonant except *y*).

If *iṬ* is attached to *Ktvā* by 7.2.35, then according to 1.2.18 *na ktvā seṭ* (which teaches that a *Ktvā* which has taken the augment *iṬ* is not treated as marked with *K*), *itvā* will no longer be treated as marked with *K*. And so, 6.1.15, which applies to certain roots which are followed by a *K*-marked affix, will not be applicable at the following step. So, 7.2.35 blocks 6.1.15. On the other hand, 7.2.35 will still be applicable after the application of 6.1.15. So, 6.1.15 does not block 7.2.35. This is a case of unidirectional blocking and thus of DOI conflict.

By my interpretation of 1.4.2, the RHS rule 7.2.35 wins and we get: *śvi* + *itvā*. Since *itvā* can no longer be treated as marked with *K*, 7.3.84 *sārvadhātukārdhadhātukayoḥ*[24] causes *guṇa* of *i*, thereby giving us *śve* + *itvā*. By 6.1.78 *eco’yavāyāvaḥ*, we get the correct form: *śvayitvā*.

2. *han* + *Kta* – ‘to kill’, past passive participle



6.4.15 *anunāsikasya kvijhaloḥ kṅiti*: the penultimate vowel of a base which ends in a nasal (*anunāsika*), is replaced with its long counterpart when affix *KvI*, or an affix beginning with *jhaL* ‘a non-nasal stop or a fricative’ and marked with *K* or *Ṅ* follows.

6.4.37 *anudāttopadeśavanatitanotyādīnām anunāsikalopo jhali kṅiti*: the final nasal of a base marked with *anudātta* when taught in the *Dhātupāṭha*, as well as of *vanA* ‘to like’ and the roots

[24] *Guṇa* replaces the final sound *iK* (*i, u, ṛ, ḷ*) of a verbal base when a *sārvadhātuka* or *ārdhadhātuka* affix follows.

headed by *tanU* ‘to extend’, is replaced with *LOPA* when an affix beginning with *jhaL* ‘a non-nasal stop or a fricative’ and marked with *K* or *Ṅ* follows.

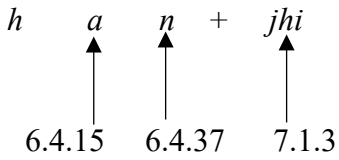
If *n* of *han* is replaced with *LOPA* by 6.4.37, 6.4.15 will not be applicable at the following step. But if the vowel of *han* is lengthened by 6.4.15, 6.4.37 will still be applicable at the following step. This is a case of unidirectional blocking, and thus of DOI conflict.

By my interpretation of 1.4.2, we apply the RHS rule 6.4.37 and get the correct form *hata*.

3. *han* + *jhi* – ‘to kill’, present third-person plural

As per my interpretation of 1.4.13, *han* cannot be called an *aṅga* with respect to *jhi.* Thus, rules from the *aṅgādhikāra* are not applicable at this step. I will not repeat this clarification henceforth and will assume that the reader is by now familiar with it.

han + *jhi* → *han* + *ŚaP* + *jhi* (3.1.68 *kartari śap*[25]) → *han* + *LUK* + *jhi* (2.4.72 *adiprabhṛtibhyaḥ śapaḥ*[26]). Now *han* and *LUK* cannot undergo any other operations which are not triggered by *jhi*, so *han* + *LUK* can be written as *han*, which is an *aṅga* with respect to *jhi*. Here, the following rules from the *aṅgādhikāra* (6.4 to 7.4) are applicable:



6.4.15 *anunāsikasya kvijhaloḥ kṅiti*: same as above.

6.4.37 *anudāttopadeśavanatitanotyādīnām anunāsikalopo jhali kṅiti*: same as above.

7.1.3 *jho’ntaḥ*: a *jh* which constitutes the initial sound of an affix is replaced with *ant*.

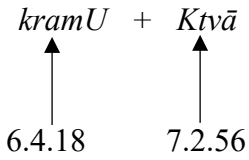
We already know from the previous example that there is a Type 2a (DOI conflict) between 6.4.15 and 6.4.37, and that 6.4.37 wins. So now let us consider the relationship between 6.4.37 and 7.1.3.

[25] Affix *ŚaP* occurs after a verbal root when a *sārvadhātuka* affix which denotes *kartṛ* ‘agent’ follows.

[26] Affix *ŚaP* is replaced with *LUK* when it occurs after one of the roots headed by *adA* ‘to eat’ in the *Dhātupāṭha*.

If we apply 6.4.37 at this step, 7.1.3 will be applicable at the following step. But if we apply 7.1.3 at this step, the affix will no longer begin with a *jhaL* sound, and therefore 6.4.37 will not be applicable at the following step. This is a case of unidirectional blocking, and thus of DOI conflict. By my interpretation of 1.4.2, the RHS rule 7.1.3 wins, and we get *han* + *anti* → *hn* + *anti* (6.4.98 *gamahanajanakhanaghasāṁ lopaḥ kṅity anaṅi*[27]) → *ghnanti* (7.3.54 *ho hanter ñṇinneṣu*[28]), which is the correct form.

4. *kramU* + *Ktvā* – 'to stride', absolutive



6.4.18 *kramaś ca ktvi*: the penultimate vowel of *kramU* 'stride', is optionally replaced with its long counterpart when affix *Ktvā*, beginning with *jhaL* (a non-nasal stop or a fricative), follows.

7.2.56 *udito vā*: augment *iṬ* is, optionally, attached to affix *Ktvā* when it follows a verbal root marked with *U.*

If, by 7.2.56, the *iṬ* augment is attached to *Ktvā*, then 6.4.18, which requires the affix to begin a specific kind of consonant, will not be applicable at the following step. But if we apply 6.4.18, 7.2.56 will still be applicable at the following step.

This is a case of unidirectional blocking, and thus of DOI conflict.

By my interpretation of 1.4.2, we apply the RHS rule 7.2.56 and get the correct form: *kramitvā*.

Note that both 6.4.18 and 7.2.56 are optional rules. So, for each of these rules we have a choice. We can either implement the rule or not do so. Let us consider what happens in different scenarios:

[27] The penultimate sound of *gam* 'to go', *han* 'to kill', *jan* 'to be born', *khan* 'to dig' and *ghas* 'to eat', is replaced with *LOPA* when an affix beginning with a vowel and marked with *K* or *Ṅ*, except *aṄ*, follows.

[28] The *h* of *han* 'to harm, kill' is replaced with a velar stop when an affix marked with *Ñ* and *Ṇ*, or simply *n* (i.e., after *LOPA* of *a*) follows.

If we do not implement the optional rule 7.2.56, we get:

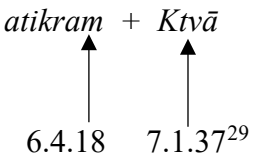
(i) *krantvā*, if we do not implement the optional rule 6.4.18; and

(ii) *krāntvā*, if we do implement the optional rule 6.4.18.

If we implement 7.2.56 but not 6.4.18, we get, again, *krāntvā*.

All three forms, *krantvā*, *krāntvā* and *kramitvā* are correct.

5. *atikram* + *Ktvā* – 'to surpass', absolutive



6.4.18 *kramaś ca ktvi*: same as above.

7.1.37 *samāse'nañpūrve ktvo lyap*: in a compound, the first member of which is not *naÑ*, the affix *Ktvā* in the second member of the compound is replaced with *LyaP*.

If we apply 7.1.37, *LyaP* replaces *Ktvā* and so 6.4.18 will not be applicable at the following step. But if we apply 6.4.18, 7.1.37 will still be applicable at the following step. This is a case of unidirectional blocking, and thus of DOI conflict.

By my interpretation of 1.4.2, we apply the RHS rule 7.1.37 and get the correct form: *atikramya*.

It is important to point out an anomaly here. Pāṇini's rule 2.2.18 *kugatiprādayaḥ* teaches that the particle *ku*, items termed *gati* (including *ati*) and items belonging to the group headed by *pra* (which also includes *ati*) combine with syntactically related *pada*s to form *tatpuruṣa* compounds. We know, thanks to 2.1.4 *saha supā*, that a compound is composed of forms ending in *suP*. Since the three forms *krantvā / krāntvā / kramitvā* (see example 4 of this section)

[29] Note that, here, an SOI takes place between 7.1.37 *samāse'nañpūrve ktvo lyap* and 7.2.56 *udito vā*. 7.1.37 wins because it has been specifically taught for compounds. Here, since the focus is on DOI conflict, I have avoided mentioning this and other such SOI relationships where it was possible to avoid them.

end in *suP* (which is replaced with *LUK* by 2.4.82 *avyayād āpsupaḥ*), *ati* can combine with any of these forms to construct a *tatpuruṣa* compound. Let us consider each of the three scenarios:

a. Compound between *ati* and *krantvā*.

By 7.1.37 *samāse'nañpūrve ktvo lyap*, we replace *Ktvā* with *LyaP* and get **atikranya*, which is not the correct form.

b. Compound between *ati* and *krāntvā.*

By 7.1.37, we replace *Ktvā* with *LyaP* and get **atikrānya*, which is also not the correct form.

c. Compound between *ati* and *kramitvā*.

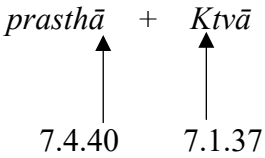
By 7.1.37 *samāse'nañpūrve ktvo lyap*, we replace *Ktvā* with *LyaP* and get *atikramiya* → **atikramitya* (6.1.71 *hrasvasya piti kṛti tuk*), which is not the correct form.

To derive the correct form, we have to start the derivation by adding the verbal root *kram* to *ati* which constitutes the *pūrvapada*. To that, we add affix *Ktvā*: *atikram* + *Ktvā*. This alone gives us the correct answer.[30] We see the same phenomenon in examples 6-8 below. But this runs contrary to how we generally construct compounds – by combining two or more *subanta* forms.

Thus, the following question arises: if it is difficult to derive *atikramya* correctly as a compound, why does Pāṇini want us to view *atikramya* as a compound in the first place? This likely has to do with accentuation, which is not the focus of this thesis. The distinction between *atikramya* and *atikrāmati* (where *ati* is only a morpho-syntactically bound particle cf. 1.4.8 *te prāg dhātoḥ*), the status of particles like *ati* in Vedic and the relationship between *Ktvā* and *LyaP* in Vedic can all shed more light on this matter, but we cannot delve into these topics here.

[30] The tradition too takes cognizance of this. Vyāḍi suggests that an operation involving the *upasarga* and the verbal base is *antaraṅga*: *dhātūpasargayor antaraṅgaṁ kāryam bhavati* (Pbh 37 of *Paribhāṣāsūcanam*). We know that an *antaraṅga* operation gets precedence over a *bahiraṅga* operation.

6. *prasthā* + *Ktvā* – ‘to depart’, absolutive



7.4.40 *dyatisyatimāsthām it ti kiti*: a short *i* replaces the final sound of *do* ‘to cut’, *ṣo* ‘to end, terminate’, *mā* ‘to measure’ and *sthā* ‘to stay’, when a *t*-initial affix marked with *K* follows.

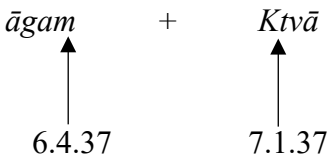
7.1.37 *samāse’nañpūrve ktvo lyap*: same as above.

If we replace *Ktvā* with *LyaP* by 7.1.37, the affix no longer begins with *t* and thus 7.4.40 will not be applicable at the following step. On the other hand, if we apply 7.4.40, 7.1.37 will still be applicable at the following step.

This is a case of unidirectional blocking, and thus of DOI conflict.

By my interpretation of 1.4.2, we apply the RHS rule 7.1.37 which gives the correct form: *prasthāya*.

7. *āgam* + *Ktvā* – ‘to come’, absolutive



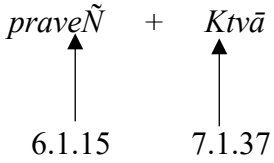
6.4.37 *anudāttopadeśavanatitanotyādīnām anunāsikalopo jhali kṅiti*: the final nasal of a base marked with *anudātta* when taught in the *Dhātupāṭha*, as well as of *vanA* ‘to like’ and the roots headed by *tanU* ‘to extend’, is replaced with *LOPA* when an affix beginning with *jhaL* (a non-nasal stop or a fricative) and marked with *K* or *Ṅ* follows.

7.1.37 *samāse’nañpūrve ktvo lyap*: same as above.

If we replace *Ktvā* with *LyaP* by 7.1.37, the affix no longer begins with *jhaL* and thus 6.4.37 will not be applicable at the following step. On the other hand, if we apply 6.4.37, 7.1.37 will still be applicable at the following step. This is a case of unidirectional blocking, and thus of DOI conflict.

By my interpretation of 1.4.2, we apply the RHS rule 7.1.37 and get: *āgam + tvā* → *āgam + ya* (7.1.37) → *āga + ya* (6.4.38 *vā lyapi*[31]) → *āgatya* (6.1.71 *hrasvasya piti kṛti tuk*[32]), which is the correct form. Note that the application of 6.4.38 is optional. If we do not implement this rule, we get *āgamya*, which is also correct.

8. *praveÑ + Ktvā* – 'to weave', absolutive



6.1.15 *vacisvapiyajādīnām kiti*: roots *vac* 'to speak', *svap* 'to sleep', and those headed by *yaj* 'to perform sacrifice' undergo *samprasāraṇa* when an affix marked with *K* follows.

7.1.37 *samāse'nañpūrve ktvo lyap*: same as above.

If we apply 6.1.15 at this step, 7.1.37 will still be applicable at the following step. But if we apply 7.1.37 at this step, then by 6.1.41 *lyapi ca* (which teaches that *veÑ* does not undergo *samprasāraṇa* when *LyaP* follows), 6.1.15, which teaches *samprasāraṇa*, will not be applicable at the following step. This is a case of unidirectional blocking, and thus of DOI conflict.

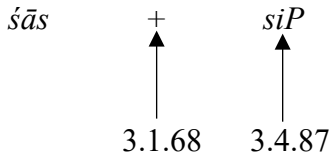
By my interpretation of 1.4.2, we apply the RHS rule 7.1.37 and get: *prave + ya* → *pravāya* (6.1.45 *ād eca upadeśe'śiti*[33]), which is the correct form.

[31] The final nasal of a root marked with *anudātta* when taught in the *Dhātupāṭha* (cf. *upadeśe*), as well as of *vanA* 'to like' and the roots headed by *tanU* 'to extend', is optionally replaced with *LOPA* before the substitute *LyaP*.

[32] Augment *tUK* is attached to a root ending in a short vowel when a *kṛt* affix marked with *P* follows.

[33] The final sound of a verbal base ending in *eC* (*e, o, ai, au*) when taught in the *Dhātupāṭha* is replaced with *ā*, when an affix that is not marked with *Ś* follows.

9. *śās* + *siP* – ‘to instruct’, imperative second-person singular

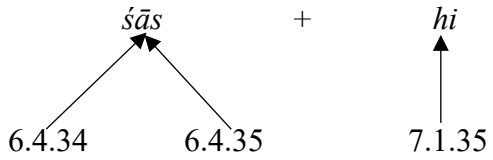


3.1.68 *kartari śap*: affix *ŚaP* occurs after a verbal root when a *sārvadhātuka* affix which denotes *kartṛ* ‘agent’ follows.

3.4.87 *ser hy apic ca*: a *siP* replacement of *LOṬ* is replaced with *hi* and is treated as if not marked with *P*.

These two rules do not block each other. This is not a case of conflict.

By my interpretation of 1.4.2, we apply the RHS rule 3.4.87 and get *śās* + *hi* → *śās* + *ŚaP* + *hi* (3.1.68) → *śās* + *hi* (2.4.72 *adiprabhṛtibhyaḥ śapaḥ*[34]). *śās* can now be called an *aṅga* with respect to *hi* (cf. my interpretation of 1.4.13). Thus, the following rules from the *aṅgādhikāra* become applicable:



6.4.34 *śāsa id aṅhaloḥ*: the penultimate sound of *śās*, is replaced with short *i* when followed by *aṄ*, or an affix that begins with a consonant and is marked with *K* or *Ṅ*.[35]

6.4.35 *śā hau*: *śās* is replaced with *śā* when affix *hi* follows.

7.1.35 *tuhyos tātaṅ āśiṣy anyatarasyām*: affixes *tu* and *hi* are optionally replaced with *tātAṄ*, provided benediction (*āśiḥ*) is denoted.[36]

[34] Affix *ŚaP* is replaced with *LUK* when it occurs after one of the roots headed by *adA* ‘to eat’ in the *Dhātupāṭha*.

[35] *hi* is an *apit* (cf. 3.4.87 *ser hy apic ca*) *sārvadhātuka*, and so by 1.2.4 *sārvadhātukam apit*, it can be treated as marked with *K* or *Ṅ*. Thus, 6.4.34 is applicable here.

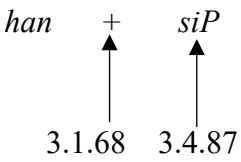
[36] For a discussion on how this rule should be interpreted using Pāṇini’s metarules, see Appendix A.

Here, we see that there is an SOI interaction between 6.4.34 and 6.4.35[37] and a DOI interaction between them and 7.1.35. Let's first deal with the SOI between 6.4.34 and 6.4.35. 6.4.35 is more specific because it pertains to the *hi* affix alone and thus wins[38]. So now let us discuss the relationship between 6.4.35 and 7.1.35.

If we apply 6.4.35, 7.1.35 will still be applicable at the following step. But if we apply 7.1.35, *hi* will be replaced with *tātAṄ* and thus 6.4.35 will not be applicable at the following step. This is a case of unidirectional blocking, and thus of DOI conflict.

By my interpretation of 1.4.2, we apply the RHS rule 7.1.35 and get: *śās* + *tāt* → *śis* + *tāt* (6.4.34 *śāsa idaṅhaloḥ*) → *śiṣṭāt* (8.3.60 *śāsivasighasīnāṁ ca*, 8.4.41 *ṣṭunā ṣṭuḥ*), which is the correct form.

10. *han* + *siP* – 'to hurt', imperative second-person singular



3.1.68 *kartari śap*: same as above.

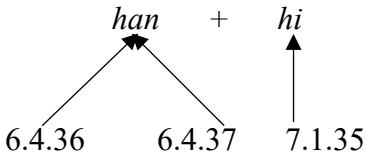
3.4.87 *ser hy apic ca*: same as above.

Neither of the two rules blocks the other. This is a case of DOI non-conflict.

By my interpretation of 1.4.2, we apply the RHS rule 3.4.87 and get *han* + *hi* → *han* + *ŚaP* + *hi* (3.1.68) → *han* + *hi* (2.4.72 *adiprabhṛtibhyaḥ śapaḥ*). *han* can now be called an *aṅga* with respect to *hi* (cf. my interpretation of 1.4.13). Thus, the following rules from the *aṅgādhikāra* become applicable:

[37] The operand of 6.4.34 is a part of the operand of 6.4.35 and so, like in the previous chapters, here too, we classify such interactions as Type 1 (SOI).

[38] Note that 6.4.35 is *asiddhavat* with respect to 6.4.34, but in my view, this does not affect the way in which we deal with SOI. I will discuss this further in the next chapter.



6.4.36 *hanter jaḥ*: the root *han* is replaced with *ja* when the affix *hi* follows.

6.4.37 *anudāttopadeśavanatitanotyādīnām anunāsikalopo jhali kṅiti*: the final nasal of a base marked with *anudātta* when taught in the *Dhātupāṭha*, as well as of *vanA* 'to like' and the roots headed by *tanU* 'to extend', is replaced with *LOPA* when an affix beginning with *jhaL* (a non-nasal stop or a fricative) and marked with *K* or *Ṅ* follows.[39]

7.1.35 *tuhyos tātaṅ āśiṣy anyatarasyām*: same as above.

There is an SOI relationship between 6.4.36 and 6.4.37. 6.4.36 is specifically taught for *han* + *hi* and so it is clearly more specific than 6.4.37. So, we put 6.4.37 aside. Now let us consider the relationship between 6.4.36 and 7.1.35.

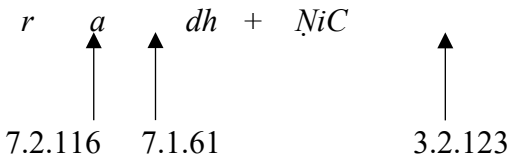
If we apply 6.4.36 at this step, 7.1.35 will still be applicable at the following step. However, if we replace *hi* with *tātAṄ* by 7.1.35 at this step, then 6.4.36, which applies only when *han* is followed by *hi*, will not be applicable at the following step. This is a case of unidirectional blocking and thus of DOI conflict.

By my interpretation of 1.4.2, we apply the RHS rule 7.1.35 and get *han* + *tātAṄ* → *hatāt* (6.4.37 *anudāttopadeśavanatitanotyādīnām anunāsikalopo jhali kṅiti*), which is the correct form.

[39] Since *hi* is an *apit sārvadhātuka*, it can be treated as marked with *K* by 1.2.4 *sārvadhātukam apit*. Thus 6.4.37 is applicable.

11. *radh* + *ṆiC*[40] – ‘to subdue’, causative present third-person singular

radh is an *aṅga* with respect to *ṆiC*. *ṆiC* can trigger two operations from the *aṅgādhikāra* on *radh* namely 7.2.116 and 7.1.67.



7.2.116 *ata upadhāyāḥ*: a vowel termed *vṛddhi* replaces the penultimate sound *a* of a verbal base when an affix marked with *Ṇ* or *Ñ* follows.

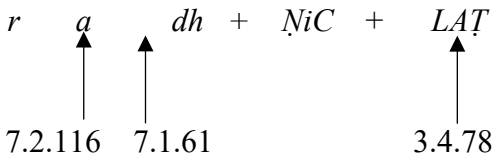
7.1.61 *radhijabhor aci*: augment *nUM* is attached to *radhA* ‘to subdue’ and *jabhA* ‘to gape’ when an affix beginning with a vowel follows.

3.2.123 *vartamāne laṭ*: affix *LAṬ* occurs after a verbal root when the action is denoted at the current time (*vartamāna*).

3.2.123 neither blocks nor is blocked by the other two rules. Let us look at the relationship between 7.2.116 and 7.1.61.

If we apply 7.2.116, 7.1.61 will still be applicable at the following step. However, if we apply 7.1.61, that is, if we insert the augment *nUM* before the final *dh* (cf. 1.1.47 *mid aco’ntyāt paraḥ*), then *a* is no longer the penultimate sound, and so 7.2.116 will not be applicable at the following step. This is a case of unidirectional blocking, and thus of DOI conflict.

By my interpretation of 1.4.2, we apply the right-most rule 3.2.123 get *radh* + *ṆiC* + *LAṬ*. Here, the following rules are applicable:



7.2.116 *ata upadhāyāḥ*: same as above.

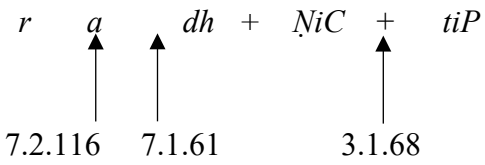
7.1.61 *radhijabhor aci*: same as above.

3.4.78 *tip-tas-jhi-sip-thas-tha-mib-vas-mas-ta-ātāṁ-jha-thās-āthāṁ-dhvam-iḍ-vahi-mahiṅ*

[40] 3.1.26 *hetumati ca.*

We have already discussed the relationship between 7.2.116 and 7.1.61. 3.4.78 neither blocks nor is blocked by the other two rules.

By my interpretation of 1.4.2, we apply the right most rule 3.4.78 and get *radh* + *ṆiC* + *tiP*. At this step, multiple rules are applicable:



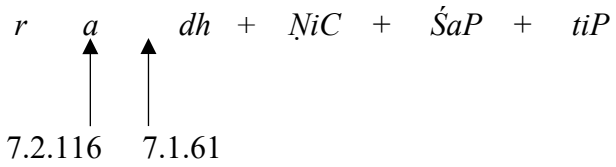
7.2.116 *ata upadhāyāḥ*: same as above.

7.1.61 *radhijabhor aci*: same as above.

3.1.68 *kartari śap*: same as above.

We have already discussed the relationship between 7.2.116 and 7.1.61. 3.1.68 neither blocks nor is blocked by the other two rules.

By my interpretation of 1.4.2, we apply the right most rule 3.1.68 and get: *radh* + *ṆiC* + *ŚaP* + *tiP*. At this point, two rules are applicable:

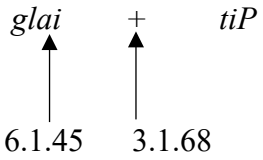


We have already established that there is a DOI conflict between 7.2.116 and 7.1.61.

By my interpretation of 1.4.2, we apply the RHS rule 7.1.61 and get *randh* + *ṆiC* + *ŚaP* + *tiP*. *randh* and *ṆiC* cannot undergo any other operations which are not triggered by *ŚaP*, so we can write *randh* + *ṆiC* as *randhi*. *randhi* is an *aṅga* with respect to *ŚaP*. Thus by 7.3.84 *sārvadhātukārdhadhātukayoḥ*[41], which belongs to the *aṅgādhikāra* and is triggered here by *ŚaP*, is applicable to *randhi*. Upon its application, we get *randhe* + *a* + *ti* → *randhaya* + *ti* (6.1.78 *eco'yavāyāvaḥ*) → *randhayati*, which is the correct form.

[41] *Guṇa* replaces the final sound *iK* of a verbal base when a *sārvadhātuka* or *ārdhadhātuka* affix follows.

12. *glai + tiP* – ‘to become tired’, present third-person singular



6.1.45 *ād eca upadeśe’śiti*: the final sound of a verbal root which ends in *eC* when taught in the *Dhātupāṭha* is replaced with *ā*, when an affix which is not marked with *Ś* follows.

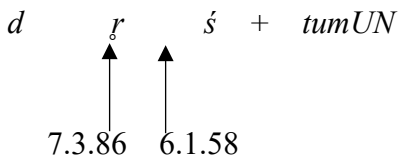
3.1.68 *kartari śap*: same as above.

If we apply 6.1.45 at this step, 3.1.68 will be applicable at the following step. But if we add the affix *ŚaP* at this step by 3.1.68, then 6.1.45 will not be applicable at the following step.

This is a case of unidirectional blocking, and thus of DOI conflict.

By my application of 1.4.2, we apply the RHS rule 3.1.68 and get the correct form: *glai + a + ti* → *glāyati* (6.1.78 *eco’yavāyāvaḥ*).

13. *dṛś + tumUN* – ‘to see’, infinitive



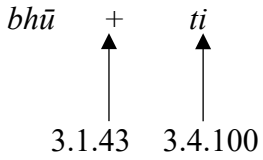
7.3.86 *pugantalaghūpadhasya ca*: *guṇa* replaces *iK* (*i, u, ṛ, ḷ*) of a verbal base which ends in the augment *pUK* or which has a *laghu* ‘light’ vowel as its penultimate sound when a *sārvadhātuka* or *ārdhadhātuka* affix follows.

6.1.58 *sṛjidṛśor jhaly am akiti*: augment *aM* is attached to verbal roots *sṛj* ‘to release, project’ and *dṛśIR* ‘to look’ before an affix which begins with a *jhaL*, but is not marked with *K*.

If we apply 7.3.86 at this step, 6.1.58 will still be applicable at the following step. But if we apply 6.1.58 at this step, *ṛ* will no longer be the penultimate vowel and so 7.3.86 will not be applicable at the following step.

This is a case of unidirectional blocking, and thus of DOI conflict. By my interpretation of 1.4.2, we apply the RHS rule 6.1.58 and get *dṛaś + tum* → *draś + tum* (6.1.77 *iko yaṇ aci*) → *draṣ + tum* (8.2.36 *vraścabhrasjasṛjamṛjayajarājabhrājacchaśāṁ ṣaḥ*) → *draṣṭum* (8.4.41 *ṣṭunā ṣṭuḥ*), which is the correct form.

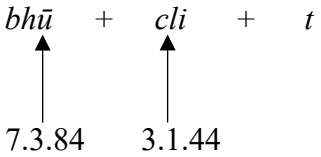
14. *bhū* + *tiP* – ‘to be’, aorist third-person singular



3.1.43 *cli luṅi*: affix *cli* is added to a verbal root when *LUṄ* follows.

3.4.100 *itaś ca*: the *i* of a replacement of any *lakāra* marked with *Ṅ*, is replaced with *LOPA*.

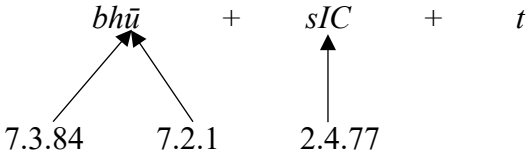
There is no conflict between the two rules. By my interpretation of 1.4.2, we apply the RHS rule 3.4.100 and get: *bhū* + *t*. At this step, only one rule, namely 3.1.43 is applicable. On applying this rule, we get *bhū* + *cli* + *tiP*. Since *bhū* is an *aṅga* with respect to *cli*, 7.3.84 from the *aṅgādhikāra* is applicable here, and so is 3.1.44:



7.3.84 *sārvadhātukārdhadhātukayoḥ*: *guṇa* replaces the final sound *iK* of a verbal base when a *sārvadhātuka* or *ārdhadhātuka* affix follows.

3.1.44 *cleḥ sic*: *cli* is replaced with *sIC*.

There is no conflict between these two rules. By my interpretation of 1.4.2, we apply the RHS rule 3.1.44 and get *bhū* + *sIC* + *t.* Here three rules are applicable:



7.3.84 *sārvadhātukārdhadhātukayoḥ*: same as above.

7.2.1 *sici vṛddhiḥ parasmaipadeṣu*: the final sound *iK* of a verbal base is replaced with its *vṛddhi* counterpart before a *sIC* that is followed by a *parasmaipada* affix.

2.4.77 *gātisthāghupābhūbhyaḥ sicaḥ parasmaipadeṣu*: affix *sIC* is replaced with *LUK* when it is located after *gā* ‘to go’, *sthā* ‘to stand’, *ghu* ‘a root termed *ghu*’, *pā* ‘to drink’, or *bhū* ‘to be, become’ and before a *parasmaipada* affix.

There is an SOI relationship between 7.3.84 and 7.2.1. Since 7.2.1 has been taught for bases followed by *sIC*, it is more specific and thus wins. Now let us look at the relationship between 7.2.1 and 2.4.77.

If we apply 7.2.1 at this step, 2.4.77 will be applicable at the following step. But if we apply 2.4.77 at this step, 7.2.1 will not be applicable at the following step. This is a case of unidirectional blocking, and thus of DOI conflict.

By my interpretation of 1.4.2, we apply the RHS rule 2.4.77 and get *bhū + t. bhū* can now be called an *aṅga* with respect to *t*. Note that *t* cannot trigger *guṇa* of the *ū* of *bhū* due to the following rule:

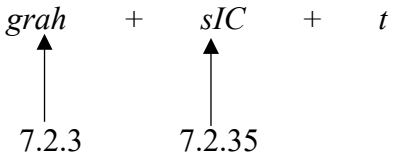
7.3.88 *bhūsuvos tiṅi*: a *guṇa* vowel does not replace the *iK* of *bhū* 'to be' and *sū* 'to give birth to' when a *sārvadhātuka tiṄ* affix follows.

So only one rule from the *aṅgādhikāra*, namely 6.4.71 *luṅlaṅlṛṅṣv aḍ udāttaḥ*, which is triggered by *t* is applicable. It teaches that the *udātta* augment *aṬ* is attached to a verbal base when affixes *LUṄ*, *LAṄ* and *LṚṄ* follow. On applying this rule, we get the correct form: *abhūt*.

15. *grah + tiP* – 'to obtain', aorist third-person singular

The first couple of steps of this derivation are similar to the previous one. I will mention them in brief here and focus on the step which involves conflict.

grah + tiP → *grah + t* (3.4.100 *itaś ca*) → *grah + cli + t* (3.1.43 *cli luṅi*) → *grah + sIC + t* (3.1.44 *cleḥ sic*).



7.2.3 *vadavrajahalantasyācaḥ*: a vowel termed *vṛddhi* replaces the vowel of *vad* 'to speak', *vraj* 'to wander', and a verbal base ending in a consonant, before a *sIC* which is followed by a *parasmaipada* affix.

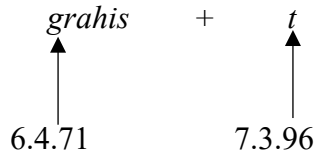
7.2.35 *ārdhadhātukasyeḍ valādeḥ*: augment *iṬ* is attached to an *ārdhadhātuka* affix beginning with *vaL* (any consonant except *y*).

If we apply 7.2.3 at this step, 7.2.35 will be applicable at the following step. But if we attach the augment *iṬ* to *sIC* by 7.2.35 at this step, 7.2.3 will not be applicable at the following step, due to 7.2.5:

7.2.5 *hmyantakṣaṇaśvasajāgṛṇiśvyeditām*: a vowel termed *vṛddhi* does not come in place of the vowel of verbal bases (i) ending in *h*, *m*, *y*; or (ii) *kṣaṇA* 'to harm', *śvasA* 'to breathe' and *jāgṛ* 'to wake up'; or (iii) ending in the affix *Ṇi*; or (iv) *śvi* 'to swell'; or (v) marked with *E*; before an *iṬ*-initial *sIC* which is followed by a *parasmaipada* affix.[42]

In conclusion, if we apply 7.2.35 at this step, 7.2.3 will not be applicable at the following step. This is a case of unidirectional blocking, and thus of DOI conflict.

By my interpretation of 1.4.2, we apply the RHS rule 7.2.35 and get *grah* + *is* + *t*. *grah* and *is* cannot undergo any other operations which are not triggered by *t*, thus we can write *grah* + *is* as *grahis*. *grahis* is an *aṅga* with respect to *t*. The following rules from the *aṅgādhikāra* become applicable:



6.4.71 *luṅlaṅlṛṅṣv aḍ udāttaḥ*: same as above.

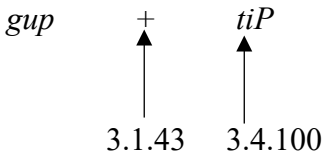
7.3.96 *astisico'pṛkte*: augment *īṬ* is attached to a consonant-initial *sārvadhātuka* affix which consists of only one sound (*apṛkta*) and occurs after the verbal base *as* or affix *sIC*.

There is no conflict between these rules. By my interpretation of 1.4.2 we apply the RHS rule 7.3.96 and get *grahis* + *īt*. At this step, we apply 6.4.71 and get *agrahis* + *īt.* Now that all possible rules from the *sapādasaptādhyāyī* have been applied, we apply 8.2.28 *iṭa īṭi* from the

[42] One may ask: why did Pāṇini compose 7.2.5 if 7.2.4 *neṭi* already prohibits *vṛddhi* in such cases? It is true that by 7.2.4 *neṭi*, when the consonant-final base is followed by an *iṬ*-initial *sIC*, *vṛddhi* is prohibited. But 7.2.7 *ato halāder laghoḥ* makes this optional for bases which start with a consonant and contain the light vowel *a.* Thus, Pāṇini has composed 7.2.5 to negate this optionality, or in other words, to prescribe the mandatory prohibition of *vṛddhi* in the said circumstances.

tripādī which replaces the *s* between *iṬ* and *īṬ* with *LOPA.* This gives us the correct form: *agrahiīt* → *agrahīt* (6.1.101 *akaḥ savarṇe dīrghaḥ*).[43]

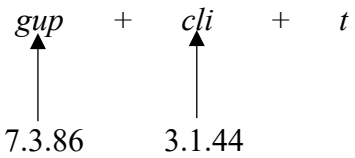
16. *gupU* + *tiP* – 'to hide', aorist third-person singular[44]



3.1.43 *cli luṅi*: same as above.

3.4.100 *itaś ca*: same as above.

There is no conflict between these two rules. By my interpretation of 1.4.2, we apply the RHS rule 3.4.100 and get *gup* + *t*. By my interpretation of 1.4.13, *gup* is not an *aṅga* with respect to *t*, so rules like 7.3.86 *pugantalaghūpadhasya ca* which are taught in the *aṅgādhikāra* and which are triggered by *t* cannot apply here. By applying 3.1.43, we get *gup* + *cli* + *t*. Here the following rules are applicable:



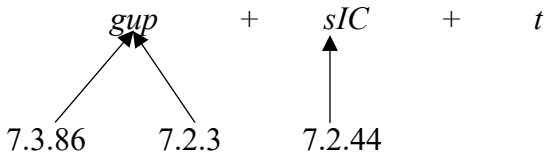
7.3.86 *pugantalaghūpadhasya ca*: *guṇa* replaces the *iK* (*i*, *u*, *ṛ*, *ḷ*) of a verbal base which ends in the augment *pUK* or which has a *laghu* 'light' vowel as its penultimate sound when a *sārvadhātuka* or *ārdhadhātuka* affix follows.

3.1.44 *cleḥ sic*: same as above.

There is no conflict between the two rules. By my interpretation of 1.4.2, we apply the RHS rule 3.1.44 and get: *gup* + *sIC* + *t*. Here multiple rules are applicable:

[43] An important question arises here: how is it possible to apply 6.1.101, after applying 8.2.28, which belongs to the *asiddha* section? Unfortunately, I have not been able to find a satisfactory explanation for this.

[44] By 3.1.31 *āyādaya ārdhadhātuke vā*, *āya* can be optionally added to *gupU* here, but we will not discuss this option because it is not relevant to the present argument.



7.3.86 *pugantalaghūpadhasya ca*: same as above.

7.2.3 *vadavrajahalantasyācaḥ*: same as above.

7.2.44 *svarati-sūti-sūyati-dhūñ-ūdito vā*: augment *iṬ* is introduced to an *ārdhadhātuka* affix which begins with *vaL* (any consonant except *y*), provided the same occurs after *svṛ* 'resound', *ṣūṄ* (*adādi*) 'give birth to', *ṣūṄ* (*divādi*) 'give birth to', *dhūÑ* 'to shake', and roots marked with *Ū*.

There is an SOI relationship between 7.3.86 and 7.2.3. 7.2.3 has been taught specifically for a set of verbs followed by *sIC*, and thus wins. Now let us look at the DOI relationship between 7.2.44 and 7.2.3.

If we apply 7.2.3 at this step, 7.2.44 will be applicable at the following step. But if we apply 7.2.44 at this step, then 7.2.3 will not be applicable at the following step, because of 7.2.4 *neṭi* which prohibits *vṛddhi* of the vowel of a consonant-final base when the following *sIC* has taken the augment *iṬ*.

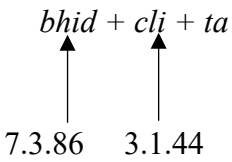
This is a case of unidirectional blocking and thus of DOI conflict. By my interpretation of 1.4.2, we apply the RHS rule 7.2.44 and get *gup + is + t*. By 7.3.86 *pugantalaghūpadhasya ca*, we get *gop + is + t*. Note that, *gop* and *is* cannot undergo any other operations which are not triggered by *t.* Thus, we can write *gop + is* as *gopis*. *gopis* is an *aṅga* with respect to *t*.

I will not go into the depth of the remaining steps of this derivation because we have seen these steps in a similar derivation above: *gopis + t* → *gopis + īt* (7.3.96 *astisico'pṛkte*) → *agopis + īt* (6.4.71 *luṅlaṅlṛṅṣv aḍ udāttaḥ*) → *agopi + īt* (8.2.28 *iṭa īṭi*) → *agopīt* (6.1.101 *akaḥ savarṇe dīrghaḥ*), which is the correct form.

If we do not implement the optional rule 7.2.44, we get: *gup + s + t* → *gaups + t* (7.2.3 *vadavrajahalantasyācaḥ*) → *gaups + īt* (7.3.96 *astisico'pṛkte*) → *agaupsīt* (6.4.71 *luṅlaṅlṛṅṣv aḍ udāttaḥ*), which is also correct.

17. *bhid* + *ta* – ‘to break’, aorist third-person singular

bhid + *ta* → *bhid* + *cli* + *ta* (3.1.43 *cli luṅi*)



3.1.44 *cleḥ sic*: same as above.

7.3.86 *pugantalaghūpadhasya ca*: same as above.

If we apply 7.3.86 at this step, 3.1.44 will be applicable at the following step. But, if we apply 3.1.44 at this step, 7.3.86 will not be applicable at the following step because of 1.2.11:

1.2.11 *liṅsicāv ātmanepadeṣu*: a *LIṄ* or *sIC* affix which begins with a *jhaL* (a non-nasal stop or a fricative) and occurs after a consonant preceded by an *iK* (*i, u, ṛ, ḷ*) is treated as if marked with *K*, before *ātmanepada* endings.

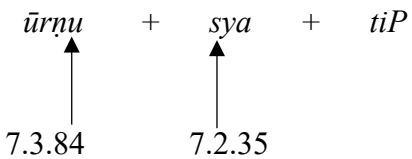
By 1.2.11 *sIC* is treated as marked with *K*. So, if we apply 3.1.44 at this step, *sIC*, marked by *K*, will not trigger *guṇa* (here, 7.3.86), thanks to 1.1.5 *kṅiti ca*, at the following step.

This is a case of unidirectional blocking, and thus of DOI conflict.

By my interpretation of 1.4.2, we apply the RHS rule 3.1.44 and get *bhid* + *s* + *ta* → *bhids* + *ta* → *abhids* + *ta* (6.4.71 *luṅlaṅlṛṅṣv aḍ udāttaḥ*) → *abhidta* (8.2.26 *jhalo jhali*) → *abhitta* (8.4.55 *khari ca*), which is the correct form.

18. *ūrṇuÑ* + *tiP* – ‘to cover’, simple future third-person singular

ūrṇuÑ + *tiP* → *ūrṇuÑ* + *sya* + *tiP* (3.1.33 *syatāsī lṛluṭoḥ*).



7.3.84 *sārvadhātukārdhadhātukayoḥ*: *guṇa* replaces the final *iK* (*i, u, ṛ, ḷ*) of a verbal base when a *sārvadhātuka* or *ārdhadhātuka* affix follows.

7.2.35 *ārdhadhātukasyeḍ valādeḥ*: augment *iṬ* is attached to an *ārdhadhātuka* affix beginning with *vaL* (any consonant except *y*).

If we apply 7.3.84 at this step, 7.2.35 will be applicable at the following step. But if we apply 7.2.35 at this step, 7.3.84 will not be applicable at the following step due to 1.2.3:

1.2.3 *vibhāṣorṇoḥ*: an affix with initial augment *iṬ* is optionally treated as marked with *Ṅ* when it occurs after *ūrṇuÑ*.

So, if we apply 7.2.35, and treat the resultant *iṣya* as marked with *Ṅ*, then by 1.1.5 *kṅiti ca*, 7.3.84 will not be applicable at the following step.

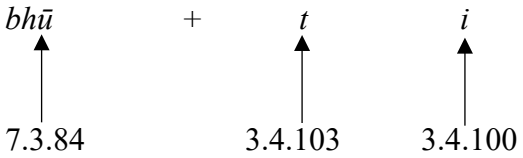
This is a case of unidirectional blocking, and thus of DOI conflict.

By my interpretation of 1.4.2, we apply the RHS rule 7.2.35 and get: *ūrṇu* + *iṣya* + *ti* → *ūrṇuviṣyati* (6.4.77 *aci śnudhātubhruvāṁ yvor iyaṅuvaṅau*[45]).

On the other hand, if we do not implement the optional rule 1.2.3, then the derivation proceeds as follows: *ūrṇu* + *iṣya* + *tiP* (7.2.35 *ārdhadhātukasyeḍ valādeḥ*) → *ūrṇo* + *iṣya* + *tip* (7.3.84 *sārvadhātukārdhadhātukayoḥ*) → *ūrṇaviṣyati* (6.1.78 *eco'yavāyāvaḥ*).

19. *bhū* + *tiP* – 'to be', *āśīrliṅ* (benedictive) third-person singular

Since no *vikaraṇa* is added between *bhū* and *tiP* in *āśīrliṅ* forms, at this step, *bhū* can be called an *aṅga* with respect to *tiP*.



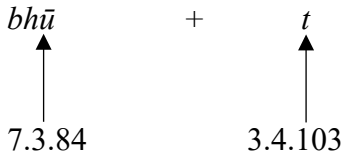
7.3.84 *sārvadhātukārdhadhātukayoḥ*: same as above.

3.4.103 *yāsuṭ parasmaipadeṣūdātto ṅic ca*: *udātta* 'high-pitched' augment *yāsUṬ* is attached to *parasmaipada* substitutes of *LIṄ*, and is treated as marked with *Ṅ*.

3.4.100 *itaś ca*: the *i* of a replacement of any *lakāra* marked with *Ṅ*, is replaced with *LOPA*.

3.4.100 neither blocks nor is blocked by the other two rules. By my interpretation of 1.4.2, we apply the right most rule 3.4.100 and get *bhū* + *t*. Here two rules are applicable:

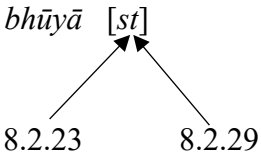
[45] The final *i* and *u* of *Śnu*, and of any verbal base, and of *bhrū* 'brow' are replaced with *iyAṄ* and *uvAṄ*, respectively, when an affix beginning with a vowel (*aC*) follows.



If we apply 7.3.84 at this step, 3.4.103 will be applicable at the following step. But if we apply 3.4.103 at this step, 7.3.84, which prescribes *guṇa* of *ū*, will not be applicable at the following step. This is because, *yāsUṬ* is marked with *Ṅ* and thus by 1.1.5 *kṅiti ca*, *guṇa* is blocked.

This is a case of unidirectional blocking, and thus of DOI conflict.

By my interpretation of 1.4.2, we apply the RHS rule 3.4.103 and get *bhū* + *yāst*. Here, again, two rules are applicable:



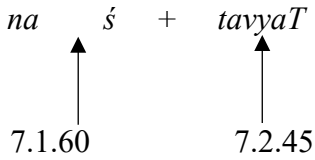
8.2.23 *saṁyogāntasya lopaḥ*: the final sound of a conjunct which occurs at the end of a *pada* is replaced with *LOPA*.

8.2.29 *skoḥ saṁyogādyor ante ca*: the initial *s* and *k* of a conjunct which occurs at the end of a *pada*, or is followed by *jhaL* (a non-nasal stop or a fricative), is replaced with *LOPA*.

Note that both 8.2.23 and 8.2.29 belong to the *tripādī* section. So, 8.2.29 is *asiddha* with respect to 8.2.23. However, this does not impact our method of resolving the SOI between them. I will discuss this in chapter 5.

8.2.29 has been taught for a specific set of conjuncts and thus wins, thereby leading to the correct form: *bhūyāt*.

20. *naś* + *tavyaT* – ‘to perish’, optative passive participle



7.1.60 *masjinaśor jhali*: augment *nUM* is attached to *ṬUmasjI* ‘to sink, immerse’ and *naś* ‘to perish’ when an affix beginning with *jhaL* (a non-nasal stop or a fricative) follows.

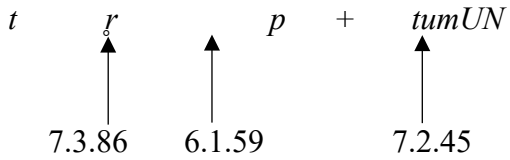
7.2.45 *radhādibhyaś ca*: augment *iṬ* is optionally attached to *ārdhadhātuka* affixes beginning with *vaL* (any consonant except *y*) and occurring after the set of verbal roots beginning with *radhA* ‘to be subdued’.[46]

If we apply 7.1.60 at this step, 7.2.45 will still be applicable at the following step. But if we apply 7.2.45 at this step, then the affix no longer begins with a *jhaL* sound, so 7.1.60 will not be applicable at the following step. This is a case of unidirectional blocking and thus of DOI conflict.

By my interpretation of 1.4.2, we apply the RHS rule 7.2.45 and get: *naśitavya*, which is the correct form. If we do not implement the optional rule 7.2.45, we get: *naṁṣṭavya*, which is also correct.

[46] This set of roots includes *naś*.

21. *tṛp* + *tumUN* – ‘to be satisfied’, infinitive



7.3.86 *pugantalaghūpadhasya ca*: *guṇa* replaces the *iK* (*i*, *u*, *ṛ*, *ḷ*) of a verbal base which ends in the augment *pUK* or which has a *laghu* ‘light’ vowel as its penultimate sound when a *sārvadhātuka* or *ārdhadhātuka* affix follows.

6.1.59 *anudāttasya cardupadhasyānyatarasyām*: augment *aM* is optionally introduced to a verbal root which is *anudātta* when taught in the *Dhātupāṭha* and has *ṛ* as its penultimate sound when an affix beginning with *jhaL* (a non-nasal stop or a fricative) and not marked with *K*, follows.

7.2.45 *radhādibhyaś ca*: same as above.

Let us first consider what happens if we implement both optional rules 6.1.59 and 7.2.45.

Let us first look at the relationship between 7.3.86 and 6.1.59. If we apply 7.3.86 at this step, that will change *ṛ* to *ar*, and so 6.1.59, which applies only when the penultimate sound is *ṛ* will not be applicable at the following step. If we apply 6.1.59 at this step, *ṛ* will no longer be the penultimate sound, so 7.3.86 will not be applicable at the following step. This is a case of mutual blocking, and thus of DOI conflict.

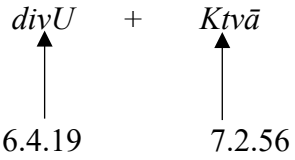
Now let us study the relationship between 6.1.59 and 7.2.45. If we apply 6.1.59 at this step, 7.2.45 will still be applicable at the following step. If we apply 7.2.45 at this step, the affix will no longer begin with *jhaL* and thus 6.1.59 will not be applicable at the following step. This is a case of unidirectional blocking, and thus of DOI conflict.

Lastly, 7.3.86 and 7.2.45 do not block each other.

By my interpretation of 1.4.2, we apply the right-most rule 7.2.45 and get: *tṛp* + *itum* → *tarpitum* (7.3.86 *pugantalaghūpadhasya ca*), which is the correct form.

If we implement the optional rule 7.2.45 but not the optional rule 6.1.59, we get the same form: *tarpitum*. However, if we implement 6.1.59 but not 7.2.45, we get *tṛap* + *tum* (6.1.59) → *traptum* (6.1.77 *iko yaṇ aci*), which is also correct. If we do not implement both 7.2.45 and 6.1.59, we get *tarptum* (7.3.86), which is also correct.

22. *divU* + *Ktvā* – ‘to gamble’, absolutive



6.4.19 *chvoḥ śūḍ anunāsike ca*: *ch* and *v* of a base are replaced with *ś* and *ūṬH*, respectively, when *KvI*, or an affix beginning with *jhaL* (a non-nasal stop or a fricative) and marked with *K* or *Ṅ*, or beginning with a nasal, follows.

7.2.56 *udito vā*: augment *iṬ* is optionally attached to affix *Ktvā* when it follows a verbal root marked with *U.*

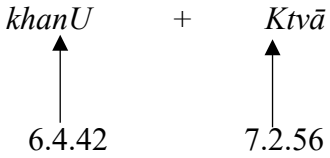
If we apply 6.4.19 at this step, 7.2.56 will be applicable at the following step. If we attach augment *iṬ* to *tvā* by 7.2.56 at this step, then by 1.2.18 *na ktvā seṭ*[47], *Ktvā* cannot be treated as marked with *K.* Thus, 6.4.19 will not be applicable at the following step. This is a case of unidirectional blocking, and thus of DOI conflict.

By my interpretation of 1.4.2, we apply the RHS rule 7.2.56 and get: *div* + *itvā*. Since *itvā* cannot be treated as marked with *K*, it can no longer block *guṇa* and *vṛddhi* (i.e., 1.1.5 *kṅiti ca* does not hold). Thus, by 7.3.86 *pugantalaghūpadhasya ca*, we get *devitvā*, which is the correct form.

If we do not implement the optional rule 7.2.56, we get: *div* + *tvā* → *diū* + *tvā* (6.4.19 *chvoḥ śūḍ anunāsike ca*) → *dyūtvā* (6.1.77 *iko yaṇ aci*), which is also correct.

[47] *Ktvā* which has taken the *iṬ* augment is not treated as marked with *K.*

23. *khanU* + *Ktvā* – ‘to dig’, absolutive



6.4.42 *janasanakhanāṁ sañjhaloḥ*: the final sound of *janA* ‘to generate’, *sanA* ‘to gain’, and *khanU* ‘to dig’, is replaced with *ā* when *saN* or an affix beginning with *jhaL* (a non-nasal stop or a fricative) and marked with *K* or *Ṅ* follows.

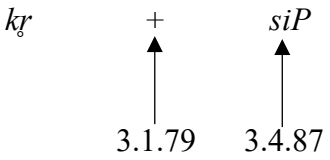
7.2.56 *udito vā*: same as above.

If we apply 6.4.42 at this step, 7.2.56 will be applicable at the following step. But if we apply 7.2.56 at this step, the affix will no longer begin with *jhaL* and so 6.4.42 will not be applicable at the following step. This is a case of unidirectional blocking, and of DOI conflict.

By my interpretation of 1.4.2, we apply the RHS rule 7.2.56 and get *khanitvā*, which is the correct form.

If we do not implement the optional rule 7.2.56, we get *kha-ā* + *tvā* → *khātvā* (6.1.101 *akaḥ savarṇe dīrghaḥ*), which is also correct.

24. *kṝ* + *siP* – ‘to make’, imperative second-person singular

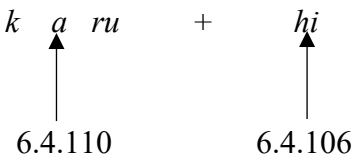


3.1.79 *tanādikṝñbhya uḥ*: affix *u* is added after verbal roots belonging to the set headed by *tanU* ‘to stretch’ and also after *kṝÑ* ‘to make’ when a *sārvadhātuka* affix which denotes *kartṛ* follows.

3.4.87 *ser hy apic ca*: a *siP* replacement of *LOṬ* is replaced with *hi* and is treated as if not marked with *P*.

There is no conflict between these rules.

By my interpretation of 1.4.2, we apply the RHS rule 3.4.87 and get *kṝ* + *hi*. Thereafter, the derivation proceeds as follows *kṝ* + *hi* → *kṝ* + *u* + *hi* (3.1.79 *tanādikṝñbhya uḥ*) → *karu* + *hi* (7.3.84 *sārvadhātukārdhadhātukayoḥ*). *karu* is an *aṅga* with respect to *hi*, so the following rules from the *aṅgādhikāra* are applicable:



6.4.110 *ata ut sārvadhātuke*: the *a* of base which is constituted by *kr̥*, and ends in affix *u*, is replaced with *u* when a *sārvadhātuka* affix marked with *K* or *Ṅ* follows.

6.4.106 *utaś ca pratyayād asaṁyogapūrvāt*: *hi* is replaced with *LUK* when it is preceded by a base that ends in affix *u*, such that *u* is not preceded by a conjunct.

Note that both these rules fall under the heading rule 6.4.22 *asiddhavat atrābhāt*. I interpret this rule as: till 6.4.129 *bhasya*, any rule will treat any other rule here (i.e., in this section) as *asiddhavat*'. In my opinion, if A treats B as *asiddhavat*, A acknowledges the existence of B, but not the outcome of the application of B'. I will discuss this interpretation in detail in chapter 5.

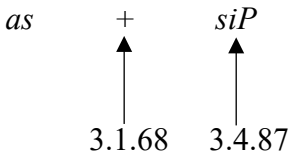
Since 6.4.110 and 6.4.106 acknowledge each other's existence, we can use 1.4.2 to deal with this case of DOI.

If we apply 6.4.110 at this step, 6.4.106 will be applicable at the following step. But if we replace *hi* with *LUK* by 6.4.106, 6.4.110 will not be applicable at the following step[48]. This is a case of unidirectional blocking, and thus of DOI conflict.

By my interpretation of 1.4.2, we apply the RHS rule 6.4.106 and get *karu*. Since 6.4.106 is *asiddhavat* with respect to 6.4.110, 6.4.110 does not acknowledge the outcome of the application of 6.4.106. Thus 6.4.110 applies, and we get the correct form: *kuru*.

[48] 1.1.63 *na lumatāṅgasya.*

25. *as* + *siP* – ‘to be’, imperative (*āśiṣi* ‘benediction’) second-person singular

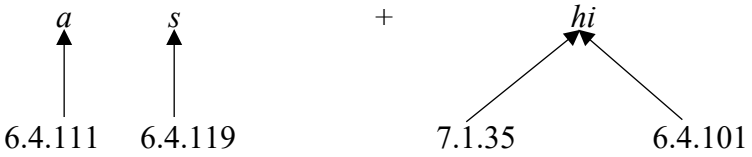


3.1.68 *kartari śap*: affix *ŚaP* occurs after a verbal root when a *sārvadhātuka* affix which denotes *kartṛ* ‘agent’ follows.

3.4.87 *ser hy apic ca*: same as above.

There is no conflict between these rules.

By my interpretation of 1.4.2, we apply the RHS rule 3.4.87 and get *as* + *hi*. Then, the derivation proceeds as follows: *as* + *hi* → *as* + *ŚaP* + *hi* (3.1.68 *kartari śap*) → *as* + *hi* (2.4.72 *adiprabhṛtibhyaḥ śapaḥ*). Since *as* is an *aṅga* with respect to *hi*, the following rules from the *aṅgādhikāra* are applicable:



6.4.111 *śnasor allopaḥ*: the *a* of affix *ŚnaM* and of root *as*, is replaced with *LOPA* when a *sārvadhātuka* affix marked with *K* or *Ṅ* follows.

6.4.119 *ghvasor ed dhāv abhyāsalopaś ca*: the final sound of a verbal base termed *ghu* or of *as*, is replaced with *e* when affix *hi* follows, and *abhyāsa* (first of two reduplicated syllables) is replaced with *LOPA.*

7.1.35 *tuhyos tātaṅ āśiṣy anyatarasyām*: affixes *tu* and *hi* are optionally replaced with *tātAṄ*, provided benediction (*āśiḥ*) is denoted.

6.4.101 *hujhalbhyo her dhiḥ*: *hi* is replaced with *dhi* when it occurs after root *hu* or after a verbal base ending in *jhaL* (a non-nasal stop or a fricative).

There is no conflict between 6.4.111 and 6.4.119.

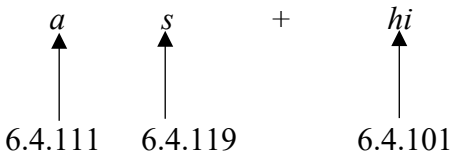
There is an SOI between 7.1.35 and 6.4.101. 7.1.35 is more specific because it has been taught with respect to benedictive forms.

So now let us look at the relationship between 6.4.119 and 7.1.35. If we apply 6.4.119 at this step, then 7.1.35 will be applicable at the following step. If we replace *hi* with *tātAṄ* by 7.1.35

at this step, 6.4.119 will not be applicable at the following step. This is a case of unidirectional blocking, and thus of DOI conflict.

By my interpretation of 1.4.2, we perform the right-most operation 7.1.35 (which defeats 6.4.101 in SOI, as seen above) and get: *as* + *tāt* → *stāt* (6.4.111 *śnasor allopaḥ*), which is the correct form.

If we do not implement the optional rule 7.1.35, the derivation proceeds as follows:

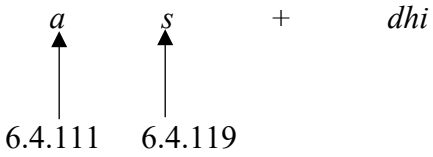


There is no conflict between 6.4.111 and 6.4.119. Let us look at the relationship between 6.4.119 and 6.4.101.

If we apply 6.4.119 at this step, then 6.4.101 will not be applicable at the following step. If we apply 6.4.101 at this step, then 6.4.119 will not be applicable at the following step. This is a case of mutual blocking.

Note that all three rules belong to the *asiddhavat* section. So, each rule can see the other two rules but not the outcome of the application of the other two rules. Since these rules can see one another, we can use 1.4.2 to solve the DOI between them.

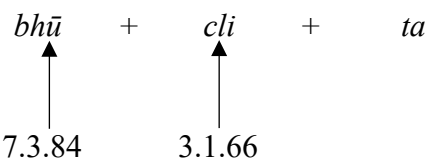
By my interpretation of 1.4.2, we apply the right-most rule 6.4.101 and get *as* + *dhi.* The other two rules cannot see the outcome of the application of 6.4.101. They are still applicable:



By my interpretation of 1.4.2, we apply the RHS rule 6.4.119 and get *ae* + *dhi.* Here, 6.4.111 applies and we get the correct form *edhi*.

26. *bhū* + *ta* – 'to be', passive aorist third-person singular

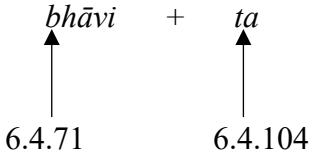
bhū + *ta* → *bhū* + *cli* + *ta* (3.1.43 *cli luṅi*[49])



7.3.84 *sārvadhātukārdhadhātukayoḥ*: *guṇa* replaces the final *iK* (*i, u, ṛ, ḷ*) of a verbal base when a *sārvadhātuka* or *ārdhadhātuka* affix follows.

3.1.66 *ciṇ bhāvakarmaṇoḥ*: *CiṆ* occurs in place of affix *cli* after a verbal base when the *LUṄ* substitute *ta* denoting *bhāva* 'action' or *karman* 'object' follows.

There is no conflict between these two rules. By my interpretation of 1.4.2, we apply the RHS rule 3.1.66 and get *bhū* + *CiṆ* + *ta*. Thereafter, the derivation proceeds as follows: *bhū* + *CiṆ* + *ta* → *bhau* + *CiṆ* + *ta* (7.2.115 *aco ñṇiti*[50]) → *bhāv* + *CiṆ* + *ta* (6.1.78 *eco'yavāyāvaḥ*). Since *bhāv* and *CiṆ* cannot undergo any other operations which are not triggered by *ta*, we can write *bhāv* + *CiṆ* as *bhāvi.* By my interpretation of 1.4.13, *bhāvi* is an *aṅga* with respect to *ta*. Here, multiple rules from the *aṅgādhikāra* become applicable:



6.4.71 *luṅlaṅlṛṅṣv aḍ udāttaḥ*: the *udātta* 'high-pitched' augment *aṬ* is attached to a verbal base when affixes *LUṄ*, *LAṄ* and *LṚṄ* follow.

6.4.104 *ciṇo luk*: an affix which occurs after *CiṆ* is replaced with *LUK*.

Note that both these rules fall under the heading rule 6.4.22 *asiddhavad atrābhāt*. They are *asiddhavat* with respect to each other. That is, each rule acknowledges the existence of the other rule, but not the outcome of the application of the other rule.

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[49] Affix *cli* is added to a verbal root when *LUṄ* follows.

[50] Note that, at this step, there is an SOI between 7.2.115 *aco ñṇiti* and 7.3.84 *sārvadhātukārdhadhātukayoḥ*. However, I have not drawn a diagram to show this in the main text for the sake of brevity. Since 7.2.115 is conditioned by affixes marked with *Ñ* and *Ṇ*, it is more specific and thus wins.

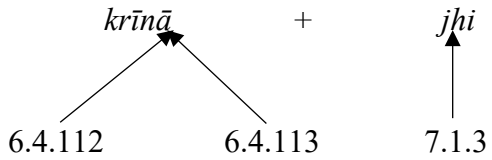
Since 6.4.71 and 6.4.104 acknowledge each other's existence, we can use 1.4.2 to deal with this case of DOI.

If we apply 6.4.71 at this step, 6.4.104 will be applicable at the following step. But if we apply 6.4.104 at this step, the affix will be replaced with *LUK*, and so 6.4.71 will not be applicable at the following step[51]. This is a case of unidirectional blocking, and thus of DOI conflict.

By my interpretation of 1.4.2, we apply the RHS rule 6.4.104 and get: *bhāvi*. Since 6.4.104 is *asiddhavat* with respect to 6.4.71, 6.4.71 does not acknowledge the outcome of the application of 6.4.104. Consequently, 6.4.71 applies, and we get the correct form: *abhāvi.*

27. *krī* + *jhi* – 'to buy', present third-person plural

krī + *jhi* → *krī* + *Śnā* + *jhi* (3.1.81 *kryādibhyaḥ śnā*[52]) → *krīnā* + *jhi*. Now that *krīnā* is an *aṅga* with respect to *jhi*, the following rules from the *aṅgādhikāra* become applicable:



6.4.112 *śnābhyastayor ātaḥ*[53]: the final *ā* of a base which ends in *Śnā* or of a reduplicated base (*abhyasta*) is replaced with *LOPA* when a *sārvadhātuka* affix marked with *K* or *Ṅ* follows.

6.4.113 *ī haly aghoḥ*: the final *ā* of a base which ends in *Śnā* or of a reduplicated base (*abhyasta*), excluding items termed *ghu*, is replaced with *ī* when a *sārvadhātuka* affix beginning with a consonant and marked with *K* or *Ṅ* follows.

7.1.3 *jho'ntaḥ*: *jh* which is the initial sound of an affix is replaced with *ant*.

There is an SOI between 6.4.112 and 6.4.113. First let us identify the more specific i.e., winning rule. Then we will examine the DOI between the winning rule and 7.1.3.

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[51] 1.1.63 *na lumatāṅgasya*.

[52] Affix *Śnā* occurs after verbal roots belonging to the class headed by *ḌUkrīÑ* 'to buy, barter' when a *sārvadhātuka* affix which denotes *kartṛ* follows.

[53] 6.4.112 and 6.4.113 are applicable here because *jhi* is treated as marked with *K* / *Ṅ* by virtue of being an *apit sārvadhātuka* (cf. 1.2.4 *sārvadhātukam apit*).

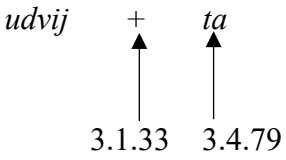
6.4.113 is more specific because it is applicable only when the affix begins with a consonant, and thus wins. Now let us look at the DOI relationship between 6.4.113 and 7.1.3.

If we apply 6.4.113 at this step, 7.1.3 will be applicable at the following step. However, if we apply 7.1.3 at this step, *jhi* will no longer begin with a consonant. Thus 6.4.113 will not be applicable at the following step.

This is a case of unidirectional blocking, and thus of DOI conflict.

By my interpretation of 1.4.2, we apply the RHS rule 7.1.3 and get: *krīnā+ anti*. Here, 6.4.112 applies and we get *krīṇanti*[54] which is the correct form.

28. *udvij* + *ta* – 'to fear', simple future third-person singular

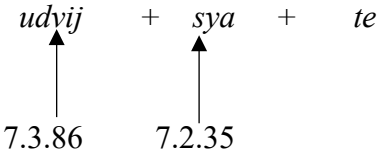


3.1.33 *syatāsī lṛluṭoḥ*: affixes *sya* and *tāsI* respectively occur after verbal bases when *LṚ* and *LUṬ* follow.

3.4.79 *ṭita ātmanepadānāṁ ṭer e*: the part that begins with the last vowel (*ṭi*)[55] of an *ātmanepada* replacement of a *lakāra* marked with *Ṭ* is replaced with *e*.

There is no conflict between these rules.

By my interpretation of 1.4.2, we apply the RHS rule 3.4.79 and get *udvij* + *te*. Thereafter we apply 3.1.33 and get *udvij* + *sya* + *te*. Here two rules are applicable:



7.3.86 *pugantalaghūpadhasya ca*: *guṇa* replaces the *iK* (*i*, *u*, *ṛ*, *ḷ*) of a verbal base which ends in the augment *pUK* or which has a *laghu* 'light' vowel as its penultimate sound when a *sārvadhātuka* or *ārdhadhātuka* affix follows.

[54] 8.4.2 *aṭkupvāṅnumvyavāye'pi.*

[55] 1.1.64 *aco'ntyādi ṭi*.

7.2.35 *ārdhadhātukasyeḍ valādeḥ*: augment *iṬ* is attached to an *ārdhadhātuka* affix beginning with *vaL* (any consonant except *y*).

If we apply 7.3.86 at this step, 7.2.35 will be applicable at the following step. But if we apply 7.2.35 at this step, 7.3.86 will not be applicable at the following step, because of the following rule:

1.2.2 *vija iṭ*: an affix with initial augment *iṬ* is treated as if marked with *Ṅ* when it occurs after *OvijI* 'to fear'.

So, if we apply 7.2.35 at this step, the resultant *isya*, by 1.2.2, will be treated as marked with *Ṅ*. Consequently, thanks to 1.1.5 *kṅiti ca*, 7.3.86 will not be applicable at the following step.

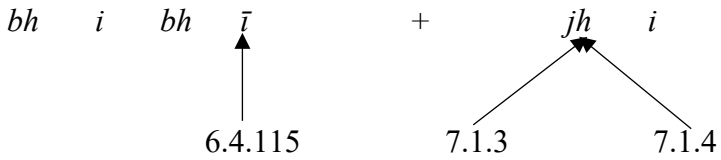
This is a case of unidirectional blocking, and thus of DOI conflict.

By my interpretation of 1.4.2, we apply the RHS rule 7.2.35 and get: *udvijisya* + *te* → *udvijiṣyate* (8.3.59 *ādeśapratyayoḥ*), which is the correct form.

29. *bhī* + *jhi* – 'to be afraid', present third-person plural

bhī + *jhi* → *bhī* + *ŚaP* + *jhi* (3.1.68 *kartari śap*) → *bhī* + *ŚLU* + *jhi* (2.4.75 *juhotyādibhyaḥ śluḥ*) → *bhībhī* + *ŚLU* + *jhi* (6.1.10 *ślau*) → *bhibhī* + *ŚLU* + *jhi* (7.4.59 *hrasvaḥ*[56]).

At this point, *bhibhī* and *ŚLU* cannot undergo any other operations which are not triggered by *jhi.* Thus, we can write *bhibhī* + *ŚLU* as *bhibhī*. In *bhibhī* + *jhi*, *bhibhī* can now be called an *aṅga* with respect to *jhi*. Thus, the following rules from the *aṅgādhikāra* become applicable:



6.4.115 *bhiyo'nyatarasyām*: the final *ī* of *bhī* is optionally replaced with *i* when an affix beginning with a consonant, and marked with *K* or *Ṅ* follows.[57]

[56] The vowel of the *abhyāsa* 'first of two reduplicated syllables' is replaced with its short counterpart.

[57] By virtue of being an *apit sārvadhātuka*, *jhi* is treated as marked with *K* / *Ṅ* (cf. 1.2.4 *sārvadhātukam apit*).

7.1.3 *jho'ntaḥ*: a *jh* which is the initial sound of an affix is replaced with *ant*.

7.1.4 *ad abhyastāt*: when preceded by a reduplicated base, a *jh* which is the initial sound of an affix is replaced with *at*.

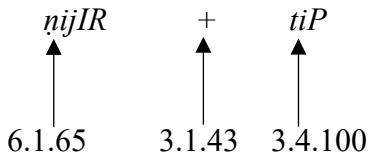
There is an SOI relationship between 7.1.3 and 7.1.4. Since 7.1.4 has been taught specifically for reduplicated bases, it is more specific and thus wins.

Let us consider the relationship between 7.1.4 and 6.4.115. If we apply 6.4.115 at this step, 7.1.4 will be applicable at the following step. But if, by 7.1.4, we replace *jh* with *at*, which starts with a vowel, 6.4.115 will not be applicable at the following step. This is a case of unidirectional blocking, and thus of DOI conflict.

By my interpretation of 1.4.2, we apply the RHS rule 7.1.4 (which defeats 7.1.3 in SOI, as seen above) and get: *bhibhī* + *ati* → *bhibhy* + *ati* (6.1.77 *iko yaṇ aci*). Now that all rules from the *sapādasaptādhyāyī* have applied, we can apply 8.4.54 *abhyāse car ca* from the *tripādī*. This gives us *bibhyati*, which is the correct form.

Note that the optional rule 6.4.115 *bhiyo'nyatarasyām*, despite being applicable, does not actually end up applying in this derivation. So even if we had not implemented the optional rule 6.4.115, we would still have got the same form, i.e., *bibhyati*.

30. *ṇijIR* + *tiP* – 'to purify', aorist third-person singular

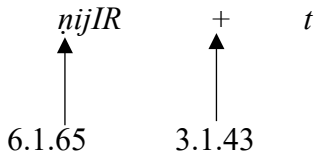


6.1.65 *ṇo naḥ*: the initial *ṇ* of a verbal root when taught in the *Dhātupāṭha* is replaced with *n*.

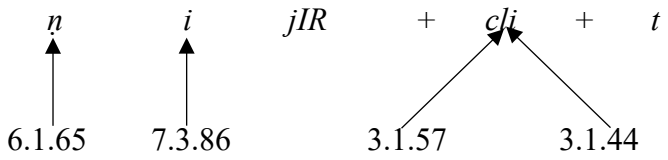
3.1.43 *cli luṅi*: affix *cli* is added to a verbal root when *LUṄ* follows.

3.4.100 *itaś ca*: the *i* of a replacement of any *lakāra* marked with *Ṅ*, is replaced with *LOPA*.

There is no conflict between these rules. By my interpretation of 1.4.2, we apply the right most rule 3.4.100 and get: *ṇijIR* + *t.* Here the following rules are applicable:



There is no conflict between these rules. By my interpretation of 1.4.2, we apply the RHS rule 3.1.43 and get *ṇij + cli + t*. Here the following rules are applicable:



6.1.65 *ṇo naḥ*: same as above.

7.3.86 *pugantalaghūpadhasya ca*: same as above.

3.1.44 *cleḥ sic*: *cli* is replaced with *sIC*.

3.1.57 *irito vā*: affix *cli* is optionally replaced with *aṄ* after verbal roots marked with *IR* when a *parasmaipada* replacement of *LUṄ* which denotes *kartṛ* follows.

6.1.65 is not in conflict with the other rules. There is an SOI relationship between 3.1.44 and 3.1.57. Since 3.1.57 has been specifically taught for roots marked with *IR*, it wins.

Let us consider the DOI relationship between 7.3.86 and 3.1.57. If we apply 7.3.86 at this step, 3.1.57 will be applicable at the following step. But if we replace *cli* with *aṄ* by 3.1.57, then by 1.1.5 *kṅiti ca*, 7.3.86 will not be applicable at the following step. This is a case of unidirectional blocking and thus of DOI conflict.

By my interpretation of 1.4.2, we perform the right most operation 3.1.57 (which defeats 3.1.44 in SOI, as seen above). We get: *ṇij + aṄ + t* → *nij + aṄ + t* (6.1.65). *nij* and *aṄ* cannot undergo any other operations which are not triggered by *t*, so we can write *nij + aṄ* as *nija*. *nija* is an *aṅga* with respect to *t.* Thus, we apply 6.4.71 *luṅlaṅlṛṅṣv aḍ udāttaḥ* and get *anijat*, which is the correct form.

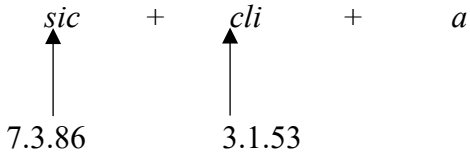
If we do not implement the optional rule 3.1.57 *irito vā*, the derivation proceeds as follows: *ṇij + cli + t* → *ṇij + sIC + t* (3.1.44) → *ṇaij + s + t* (7.2.3 *vadavrajahalantasyācaḥ*) → *naij + s*

+ *t* (6.1.65 *ṇo naḥ*) → *naijs* + *īt* (7.3.96 *astisico'pṛkte*) → *anaikṣīt* (6.4.71 *luṅlaṅlṛṅṣv aḍ udāttaḥ*)[58], which is also correct.

31. *sic* + *tiP* – 'to sprinkle', aorist third-person singular

This derivation is very similar to the previous one so I will simply focus on the part involving DOI conflict. In the rest of the steps, if two rules are simultaneously applicable, I choose the RHS rule in case of DOI and the more specific rule in case of SOI.

sic + *tip* → *sic* + *t* (3.4.100 *itaś ca*) → *sic* + *cli* + *t* (3.1.43 *cli luṅi*)



7.3.86 *pugantalaghūpadhasya ca*: same as above.

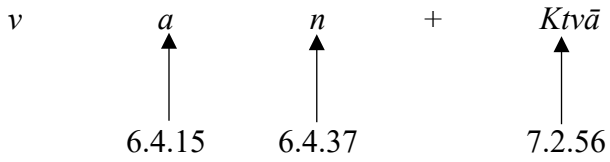
3.1.53 *lipisicihvaś ca*: affix *cli* is replaced with *aṄ* after verbal roots *lip* 'to coat, smear', *sic* 'to pour out, sprinkle' or *hveÑ* 'to call' when *LUṄ* which denotes *kartṛ* follows.

If we apply 7.3.86 at this step, 3.1.53 will be applicable at the following step. But if we apply 3.1.53 at this step, then by 1.1.5 *kṅiti ca*, 7.3.86 will not be applicable at the following step. This is a case of unidirectional blocking and thus of DOI conflict.

By my interpretation of 1.4.2, we apply the RHS rule 3.1.53 and get *sic* + *aṄ* + *t*. *sic* and *aṄ* cannot undergo any other operations which are not triggered by *t*. Thus *sic* + *aṄ* can be written as *sica.* Thereafter 6.4.71 *luṅlaṅlṛṅṣv aḍ udāttaḥ* from the *aṅgādhikāra* applies, leading to the correct form, *asicat*.

[58] In the interest of brevity, I have omitted to mention certain phonological processes here, which lead us from *naijs* to *naikṣ.*

32. *vanU* + *Ktvā* – ‘to desire’, absolutive



6.4.15 *anunāsikasya kvijhaloḥ kṅiti*: the penultimate vowel of a base which ends in a nasal (*anunāsika*), is replaced with its long counterpart when affix *KvI*, or an affix beginning with *jhaL* ‘a non-nasal stop or a fricative’ and marked with *K* or *Ṅ* follows.

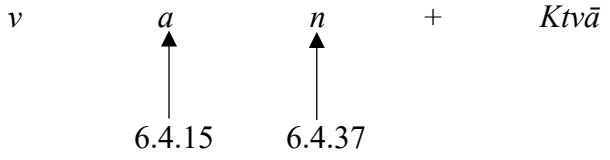
6.4.37 *anudāttopadeśavanatitanotyādīnām anunāsikalopo jhali kṅiti*: the final nasal of a base marked with *anudātta* when taught in the *Dhātupāṭha*, as well as of *vanA* ‘to like’ and the roots headed by *tanU* ‘to extend’, is replaced with *LOPA* when an affix beginning with *jhaL* ‘a non-nasal stop or a fricative’ and marked with *K* or *Ṅ* follows.

7.2.56 *udito vā*: augment *iṬ* is optionally attached to affix *Ktvā* when it follows a verbal root marked with *U.*

Let us consider the relationship of 7.2.56 with the other two rules. If we apply 6.4.15 or 6.4.37 at this step, 7.2.56 will be applicable at the following step. But if we apply 7.2.56 at this step, then then both 6.4.14 and 6.4.37 will not be applicable at the following step. Thus, 7.2.56 unidirectionally blocks both 6.4.15 and 6.4.37 and is in a DOI conflict with both of them.

By my interpretation of 1.4.2, we apply the right most rule 7.2.56 and get *vanitvā*, which is the correct form.

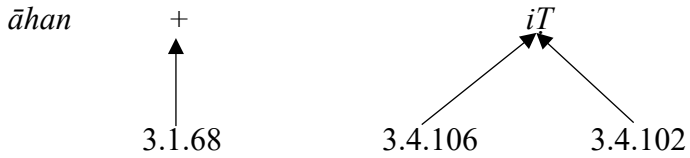
If we do not implement the optional rule 7.2.56, the derivation proceeds as follows:



If we apply 6.4.15 at this step, 6.4.37 will be applicable at the following step. But if we apply 6.4.37 at this step, 6.4.15 will not be applicable at the following step. This is a case of unidirectional blocking and of DOI conflict.

By my interpretation of 1.4.2, we apply the RHS rule 6.4.37 and get *vatvā*, which is also correct.

33. *āhan* + *iṬ* – ‘to hit’, optative first-person singular



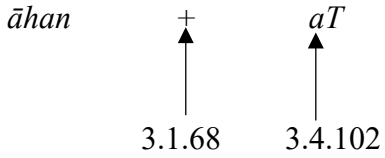
3.1.68 *kartari śap*: affix *ŚaP* occurs after a verbal root when a *sārvadhātuka* affix which denotes *kartṛ* ‘agent’ follows.

3.4.102 *liṅas sīyuṭ*: a substitute of *LIṄ* receives the augment *sīyUṬ*.

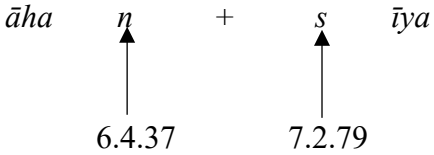
3.4.106 *iṭo’t*: *iṬ*, which is the first-person singular *ātmanepada* substitute of *LIṄ*, is replaced with *aT*.

3.1.68 neither blocks nor is blocked by the other rules. There is an SOI relationship between 3.4.106 and 3.4.102, and 3.4.106 wins because it has been specifically taught for *iṬ*.

By my interpretation of 1.4.2, we apply the RHS rule 3.4.106 (which defeats 3.4.102 in SOI, as stated above) and get *āhan* + *aT*. Here two rules are applicable:



As stated before, there is no conflict between these two rules. By my interpretation of 1.4.2, we apply the RHS rule 3.4.102 and get *āhan* + *sīya.* Thereafter the derivation proceeds as follows: *āhan* + *sīya* → *āhan* + *ŚaP* + *sīya* (3.1.68 *kartari śap*) → *āhan* + *sīya* (2.4.72 *adiprabhṛtibhyaḥ śapaḥ*). Now *āhan* can be called an *aṅga* with respect to *sīya*. Thus, the following rules from the *aṅgādhikāra* are applicable:



6.4.37 *anudāttopadeśavanatitanotyādīnām anunāsikalopo jhali kṅiti*: same as above.

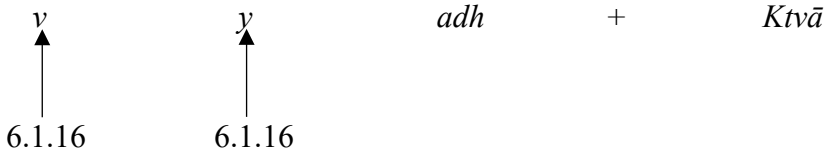
7.2.79 *liṅaḥ salopo’nantyasya*: the non-final *s* of a *sārvadhātuka* substitute of *LIṄ* is replaced with *LOPA*.

If we apply 6.4.37 at this step, 7.2.79 will still be applicable at the following step. But if we apply 7.2.79 at this step, *āhan* will no longer be followed by a *jhaL* sound and thus 6.4.37 will

not be applicable at the following step. This is a case of unidirectional blocking, and thus of DOI conflict.

By my interpretation of 1.4.2, we apply the RHS rule 7.2.79 and get *āhan* + *īya*. Thereafter, the derivation proceeds as follows: *āhn* + *īya* (6.4.98 *gamahanajanakhanaghasāṁ lopaḥ kṅity anaṅi*[59]) → *āghnīya* (7.3.54 *ho hanter ñṇinneṣu*[60]), which is the correct form.

34. *vyadh* + *Ktvā* – 'to hurt', absolutive



6.1.16 *grahijyāvayivyadhivaṣṭivicativṛścatipṛcchatibhṛjjatīnāṁ ṅiti ca*: verbal roots *grahA* 'to grab, seize', *jyā* 'to decay, grow old', *vay* (a substitute of *veÑ* 'to weave' by 2.4.41 *veño vayiḥ*), *vyadhA* 'to pierce, hurt', *vaśA* 'to shine', *vyacA* 'to deceive', *OvraścŪ* 'to cut', *pracchA* 'to ask' and *bhrasjA* 'to roast' undergo *samprasāraṇa* when an affix marked with *K* and *Ṅ* follows.

Note that both *v* and *y* can potentially undergo *samprasāraṇa* by 6.1.16. If we apply 6.1.16 to *v* at this step, 6.1.16 will be applicable to *y* at the following step. But if we apply 6.1.16 to *y* at this step, then by 6.1.37 *na samprasāraṇe samprasāraṇam*, 6.1.16 will not be applicable to *v* at the following step. This is a case of unidirectional blocking and thus of DOI conflict.

By my interpretation of 1.4.2, we apply the RHS rule 6.1.16 to *y* and get *viadh* + *tvā*. Thereafter, the derivation proceeds as follows: *vidh* + *tvā* (6.1.108 *samprasāraṇāc ca*) → *vidhdhvā* (8.2.40 *jhaṣas tathor dho'dhaḥ*) → *viddhvā* (8.4.53 *jhalāṁ jaś jhaśi*), which is the correct form.

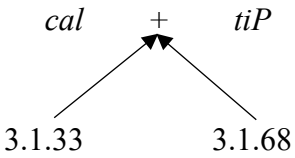
[59] See translation in example 3.

[60] See translation in example 3.

4.4 Examples of SOI

We have already looked at several examples of SOI while discussing examples of DOI conflict. Here I will present a few more examples. As I have done earlier, I will spell out and examine the conditions in which the rules apply and then determine which of the two rules is more specific.

(1) *cal* + *tiP* – 'to walk', simple future third-person singular



3.1.33 *syatāsī lṛluṭoḥ*: affixes *sya* and *tāsI* respectively occur after verbal roots when *LṚ* and *LUṬ* follow.

3.1.68 *kartari śap*: affix *ŚaP* occurs after a verbal root when a *sārvadhātuka* affix which denotes *kartṛ* 'agent' follows.

3.1.33

(when *LṚ* and *LUṬ* follow)

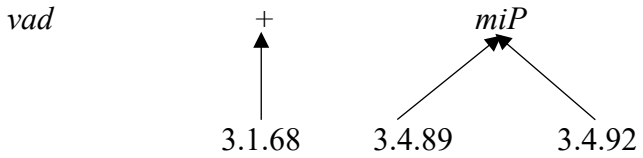
3.1.68

(when *LṚ* and *LUṬ* follow)

(when other *sārvadhātuka* affixes follow)

The conditions highlighted in bold are exactly the same. This is a case of SOI-M. Thus, we compare the two rules themselves. 3.1.33 has been taught specifically for *LṚ* and *LUṬ.* So, it is more specific and thus wins. We get *cal* + *sya* + *ti* → *caliṣyati* (7.2.35 *ārdhadhātukasyeḍ valādeḥ*), which is the correct form.

(2) *vad* + *miP* – ‘to speak’, imperative first-person singular



3.1.68 *kartari śap*: same as above.

3.4.89 *mer niḥ*: a *miP* substitute of *LOṬ* is replaced with *ni.*

3.4.92 *āḍ uttamasya pic ca*: a first-person substitute of *LOṬ* receives the initial augment *āṬ* which is treated as marked with *P*.

3.1.68 is not in conflict with 3.4.89 or 3.4.92. By my interpretation of 1.4.2 we should perform the RHS operation. But which one of the two RHS rules, namely 3.4.89 and 3.4.92, should we apply? Let us examine the SOI between 3.4.89 and 3.4.92.

3.4.89

***miP* (replacement of *LOṬ*)**

3.4.92

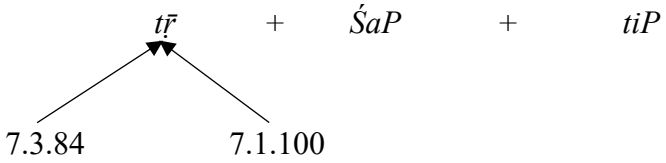
***miP* (replacement of *LOṬ*)**

other first-person affixes (replacements of *LOṬ*)

The conditions highlighted in bold are exactly the same. This is a case of SOI-M. Thus, we compare the two rules themselves. 3.4.89 has been taught specifically for *miP.* So, it is more specific and thus wins. Thus, we get *vad* + *ni*. Thereafter, the derivation proceeds as follows: *vad* + *ni* → *vad* + *āni* (3.4.92 *āḍ uttamasya pic ca*) → *vad* + *ŚaP* + *āni* (3.1.68 *kartari śap*) → *vadāni* (6.1.97 *ato guṇe*), which is the correct form.

(3) *tṝ* + *tiP* – ‘to cross’, present third-person singular

tṝ + *tiP* → *tṝ* + *ŚaP* + *tiP* (3.1.68 *kartari śap*)



7.3.84 *sārvadhātukārdhadhātukayoḥ*: *guṇa* replaces the final sound *iK* (*i, u, ṛ, ḷ*) of a verbal base when a *sārvadhātuka* or *ārdhadhātuka* affix follows.

7.1.100 *ṛta id dhātoḥ*: *ṛ* which occurs at the end of a verbal base is replaced with *i.*

Note that, we have to take into account rules like 1.1.5 *kṅiti ca* [which prohibits *guṇa* and *vṛddhi* of the *iK* (*i, u, ṛ, ḷ*) of a verbal base when the following affix is marked with *K, G* or *Ṅ*] when determining the exact conditions in which the aforementioned rules are applicable. Because of 1.1.5, 7.3.84 is applicable only when the affix is not marked with *K, G* or *Ṅ.*

7.3.84

***ṝ* + affix (*sārvadhātuka* or *ārdhadhātuka*) (not marked with *K*, *G*, *Ṅ*)**

other *iK* sounds + affix (*sārvadhātuka* or *ārdhadhātuka*) (not marked with *K*, *G*, *Ṅ*)

7.1.100

***ṝ* + affix (*sārvadhātuka* or *ārdhadhātuka*)**

The conditions highlighted in bold are not the same. Thus, this is a case of SOI-L. 7.3.84 is more specific because it is applicable only if the affix is not marked with *K*, *G* or *Ṅ* whereas 7.1.100 is applicable regardless of whether the affix is marked with *K*, *G* or *Ṅ*. Thus, 7.3.84 wins, giving the correct form *tarati* (cf. 1.1.51 *ur aṇ raparaḥ*).

Let us now consider Cardona’s (1970: 57-58) method of deriving this form. He uses a principle that he calls ‘limited blocking’ to deal with this aforementioned SOI. He explains it as follows: “though a rule R_2 as a whole does not state an *apavāda* of an R_1, as a whole, it can do so for some operands or environments common to both”. Further, he says: “(Consider) rules: 7.3.84 *sārvadhātukārdhadhātukayoḥ* and 7.1.100 *ṛta id dhātoḥ*. By the latter, the *ṛ* of an *aṅga* which is a verb root is replaced with *i*. The rules are not related as *utsarga* and *apavāda* in their entirety: the operands of 7.3.84 are *i, u, ṛ* while that of 7.1.100 is *ṝ*. Nor are the contexts identical. Although 7.1.100 operates when the root is followed by any affix introduced after it

and *sārvadhātuka* and *ārdhadhātuka* affixes, the contexts for 7.3.84, include all post-radical affixes, the context of 7.3.84 is restricted by 1.1.5 (*kṅiti ca*). In the case of the single shared operand (*ṝ*), then, 7.1.100 will counter 7.3.84 (sic)[61], since all the contexts of the former are included in those of the latter. Thus, given the root *stṝ* followed by the affix *ana*, one obtains the desired form *staraṇa-* 'spreading' without recourse to *paratva*."

Kiparsky (1991: 350-351) criticizes this solution, saying that using such arguments, one could have arrived at exactly the opposite conclusion. He says, "So (Cardona's statement) is compatible with two different procedures yielding opposite results:

"If the environments of R_2 are properly included in the environments of R_1, and the operands of R_1, are properly included in the operands of R_2, then

a. R_2 blocks R_1, (for the environments of R_2 are properly included in the environments of R_1, in the shared operand domain).

b. R_1 blocks R_2 (for the operands of R_1 are properly included in the operands of R_2 in the shared environment domain).

"In case (a) of Cardona 1970 (p. 57) the two rules are: 7.3.84 *sārvadhātukārdhadhātukayoḥ* (*guṇaḥ*) and 7.1.100 *ṛta id dhātoḥ*. So, Cardona applies procedure a: "in the case of the single shared operand (*ṝ*) then, 7.1.100 will counter 7.3.84 [sic – this is evidently a slip and he must have meant to say '7.3.84 will counter 7.1.100'], since all the contexts of the former are included in those of the later". If the facts were the other way round (i.e., if the outcome was **stiraṇa*), he would have said "in the case of the single shared context (non-*kit* suffixes), 7.1.100 will counter 7.3.84, since all the operands of the former are included in those of the latter (procedure b)".

I think that Cardona's limited blocking principle is similar to my method of dealing with SOI. However, Kiparsky correctly points out that the explanation offered by Cardona is ambiguous. On the other hand, my solution overcomes such ambiguity by following the clearly defined procedure which I have developed and used to tackle all examples of SOI in this thesis.

This brings us to the end of our survey of SOI and DOI examples from derivations of finite verbs and primary derivatives.

[61] As pointed out by Kiparsky, Cardona means the exact opposite, that is, '7.3.84 will counter 7.1.100'.

4.5 Selection of Examples

I have presented examples of both SOI conflict and DOI conflict in chapters 2, 3 and 4, of this thesis. Instead of focusing on only those steps that involve conflict, I have performed entire derivations, right from the first step to the last one – drawing diagrams for each step where two or more rules are simultaneously applicable. Before closing this chapter, I must discuss the process through which I conducted my searches for examples, the rationale behind the choice of these examples and also the distributional patterns I noticed in this process.

I performed numerous derivations from the *Laghusiddhāntakaumudī* and chose those which involve examples of conflict. Having studied the various *prakaraṇa*s 'chapters' of this text, namely those on *sandhi, subanta, taddhitānta*, *samāsa*, *tiṅanta* and *kṛdanta*, I have selected a diverse and representative set of examples to the best of my abilities. In order to avoid redundancy, I have excluded those examples which are only superficially different from those included in this thesis.

To show that my method can tackle all kinds of conflicts in various derivational contexts, I have tried to strike a balance:

(i) between short derivations which involve only two or three steps and fewer cases of same-step interaction, and long ones which involve many steps and several cases of same step interaction;

(ii) between simple examples which help the reader gain conceptual clarity and complex ones which demonstrate the potency of my solution; and

(iii) between examples which have been extensively discussed in traditional literature and examples which I have newly spotted during my research.

To underscore the far-reaching impact of my research:

(i) I have given precedence to derivations which involve popular, broad, general and widely-applicable rules, whilst also ensuring the inclusion of derivations which involve rarely applicable and highly specific rules.

(ii) I have prioritized the exposition of those examples which highlight the contrast between my method and the traditional method.

(iii) I have paid special attention to certain challenging examples discussed in the *Mahābhāṣya*, the *Kāśikā*, Cardona (1970), Kiparsky (1982), Pataskar (1985), Bronkhorst (2004), Joshi and

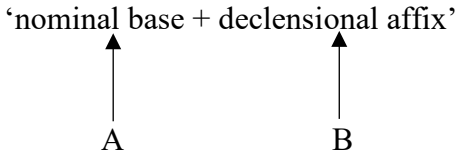
Kiparsky (2005) etc., with the aim of showing that my method is singlehandedly able to overcome a wide variety of problems associated with this topic. In Appendix D, I provide more information on the examples which are present in some of these sources and have also been discussed by me.

4.6 Distribution of Examples of Conflict

Now let us examine the distribution of examples of conflict across various kinds of derivations (e.g., *subanta*, *kṛdanta* etc.). Since Pāṇini uses the general-exception framework throughout the *Aṣṭādhyāyī*, we find cases of SOI conflict in all kinds of derivations. And while we might find more examples of SOI conflict in some kinds of derivations than others, we do not come across any unique or peculiar patterns that merit discussion here.

So, I will focus on the distribution of DOI conflicts in Pāṇinian derivations in this section. Let us inquire why, on the whole, DOI conflicts, and especially certain kinds of DOI conflicts (e.g., mutual blocking), are found more frequently in certain kinds of derivations than others. I request the reader to bear in mind that I will be making some broad generalizations here in order to paint an overarching picture. Therefore, my statements will not be entirely accurate. Since we are talking about DOI-conflict here, I will not touch upon those instances of DOI which do not involve conflict.

To start with, let us consider *subanta* derivations.



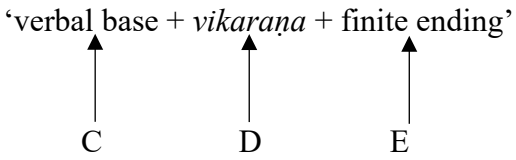
We will focus on cases where the application of A to the base is triggered by the first sound of the affix, and the application of B to the affix is triggered by the last sound of the base. If the first sound of the affix changes, A is not applicable to the base anymore and if the last sound of the base changes, B is not applicable to the affix anymore. Therefore, when two such rules are simultaneously applicable in *subanta* derivations, A to the base and B to the affix, both rules block each other, leading to a situation of DOI conflict. See examples 1-5 and 9 of section 2.7, chapter 2.

In other cases, we find that the application of B to the affix is triggered simply by the grammatical gender, word category (e.g., pronoun) etc. of the base. In such a case, even if the

base undergoes phonological change, B will still be applicable at the following step. On the contrary, we observe that the application of A to the base is triggered by the first sound or the mere presence of an affix. So, if the affix is deleted, for example, by *LUK*, or if its first sound changes, then A will no longer be applicable at the following step. These are cases of unidirectional blocking. See examples 6-8 and 13 of section 2.7, chapter 2.

Thus, we see both kinds of examples of DOI conflict, namely those of mutual blocking and those of unidirectional blocking, in *subanta* derivations. Note that I have overlooked, for the sake of simplicity, examples of DOI conflict where both rules apply to two different parts of the base or to two different parts of the affix respectively.

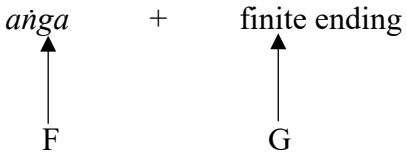
Let us contrast this with *tiṅanta* derivations. One of the early steps of these derivations looks like this:



*Vikaraṇa*s on the whole do not undergo many changes. Even when they do, the application of D (which may teach replacement with *LUK* or other substitutes, augmentation, etc.) is not triggered by the last sound of the verbal root. So even if the verbal root undergoes some changes, D will still be applicable to the *vikaraṇa* at the following step. On the other hand, the application of C (which may entail *guṇa*, *samprasāraṇa*, augmentation, lengthening of the penultimate vowel, deletion of nasal etc.) is dependent on the existence of the *vikaraṇa,* its being marked with *K or Ṅ*, etc. So, if the *vikaraṇa* undergoes certain changes, such as replacement with *LUK* or attachment of certain augments like *iṬ* which annul the effect of *K*/*Ṅ* (cf. 1.2.18 *na ktvā seṭ*), C will not be applicable to the base at the following step. These are cases of unidirectional blocking.

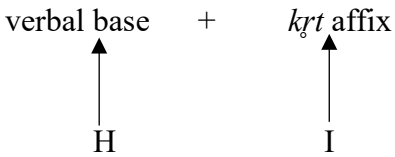
Most rules (E) which are applicable to finite endings at this stage, are triggered by the type of *lakāra* that the ending has replaced, whether that *lakāra* is marked with *Ṭ* or *Ṅ*, the number and person of the ending, whether the ending is *parasmaipada* or *ātmanepada* etc. They do not block and are not blocked by other rules (for example, see rules 3.4.77 – 3.4.112 of the *Aṣṭādhyāyī*). So, we will not focus on them here.

Once the *aṅga* is ready, we get:



The application of F (such as *guṇa*, *vṛddhi*, *samprasāraṇa* etc.) is triggered by the existence of the affix, the first sound of the affix, whether or not it is marked with *K / Ṅ* etc. Thus, if the affix undergoes certain changes, F is not applicable at the following step. But G is not triggered by the last sound of the *aṅga*. Thus, even if the *aṅga* undergoes certain changes, G is still applicable at the following step. This is a case of unidirectional blocking.

Let us now look at *kṛdanta* derivations.



The application of H (such as *guṇa*, *samprasāraṇa* etc.) is triggered by / depends on the first sound of the affix, whether it has taken the augment *iṬ*, whether it is marked with *K / Ṅ* etc. Thus, if the affix undergoes certain changes, H is not applicable at the following step. Let us call H the dependent rule. On the other hand, I is triggered by the first sound of the affix itself (e.g., 7.2.35 *ārdhadhātukasyeḍ valādeḥ*) and other factors. Essentially, the application of I is not dependent on the final sound of the base. So even if the base changes, I is still applicable at the following step. Let us call I the independent rule. This is a case of unidirectional blocking, where the independent rule blocks the dependent rule.

Before we proceed further, notice that, in almost all cases of unidirectional blocking in DOI discussed in the thesis, it is the RHS rule which unidirectionally blocks the LHS rule, and not vice-versa.[62] This is because, it is the RHS rule which is independent and it is the LHS rule which is dependent. In other words, in almost all cases of unidirectional blocking, the applicability of the RHS rule does not depend on whether the penultimate or last sound of the

[62] This is exactly why the traditional *nitya* tool which teaches that the *nitya* rule defeats the *anitya* rule, always correctly resolves cases of DOI conflict involving unidirectional blocking: the *nitya* rule is applicable to the RHS operand and the *anitya* rule to the LHS operand. By (my interpretation of) 1.4.2, the RHS rule (which is also the *nitya* rule) defeats the LHS rule (which is the *anitya* rule).

base changes, but the applicability of the LHS rule does depend on whether the affix is marked with *K* / *Ṅ*, whether it starts with a vowel, whether it has taken the augment *iṬ* etc.

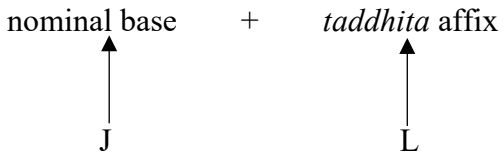
Coming back to the larger theme of this section, we see that almost all cases of DOI conflict in both *tiṅanta* and *kṛdanta* derivations involve only unidirectional blocking. This can be observed in the examples discussed in section 4.3. We rarely come across examples of DOI conflict that involve mutual blocking. One such exception is example 21 of section 4.3 of this chapter, which does involve mutual blocking.

To sum up my observations, we find examples of both mutual and unidirectional blocking in *subanta* derivations, but of unidirectional blocking alone in *tiṅanta* and *kṛdanta* derivations.

As seen in this thesis, we find relatively fewer examples of DOI conflict in *taddhitānta* and *samāsa* derivations than we do in *subanta*, *tiṅanta* and *kṛdanta* sections. How can we explain this phenomenon?

Let us first answer this question in the context of *samāsa* derivations. The *samāsa* template is '[(base$_1$ *suP*$_1$) (base$_2$ *suP*$_2$)] + *suP*$_3$'. *suP*$_1$ and *suP*$_2$ are replaced with *LUK* by 2.4.71 *supo dhātuprātipadikayoḥ*. Thus, we are left with 'base$_1$ base$_2$ + *suP*$_3$'. Given that the only remaining affix, i.e., *suP*$_3$ is also a *suP* affix, there is almost no scope for any other conflicts to arise apart from those that can potentially arise in *subanta* derivations. The only exceptions to this are those cases wherein the *uttarapada* can potentially trigger changes in the *pūrvapada* (see examples 1 and 8 of section 3.2, chapter 3). This explains why we find very few examples of DOI conflict which are exclusive to *samāsa* derivations, i.e., which are not already found in *subanta* derivations.

In *taddhitānta* derivations too, we find very few examples DOI conflict. Even these examples are quite similar to each other (see examples 3-7 of section 3.2, chapter 3) and arise because of the nominal inflection of *taddhitānta* forms. Why is this the case? The majority of *taddhita* rules actually teach addition of *taddhita* affixes, and not any substitutions or modifications. The *taddhita* template is '(nominal base + *suP*) + *taddhita* affix'. *suP* is replaced with *LUK* by 2.4.71 *supo dhātuprātipadikayoḥ*. Thus, we are left with 'nominal base + *taddhita* affix'.



Taddhita affixes undergo very few, generic changes by rules (L) like by 7.1.2 *āyaneyīnīyiyaḥ phaḍhakhacchaghāṁ pratyayādīnām*, which are independent of the final sound of the nominal base. So, any change in the base by rule J cannot block these operations (L) on *taddhita* affixes.

The nominal bases preceding *taddhita* affixes can also undergo certain general changes by rules (J) such as 7.2.117 *taddhiteṣv acām ādeḥ*, 7.2.118 *kiti ca* etc. which do not depend on the first sound of the *taddhita* affix for their application, and thus are not blocked by L in case of DOI. And even those operations (J) such as 6.4.146 *or guṇaḥ* and 6.4.148 *yasyeti ca*, which are triggered by the first sound of the following *taddhita* affix, are seldom blocked, simply because the following *taddhita* affixes themselves undergo very few changes. So, barring replacement with *LUK* (see examples 3-7 of section 3.2, chapter 3), most changes in the *taddhita* affix cannot block these operations (J) on the nominal base. Since there is little scope for DOI blocking between J and L, we come across very few examples of DOI conflict in *taddhita* derivations.

Chapter Five

5.1 Traditional Views on *Asiddha* and *Asiddhavat*

In the previous chapters, I have shed light on how I think Pāṇini perceives the interactions between simultaneously applicable rules and more specifically, how he resolves cases of SOI and DOI. In this process, I have also discussed my interpretation of 1.4.2 *vipratiṣedhe paraṁ kāryam*.

In this chapter, I will dwell on three very important rules of the *Aṣṭādhyāyī*, which deal with the concepts of *asiddha* and *asiddhavat*. 6.1.86 *ṣatvatukor asiddhaḥ* and 8.2.1 *pūrvatrāsiddham* teach the former and 6.4.22 *asiddhavad atrā bhāt* the latter. I will discuss both the traditional interpretation of these rules and my own interpretation of them. I will also demonstrate how these rules impact SOI and DOI, if at all they do, and how they interact with (my interpretation of) 1.4.2.

Let me start by presenting the English translation of these three rules as per the traditional interpretations. To highlight the differences of opinion within the tradition, I will make relevant comments on what texts like *Mahābhāṣya*, *Kāśikā*, *Siddhāntakaumudī* and *Nyāsa* say about these rules.

6.1.86 *ṣatvatukor asiddhaḥ* (*ekaḥ pūrvaparayoḥ saṁhitāyām*): a single replacement (*ekaḥ*) in place of the preceding and the following sound segments (*pūrvaparayoḥ*) in continuous utterance (*saṁhitāyām*) is suspended[1] (*asiddhaḥ*) with respect to any potential replacement with *ṣ* or insertion of augment *tUK* (*ṣatva-tuk-or*).

Here, should the *kārya* (i.e., 'operation', or more aptly, 'outcome of application of the rule') be suspended or the *śāstra* (i.e., the rule) itself? In traditional literature, if the *kārya* is suspended, this is called *kāryāsiddhi*, whereas if the *śāstra* is suspended, this is called *śāstrāsiddhi*. According to the *Kāśikā*, *asiddha* implies *kāryāsiddhi*[2], but according to the *Siddhāntakaumudī*, *asiddha* stands for *śāstrāsiddhi*[3].[4]

[1] When A is suspended with respect to B, B cannot acknowledge A.

[2] *ṣatve tuki ca kartavye ekādeśo'siddho bhavati, siddhakāryaṁ na karoti ity arthaḥ*.

[3] *ṣatve tuki ca kartavye ekādeśaśāstram asiddhaṁ syāt*.

[4] In his commentary on 8.2.1, Rama Nath Sharma (2003, Vol. 6, p. 476) says, "The *asiddhatva* of 8.2.1 *pūrvatrāsiddham* is thus accepted as suspension of rules (*sāstrāsiddhatva*). Neo-grammarians such as

8.2.1 *pūrvatrāsiddham*: that which is taught from here onwards is suspended (*asiddham*) with respect to what precedes it (*pūrvatra*).

As per the tradition's interpretation, 8.2.1 can be rewritten as follows:

Q is suspended with respect to P if:

(i) Q is taught after P in the serial order of the *Aṣṭādhyāyī*, and

(ii) Q is taught after 8.2.1 in the serial order of the *Aṣṭādhyāyī*.

Here, again, the *Kāśikā* favours the *kāryāsiddhi* interpretation, whereas the *Siddhāntakaumudī* prefers the *śāstrāsiddhi* interpretation. There is some discussion in *Nyāsa* on 8.2.1 about whether *asiddha* stands for *kāryāsiddhi* or for *śāstrāsiddhi*.

6.4.22 *asiddhavad atrā bhāt*: that which is taught in the section starting here and extending up to *bh* (*ā bhāt*)[5] is suspended (*asiddhavat*)[6], if both rules have a *samānāśraya* 'common substratum' (*atra*).

According to the *Kāśikā* on 6.4.22, we must infer *samānāśrayatva* from the presence of word *atra*.[7] The *Nyāsa* glosses *āśraya* as *nimitta* 'cause'. If this is the case, *samānāśraya* would mean 'common cause'. However, I do not think this is the correct interpretation. I will explain my understanding of the meaning of *samānāśraya* later in this chapter, when discussing a germane example.

On 6.4.22, Kātyāyana presents two different views on the meaning of the word *atra.* One view is that it stands for *samānāśrayatva*[8]. The other opinion is that *atra* has been used to indicate

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Nāgeśa and Bhaṭṭojī Dīkṣita accept this view. Earlier grammarians, which also includes authors of the *Kāśikāvṛtti*, accept the *kāryāsiddhatva* view."

[5] There is some controversy about the meaning of *ā bhāt*. We will examine this topic later in this chapter.

[6] *Kāśikā*'s interpretation alludes to the rules which are *asiddhavat,* but does not mention the rules with respect to which these rules are *asiddhavat*. We are left to answer the 'with respect to what?' question on our own.

[7] *atreti samānāśrayatvapratipattyartham.*

[8] Explaining why *asiddhavat* is not applicable in a certain context, Kātyāyana says (vt. 12) *samānāśrayavacanāt siddham* '[despite being placed in the section headed by 6.4.22] it (i.e., this rule) is *siddha* [and not *asiddhavat*] because [*asiddhavat* has been taught only in regard with] *samānāśrayatva*, [and here the *samānāśrayatva* condition has not been met]' (Mbh III.190.22).

that it is with respect to the rules taught *atra* 'here' (in the section headed by 6.4.22) that the rules of this section (i.e., those rules headed by 6.4.22) are *asiddhavat*.[9] In other words, if *atra* had not been mentioned, the rules taught in this section would have become *asiddhavat* even with respect to rules lying outside this section, such as 7.2.116 *ata upadhāyāḥ*[10], which is not desirable[11], hence the need to state '*atra*'. We can say that *atra*, according to this view, stands for 'with respect to the rules taught here (i.e., in the section headed by 6.4.22)'.

Both the *Kāśikā* and the *Siddhāntakaumudī* interpret *ā bhāt*, not as 'up to 6.4.129 *bhasya*', but instead as 'up to the end of the section headed by 6.4.129 *bhasya*'. The jurisdiction of 6.4.129 continues up to 6.4.175, which is the end of 6.4. Thus, according to the *Kāśikā*, *ā bhāt* implies 'up to the end of 6.4'.[12] On the other hand, Kātyāyana and Patañjali discuss both possibilities[13]: one, that the jurisdiction of 6.4.22 ends at 6.4.129, and the other, that it continues up to the end of 6.4. We will study this later in this chapter.

From what both the *Kāśikā* and the *Siddhāntakaumudī* say about 6.4.22, the traditional interpretation of this rule can be rewritten as follows:

A is suspended with respect to B if:

(i) both A and B are taught in 6.4.22 – 6.4.175, and

(ii) both A and B have a *samānāśraya*

Note that the tradition does not make any actual distinction between *asiddha* and *asiddhavat*, which is why I have translated both terms as 'suspended'.

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[9] See Vt. 2 *atragrahaṇam viṣayārtham* (Mbh III.187.11) and Patañjali's commentary on it.

[10] For example, consider the form *rāga* 'colour' which is derived from the root *rañjI* 'to colour'. The derivation proceeds as follows: *rañj + GHaÑ* (3.3.18 *bhāve*) → *raj + a* (6.4.27 *ghañi ca bhāvakaraṇayoḥ*) → *rāj + a* (7.2.116 *ata upadhāyāḥ*) → *rāga* (7.3.52 *cajoḥ ku ghiṇṇyatoḥ*). Here, if 6.4.27 is *asiddhavat* with respect to 7.2.116, then 7.2.116 will not apply after the application of 6.4.27.

[11] On vt. 2, Patañjali says: *viṣayaḥ pratinirdiśyate. atraitasminn ābhāc chāstra ā bhāc chāstram asiddhaṁ yathā syāt. iha mā bhūt. abhāji rāgaḥ upabarhaṇam iti.*

[12] *yad ita ūrdhvam anukramiṣyāmaḥ ā adhyāyaparisamāpteḥ tad asiddhavat bhavati ity evaṁ veditavyam* (*Kāśikā* on 6.4.22).

[13] Mbh III.192.10-193.19.

5.2 My Interpretation of These Three Rules

In this section, I will present my interpretation of the three rules and support the same with evidence and examples. I will also show how SOI and DOI function in these sections.

Let us first examine 6.1.86 *ṣatvatukor asiddhaḥ* and 8.2.1 *pūrvatrāsiddham* respectively. I think that *asiddha* in these two rules denotes *śāstrāsiddhi*: rule X is *asiddha* with respect to rule Y. However, when rule X (*śāstra*) is *asiddha* with respect to rule Y, the outcome of the application of rule X (*kārya*) too will automatically be *asiddha* with respect to rule Y. In other words, I think that *śāstrāsiddhi* always entails *kāryāsiddhi*. Thus, we conclude that 6.1.86 and 8.2.1 teach *śāstrāsiddhi*, and therefore, also teach *kāryāsiddhi*.[14]

What impact does the fact that one rule is *asiddha* with respect to the other rule have on 1.4.2? We cannot use 1.4.2 to resolve a case of DOI unless both rules involved in the DOI acknowledge each other's existence. How do we resolve cases of DOI where one rule does not acknowledge the existence of the other? In such cases of DOI, the rule which does not acknowledge the existence of the other rule prevails. This will become clearer through the examples discussed later in this chapter.

Consider the following examples:

1) *adhī* + *Ktvā* – 'to study', absolutive

Note that *adhī* is formed by applying rule 6.1.101 *akaḥ savarṇe dīrghaḥ* (which teaches that a long vowel replaces both *aK* '*a*, *i*, *u*, *ṛ* or *ḷ*' and the immediately following *savarṇa* 'homogeneous' vowel) to *adhi* + *i.* I have explained why we need to begin the derivation with *adhī* + *Ktvā* when discussing example 5 of section 4.3, chapter 4.

To *adhī* + *Ktvā*, we apply the rule 7.1.37 *samāse'nañpūrve ktvo lyap* which teaches that, in a compound, the first member of which is not *naÑ*, the affix *Ktvā* in the second part of the compound is replaced with *LyaP.* Thus, we get *adhīya*. 6.1.86 teaches that a rule prescribing a single replacement in place of the preceding and the following sound segments is *asiddha* with respect to rules teaching replacement with *ṣ* or attachment of augment *tUK*. Thus, we deem both 6.1.101 *akaḥ savarṇe dīrghaḥ* and the outcome of its application (because, remember,

[14] The *Nyāsa* on 8.2.1 too says so: *śāstrasyāsiddhau ca kṛtāyām arthataḥ kāryāsiddhatvaṁ kṛtam eva bhavati tasya tannibandhanatvāt.*

śāstrāsiddhi always entails *kāryāsiddhi*) to be suspended with respect to the rule 6.1.71 *hrasvasya piti kṛti tuk*, which teaches that augment *tUK* is attached to a verbal base ending in a short vowel when a *kṛt* affix marked with *P* follows. Therefore, we consider *adhīya* to be *adhi-i-ya*, apply 6.1.71 to it, and get the correct form *adhītya*.

If Pāṇini had not taught 6.1.86, 6.1.71 would not have applied here, leading to the incorrect form **adhīya*.[15]

2) *kas* + *asiñcat* 'Who sprinkled?'

The derivation proceeds as follows: *kas* + *asiñcat* → *kar* + *asiñcat* (8.2.66 *sasajuṣoḥ ruḥ*[16]) → *ka-u* + *asiñcat* (6.1.113 *ato ror aplutād aplute*[17]) → *ko asiñcat* (6.1.87 *ād guṇaḥ*) → *ko'siñcat* (6.1.109 *eṅaḥ padāntād ati*), which is the correct phrase.

We have derived *ko'siñcat* by applying 6.1.109 *eṅaḥ padāntād ati* which teaches *pūrvarūpa ekādeśa*, i.e., the replacement of *o* + *a* in *ko* + *asiñcat* with the LHS sound *o*. By 6.1.86 *ṣatvatukor asiddhaḥ*, 6.1.109 and the outcome of its application (*o*) are *asiddha* with respect to the following rule teaching *ṣatva*:

8.3.59 *ādeśapratyayoḥ*: *ṣ* replaces non-*pada*-final *s* of a substitute or of an affix occurring after *iṆ* (any vowel except *a*; *h*, *y*, *v*, *r* and *l*) or a velar stop, even when there is intervention of *nUM*, *visarjanīya,* or *śaR* (*ś*, *ṣ*, *s*).

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[15] Note that, if we had started the derivation with *adhi* + *itvā*, the derivation would have proceeded as follows. Two rules are applicable here, namely 6.1.101 *akaḥ savarṇe dīrghaḥ* and 7.1.37 *samāse'nañpūrve ktvo lyap.* This is a case of DOI. By 1.4.2, the RHS rule wins and we get *adhi* + *iya*. Here, two rules are applicable: 6.1.101 and 6.1.71 *hrasvasya piti kṛti tuk.* This is a case of SOI. 6.1.71 is more specific and thus wins. This gives us *adhi* + *itya*. Now 6.1.101 applies, giving the correct form *adhītya*. Notice that, if we start the derivation with *adhi* + *itvā*, we get the correct form without applying 6.1.86. But the fact that Pāṇini composed 6.1.86 confirms the fact that the derivation of this compound begins with *adhī* + *tvā* and not with *adhi* + *itvā*, even though the compound itself is being formed from *adhi* and *itvā* by 2.2.18 *kugatiprādayaḥ.* I have discussed this in some detail in example 5 of section 4.3, chapter 4.

[16] The *s* at the end of a *pada* and the final *s* of *sajus* 'companion, together with' are replaced with *rU.*

[17] An *uT* replaces a *rU* when it is both preceded and followed by a non-*pluta a*.

Thus 8.3.59 is not able to apply to *ko'siñcat*. If Pāṇini had not composed 6.1.86, then 8.3.59 would have applied to *ko'siñcat*, giving us the incorrect form: **ko'ṣiñcat.*

However, there is a problematic aspect of this derivation that merits discussion: we know that 8.2.66 *sasajuṣoḥ ruḥ* is *asiddha* with respect to 6.1.113 *ato ror aplutād aplute* by 8.2.1 *pūrvatrāsiddham*. Therefore, 6.1.113 cannot acknowledge 8.2.66 and the outcome of its application and consequently cannot apply there. But this contradicts what we observe in the derivation of *ko'siñcat* where, in order to get the correct final form, we ought to apply 6.1.113 to *kar* + *asiñcat* which is the direct outcome of the application of 8.2.66.

Nyāsa on 6.1.113 acknowledges this problem but is unable to solve it. It says: the only *rU* that we find in the *Aṣṭādhyāyī* results from the application of 8.2.66. So Pāṇini would not have composed 6.1.113 which applies to *rU* if he intended for the outcome of the application of 8.2.66 (i.e., *rU*) to be *asiddha* with respect to 6.1.113.[18] Buiskool (1939: 101) thinks that Pāṇini has placed 6.1.113 in 6.1 only because of its similarity with the rules that precede and follow it.

Here is a possible solution to this problem: I think that, in the Pāṇinian system, all possible rules that can be applied while constructing a word ought to be applied before the word enters a sentence. Let us call them word-level rules. Let us call those rules which apply after the word enters the sentence, sentence-level rules. I think Pāṇini does not consider word-level rules to be *asiddha* with respect to sentence-level rules. 8.2.66 is a word-level rule simply because it can be applied before the word enters the sentence, and thus is not *asiddha* with respect to 6.1.113, which by virtue of applying at the boundary between two words is a sentence-level rule.[19]

We do not find any examples of SOI or DOI involving 6.1.86 *ṣatvatukor asiddhaḥ*. Let us now look at some derivations involving 8.2.1 *pūrvatrāsiddham*, and also how this rule interacts with SOI and DOI.

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[18] *Yadi rutvam asiddhaṁ syāt tadā sthānitvena ror āśrayaṇam anarthakaṁ syāt. kasyacid ukārānubandhaviśiṣṭasya ror asambhavāt.*

[19] However, I must admit that there exist other cases of this kind which remain intractable or unexplainable. For example, see example 15 of section 4.3, chapter 4 where 6.1.101 applies after the application of 8.2.28.

3) *rājan* + *bhis* – 'king', instrumental plural

Here, we apply 8.2.7 *nalopaḥ prātipadikāntasya* (which teaches that the final *n* of a nominal stem termed *pada* is replaced with *LOPA*) and get *rāja* + *bhis*. By 8.2.1 *pūrvatrāsiddham*[20], rules like 7.1.9 *ato bhisa ais*[21], 7.3.102 *supi ca*[22] and 7.3.103 *bahuvacane jhaly et*[23] which are applicable when deriving the instrumental plural of *a*-final stems, do not acknowledge the existence of 8.2.7. Consequently, they cannot acknowledge the outcome of its application either. Therefore, they are not applicable here. The correct form is *rājabhiḥ*.

If Pāṇini had not taught 8.2.1, we would have got the incorrect form **rājaiḥ* (cf. 7.1.9 *ato bhisa ais*).

4) *asmai* + *uddhara* 'lift (it) for him'

The derivation proceeds as follows: *asmai* + *uddhara* → *asmāy* + *uddhara* (6.1.78 *eco'yavāyāvaḥ*[24]) → *asmā* + *uddhara* (8.3.19 *lopaḥ śākalyasya*[25]). By 8.2.1, 8.3.19 is *asiddha* with respect to 6.1.87 *ād guṇaḥ*, which teaches that *guṇa* (*a, e, o*) replaces both *a* and the vowel immediately following it. Thus, the outcome of the application of 8.3.19 (i.e., *asmā* + *uddhara*) too is *asiddha* with respect to 6.1.87. Therefore, 6.1.87 is not applicable here. The correct phrase is *asmā uddhara*.

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[20] Technically, there is a rule more specific than 8.2.1 *pūrvatrāsiddham* which teaches this *asiddhatva*. This rule is 8.2.2 *nalopaḥ supsvarasaṁjñātugvidhiṣu kṛti*, which teaches that the rule teaching *n*-deletion is suspended with respect to rules pertaining to declension (*suP*), accent (*svara*), technical designations (*saṁjñā*) and introduction of augment *tUK* before a *kṛt* affix. 8.2.2 is a *niyama sūtra*, which allows *n*-deletion to be *asiddha* only in the aforementioned circumstances.

[21] *Ais* replaces *bhis* when *bhis* occurs after an *a*-final base.

[22] The *a* at the end of a nominal base is replaced with its long equivalent when followed by a declensional affix starting with *yaÑ* (i.e., *y, v, r l*, *jh*, *bh* or any nasal).

[23] The *a* at the end of a nominal base is replaced with *e* when followed by a plural declensional affix starting with *jhaL* (a non-nasal stop or a fricative).

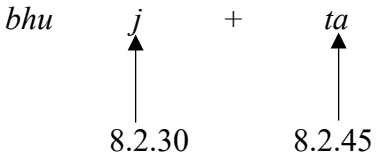
[24] An e*C* (*e, o, ai, au*) is replaced with *ay, av, āy*, *āv* respectively, when a vowel follows.

[25] A *pada*-final *v* or *y* which occurs after *a* or *ā* is, in the opinion of Śākalya, replaced with *LOPA* when *aŚ* (any voiced sound) follows.

If Pāṇini had not taught 8.2.1, we would have got the incorrect phrase **asmoddhara* (cf. 6.1.87 *ād guṇaḥ*).

Derivations 3 and 4 involve 8.2.1 but do not involve any cases of DOI or SOI. Now let us look at examples 5 and 6 which, alongside 8.2.1, also involve cases of DOI and SOI respectively.

5) *bhujO* + *Kta* – 'to bend', past passive participle



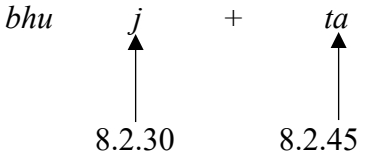
8.2.30 *coḥ kuḥ*: a sound denoted by *cU* (palatals) is replaced with a corresponding sound denoted by *kU* (velars) when *cU* occurs at the end of a *pada* or is followed by *jhaL* (a non-nasal stop or a fricative).

8.2.45 *oditaś ca*: the *t* of a *niṣṭhā* affix[26] which occurs after a verbal root marked with *O* is replaced with *n*.

This is a case of DOI. Both rules lie in the *tripādī.* Thus, 8.2.30 does not acknowledge the existence of 8.2.45. As stated before, I think that 1.4.2 comes into play only if the two rules can acknowledge each other's existence. Thus, 1.4.2 cannot address this case of DOI.

Therefore, the rule that cannot see the other rule applies here, and we get: *bhug* + *ta* (8.2.30). Now, 8.2.45 applies and we get the correct form *bhugna*.

In order to understand the crucial role played by 8.2.1 *pūrvatrāsiddham* in this derivation, let us analyse how this derivation would have proceeded in its absence:



8.2.30 *coḥ kuḥ*: same as above.

8.2.45 *oditaś ca*: same as above.

[26] 1.1.26 *ktaktavatū niṣṭhā.*

This is a case of DOI. But before we look at the outcome (as per my interpretation of 1.4.2), let us understand the relationship between 8.2.30 and 8.2.45. If we apply 8.2.30 at this step, 8.2.45 will be applicable at the following step (as seen in the derivation of *bhugna* above). But if we apply 8.2.45 at this step, then *t* will be replaced with *n*, which does not belong to *jhaL*. Thus 8.2.30 will not be applicable at the following step. In other words, the RHS rule 8.2.45 blocks the LHS rule 8.2.30, but the LHS rule 8.2.30 does not block the RHS rule 8.2.45. This is a case of unidirectional blocking.

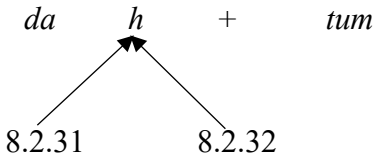
By my interpretation of 1.4.2, the RHS rule 8.2.45 applies and we get *bhuj* + *na*. As stated above, 8.2.45 blocks 8.2.30. Thus, 8.2.30 is unable to apply to *bhuj* + *na*, and we get the incorrect form *bhujna* → **bhujña* (8.4.40 *stoś ścunā ścuḥ*).

To get the correct form, one needs to apply both rules, 8.2.30 and 8.2.45, in two consecutive steps. Since 8.2.45 unidirectionally blocks 8.2.30, the only way to apply both rules, is to apply them in the following order: first, 8.2.30, and then, 8.2.45. For this, one needs to devise a way to neutralize the impact of 1.4.2. Pāṇini has achieved this with the help of 8.2.1. He has placed 8.2.45 (the RHS rule) after 8.2.1 *pūrvatrāsiddham* and also after the LHS rule 8.2.30 in the serial order of the *Aṣṭādhyāyī*. This enables 8.2.30 to ignore 8.2.45 and consequently, to apply before the application of 8.2.45.

Let me state in general terms how Pāṇini uses 8.2.1 to impact certain cases of DOI. In those cases of DOI wherein the RHS rule unidirectionally blocks the LHS rule, and where Pāṇini wants both the RHS and LHS rules to apply, he places the RHS rule after 8.2.1 and after the LHS rule in the serial order of the *Aṣṭādhyāyī*. In simple words, when required, Pāṇini uses 8.2.1 *pūrvatrāsiddham* to neutralize the impact of 1.4.2 on those cases of DOI which involve unidirectional blocking, where it is desirable for him to do so.[27]

[27] Even though the traditional understanding of *vipratiṣedha* is different from mine, it must be mentioned here that, in his first *vārttika* on 8.2.1, Kātyāyana says: *pūrvatrāsiddhe nāsti vipratiṣedho'bhāvād uttarasya* "in the section headed by 8.2.1, *vipratiṣedha* does not arise because of the absence [i.e., suspension] of the rule which comes later in the *Aṣṭādhyāyī*'s serial order" (Mbh III.385.14).

6) *dah* + *tumUN* – ‘to burn’, infinitive



8.2.31 *ho ḍhaḥ*: *h* is replaced with *ḍh* when *h* occurs at the end of a *pada*, or when it is followed by *jhaL* (a non-nasal stop or a fricative).

8.2.32 *dāder dhātor ghaḥ*: *gh* replaces the final *h* of a verbal root beginning with *d* when it occurs at the end of a *pada* or is followed by *jhaL* (a non-nasal stop or a fricative).

Because 8.2.32 is in the section governed by 8.2.1 and follows 8.2.31 in the serial order of the *Aṣṭādhyāyī*, it is *asiddha* with respect to 8.2.31. According to the tradition, since 8.2.32 is *asiddha* with respect to 8.2.31, 8.2.31 should apply here. This, however, gives *daḍh* + *tum*, which leads to the wrong form **dāḍhum*.[28]

Kātyāyana acknowledges the fact that, to get the correct answer, we need to apply 8.2.32 which is the exception, and not 8.2.31, which is the general rule. However, he assumes that the exception rule cannot win if it is *asiddha* with respect to the general rule. To tackle this problem, in vt. 2[29] on 8.2.1, he says: *apavādo vacanaprāmāṇyāt* ‘the exception [wins] on the authority of the statement [of rule 8.2.32]’.

Thus, for the tradition, the exception rule 8.2.32 is not *asiddha* with respect to the general rule 8.2.31, thanks to Kātyāyana’s *vārttika*. Therefore, the former wins, leading to the correct form: *dah* + *tum* → *dagh* + *tum* (8.2.32 *dāder dhātor ghaḥ*) → *dagh* + *dhum* (8.2.40 *jhaṣas tathor dho’dhaḥ*) → *dagdhum* (8.4.53 *jhalāṁ jaś jhaśi*).

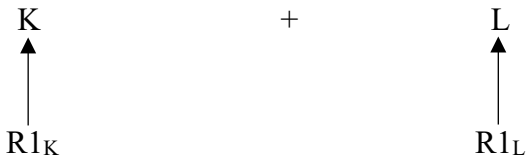
I disagree with the tradition. I think that, in case of SOI, the more specific rule wins even if it is *asiddha* with respect to the general rule. Let me explain why. We know that Pāṇini has instructed us on how to tackle DOI through his rule 1.4.2, but he has not given any instructions about dealing with SOI. Similarly, I think that, in teaching 8.2.1 *pūrvatrāsiddham* and 6.4.22

[28] *dah* + *tum* → *daḍh* + *tum* (8.2.31) → *daḍh* + *dhum* (8.2.40 *jhaṣas tathor dho’dhaḥ*) → *daḍh* + *ḍhum* (8.4.41 *ṣṭunā ṣṭuḥ*) → *da* + *ḍhum* (8.3.13 *ḍho ḍhe lopaḥ*) → **dāḍhum* (6.3.111 *ḍhralope pūrvasya dīrgho’ṇaḥ*).

[29] Mbh III.385.19-21.

asiddhavad atrā bhāt, Pāṇini has given instructions vis-à-vis DOI but not vis-à-vis SOI. In other words, 8.2.1 and 6.4.22 have no impact on SOI. Consider the following situation:

We know that there is an SOI between $R1_K$ and $R2_K$, and an SOI between $R1_L$ and $R2_L$. Before 1.4.2, 8.2.1 and 6.4.22 can potentially exert their influence, Pāṇini resolves both these SOIs. Let us assume that $R1_K$ is more specific that $R2_K$, thus $R1_K$ wins. Similarly, let us assume that $R1_L$ is more specific than $R2_L$, thus $R1_L$ wins. The above diagram can be redrawn as follows, by omitting to mention the losing rules:



Now, 1.4.2, 8.2.1 and 6.4.22 can potentially come into play. If neither of the two rules are governed by 8.2.1 or 6.4.22, then by my interpretation of 1.4.2, the RHS rule $R1_L$ applies at this step. If 8.2.1 governs one of the two rules, that is, for example, if $R1_L$ is *asiddha* with respect to $R1_K$, then 1.4.2, which I think comes into the picture only when both rules acknowledge each other's existence, cannot resolve this DOI. By 8.2.1, $R1_K$ applies at this step. I hope this disambiguates my proposition that 1.4.2, 8.2.1 etc. are relevant in regard with DOI but not in regard with SOI.

Coming back to the present example, I think the fact that 8.2.32 is *asiddha* with respect to 8.2.31 has no bearing on our method of resolving SOI, which requires us to pick the more specific rule. The more specific rule 8.2.32 wins despite being *asiddha* with respect to the general rule 8.2.31.

Now let us examine 6.4.22 *asiddhavad atrā bhāt*. As stated in section 5.1 of this chapter, according to the *Kāśikā*, 6.4.22 means:

A is *asiddhavat* with respect to B if:

(i) both A and B are taught in 6.4.22 – 6.4.175 (*ā bhāt*), and

(ii) both A and B have a *samānāśraya* 'common substratum' (*atra*).

I disagree with *Kāśikā*'s interpretation of all three parts of this rule, namely *asiddhavat*, *ā bhāt* and *atra*. Let us begin by looking at *asiddhavat*. As stated in section 5.1, the tradition does not differentiate between *asiddha* and *asiddhavat*. It interprets both of them as 'suspended'. However, I do not think that Pāṇini would have added -*vat* to *asiddha* if he wanted to convey a meaning that can be conveyed by *asiddha* itself.

In fact, *asiddhavat* is derived by adding the *taddhita* affix *vatI* to *asiddha* + *Ṭā* (cf. 5.1.115 *tena tulyaṁ kriyā cedvatiḥ*[30]). *Ṭā* is later deleted by 2.4.71 *supo dhātuprātipadikayoḥ*, thereby leading to the form *asiddhavat*, which means 'like *asiddha*'. So, *asiddhavat* is different from yet similar to *asiddha*.

We know that *asiddha* implies *śāstrāsiddhi* ('Rule X is suspended with respect to rule Y') which in turn always entails *kāryāsiddhi* ('The outcome of the application of rule X is suspended with respect to rule Y'). Because *asiddha* and *asiddhavat* have different meanings, the only possible interpretation of *asiddhavat* is *kāryāsiddhi*: 'the outcome of the application of rule X is suspended with respect to rule Y.'[31] I will support this conclusion with more evidence later in this chapter. The meanings of *asiddha* and *asiddhavat* can be summarized as follows:

Type	*śāstrāsiddhi*	*kāryāsiddhi*
asiddha	Yes	Yes
asiddhavat	No	Yes

[30] The *taddhita* affix *vatI* occurs to denote the sense of *tulya* 'similar to, comparable with' after a syntactically related nominal stem ending in *tṛtīyā* 'instrumental', provided what is *tulya* is also *kriyā* 'action'.

[31] Cardona (1997: 425) too holds this opinion: "I differ from Pāṇinīyas in my interpretation of 6.4.22 [*asiddhavad atrābhāt*]. Pāṇinīyas maintain that this too should be considered to provide for rule suspension (*śāstrāsiddhatvam*), not the suspension of what results from applying rules (*kāryāsiddhatvam*)".

So, how does 6.4.22, which teaches *asiddhavat*, interact with 1.4.2?

(i) In case of DOI between two rules, if these two rules are *asiddhavat* with respect to each other, they acknowledge each other's existence (because there is no *śāstrāsiddhi*). This allows the resolution of the DOI by 1.4.2.

(ii) Each of these two rules involved in DOI does not acknowledge the outcome of the application of the other (because there is *kāryāsiddhi*). This ensures that, after the RHS rule has applied (by my interpretation of 1.4.2), the LHS rule <u>always</u> applies at the following step, because it does not acknowledge the outcome of the application of the RHS rule.

This will become clearer in the examples below. Now let us attempt to decipher the meaning of *ā bhāt* in 6.4.22 *asiddhavad atrā bhāt*. As stated in section 5.1 of this chapter, Kātyāyana and Patañjali discuss both possibilities: one, that the jurisdiction of 6.4.22 ends at 6.4.129, and the other, that it continues up to the end of 6.4.

I think that the *adhikāra* of 6.4.22 ends at 6.4.129. Let me explain why this is the case. We know how Pāṇini indicates the boundary of *adhikāra sūtra*s: he uses either *ā* or *prāk* in conjunction with a term from the *sūtra* which constitutes the boundary, in the ablative. For example, consider 1.4.1 *ā kaḍārād ekā saṁjñā* , the jurisdiction of which ends at 2.2.38 *kaḍārāḥ karmadhāraye* and 4.1.83 *prāg dīvyato'ṇ*, the jurisdiction of which ends at 4.4.2 *tena dīvyati khanati jayati jitam*. So, if Pāṇini wanted to state that the *adhikāra* of 6.4.22 continues up to 6.4.175 *ṛtvyavāstvyavāstvamādhvīhiraṇyayāni cchandasi*, then he would have said, in 6.4.22, *asiddhavad atra ā ṛtvyāt* (which, after *sandhi*, becomes *asiddhavad atrārtvyāt*). But since he has said *asiddhavad atrābhāt*, the jurisdiction of 6.4.22 continues only up to 6.4.129 *bhasya*. The examples discussed below will buttress my position.

Now let us examine the word *atra* in 6.4.22. As stated in section 5.1 of this chapter, Kātyāyana discusses two possible interpretations of the word *atra*. One is *samānāśrayatva* 'common substratum' and the other 'with respect to the rules taught here'. Only one of the two interpretations can be correct, and I think that it is the latter, for reasons that I will now explain.

Firstly, notice that in 8.2.1 we find another term which like *a-tra*, ends in the affix *traL*, namely *pūrva-tra*. There, *pūrva-tra* means 'with respect to the rules taught before (in the *Aṣṭādhyāyī*'s serial order)'. This strongly suggests that in 6.4.22, *atra*, which also ends in *tra*, means 'with respect to the rules taught here (in the section governed by 6.4.22)'.

Secondly, consider *Kāśikā*'s interpretation of 6.4.22: that which is taught in the section starting here and extending up to the end of 6.4 (*ā bhāt*) is suspended (*asiddhavat*), if both rules have a *samānāśraya* 'common substratum' (*atra*). It infers *samānāśrayatva* from the word *atra.* But if we assume that *atra* implies *samānāśrayatva*, then it follows that Pāṇini has not said anything about the rules with respect to which the rules in the section headed by 6.4.22 are *asiddhavat*. As I have stated earlier, in such a case, rules in the *ābhīya* section become *asiddhavat* with respect to, for example, rules from *adhyāya* seven, which is not desirable. This too indicates that *atra* means 'with respect to the rules taught here (i.e., in the section 6.4.22-6.4.129)'. I will discuss this further when dealing with specific examples below.

Now that I have discussed my opinion about all three parts of 6.4.22, namely *asiddhavat*, *atra* and *ā bhāt*, here is my interpretation of 6.4.22:

6.4.22 *asiddhavad atrā bhāt*: the outcome of the application of a rule taught in the section 6.4.22-6.4.129, is not acknowledged by any other rule taught here (*atra*), that is, in the section 6.4.22-6.4.129.

For the sake of clarity, I reproduce the table dealing with the difference between *asiddha* and *asiddhavat* below:

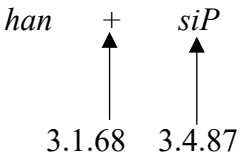
Type	*śāstrāsiddhi*	*kāryāsiddhi*
asiddha	Yes	Yes
asiddhavat	No	Yes

Before we look at derivations involving 6.4.22, here is a summary of my interpretation of all three rules:

A	B	C
Rule	Rules which are *asiddha* (under 6.1.86 and 8.2.1) / *asiddhavat* (under 6.4.22)	Rules with respect to which rules in column B are *asiddha* (under 6.1.86 and 8.2.1) / *asiddhavat* (under 6.4.22)
6.1.86 *ṣatvatukor asiddhaḥ* (*ekaḥ pūrvaparayoḥ*)	Any rule teaching *ekādeśa* (6.1.84-6.1.108)	Any rule teaching introduction of augment *tUK* (e.g., 6.1.71 *hrasvasya piti kṛti tuk*) or replacement of *s* with *ṣ* (e.g., 8.3.59 *ādeśapratyayoḥ*)
8.2.1 *pūrvatrāsiddham*	Any rule G that comes after 8.2.1 in the serial order of the *Aṣṭādhyāyī*	Any rule F which comes before rule G (see column B) in the serial order of the *Aṣṭādhyāyī*
6.4.22 *asiddhavad atrā bhāt*	Any rule taught in 6.4.22-6.4.129.	Any rule taught in 6.4.22-6.4.129.

Let us now look at derivations which involve both SOI and 6.4.22.

7) *han* + *siP* – 'to hurt', imperative second-person singular[32]



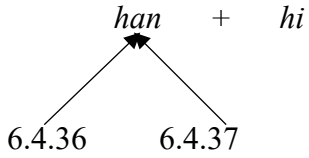
3.1.68 *kartari śap*: affix *ŚaP* occurs after a verbal root when a *sārvadhātuka* affix which denotes *kartṛ* 'agent' follows.

3.4.87 *ser hy apic ca*: a *siP* replacement of *LOṬ* is replaced with *hi* and is treated as if not marked with *P*.

This is a case of DOI. By my interpretation of 1.4.2, we apply the RHS rule 3.4.87 and get *han* + *hi*. Thereafter the derivation proceeds as follows: *han* + *hi* → *han* + *ŚaP* + *hi* (3.1.68) →

[32] We have performed an almost identical derivation in chapter 4 (see derivation 10, section 4.3). There, we replaced *hi* with *tātAṄ*, by the optional rule 7.1.35 *tuhyos tātaṅ āśiṣy anyatarasyām.* Here, however, we will not apply 7.1.35.

han + *hi* (2.4.72 *adiprabhṛtibhyaḥ śapaḥ*). Now, *han* can be called an *aṅga* with respect to *hi* (cf. my interpretation of 1.4.13). Thus, the following rules from the *aṅgādhikāra* become applicable:



6.4.36 *hanter jaḥ*: the root *han* is replaced with *ja* when the affix *hi* follows.

6.4.37 *anudāttopadeśavanatitanotyādīnām anunāsikalopo jhali kṅiti*: the final nasal of a base marked with *anudātta* when taught in the *Dhātupāṭha*, as well as of *vanA* 'to like' and the roots headed by *tanU* 'to extend', is replaced with *LOPA* when an affix beginning with *jhaL* (a non-nasal stop or a fricative) and marked with *K* or *Ṅ* follows.[33]

There is an SOI relationship between 6.4.36 and 6.4.37. 6.4.36 is specifically taught for *han* + *hi*, so it is more specific than 6.4.37.

Note that the two rules 6.4.36 and 6.4.37 have been taught in the *asiddhavat* section. However, as argued above (see example 6), Pāṇini's rules 8.2.1 and 6.4.22 deal with DOI, but not with SOI. Like 8.2.1, 6.4.22 too has no impact on SOI. Here, the more specific rule 6.4.36 wins, and we get *jahi,* which is the correct form.

Now let us imagine what would have happened in the absence of 6.4.22. The following rule would have become applicable to *ja* + *hi*:

6.4.105 *ato heḥ*: a *hi* which comes after a base ending in *a* is replaced with *LUK*.

This would have given the incorrect form **ja*. 6.4.22 helps us avoid deriving this incorrect form: as taught by 6.4.22, 6.4.36 is *asiddhavat* with respect to 6.4.105. So even though 6.4.105 can acknowledge the existence of 6.4.36, it cannot acknowledge the outcome of the application of 6.4.36. As a result, 6.4.105 is not applicable to *jahi.*

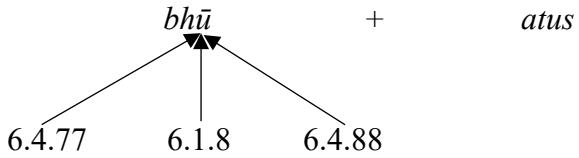
[33] Since *hi* is a *sārvadhātuka* which is not marked with *P*, we can say that it is marked with *K* by 1.2.4 *sārvadhātukam apit*. Thus 6.4.37 is applicable.

8) *bhū* + *tas* – ‘to be’, perfect third-person dual

6.1.8 *liṭi dhātor anabhyāsasya*: a verbal base which has not undergone reduplication undergoes reduplication when followed by *LIṬ*.[34]

3.4.82 *parasmaipadānāṁ ṇalatususthalathusaṇalvamāḥ*: *ṆaL*, *atus*, *us*, *thaL*, *athus*, *a*, *ṆaL*, *va* and *ma* respectively come in place of the nine *parasmaipada* replacements of *LIṬ* namely *tiP*, *tas*, *jhi*, *siP*, *thas*, *tha*, *miP*, *vas* and *mas*.

By my interpretation of 1.4.2, we apply the RHS rule 3.4.82 and get: *bhū* + *atus*. Here, three rules are applicable:



6.1.8 *liṭi dhātor anabhyāsasya*: same as above.

6.4.77 *aci śnudhātubhruvāṁ yvor iyaṅuvaṅau*: the final *i* and *u* of *Śnu*, and of any verbal base, and of *bhrū* ‘brow’ are replaced with *iyAṄ* and *uvAṄ*, respectively, when an affix beginning with a vowel follows.

6.4.88 *bhuvo vug luṅliṭoḥ*: augment *vUK* is attached to *bhū* when a *LUṄ* or *LIṬ* affix beginning with a vowel follows.

This is a case of SOI. Note that 6.4.77 and 6.4.88 both belong to the section headed by 6.4.22. However, as stated above, 6.4.22 does not impact SOI. Let us find out which of the three rules is the most specific.

6.4.77 *aci śnudhātubhruvāṁ yvor iyaṅuvaṅau*

bhū* + affix beginning with *aC

other conditions

[34] Note that, the whole base does not undergo reduplication. Instead, only one syllable does. See 6.1.1 *ekāco dve prathamasya* and 6.1.2 *ajāder dvitīyasya*.

6.1.8 *liṭi dhātor anabhyāsasya*

***bhū* + affix beginning with *aC* (*LIṬ*)**

other conditions

6.4.88 *bhuvo vug luṅliṭoḥ*

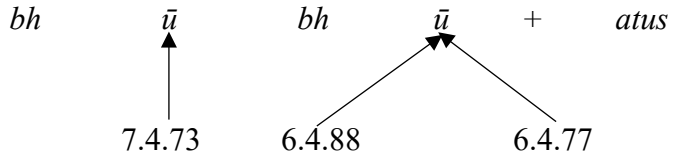
***bhū* + affix beginning with *aC* (*LIṬ*)**

bhū + affix beginning with *aC* (*LUṄ*)

other conditions

6.4.88 and 6.1.8 are both more specific than 6.4.77 because 6.4.77 has not been taught specifically for *LIṬ*. Between 6.4.88 and 6.1.8, 6.1.8 is more specific because it has been taught exclusively for *LIṬ*, whereas 6.4.88 has been taught for both *LUṄ* and *LIṬ*.

Thus, 6.1.8 emerges as the most specific rule. Upon applying it, we get: *bhūbhū* + *atus*. Here the following rules are applicable:



7.4.73 *bhavater aḥ*: *a* replaces the last sound of the *abhyāsa* of *bhū* 'to be' when *LIṬ* follows.

6.4.88 *bhuvo vug luṅliṭoḥ*: same as above.

6.4.77 *aci śnudhātubhruvāṁ yvor iyaṅuvaṅau*: same as above.

By my interpretation of 1.4.2, we perform the RHS operation. But which of the two RHS rules should we apply? As stated above, there is an SOI between 6.4.88 and 6.4.77, and the more specific rule 6.4.88 wins. Thus, we get: *bhūbhūv* + *atus*. At this step, 7.4.43 applies, giving us *bhabhūv* + *atus*. Now that all rules from the *sapādasaptādhyāyī* have applied, the rule 8.4.54 *abhyāse car ca* applies, thereby giving the correct form: *babhūvatuḥ*.

In vt. 14[35] on 6.4.22, Kātyāyana alludes to the interaction between *vUK* (6.4.88) and *uvAṄ* (6.4.77). He says: *vugyuṭāv uvaṅyaṇoḥ* 'rules teaching augments *vUK* and *yUṬ* [should be *siddha* and not *asiddhavat*] with respect to rules teaching *uvAṄ* and *yaÑ*'. This *vārttika* is

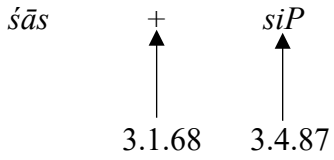
[35] Mbh III.191.15.

premised on the assumption that, if 6.4.88 *bhuvo vug luṅliṭoḥ* is *asiddhavat* (which according to the tradition, has the same meaning as *asiddha*) with respect to 6.4.77 *aci śnudhātubhruvāṁ yvor iyaṅuvaṅau*, then 6.4.77 will apply, giving the wrong answer **babhuvatuḥ.*

However, as I have shown in the derivation above, there is an SOI between 6.4.77 and 6.4.88, and 6.4.22 has no impact on SOI. Thus, Pāṇini's system correctly derives this form, and this *vārttika* is not required to assist in the process.

Now let us consider an example which demonstrates the impact of 6.4.22 on DOI.

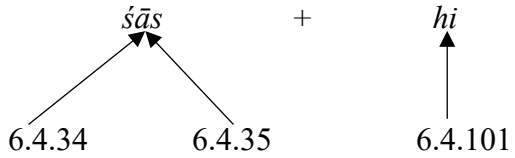
9) *śās* + *siP* – 'to teach', imperative second-person singular[36]



3.1.68 *kartari śap*: affix *ŚaP* occurs after a verbal root when a *sārvadhātuka* affix which denotes *kartṛ* 'agent' follows.

3.4.87 *ser hy apic ca*: a *siP* replacement of *LOṬ* is replaced with *hi* and is treated as if not marked with *P*.

This is a case of DOI. By my interpretation of 1.4.2, we apply the RHS rule 3.4.87 and get *śās* + *hi.* Thereafter, the derivation proceeds as follows: *śās* + *hi* → *śās* + *ŚaP* + *hi* (3.1.68) → *śās* + *hi* (2.4.72 *adiprabhṛtibhyaḥ śapaḥ*[37]). *śās* can now be called an *aṅga* with respect to *hi* (cf. my interpretation of 1.4.13). Thus, the following rules from the *aṅgādhikāra* become applicable:



[36] We have performed this derivation in chapter 4. See derivation 9 of section 4.3. There, we replaced *hi* with *tātAṄ*, by the optional rule 7.1.35 *tuhyos tātaṅ āśiṣy anyatarasyām.* Here, however, we will not do so.

[37] Affix *ŚaP* is replaced with *LUK* when it occurs after roots belonging to the set headed by *adA* 'to eat' (second class).

6.4.34 *śāsa id aṅhaloḥ*: the penultimate sound of *śās*, is replaced with short *i* when followed by *aṄ*, or an affix that begins with a consonant and is marked with *K* or *Ṅ*. [38]

6.4.35 *śā hau*: *śās* is replaced with *śā* when affix *hi* follows.

6.4.101 *hujhalbhyo her dhiḥ*: *hi* is replaced with *dhi* when it occurs after root *hu* or after a form ending in *jhaL* (a non-nasal stop or a fricative).

There is an SOI between 6.4.34 and 6.4.35. As stated before, 6.4.22 does not impact SOI. 6.4.35 is more specific because it pertains to *hi* alone and thus wins.

Now we shall focus on the interaction between 6.4.35 and 6.4.101. Note that both these rules fall under the heading rule 6.4.22 *asiddhavad atrābhāt*. Thus 6.4.35 can acknowledge the existence of 6.4.101 but cannot acknowledge the outcome of the application of 6.4.101. Similarly, 6.4.101 can acknowledge the existence of 6.4.35 but not the outcome of the application of 6.4.35.

Since 6.4.35 and 6.4.101 acknowledge each other's existence, we can use 1.4.2 to deal with this case of DOI. By my interpretation of 1.4.2, we apply the RHS rule 6.4.101 and get *śās + dhi.* Since 6.4.101 is *asiddhavat* with respect to 6.4.35, 6.4.35 does not acknowledge the outcome of the application of 6.4.101. Thus 6.4.35 applies and we get the correct form: *śādhi*.

In order to understand the crucial role played by 6.4.22 in this derivation, let us analyse how this derivation would have proceeded in its absence. We will directly look at the relevant step:

Let us examine the relationship between 6.4.35 and 6.4.101. If, by 6.4.35, we replace *śās* with *śā* at this step, then 6.4.101, which applies to *hi* when *hi* is preceded by *jhaL*, will not be applicable at the following step. If, by 6.4.101, we replace *hi* with *dhi* at this step, then 6.4.35, which applies to *śās* when it is followed by *hi*, will not be applicable at the following step. This is a case of mutual blocking in DOI.

[38] *hi* is an *apit* (cf. 3.4.87 *ser hy apic ca*) *sārvadhātuka*, and so by 1.2.4 *sārvadhātukam apit*, we can say that it is marked with *K* or *Ṅ*. Thus, 6.4.34 is applicable here.

By my interpretation of 1.4.2, we apply the RHS rule 6.4.101 and get *śās* + *dhi*. As stated above, 6.4.35 is not applicable after the application of 6.4.101. Thus, the final form is **śāsdhi*, which is incorrect. To get the correct form *śādhi*, we need to apply both 6.4.35 and 6.4.101. However, since both rules block each other, only one can apply in this derivation. To overcome this problem, Pāṇini has put them both in the section headed by 6.4.22.

6.4.22 teaches that the two rules within 6.4.22-6.4.129 are *asiddhavat* with respect to each other. At the risk of repetition, let me state that this ensures two things:

(i) Both rules acknowledge each other's existence. This allows the resolution of the DOI by (my interpretation of) 1.4.2.

(ii) Each of the two rules does not acknowledge the outcome of the application of the other. This ensures that, after the RHS rule has applied (by my interpretation of 1.4.2), the LHS rule applies at the following step, because it does not acknowledge the outcome of the application of the RHS rule.

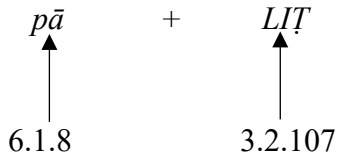
Let me state in general terms what we have seen in this derivation. In those cases of DOI wherein two rules block each other, and where Pāṇini wants both rules to apply, he places them in the section 6.4.22-6.4.129. In simple words, when required, Pāṇini uses 6.4.22 *asiddhavad atrā bhāt* to neutralize the impact of 1.4.2 (as interpreted by me) on those cases of DOI which involve mutual blocking, where it is desirable for him to do so. Contrast this with 8.2.1, which as I have stated earlier, is leveraged by Pāṇini to neutralize the impact of 1.4.2 on those cases of DOI which involve unidirectional blocking.[39]

Note that, if Pāṇini had taught 6.4.22 as *asiddham atrā bhāt* instead of *asiddhavad atrā bhāt*, then both rules, namely 6.4.35 and 6.4.101, would not be able to acknowledge each other. Thus, both would try to apply to their respective operands. Since only one rule can apply at any given step, the machine would have come to a halt.

Now, through the following derivation, I will provide evidence to support my claim that the jurisdiction of 6.4.22 ends at 6.4.129.

[39] For more examples of the impact of 6.4.22 on DOI, see derivations 24 and 26 of section 4.3, chapter 4.

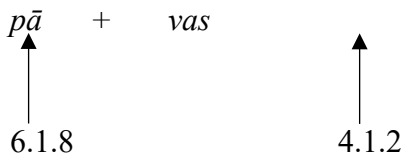
10) Let us derive the accusative plural of the Vedic perfect participle of *pā* 'to drink': *pā* + *LIṬ* 'he who had drunk'[40].



6.1.8 *liṭi dhātor anabhyāsasya*: an un-reduplicated verbal base undergoes reduplication when followed by *LIṬ*.[41]

3.2.107 *kvasuś ca*: *KvasU* optionally replaces *LIṬ* in Vedic when the action is denoted in the past.

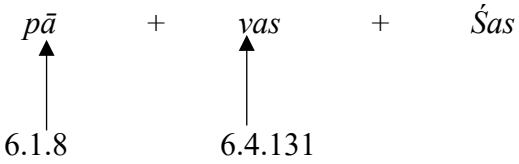
By my interpretation of 1.4.2, we apply the RHS rule 3.2.107 and get *pā* + *KvasU*. Here the following rules are applicable:



6.1.8 *liṭi dhātor anabhyāsasya*: same as above.

4.1.2 *svaujasamauṭchaṣṭābhyāmbhisṅebhyāmbhyasṅasibhyāmbhyasṅasosāmṅyossup*[42]

By my interpretation of 1.4.2, we apply the RHS rule 4.1.2 and get: *pā* + *vas* + *Śas*. Here, the following rules are applicable:



[40] In contrast with other derivations, where, for brevity's sake, I start the derivation directly with the substitute of the *lakāra*, here I have started this unconventional derivation with *LIṬ* for the sake of clarity.

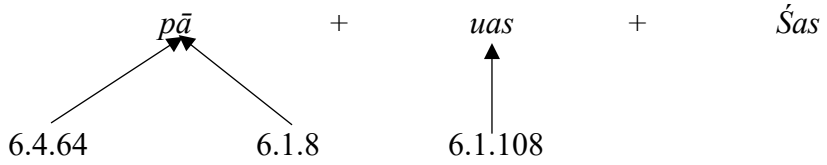
[41] Note that the whole base does not undergo reduplication. Instead, only one syllable does. See 6.1.1 *ekāco dve prathamasya* and 6.1.2 *ajāder dvitīyasya*.

[42] This is applicable because *KvasU* is a *kṛt* affix (cf. 1.2.46 *kṛttaddhitasamāsāś ca*).

6.1.8 *liṭi dhātor anabhyāsasya*: same as above.

6.4.131 *vasoḥ samprasāraṇam*: the semivowel of the affix *vasU* in an item termed *bha* is replaced with the corresponding vowel *u.*

By my interpretation of 1.4.2, we apply the RHS rule 6.4.131 and get *pā* + *uas* + *Śas*. Here, the following rules are applicable:

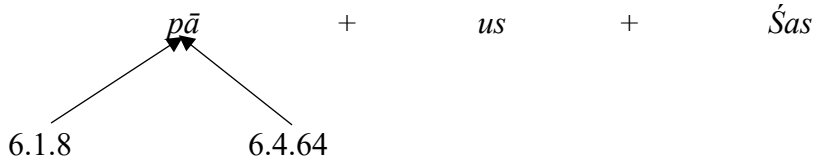


6.4.64 *āto lopa iṭi ca*: the final *ā* of a base is replaced with *LOPA* when followed by augment *iṬ* or an *ārdhadhātuka* affix which begins with a vowel and is marked with *K* or *Ṅ*.

6.1.8 *liṭi dhātor anabhyāsasya*: same as above.

6.1.108 *samprasāraṇāc ca*: a *samprasāraṇa* vowel and the following vowel, are together replaced with the former.

By my interpretation of 1.4.2, we apply the RHS 6.1.108 rule and get *pā* + *us* + *Śas*. Here, two rules are applicable:



6.4.64 *āto lopa iṭi ca*: same as above.

6.1.8 *liṭi dhātor anabhyāsasya*: same as above.

This is a case of SOI. Let us compare the two rules to determine which one is more specific:

6.4.64

***ā* + affix beginning with vowel (*ārdhadhātuka*) (marked with *K* or *Ṅ*)**

other conditions

6.1.8

***ā* + affix beginning with vowel (*LIṬ*)**

other conditions

We cannot say that one rule is more specific than the other in this scenario. So, which of the two rules should we apply here?

Let us understand the relationship between the two rules.

In *pā + us + Śas*, if we apply 6.1.8 *liṭi dhātor anabhyāsasya*, we get *pāpā + us + Śas*. 6.4.64 *āto lopa iṭi ca* is still applicable here.

But in *pā + us + Śas*, if we apply 6.4.64 (which teaches the substitution of *ā* with ø i.e., *LOPA*), we get *pø + us + Śas*. Here, is 6.1.8 applicable?

Pāṇini has taught the rule 1.1.59 *dvirvacane'ci*, which, according to the *Kāśikā*[43], teaches that the substitute of a vowel is treated like its substituendum (i.e., the said vowel) – for the purpose of reduplication alone – when it is followed by a vowel-initial affix which conditions reduplication of the verbal base. So, in *pø + us + Śas*, by 1.1.59, we can treat *LOPA* (ø), which is the substitute of vowel *ā*, as the substituendum *ā*, because it is followed by the vowel-initial affix *us* which causes reduplication. Therefore, 6.1.8 *liṭi dhātor anabhyāsasya* is applicable here.

We have seen that the two rules do not block each other and we can apply them in any order. I think Pāṇini composed 1.1.59 to ensure that, if we apply 6.4.64 to *pā + us + Śas*, 6.1.8 can still be applied at the following step.

After applying both 6.4.64 and 6.1.8, we get *pāp + us + Śas*. To this we apply 7.4.59 *hrasvaḥ*[44] and get the correct form: *papuṣaḥ*.[45]

As stated before, according to my interpretation of 6.4.22 *asiddhavad atrā bhāt*, the jurisdiction of 6.4.22 ends at 6.4.129.

However, in the opinion of the *Kāśikā*, this jurisdiction continues up to the end of 6.4 (i.e., 6.4.175) and, therefore, it creates a difficulty in the derivation of *papuṣaḥ*. As seen above, 6.4.131 *vasoḥ samprasāraṇam* changes *vas* to *uas.* Since *uas* begins with a vowel, 6.4.64 *āto*

[43] Note that the *Mahābhāṣya* discusses two possible interpretations of 1.1.59. I have mentioned the one accepted by the *Kāśikā*. I think this is the correct interpretation. The *Kaumudī* accepts the other interpretation, which I think is incorrect. I will not discuss the same here because it is not directly related to the topic of *asiddhavat*.

[44] The vowel of the *abhyāsa* 'first of two reduplicated syllables' is replaced with its short counterpart.

[45] 8.3.59 *ādeśapratyayoḥ.*

lopa iṭi ca becomes applicable to the *ā* of *pā*. However, both 6.4.64 and 6.4.131 lie within 6.4.22 – 6.4.175, which is the jurisdiction of 6.4.22 according to the *Kāśikā*. Thus, the *Kāśikā* deems them *asiddhavat* with respect to each other. Consequently, 6.4.64 does not acknowledge the outcome of the application of 6.4.131. In other words, it does not acknowledge the change from *vas* to *uas* and cannot apply. This gives the incorrect form: *papā* + *usas* → **paposas* (6.1.87 *ād guṇaḥ*).

I think the tradition interprets *atra* as *samānāśraya* for the sole purpose of overcoming this problem. According to the *Kāśikā*, two rules can be called *asiddhavat* by 6.4.22 only if they have a *samānāśraya* 'common substratum'. Without explaining exactly what this means, the *Kāśikā* gives the following example: 6.4.131 and 6.4.64 do not have a *samānāśraya*, and thus they are not *asiddhavat* with respect to each other.[46] Consequently, 6.4.64 acknowledges 6.4.131 and applies to *papā* + *uṣaḥ* (which has been derived by applying 6.4.131). In this way, we get the correct form *papuṣaḥ*.

But what exactly does *samānāśraya* stand for? The *Nyāsa* glosses *āśraya* as *nimitta* 'cause'. So according to the *Nyāsa*, a rule is *asiddhavat* with respect to another only if the two rules have a *samānāśraya* 'common cause'. However, I do not think that here *āśraya* means *nimitta*. Let me explain why, by looking at another derivation: at the step *śās* + *hi* (see derivation 9 of this section), 6.4.35 *śā hau* which applies to *śās* is caused by *hi*, while 6.4.101 *hujhalbhyo her dhiḥ*, which applies to *hi*, is caused by *śās*. Even though the two rules do not have the same cause, the tradition deems them *asiddhavat* with respect to each other. So, when Kātyāyana uses the word *samānāśraya* in vt. 12 *samānāśrayavacanāt siddham*, he does not imply 'common cause'. What then does he mean?

It is not possible to answer this question with certainty. But one can speculate that when Kātyāyana says two rules are *samānāśraya*, he likely means that they pertain to the same set of items. Both rules 6.4.101 and 6.4.35 pertain to *śās* + *hi*, thus they are *samānāśraya* and *asiddhavat* with respect to each other. However, in our present example, 6.4.131 pertains to *vas* + *Śas*, whereas 6.4.64 *āto lopa iṭi ca* pertains to *papā* + *uas*. The two rules have different *āśraya*s 'substrata' and thus, according to the tradition, they are not *asiddhavat* with respect to each other.

[46] On vt. 12 *samānāśrayatvāt siddham*, Patañjali says, *samānāśrayam asiddhaṁ bhavati vyāśrayaṁ caitat.*

Kātyāyana also offers another solution, which basically amounts to stating that this set of examples should be exempt from following 6.4.22. In vt. 9[47] on 6.4.22, he teaches: *siddhaṁ vasusamprasāraṇam ajvidhau* 'the *samprasāraṇa* of *vasU* should be *siddha* (rather than *asiddhavat*) with regard to an operation concerning vowels.'

It is evident that the tradition struggles to resolve this problem and comes up with not one, but two alternative ways of dealing with it. Not only does Kātyāyana write a *vārttika* contradicting 6.4.22, but he also concocts the concept of *samānāśrayatva* to address this difficulty.

On the contrary, notice that, according to my interpretation of 6.4.22, 6.4.131 does not lie in the *ābhīya* section (6.4.22-6.4.129). Thus, in my opinion, 6.4.131 is not *asiddhavat* with respect to 6.4.64. Therefore, if we accept that the jurisdiction of 6.4.22 stops at 6.4.129, the challenges faced by the tradition in deriving this form do not rise. My interpretation of *atra* (with respect to the rules taught here, i.e., in the section headed by 6.4.22) and *ā bhāt* (up to 6.4.129) allows us to correctly derive *papuṣaḥ* without flouting 6.4.22.

Kātyāyana also discusses other examples of this nature, wherein he has had to write ad hoc *vārttika*s claiming that certain rules taught in the section 6.4.129-6.4.175, which, according to him, constitute a part of the *ābhīya* section (6.4.22-6.4.175), are not *asiddhavat*, contrary to his own interpretation of 6.4.22 (generally adopted by the later tradition).

For example, the problem faced by the tradition in deriving *paśuṣaḥ* (accusative plural of *paśu* + *saN* 'bestowing cattle') is the same as the one faced in deriving *papuṣaḥ*. To avoid redundancy, I will derive it by my method here without showing the DOI and SOI that might arise at different steps: *paśusaN* + *vIṬ* (3.2.67 *janasanakhanakramagamo viṭ*) → *paśusan* + *vIṬ* + *Śas* (4.1.2 *svaujas…*) → *paśusan* + *ø* + *Śas* (6.1.67 *ver apṛktasya*) → *paśusaā* + *ø* + *Śas* (6.4.41 *viḍvanor anunāsikasyāt*, 1.1.62 *pratyayalope pratyayalakṣaṇam*) → *paśusa* + *Śas* (6.4.140 *āto dhātoḥ*) → *paśusas* (6.1.97 *ato guṇe*) → *paśuṣaḥ* (8.3.108 *sanoter anaḥ*).

As seen in this derivation, in order to correctly derive *paśuṣaḥ*, one needs to first apply 6.4.41 *viḍvanor anunāsikasyāt* and then 6.4.140 *āto dhātoḥ*. However, according to the tradition, since the jurisdiction of 6.4.22 continues up to 6.4.175, 6.4.41 is *asiddhavat* with respect to 6.4.140. Consequently 6.4.140 cannot apply after the application of 6.4.41. This creates an obstacle in correctly deriving *paśuṣaḥ*. To deal with this problem, Kātyāyana has composed vt. 11[48] on

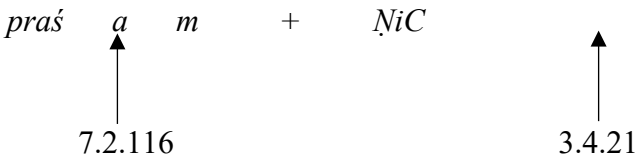
[47] Mbh III.190.11.

[48] Mbh III.190.17.

6.4.22, effectively negating 6.4.22: *āttvaṁ yalopāllopayoḥ paśuṣo na vājān*[49] *cākhāyitā cākhāyitum* '*āttva* (here, taught by 6.4.41) should be *siddha* when *y*-deletion and *ā*-deletion (here, taught by 6.4.140) [can potentially take place e.g.,] *paśuṣo na vājān*, *cākhāyitā* [and] *cākhāyitum.*' But if one thinks, as I do, that the jurisdiction of 6.4.22 ends at 6.4.129, then this problem simply does not arise. This is because 6.4.140 lies beyond 6.4.129, and therefore, in my view, 6.4.41 is not *asiddhavat* with respect to 6.4.140.[50]

Now, I will derive a certain form, then highlight the problem faced by the tradition in this derivation vis-à-vis 6.4.22, and will show how, by following my method, we do not encounter this problem at all.

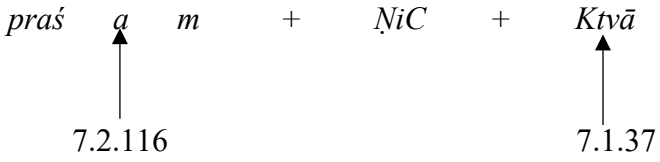
11) *praśam* + *ṆiC*[51] – 'to be pacified', causative absolutive



7.2.116 *ata upadhāyāḥ*: *vṛddhi* replaces the penultimate sound *a* of a base when an affix marked with *Ṇ* or *Ñ* follows.

3.4.21 *samānakartṛkayoḥ pūrvakāle*: affix *Ktvā* occurs after a verbal root which denotes a prior action relative to some subsequent action provided both actions share the same agent.

By my interpretation of 1.4.2, we apply the RHS rule 3.4.21 and get: *praśam* + *ṆiC* + *Ktvā*. Here the following rules are applicable:



[49] See *Ṛgveda* 5.41.1 for the context of the phrase *paśuṣo na vājān.*

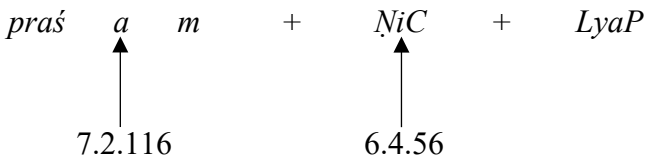
[50] The derivation of *preyān* discussed under vt. 16 on 6.4.22 *ā bhād iti ced vasusamprasāraṇayalopaprasthādīnāṁ pratiṣedhaḥ* (Mbh III.193.17) also involves the same problem. Extending the jurisdiction of 6.4.22 all the way up to the end of 6.4 produces undesirable results, to deal with which Kātyāyana has composed vt. 16.

[51] 3.1.26 *hetumati ca*.

7.2.116 *ata upadhāyāḥ*: same as above.

7.1.37 *samāse'nañpūrve ktvo lyap*: in a compound, the first member of which is not *naÑ*, the affix *Ktvā* in the second member of the compound is replaced with *LyaP*.

By my interpretation of 1.4.2, we apply the RHS rule 7.1.37 and get: *praśam* + *ṆiC* + *LyaP*. Here the following rules are applicable:



7.2.116 *ata upadhāyāḥ*: same as above.

6.4.56 *lyapi laghupūrvāt*[52]: *Ṇi*, when occurring after a sound segment which is preceded by a *laghu* 'light' vowel, is replaced with *ay*, provided the *ārdhadhātuka* affix *LyaP* follows.

By my interpretation of 1.4.2, we apply the RHS rule 6.4.56 and get *praśam* + *ay* + *LyaP*. Here, 7.2.116 *ata upadhāyāḥ* applies and we get *praśām* + *ay* + *LyaP*. At this stage, 6.4.92 *mitām hrasvaḥ* applies, which teaches that the penultimate vowel of a base marked with *M* (in the *Dhātupāṭha*), is replaced with its short counterpart when affix *Ṇi* follows. But here, *praśām* is not followed by *ṆiC* but instead by *ay*. Then how can 6.4.92 apply? 6.4.92 considers 6.4.56 to be *asiddhavat*, and thus cannot see the outcome of the latter's application: it sees *praśām* + *ay* + *LyaP* as *praśām* + *ṆiC* + *LyaP*, and thus applies, giving us the correct form, *praśamayya*.

Owing to a relevant *vārttika* (vt. 13 on 6.4.22) which we will discuss soon, it becomes clear that Kātyāyana, when trying to derive *praśamayya*, applies some of these rules in a different order: first, 7.2.116 *ata upadhāyāḥ*, second, 6.4.92 *mitāṁ hrasvaḥ* and third 6.4.56 *lyapi*

[52] "*Lyapi laghupūrvāt* originally was *lyapi laghupūrvasya*. The substitution of the Ablative for the Genitive case has been suggested by Kātyāyana (Vol. III. p. 204)." See Kielhorn (1887: 178-184) – reprinted in Staal's 'A Reader on the Sanskrit Grammarians' (1972: 121). The original version, *lyapi laghupūrvasya*, teaches that '*Ṇi*, when preceded by a light vowel, is replaced with *ay*, provided the *ārdhadhātuka* affix *LyaP* follows.' In *praśam* + *ṆiC* + *LyaP*, even though there is a light vowel (*a* of *śam*) to the left of *Ṇi*, note that *Ṇi* is not immediately preceded by *a* (there is *m* between *a* and *Ṇi*). To lend greater clarity to this rule, Kātyāyana decided to edit it (vt. 1: *lyapi laghupūrvasyeti ced vyañjanānteṣūpasaṁkhyānam*; vt. 3: *lyapi laghupūrvād iti vacanāt siddham*). Since we are discussing an example based on Kātyāyana's *vārttika* 13 on 6.4.22 here, I have presented his version in the main text, rather than the original one.

laghupūrvāt. Let us apply these three rules as per Kātyāyana's order to understand the problem faced by him: *praśam* + *ṆiC* + *LyaP* → *praśām* + *ṆiC* + *LyaP* (7.2.116 *ata upadhāyāḥ*) → *praśam* + *ṆiC* + *LyaP* (6.4.92 *mitāṁ hrasvaḥ*) → *praśamayya* (6.4.56 *lyapi laghupūrvāt*).

But applying rules in this order is against what Pāṇini has taught in 6.4.22. Let me explain how. 6.4.56 is applicable to *ṆiC* when it is preceded by a sound (*m* of *praśam*) which is in turn preceded by a light vowel (the penultimate sound *a* of *praśam*). But the light vowel *a* is the outcome of the application of 6.4.92, which, as per 6.4.22, should be considered *asiddhavat* with respect to 6.4.56. So, in this derivation, if we are to follow 6.4.22, 6.4.56 should not apply after the application of 6.4.92.

To ensure that the correct form *praśamayya* is derived, Kātyāyana formulates vt. 13[53], which basically goes against 6.4.22: *hrasvayalopāllopaś cāyādeśe lyapi* 'a short vowel (here, taught by 6.4.92), *y*-deletion and *ā*-deletion [should not be suspended] when *ay*-substitution before *LyaP* (here, taught by 6.4.56) [can take place]'.

On the contrary, by following my interpretation of 1.4.2, we get the correct answer without violating 6.4.22. This provides further proof that my interpretation of 1.4.2 is indeed correct.

In this chapter, I have discussed my opinion about the exact meanings of the three suspension rules, the difference between *asiddha* and *asiddhavat*, how these suspension rules impact SOI and DOI, how they interact with 1.4.2, and how my interpretations enable us to perform various kinds of derivations without having to rely on Kātyāyana's *vārttika*s. I do not claim to have solved every problem associated with the three suspension rules, nor do I claim to have discussed each kind of example associated with these three rules. To the extent possible, I have attempted to display the diversity of derivational examples impacted by the suspension rules.

Modern scholars, such as Bronkhorst (1980), Joshi (1982), Joshi and Roodbergen (1987), and Yagi (1992) have published papers on the three suspension rules. Some of their opinions are similar to mine, and others considerably different. However, in the interest of clarity, I have restricted the discussions in this chapter to a limited set of traditional opinions and my own opinion on this topic, without examining the opinions of modern scholars.

[53] Mbh III.191.9.

Chapter Six

In this concluding chapter, I will discuss the thought process that might have led Pāṇini to construct his algorithm for dealing with Same Step Rule Interaction (henceforth SSRI), how this algorithm was interpreted by traditional and modern scholars, and finally how we can use the knowledge of the correct meaning of 1.4.2 to conduct further research in Pāṇinian studies and allied disciplines. In essence, I will examine the past, present and future of Pāṇinian studies, with a special focus on the role played by SSRI in the functioning of the Pāṇinian machine. Since the goal of this chapter is merely to summarize the timeline of Pāṇinian thought, I will keep my arguments brief and will focus on the bigger picture, delving only into those details that are of immediate relevance.

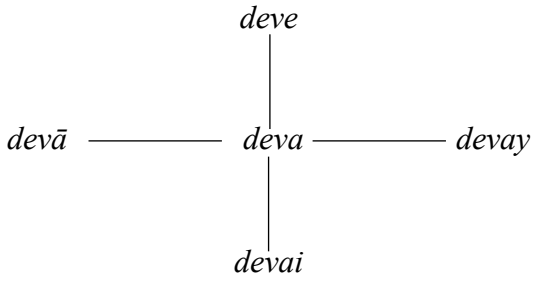
6.1 How and Why Pāṇini Composed 1.4.2

Having thrown light on the meaning of 1.4.2 in the previous chapters, I will now try to reconstruct how Pāṇini must have designed his system and, more pertinently, how he must have come up with what is arguably one of his most important rules – 1.4.2 *vipratiṣedhe paraṁ kāryam.* It must be borne in mind that this is a purely speculative endeavour. Nonetheless, since it stands on the foundation of the evidence provided in previous chapters, and since it helps one gain a better understanding of the functioning of the *Aṣṭādhyāyī*, I think it is worthwhile to engage in such speculation.

Let us use nominal inflection as our example here, and the form *devaiḥ* ('God' masculine, instrumental plural) as our pivot for this discussion. We know that Pāṇini wanted to derive not only *devaiḥ*, but also other forms such as *devāt* (ablative singular), *deveṣu* (locative plural) etc.

	Singular	Dual	Plural
Nominative (Vocative)	*devaḥ* (*deva*)	*devau* (*devau*)	*devāḥ* (*devāḥ*)
Accusative	*devam*	*devau*	*devān*
Instrumental	*devena*	*devābhyām*	*devaiḥ*
Dative	*devāya*	*devābhyām*	*devebhyaḥ*
Ablative	*devāt*	*devābhyām*	*devebhyaḥ*
Genitive	*devasya*	*devayoḥ*	*devānām*
Locative	*deve*	*devayoḥ*	*deveṣu*

To derive the aforementioned forms, Pāṇini came up with one common base to which he could add different affixes. As traditional grammarians have correctly pointed out, Pāṇini attributed great value to *lāghava* 'brevity', and thus he wanted to create the base in such a way that he would have to make the least number of changes to it. In other words, he wanted to write as few rules as possible. From the paradigm presented above, we can see that the candidates for the position of the common base were *dev*, *deva*, *deve*, *devai*, *devā*, *devay* etc. After taking into account several other inflected forms, Pāṇini concluded that it would be convenient and optimal to choose *deva* as the base and then to convert it, where required, to *deve*, *devai*, *devā*, *devāy* etc. using *guṇa*, vowel *sandhi*, substitution etc. Thus, he chose *deva* as the common base for deriving forms like *devasya*, *devāya*, *devayoḥ*, *deve* etc.



Secondly, Pāṇini wanted to derive not only *devaiḥ* but also instrumental plural forms of bases ending in other sounds and / or of other genders, such as *mālābhiḥ* ('garland' feminine, ending in *ā*, instrumental plural), *vāribhiḥ* ('water' neuter, ending in *i*, instrumental plural) etc.

kavibhiḥ	*mālābhiḥ*	*marudbhiḥ*	*vanaiḥ*
nadībhiḥ	*bhānubhiḥ*	*vāribhiḥ*	*devaiḥ*

He wanted to come up with one common affix each for every case-number combination (e.g., one affix for nominative plural, one for dative dual etc.). Given his goal of conciseness, he wanted to create these affixes in such a way that he would need to compose as few rules as possible to bring about changes in these affixes. So, when he was trying to decide what the instrumental plural affix should be, he examined all possible instrumental plural forms like *kavibhiḥ*, *mālābhiḥ*, *marudbhiḥ*, *nadībhiḥ*, *bhānubhiḥ*, *vāribhiḥ*, *vanaiḥ*, *devaiḥ* etc. He realized he had two options: he could have chosen either *bhis* or *ais* as the instrumental plural affix. He noticed that most of these forms end in *bhis*, and a minority of them end in *ais*. Because he wanted to compose as few rules as possible, he chose *bhis* as the instrumental plural affix. Consequently, he had to compose only one rule, namely 7.1.9 *ato bhisa ais*, to

deal with the affixation process for instrumental plurals. 7.1.9 teaches the substitution of *bhis* with *ais* when *bhis* is preceded by a nominal base ending in *a.*

Using the two processes mentioned above, Pāṇini came up with different classes of nominal bases, on the basis of the final sound and grammatical gender of the base, and with declensional affixes, which he has listed in 4.1.2 *sv-au-jas-am-auṭ-chaṣ-ṭā-bhyām-bhis-ṅe-bhyām-bhyas-ṅasi-bhyām-bhyas-ṅas-os-ām-ṅy-os-sup*.

	Singular	Dual	Plural
Nominative	*sU*	*au*	*Jas*
Accusative	*am*	*auṬ*	*Śas*
Instrumental	*Ṭā*	*bhyām*	*bhis*
Dative	*Ṅe*	*bhyām*	*bhyas*
Ablative	*ṄasI*	*bhyām*	*bhyas*
Genitive	*Ṅas*	*os*	*ām*
Locative	*Ṅi*	*os*	*suP*

Then, he composed certain rules teaching that the affix should be placed to the right-hand side of the base (cf. 3.1.1 *pratyayaḥ*, 3.1.2 *paraś ca*). But simply juxtaposing the affix with the base could not always give the correct form. So, what did Pāṇini do to deal with this problem? Naturally, he wrote rules to prescribe the requisite changes.

Firstly, Pāṇini wrote rules to substitute certain affixes with other equivalent items (see 7.1.9 discussed above). For example, in *deva* + *Ṅe* (dative singular), *Ṅe* had to be replaced with *ya* (cf. 7.1.13 *ṅer yaḥ*[1]). But **devaya* is not the correct form. So, thereafter, Pāṇini had to modify the nominal base, i.e., replace *a* of *deva* with its *dīrgha* counterpart *ā* (cf. 7.3.102 *supi ca*[2]) to get the correct form *devāya*. Pāṇini decided to follow this order for the whole *Aṣṭādhyāyī*: first, he substituted the affix if required, and second, he modified the base (or both base and affix together, in case of *ekādeśa*) if required.

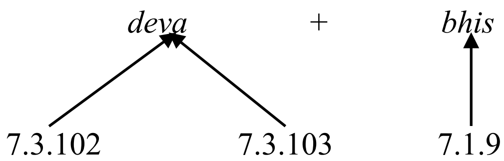
Sometimes, only affix substitution was required, and base modification was not required. For example, consider *deva* + *Ṅas* (genitive singular). Here, Pāṇini simply had to replace *Ṅas*

[1] The affix *Ṅe*, when occurring after a base ending in *a*, is replaced with *ya*.

[2] The *a* at the end of a nominal base is replaced with its long equivalent when followed by a declensional affix starting with *yaÑ* (*y, v, r l*, *jh*, *bh* or any nasal).

with *sya* (cf. 7.1.12 *ṭāṅasiṅasām inātsyāḥ*[3]) to get the correct form *devasya*. On the other hand, in some other cases, only base modification was required, and affix substitution was not required. For example, consider *deva* + *bhyām* (instrumental-dative-ablative dual). Here, Pāṇini simply had to replace *a* of *deva* with its long counterpart (cf. 7.3.102 *supi ca*[4]) to get the correct form *devābhyām*. Similarly, consider *deva* + *bhyas* (dative-ablative plural). Here, Pāṇini simply had to replace *a* of *deva* with *e* (cf. 7.3.103 *bahuvacane jhaly et*[5]) to get the correct form *devebhyaḥ*. But regardless of the situation, Pāṇini always followed the same order: first, he substituted the affix if required, and then he modified the base (or both base and affix together, in case of *ekādeśa*) if required.

Now, consider *deva* + *bhis* (instrumental plural). Here too, first Pāṇini substituted the affix *bhis* with *ais* (cf. 7.1.9 *ato bhisa ais*), and then, in *deva* + *ais*, modified both base and affix by performing an *ekādeśa* operation i.e., by replacing *a* + *ai* with *ai* (cf. 6.1.88 *vṛddhir eci*[6]). This led to the correct form *devaiḥ*. However, he realized that students using his grammar may encounter a hurdle when deriving the form *devaiḥ*. He noticed that at the step *deva* + *bhis*, 7.1.9 *ato bhisa ais* is not the only rule applicable: 7.3.102 *supi ca* and 7.3.103 *bahuvacane jhaly et*, which he had composed to derive the forms *devābhyām* and *devebhyaḥ* respectively, are also applicable.



When multiple rules became simultaneously applicable, he decided to call the competition between the rule(s) applicable to the LHS operand and the rule(s) applicable to the RHS operand, *vipratiṣedha* 'mutual opposition'. As we have seen above, Pāṇini's goal was to replace the affix first, where required, and only then to modify the base (or modify both base and affix together, in case of *ekādeśa*) where required. So, despite the applicability of the

[3] The affix *Ṭā*, *ṄasI* and *Ṅas*, when occurring after a base ending in *a*, are replaced with *ina*, *āt* and *sya* respectively.

[4] The *a* at the end of a nominal base is replaced with its long equivalent when a *yaÑ*-initial declensional affix follows.

[5] The *a* at the end of a nominal base is replaced with *e* when a plural declensional affix starting with *jhaL* (a non-nasal stop or a fricative) follows.

[6] *Vṛddhi* (*ā, ai, au*) replaces both *a* and the *eC* vowel (*e*, *o*, *ai*, *au*) immediately following it.

LHS rules 7.3.102 and 7.3.103 at this step, Pāṇini wanted the RHS rule 7.1.9, and not any of these two LHS rules, to apply at this step. Thus, he stated 1.4.2 *vipratiṣedhe paraṁ kāryam* "in the event of *vipratiṣedha* 'mutual opposition' (i.e., DOI), the *para kārya* 'RHS operation' takes place". Upon applying 7.1.9, we get *deva* + *ais*, and rules like 7.3.102 *supi ca* and 7.3.103 *bahuvacane jhaly et* are no longer applicable. Here, the rule 6.1.88 *vṛddhir eci* applies, giving the correct form, *devaiḥ*.

One pertinent question that merits our attention here is: while making changes, why does Pāṇini start from the right-hand side (i.e., the affix) and then move leftwards (i.e., towards the interface between the affix and the base)? Notice that, in the forms *devaiḥ*, *devasya*, *devānām*, *deveṣu* etc., *dev*, which we can call the 'LHS part', is common to all the forms. So, the LHS part does not need to undergo any modification whatsoever. But one may ask, why not first make changes in the middle i.e., at the interface between base and affix and then move rightwards to make changes in the affix? This would be counterproductive, because the changes at the base-affix interface depend on the phonological composition of the affix. For these reasons, when making modifications, it is optimal for Pāṇini to start from the right end and move leftwards.

Pāṇini used this SSRI resolution mechanism not only for nominal inflection, but for other kinds of derivations too – such as verbal inflection, primary and secondary derivatives, compounds etc. While in the examples of DOI discussed above, the two rules are applicable to two different items i.e., one to the base and the other to the affix, Pāṇini built his system in such a way that he could extend the application of 1.4.2 to those cases of DOI wherein both rules are applicable to two different parts of the same item.

Where required, he also composed other rules to deal with DOI. For example, he composed rules 1.4.13 *yasmāt pratyayavidhis tadādi pratyaye'ṅgam* and 6.4.1 *aṅgasya* to correctly derive forms like *edhante*, *dadhati* etc. I have discussed this in detail in sections 4.1 and 4.2, chapter 4. He also composed rules like 6.4.22 *asiddhavad atrābhāt* and 8.2.1 *pūrvatrāsiddham* to counter the impact of 1.4.2 on DOI. I have discussed this in detail in chapter 5. Lastly, note that Pāṇini did not compose any rules to deal with SOI. He expected us to choose the more specific rule, as I have shown in detail in examples 1 and 2 of section 2.8, chapter 2.

Now that we have discussed how Pāṇini must have come up with 1.4.2, let us examine how the tradition interpreted 1.4.2.

6.2 A Summary of Post-Pāṇinian Ideas on 1.4.2

Through Kātyāyana's *vārttika*s, we know that he interprets *para* in 1.4.2 *vipratiṣedhe paraṁ kāryam* as 'the rule which comes later in the *Aṣṭādhyāyī's* serial order'. For example, consider 3.1.67 *sārvadhātuke yak* which teaches that affix *yaK* occurs after a verbal root when a *sārvadhātuka* affix which denotes *bhāva* or *karman* follows. Consider vt. 4[7] on this rule: *vipratiṣedhād dhi śapo balīyastvam* 'Given the *vipratiṣedha*[8] [between *yaK* (cf. 3.1.67 *sārvadhātuke yak*) and *ŚaP* (cf. 3.1.68 *kartari śap*)], *ŚaP* is more powerful [and wins, because it is *para* i.e., taught later in the serial order of the *Aṣṭādhyāyī*].'

Note that this *vārttika* makes an incorrect statement. There is no conflict at all here: *yaK* is added to verbal roots followed by *sārvadhātuka* affixes denoting *bhāva* 'action' or *karman* 'object' whereas *ŚaP* is added when the *sārvadhātuka* affix denotes *kartṛ* 'agent'. In fact, we come across many such errors in Kātyāyana's *vārttika*s.

But I think that it is unwarranted to look for 'correct' statements in the *vārttika*s. This is because, in my opinion, Kātyāyana's *vārttika*s are often a medium for him to share all kinds of thoughts with fellow grammarians – not just the 'correct' ones. Very often, we find him use *na vā* 'or rather not' and *ca* 'and' in a series of consecutive *vārttika*s to discuss alternative or even contradicting possibilities and explanations. Let me give an example relevant to the topic of rule conflict. Consider vts. 3, 4 and 5 on 7.1.6 *śīṅo ruṭ*[9] (Mbh III.243.12-21).

Vt. 3 *jhādeśād āḍ leṭi*

'[It must be stated that, contrary to 1.4.2, the introduction of] *āṬ*, [which is taught by the *pūrva* rule 3.4.94 *leṭo'ḍāṭau*[10] wins against] the substitution of *jh* [which is taught by the *para* rule 7.1.5 *ātmanepadeṣv anataḥ*[11]].'

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[7] Mbh II.59.1.

[8] I will translate and discuss *vipratiṣedha* later in this chapter from Kātyāyana's perspective.

[9] An *aT* which replaces a *jh* which is the initial sound of an affix preceded by *śīṄ*, takes the augment *rUṬ*.

[10] Augments *aṬ* and *āṬ* are introduced, in turn (*paryāyeṇa*), to affixes which replace *LEṬ*.

[11] A *jh* which is the initial sound of an *ātmanepada* affix preceded by a verbal base that does not end in *a* is replaced with *at.*

Vt. 4 *na vā nityatvād āṭaḥ*

‘Or rather [this does] not [need to be stated] because [the rule teaching] *āṬ* is *nitya* [and thus defeats the other rule which is *anitya*].’

Vt. 5 *antaraṅgalakṣaṇatvāc ca*

‘And [also] because [the rule teaching] *āṬ* is *antaraṅga* [and thus defeats the other rule which is *bahiraṅga*].’

This style of discussing multiple possibilities without striving to always be correct, is very much akin to Patañjali’s style, which also involves a discussion about the pros and cons of various perspectives. In both Kātyāyana’s and Patañjali’s work, we find no rigidity or urgency to establish the truth. Instead, their work is characterized by curiosity and a willingness to critically examine a motley of ideas.

Coming back to the topic of *para*, suffice it to say that regardless of the correctness of its contents, vt. 4 on 3.1.67, which I have discussed above, buttresses the proposition that Kātyāyana interpreted *para* as ‘the rule which comes later in the serial order of the *Aṣṭādhyāyī*’. And while this interpretation of *para* taught by Kātyāyana – alongside tools like *nitya*, *antaraṅga* etc. discussed by him – has been fully endorsed and internalized by the later tradition, most traditional and modern scholars have almost entirely overlooked a very important idea about *paratva* that we find in a *vārttika* on 6.1.158 *anudāttaṁ padam ekavarjam.*

6.1.158 teaches that a *pada* is entirely low-pitched (*anudātta*) with the exception of one syllable. But how should we decide which syllable is not low-pitched? Is it a syllable of the *prakṛti* ‘base’ or a syllable of the *pratyaya* ‘affix’? After discussing this topic in multiple *vārttika*s on this rule, Kātyāyana says, in vt. 12[12]: *śāstraparavipratiṣedhāniyamād vā śabdaparavipratiṣedhāt siddham* ‘[in the event of *vipratiṣedha* between two operations] because it has not been [explicitly] mandated that *paratva* of rules [alone should be used to resolve] *vipratiṣedha*, alternatively *paratva* of sounds [may also be used to] accomplish [the task of resolving] *vipratiṣedha*’.[13] In other words, here, Kātyāyana suggests that alongside inferring that the rule that is *para* i.e., that comes later in the serial order of the *Aṣṭādhyāyī*

[12] Mbh III.100.12.

[13] Here, Nāgeśa, in his *Uddyota*, refers to another discussion on this subject on 1.1.57 *acaḥ parasmin pūrvavidhau* by Kaiyaṭa and Nāgeśa.

wins, we may also infer that the operation that is applicable to the *para* i.e., RHS sound or group of sounds wins.

This shows that Kātyāyana was either exposed to or himself thought about the possibility that *para* in 1.4.2 could stand for the RHS operation. If he had chosen to further develop this line of thought, this idea could potentially have reached its logical conclusion, namely the correct interpretation of *para* in 1.4.2. One could argue that, by choosing to focus on and subsequently by accepting the wrong interpretation from amongst the two possible interpretations of *para* discussed in the aforementioned *vārttika*, Kātyāyana completely changed the developmental trajectory of the Pāṇinian tradition. Kātyāyana's successors too failed to recognize the sheer potential of this *vārttika*, and thus the key to the *Aṣṭādhyāyī*'s algorithm remained before everyone's eyes and yet hidden from everyone's mind.

One key repercussion of Kātyāyana's belief that *para* in 1.4.2 stands for 'the rule that comes later in the *Aṣṭādhyāyī*'s serial order' must have been that he likely got numerous incorrect forms at the end of derivations where he solved SSRI using his interpretation of 1.4.2. Perhaps it is to avoid these undesirable outcomes - wherever possible - that he decided to reduce the jurisdiction of 1.4.2. For example, in vt. 1 on 1.4.2, he defines *vipratiṣedha* in a way that allows him to exclude *anavakāśa-sāvakāśa* pairs from the jurisdiction of 1.4.2: *dvau prasaṅgāv anyārthāv ekasmin sa vipratiṣedhaḥ* (1)[14] '[When] two rules [which are] applicable elsewhere [become applicable] to the same place, this [is called] *vipratiṣedha*'. Thus, an SSRI between two *sāvakāśa* rules (i.e., rules which are applicable elsewhere) is called *vipratiṣedha*. We know that an SSRI can be either a conflict scenario or a non-conflict one. But as I have said in previous chapters, Kātyāyana is, for the most part, interested in conflict. Thus, I will take the liberty, for the sake of this chapter, to translate the traditional interpretation of *vipratiṣedha* as 'conflict between *sāvakāśa* rules'.

In vt. 2 on 1.4.2, he says: *ekasmin yugapat asaṁbhavāt pūrvaparaprāpter ubhayaprasaṅgaḥ* "[Given the] impossibility [of] co-application at one [i.e., the same step, there arises] the undesirable scenario of both *pūrva* and *para* being applicable." In vt. 5, Kātyāyana says: *apratipattir vobhayos tulyabalatvāt* 'Or [maybe this results in] the failure of both [rules] to apply because of [their] equal strength'. In vt. 6 he says: *tatra pratipattyartham etad vacanam* 'So, this [*sūtra*] has been formulated in order to instruct us about this [i.e., the decision regarding which rule should apply]'. From vts. 1, 2, 5 and 6 on 1.4.2, we can conclude that,

[14] Mbh I.304.10-305.3.

according to Kātyāyana, the conflict between two *sāvakāśa* rules is called *vipratiṣedha*, and that these two rules are treated as *tulyabala* 'of equal strength'. Note that this is the only occasion on which Kātyāyana uses the term *tulyabala*. Patañjali too uses the word *tulyabala* only once – when commenting on vt. 5 on 1.4.2.[15]

Kātyāyana has composed several *vārttika*s discussing terms like *nitya*, *anitya*, *antaraṅga*, *bahiraṅga*, *apavāda*, *utsarga*, *anavakāśa* and *sāvakāśa*. This indicates that he was familiar with or himself constructed these concepts and established relationships between *nitya* and *anitya* rules, between *antaraṅga* and *bahiraṅga* rules, between *apavāda* and *utsarga* rules, and between *anavakāśa* and *sāvakāśa* rules. While Patañjali does not always agree with Kātyāyana, he has embraced all these concepts wholeheartedly in his commentary. We get no evidence of Kātyāyana connecting these concepts directly with *tulyabalatva*, and only one piece of evidence of him establishing a direct link between one of these tools and *vipratiṣedha*, which is as follows. On 6.1.135 *suṭ kāt pūrvaḥ* 'The augment *sUṬ* is added before *k*[16]', Kātyāyana says, in vt. 7[17]: *avipratiṣedho vā bahiraṅgalakṣaṇatvāt* '[Alternatively, one can argue that this is] not a case of *vipratiṣedha* because [*sUṬ* is] *bahiraṅga*'. This shows that he excludes *antaraṅga-bahiraṅga* pairs from the domain of 1.4.2.

But even after inventing tools like *nitya*, *antaraṅga*, *apavāda* and *anavakāśa*, Kātyāyana was unable to resolve certain conflicts, especially those involving DOI mutual blocking, using any of the aforementioned tools. On many occasions, solving such conflicts using 1.4.2 too led to an incorrect answer at the end of the derivation.[18] Thus, he wrote the '*pūrvavipratiṣiddha*' *vārttika*s. By using the expression '*pūrvavipratiṣiddha*', Kātyāyana points out that instead of the *para sūtra*, which should win as per his interpretation of 1.4.2 *vipratiṣedhe paraṁ kāryam*, it is the *pūrva sūtra* which emerges victorious. We have already looked at some such *vārttika*s in chapter 2, so I will simply mention one of them here. On 7.1.96 *striyāṁ ca*, vt. 10[19] reads: *guṇavṛddhyauttvatṛjvadbhāvebhyo num pūrvavipratiṣiddham* 'In case of *vipratiṣedha*, the *pūrva sūtra*, which teaches the insertion of the augment *nUM*, takes

[15] It must be stated though that this passage is reproduced verbatim by Patañjali in his comments on vt. 3 on 6.1.85 *antādivac ca* (Mbh III.59.20-60.6).

[16] Note that this is an *adhikāra* rule.

[17] Mbh III.93.1.

[18] For instance, see example 5 of section 2.7, chapter 2.

[19] Mbh III.275.23.

precedence over *para sūtra*s which teach (i) *guṇa*, (ii) *vṛddhi,* (iii) *auttva,* (iv) *tṛjvadbhāva*'. By writing this and other *pūrvavipratiṣiddha vārttika*s, Kātyāyana draws attention to the perceived failures of / loopholes in / exceptions to the rule 1.4.2.

Commenting on most *pūrvavipratiṣiddha vārttika*s, Patañjali says that they are not required at all. He gives various reasons for this, of which the following one is used by him on multiple occasions. On vt. 10 on 7.1.96 stated above, he says: *na vaktavyaḥ. iṣṭavācī paraśabdaḥ. vipratiṣedhe paraṁ yad iṣṭaṁ tad bhavati* '[This] should not be said. The word *para* means desirable. In [the event of] *vipratiṣedha*, the *para* i.e., desirable [rule] applies.' It is evident that in this context Patañjali tries to defend 1.4.2 against Kātyāyana's criticism. In fact, this is anything but an isolated instance: scholars like Goldstücker (1861: 119-121) and Weber (1872: 297-298) were amongst the earliest modern scholars to argue that Kātyāyana was severely critical of Pāṇini's *sūtra*s, and that Patañjali invested significant effort in countering such negative remarks. While many scholars, starting with Kielhorn, have presented rebuttals to this, even Kielhorn (1876: 50) cannot deny "that Patañjali has refuted some of the (i.e., Kātyāyana's)[20] objections, that he has rejected some of the additional rules of Kātyāyana."

Coming back to vt. 10 on 7.1.96, I would argue that by hurrying to dismiss Kātyāyana's *pūrvavipratiṣiddha vārttika*s using a rather feeble argument, namely that *para* means *iṣṭa*, Patañjali missed the opportunity to discover the truth of 1.4.2. Instead, if he had accepted Kātyāyana's statement as valid and had pondered over the cause of this phenomenon, he could possibly have realized that Kātyāyana's interpretation of *para* itself was incorrect, and that it was this misinterpretation which had led him to write the *pūrvavipratiṣiddha vārttika*s. This would certainly have been a far superior defence of Pāṇini's rule 1.4.2 against Kātyāyana's criticism than the one mounted by Patañjali.

After the composition of the *Mahābhāṣya*, ideas about the terms *vipratiṣedha*, *para*, *tulyabala*, and the various tools of conflict resolution discussed above began to take more concrete shape. Direct links and relationships between these concepts came to be established. For example, on 1.4.2, the *Kāśikā*, which was written in the 7th century AD, says:

yatra dvau prasaṅgāv anyārthāv ekasmin yugapat prāpnutaḥ sa tulyabalavirodho vipratiṣedhaḥ. tasmin vipratiṣedhe paraṁ kāryaṁ bhavati.

[20] The contents in round brackets have been added by me to Kielhorn's quote.

utsargāpavādanityānityāntaraṅgabahiraṅgeṣu tulyabalatā nāstīti nāyam asya yogasya viṣayaḥ, balavataiva tatra bhavitavyam.

'When two operations which can be applied at other sites become simultaneously applicable at one [and the same site], this is called a conflict of equal strength or *vipratiṣedha.* In the event of *vipratiṣedha*, the rule that comes later [in the serial order of the *Aṣṭādhyāyī*] prevails. A general rule (*utsarga*) and its exception (*apavāda*), or a *nitya* rule and an *anitya* rule, or an *antaraṅga* and a *bahiraṅga* rule, are not rules of equal strength. These pairs do not fall under the jurisdiction of this rule. In these cases, the stronger rule wins.'

Notice that, unlike Kātyāyana and Patañjali, the authors of the *Kāśikā* explicitly exclude *nitya-anitya*, *antaraṅga-bahiraṅga* and *apavāda-utsarga* pairs from the ambit of *vipratiṣedha* by calling them 'not *tulyabala*'. Thereafter, in both Pāṇinian and non-Pāṇinian *paribhāṣā* literature, we find multiple versions of the same *paribhāṣā* which compares the 'strengths' of the tools mentioned above. The earliest Pāṇinian *paribhāṣā* treatise to include it is the *Paribhāṣāpāṭha* of Puruṣottamadeva written in the 12th century. It reads: *pūrvaparanityāntaraṅgāpavādānām uttarottaraṁ balīyaḥ* (Pbh. 39). 'Of [these five kinds of rules, - viz.] a preceding [rule], a subsequent [rule], a *nitya* [rule], an *antaraṅga* [rule], and an *apavāda* [rule], - each following [rule] possesses greater force [than any one of, or all, the rules which are mentioned before it].'[21]

In sum, the relationships between *tulyabala*, *vipratiṣedha*, *nitya*, *antaraṅga*, *para*, *apavāda* etc. were fully and concretely established by the twelfth century. Alongside the *paribhāṣā*s teaching these tools, dozens of *paribhāṣā*s teaching exceptions to these tools were also written by the *paribhāṣākāra*s. On this account, given its unwieldy and complicated nature, the traditional solution completely fails the Occam's razor test. Additionally, the flexibility of ideas, free thinking, willingness to consider a wide variety of possibilities and alternatives, which, as stated earlier, are so characteristic of the early tradition i.e., Kātyāyana's and Patañjali's work, came to be replaced by a willing acceptance of rigid, ossified, established and widely-accepted 'facts' and 'truths' in the later tradition – in particular, in *paribhāṣā* literature. It is noteworthy that many of these *paribhāṣā*s are *anitya* 'not always applicable' by the tradition's own admission!

[21] Abhyankar (ed.) 1967: 160a.

Here, one may ask: why do the *Kāśikā* and the *paribhāṣā* texts not question the correctness of Kātyāyana's interpretation of the term *para* in 1.4.2? I think the first broad reason is that, along with Pāṇini, who composed the foundational treatise of the tradition, Kātyāyana and Patañjali too came to be worshipped in the tradition, which might have made it almost unthinkable for subsequent scholars to disagree with Kātyāyana or Patañjali over such fundamental aspects of the grammar as the meaning of *para* in 1.4.2[22]. It must be noted that even though the *Kāśikā* does present an alternative viewpoint to that of the *Mahābhāṣya* on many occasions, it completely embraces Patañjali's ideas on this subject. Secondly, even amongst the three *muni*s, Patañjali's word superseded Kātyāyana's and Kātyāyana's word superseded Pāṇini's, right from the time of Kaiyaṭa, who famously stated: *yathottaraṁ hi munitrayasya prāmāṇyam*[23] 'Among the three *muni*s, the authority of later *muni* supersedes that of his predecessor(s)'[24]. Thus, Patañjali became the most important person in the tradition, surpassing Pāṇini himself, whose work he had set out to expound on. So, hypothetically speaking, even if a traditional scholar had discovered that Patañjali had misinterpreted *para* in 1.4.2, he would have preferred Patañjali's interpretation to Pāṇini's in all likelihood!

One would have expected the tradition to start paying ever closer attention to the topic of rule conflict with the writing of the *Kaumudī* texts, the main goal of which was to teach students how to perform derivations. To achieve this goal, the *Kaumudī* texts took the radical decision to reorder the rules of the *Aṣṭādhyāyī* so that a rule would be taught in the *Kaumudī* only when it applied at some step in a certain derivation. However, unfortunately, these texts did not challenge the existing interpretation of *para* in 1.4.2 and, like previous texts, performed derivations using the traditional tools for conflict resolution. In fact, not only did the *Kaumudī* texts fail to discover the correct meaning of 1.4.2, but they also unwittingly ensured that coming generations would not decipher the same.

They did this by shifting the focus of the tradition from the comprehensive functioning of the Pāṇinian machine to the many individual products of the machine, namely, individual derivations of various forms. Over time, students of the *Kaumudī* got so familiar with these derivations that now, they do not have to and, consequently, do not, stop at most steps of the

[22] Deshpande (1998, 2019) discusses this topic in great detail.

[23] Another popular version of this, also written by Kaiyaṭa is: *uttarottaraṁ munīnāṁ prāmāṇyam.*

[24] See *Pradīpa* on *Mahābhāṣya* on 1.1.29.

derivation to ask themselves: which rules are applicable at this step? Which of these rules should I apply? And why? And if pupils do apply conflict resolution tools of their own accord and end up getting the wrong form, they are not encouraged by their teachers to ask why. Instead, they are advised to consult the *Kaumudī* texts to 'correct' themselves i.e., to memorize the explanation offered by their authors.

This chain of accepting what previous scholars have said was finally broken by many modern Indologists, including Houben (2003), who asked if Pāṇini's grammar is meant to function like a machine at all[25], and Bronkhorst (2004) who questioned the 'linearity' of Pāṇinian derivations.[26] Others have tried to make changes in some parts of the traditional conflict resolution mechanism. For example, multiple scholars, starting with Faddegon (1936), have advocated restricting the jurisdiction of 1.4.2 to 1.4.2-2.2.38. Cardona (1970: 57-58) has proposed limited blocking, which essentially deals with more complex cases of SOI, even though he does not state this explicitly.[27]

Joshi and Kiparsky interpret *vipratiṣedha* as 'mutual blocking' and state that "for…so-called *vipratiṣedha*, no general solution has been found"[28] by them.[29] However, they do propose a solution for those cases which involve unidirectional blocking, namely the *siddha* principle. What it essentially does is resort to the *nitya* principle[30] to solve not only these cases which the tradition solves using *nityatva*, but also those which it solves using *antaraṅgatva*. Bronkhorst (1984: 310-313) and Cardona (1999: 154-161) have correctly criticized the reasoning behind this principle.[31]

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[25] I hope I have proven through this thesis that Pāṇini intended for his grammar to function like a well-oiled machine. But I do not want to deny that he may have made certain mistakes by virtue of being human or that interpolations and changes occurred in the *Aṣṭādhyāyī* at the hands of later scholars. I think these factors certainly had a negative impact on the functioning of Pāṇini's machine.

[26] See section 1.3, chapter 1 for a detailed discussion on this subject.

[27] For more on this, see example 3 in section 4.4, chapter 4.

[28] Kiparsky 1987: 295.

[29] Kiparsky (1991: 349) also says, "Joshi and I were unable to find any general way to predict which rule wins in such a situation [i.e., *vipratiṣedha*, which they interpret as mutual blocking], although solutions for some special subtypes of *vipratiṣedha* were suggested." Note that the words in the square brackets in this quote have been added by me for the sake of clarity.

[30] Kiparsky 1982: 84-85.

[31] For my criticism of the same, please see appendix E.

Even though none of these scholars have been able to offer a radically different interpretation of 1.4.2, their willingness to ask questions, to propose new ideas and to challenge the traditional method of conflict resolution inspired me to do the same, eventually leading me to the interpretation of 1.4.2 I have presented in this thesis.

In the following section, I will discuss how my findings can help us better understand other aspects of the *Aṣṭādhyāyī* and linguistics in the future.

6.3 The Way Forward

I have not dealt with rules teaching accentuation in this thesis. However, accentuation is inseparable from Pāṇinian Sanskrit and thus, I hope to conduct research in the future on whether we can correctly derive accented forms using my method of tackling SSRI. Conversely, using my method of dealing with SSRI may enhance our knowledge about how accentuation actually works in the Pāṇinian system.

Secondly, I have not explored rules taught particularly for deriving Vedic forms in this thesis. However, in the future, research on derivations involving such rules may enable us to verify the correctness of my findings about Pāṇini's SSRI mechanism. It could also assist us in understanding which parts of Vedic literature Pāṇini was familiar with, thereby adding to the work done by Thieme (1935), Bronkhorst (1991) and others on this subject. In sum, such research will improve our understanding of the relationship between Pāṇini and the Vedas.

Even though the question of whether certain rules were interpolated into the 'original' version of *Aṣṭādhyāyī*[32] is not closely connected with the topic of SSRI, we can benefit from studying these topics together. For example, if we get the incorrect form at the end of a derivation in which we have resolved the SSRI using my method, then, in the presence of supporting evidence, we can consider the possibility that the rule in question has been edited or constitutes an interpolation.[33]

While it may seem that *anuvṛtti*[34] does not directly influence or get influenced by SSRI, there are some strong links between the two topics. *Anuvṛtti* alone helps us understand the exact

[32] For a detailed discussion on this, see Joshi and Roodbergen (1983).

[33] See example 1 of section 3.1, chapter 3 to understand this better.

[34] For detailed studies on *anuvṛtti*, see Joshi and Bhate (1983, 1984).

contents of any rule, and without knowing the contents of a rule, we cannot establish whether it interacts with other rules at the same step. So, developing a sound understanding of *anuvṛtti* can help us better appreciate the functioning of the *Aṣṭādhyāyī*. Also, if we get the incorrect form at the end of a derivation in which we have resolved the SSRI using my method, then we can reconsider if the right words have been continued through *anuvṛtti* into the rules involved in SSRI.[35]

Now let us look at how my findings about SSRI in the *Aṣṭādhyāyī* can potentially open up new avenues of research in certain disciplines related to Pāṇinian studies. Let us start by talking about Sanskrit computational linguistics[36]. One of the main goals of this field is to teach Pāṇini's *Aṣṭādhyāyī* to the computer, so that when we feed the bases, affixes and the speaker's intention[37] into the computer, the computer can perform the derivation for us and give us the correct final form. Understanding how Pāṇini deals with SSRI and knowing the actual meaning of 1.4.2 will surely help scholars to make progress in achieving this goal.

My findings can also help develop new ideas for modern theoretical linguistics, and more specifically, phonology. In Western phonology, Chomsky and Halle (1968) postulated that, each language has its own fixed order of applying rules in derivations. This is called extrinsic ordering. Kiparsky (1968), on the other hand, proposed that the order of rule application could be viewed as being dependent on the formal relationships between rules, namely, whether one rule feeds or bleeds the other rule.[38] This is called intrinsic ordering.

Pāṇini's derivations are neither extrinsically nor intrinsically ordered. In fact, one need not worry about the concept of rule order at all when performing Pāṇinian derivations. This is because the choice of the rule which should apply at any given step, depends neither on whether it feeds or bleeds another rule, not on any predetermined order of application. Instead, this decision is made by the ingenious algorithm devised by Pāṇini to deal with

[35] For instance, consider example 2 of section 3.1, chapter 3.

[36] 'Sanskrit Computational Linguistics – First and Second International Symposia' helps one gain a good understanding about the diversity and scope of the field.

[37] By 'speaker's intention', I mean, information about the exact form he or she wishes to derive. For example, 'imperative passive third person singular'.

[38] A feeds B if the application of A facilitates the application of B, and P bleeds Q if the application of P obstructs the application of Q.

SSRI. Perhaps modern linguistics can overcome the shortcomings of extrinsic and intrinsic ordering by experimenting with Pāṇini's model.

Finally, my work on Pāṇini's SSRI mechanism can also potentially propel further research on the topic of 'natural language complexity'. In computational theory, attempts have been made to understand how complex a formal language (i.e., an artificial language used in computer science) is using the Chomskyan hierarchy (based on Chomsky: 1959), which consists of four different levels of formal language grammars and the 'machines' that correspond with them. Linguists have also tried to situate natural languages in this hierarchy. Let us look at the hierarchy before we discuss this topic further.

Language	Least powerful grammar that can generate it	Machine equivalent to this grammar	Production rule(s)
recursively enumerable	Type 0	Turing Machine	$\delta \rightarrow \theta$
context-sensitive	Type 1	Linear Bounded Automaton	$\alpha A \beta \rightarrow \alpha \gamma \beta$
context-free	Type 2	Pushdown Automaton	$A \rightarrow \gamma$
regular	Type 3	Finite State Automaton	$A \rightarrow a$ $A \rightarrow aB$

Key:

a = terminal symbol

A, B = non-terminal symbol

$\alpha, \beta, \gamma, \delta, \theta$ = string of symbols[39]

[39] This information has a purely indicative value but no claim to exhaustiveness. There are some constraints on some of these strings depending on whether or not they can contain terminals, whether or not they can be empty etc. but I won't delve into this because it is not of much importance in the present context.

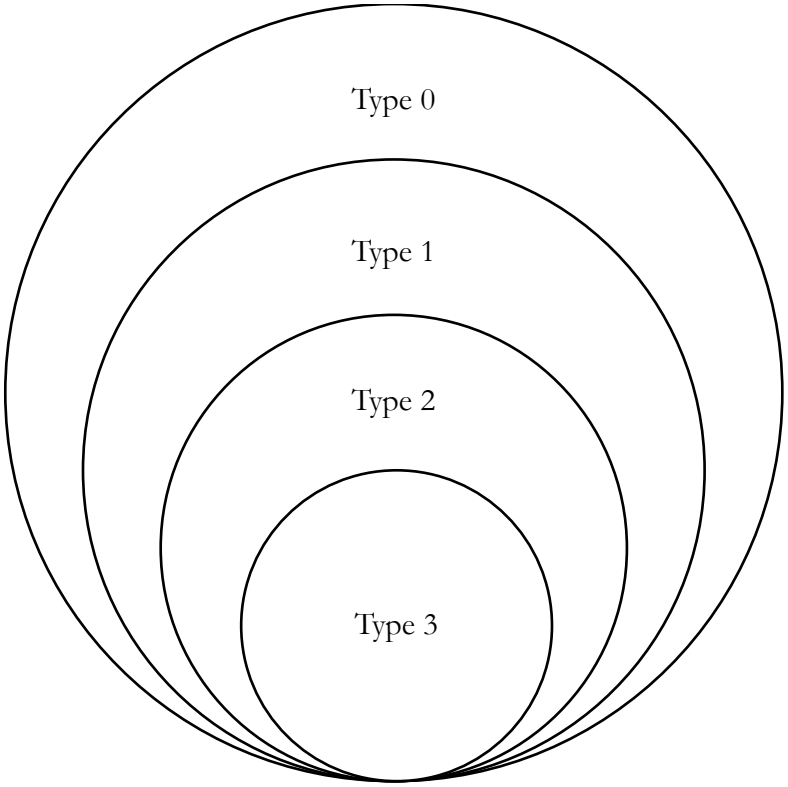
Please read the following three statements carefully in the context of the table presented above:

(i) In A → γ (Type 2), if the string γ contains only one symbol, namely the terminal symbol a, then this rule can be rewritten as A → a (Type 3). Similarly, if the string γ contains only two symbols, namely aB, then this rule can be rewritten as A → aB (Type 3). These are only two of many possibilities. Thus, regular grammars (Type 3) constitute a subset of context free grammars (Type 2).

(ii) In αAβ → αγβ (Type 1), if both α and β are empty, then this rule can be written as A → γ (Type 2). This is only one of many possibilities. Thus, context free grammars (Type 2) constitute a subset of context sensitive grammars (Type 1).

(iii) In δ → θ (Type 0), if the string δ is αAβ and if the string θ is αγβ, then this rule can be rewritten as αAβ → αγβ (Type 1). This is only one of many possibilities. Thus, context sensitive grammars (Type 1) constitute a subset of recursively enumerable grammars (Type 0).

Therefore, we can represent these grammars as follows:



As can be seen from the diagram above:

(i) Type 3 grammars can produce Type 3 languages.

(ii) Type 2 grammars can produce Type 3 and Type 2 languages.

(iii) Type 1 grammars can produce Type 3, Type 2 and Type 1 languages.

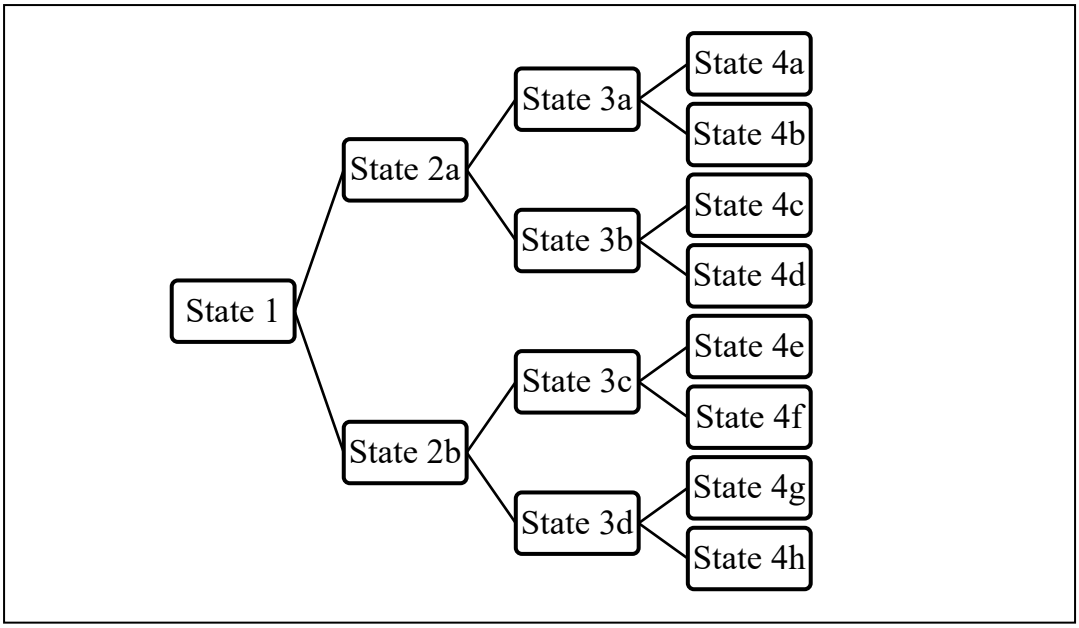
(iv) Type 0 grammars can produce Type 3, Type 2, Type 1 and Type 0 languages.

Note that in terms of productive power, the grammars can be compared as follows (where $G_1 > G_2$ stands for 'G_1 is more powerful than G_2'):

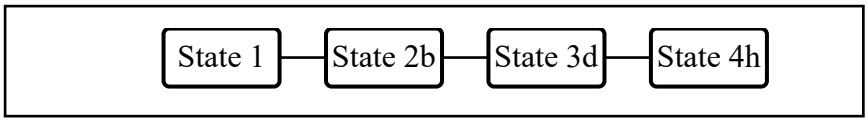
Type 0 > Type 1 > Type 2 > Type 3

As stated above, even though this hierarchy is primarily meant for formal languages, linguists have attempted to situate natural languages within it. They have shown that Dutch (Bresnan et al 1982), Swiss German (Shieber 1985) and Bambara (Culy 1985) are neither regular (Type 3) nor context free (Type 2). Scholars like Fowler (1965), Staal (1965, 1966), Hyman (2007), Penn and Kiparsky (2012) and Lowe (in press) have discussed the *Aṣṭādhyāyī*'s computational ability, the characteristics of the language it produces, and whether and how we can situate such a language, i.e., Pāṇinian Sanskrit, in the Chomskyan hierarchy.

I think that there are several loopholes in the thesis that we can meaningfully situate natural languages – which are significantly different in their nature, composition and purpose, from formal languages – in a hierarchy meant for formal languages. However, the outcome of my research has an interesting parallel with one aspect of the Chomskyan hierarchy which I think merits further exploration. The following diagram illustrates how a Pāṇinian derivation would look in the absence of Pāṇini's algorithm for dealing with SSRI. Let us assume, for the sake of this discussion, that two rules are applicable at every step of the derivation. The derivation starts at State 1 and the correct final form is State 4h.



This is a three-step derivation. Step 1 takes us from state 1 to state 2, step 2 from state 2 to state 3, and lastly step 3 from state 3 to state 4. To reach state 4h one has to make three correct decisions: one has to choose state 2b in step 1, state 3d in step 2, and state 4h in step 3. But if there had existed no internal algorithm in Pāṇini's machine, one could have ended up with any of the eight final answers (cf. state 4), and the probability of getting the correct answer would have been be 1/8. However, by teaching his solution for SSRI, Pāṇini has converted the above machine into the following machine:



To borrow terms from computational theory, Pāṇini has converted his 'non-deterministic machine', which could potentially proceed along multiple derivational paths, into a deterministic one, which proceeds along a single path dictated by the algorithm. A deterministic machine is desirable because it produces only correct forms whereas a non-deterministic machine is not desirable because it produces both correct and incorrect forms. Penn and Kiparsky (2012) say: "through the lens of contemporary NLP[40], the most amazing fact about the *Aṣṭādhyāyī* is not that it produces so many correct derivations, after all, but that it simultaneously avoids so many incorrect ones."

[40] Natural Language Processing.

Now let us use this information to situate Pāṇinian Sanskrit in this hierarchy. We already know that we find rules which resemble context sensitive rules (cf. αAβ → αγβ) in Pāṇini's grammar. Since regular (Type 3) and context free (Type 2) grammars do not contain such rules, we can infer that Pāṇini's grammar is neither regular nor context-free. But does the presence of context-sensitive rules make Pāṇini's grammar context sensitive (Type 1)? Context-sensitive grammars in the Chomskyan hierarchy correspond with *non-deterministic* linear bounded automata. But as I said, Pāṇini's grammar is *deterministic*. Thus, we cannot call the *Aṣṭādhyāyī* a Type 1 (context sensitive) grammar. What kind of grammar is the *Aṣṭādhyāyī* then? I trust that scholars will be able to answer this question in the future with the help of the information I have provided above.

In sum, I am confident that my findings about Pāṇini's algorithm for regulating SSRI will enable us to make substantial advances not only in the field of Pāṇinian studies but also in multiple allied disciplines. *pāṇinaye namaḥ*!

Appendix A: Some Pāṇinian Metarules on Substitution

Introduction

In this thesis, we have focused on *vidhi sūtra*s 'operational rules', and to be precise, on how we choose one rule from amongst the two or more operational rules which are simultaneously applicable in a derivation. While operational rules play an important, perhaps central role in Pāṇinian derivations, they cannot be correctly interpreted or applied without the help of two other categories of rules, namely *saṁjñā sūtra*s 'definition rules' and *paribhāṣā sūtra*s 'metarules'.

We have already observed how the more specific rule wins in case of competition between *saṁjñā* rules, in section 1.6, chapter 1. In appendices A and B, we will look at some cases of competition between *paribhāṣā* rules which the tradition has failed to solve satisfactorily. Pāṇini has not given any explicit instructions about which of the two competing *paribhāṣā* rules must be chosen. In keeping with the general-exception template that pervades the entire *Aṣṭādhyāyī*, I think that the more specific rule emerges victorious in cases of competition between *paribhāṣā* rules.

Competition Between *Paribhāṣā* Rules 1.1.52-1.1.55

In order to examine an example of competition between these *paribhāṣā* rules, let us derive the imperative third-person singular form of the root *likh* 'to write'. I will not discuss DOI and SOI here since our focus is on metarules. Nonetheless, I will perform the derivation bearing in mind my method of solving SOI and DOI: *likh* + *LOṬ* (3.3.162 *loṭ ca*) → *likh* + *tiP* (3.4.77 *lasya*, 3.4.78 *tip-tas-jhi*…[1]) → *likh* + *tu* (3.4.86 *er uḥ*) → *likh* + *ŚaP* + *tu* (3.1.68 *kartari śap*). Since *likh* + *ŚaP* cannot undergo any other operations which are not triggered by *tu*, we can write *likh* + *ŚaP* as *likha*. *likha* is an *aṅga* with respect to *tu*. Thus, we can apply 7.1.35 *tuhyostātaṅ āśiṣy anyatarasyām* here. This rule teaches that *tu* and *hi* should be replaced with *tātAṄ* in a benedictive form. If this rule is applied, which part of *tu* does *tātAṄ* replace? To get the correct answer, *likhatāt*, *tātAṄ* needs to replace *tu* entirely. But what do the relevant metarules have to say in this regard? Do they help us derive the correct answer, *likhatāt*? Let us look at them:

[1] The full *sūtra* reads: *tip-tas-jhi-sip-thas-tha-mip-vas-mas-t(a)-ātām-jha-thās-āthām-dhvam-iṭ-vahi-mahiṅ.*

1.1.52 *alo'ntyasya*: a substitute replaces the final sound of the item for which it is taught.

1.1.53 *ṅic ca* (*alaḥ antyasya*): a *Ṅ*-marked substitute replaces the final sound of the item for which it is taught.

1.1.54 *ādeḥ parasya* (*alaḥ*): a substitute taught for the following item replaces its first sound.

1.1.55 *anekālśit sarvasya*: a multi-sound substitute or a substitute marked with *Ś* replaces the entirety of the item for which it is taught.

Before we go further, I should clarify the traditional interpretation of 1.1.54 *ādeḥ parasya*. According to the tradition, the metarule 1.1.54 governs only those rules which follow the following template: the substitute B_1 is taught for B when B is preceded by A (where A is mentioned in the ablative). The *Kāśikā* says: *parasya kāryaṁ śiṣyamāṇam āder alaḥ pratyetavyam. kva ca parasya kāryaṁ śiṣyate. yatra pañcamīnirdeśaḥ.* 'An operation taught for the following item will apply to the first sound (of the following item). And where (i.e., in which cases) is the operation taught for the following sound? Where [an item has been] mentioned in the ablative.' It also gives an example: 6.3.97 *dvyantarupasargebhyo 'pa īt* 'the substitute *īT* is taught for [the nominal base] *ap* 'water' when *ap* is preceded by *dvi*, *antar* or an *upasarga* 'preverb'. Since *dvyantarupasargebhyo* is taught in the ablative, 1.1.54 mandates that *īT* replaces the first sound of *ap* i.e., *a*. In sum, the *Kāśikā* implies that 1.1.54 does not govern rules in which the preceding term is not mentioned in the ablative.

The *Siddhāntakaumudī* (SK) mentions the following relationships between these metarules:

(i) 1.1.54 *ādeḥ parasya* is an exception of 1.1.52 *alo'ntyasya*. Thus 1.1.54 wins against 1.1.52.[2]

(ii) 1.1.55 *anekālśit sarvasya* is an exception of 1.1.52 *alo'ntyasya*. Thus 1.1.55 wins against 1.1.52.[3]

(iii) 1.1.53 *ṅic ca* is an exception of 1.1.55 *anekālśit sarvasya*. Thus 1.1.53 wins against 1.1.55.[4]

(iv) 1.1.55 *anekālśit sarvasya* comes after 1.1.54 *ādeḥ parasya* in the serial order of the *Aṣṭādhyāyī*. Thus, by the traditional interpretation of 1.4.2, 1.1.55 wins against 1.1.54.[5]

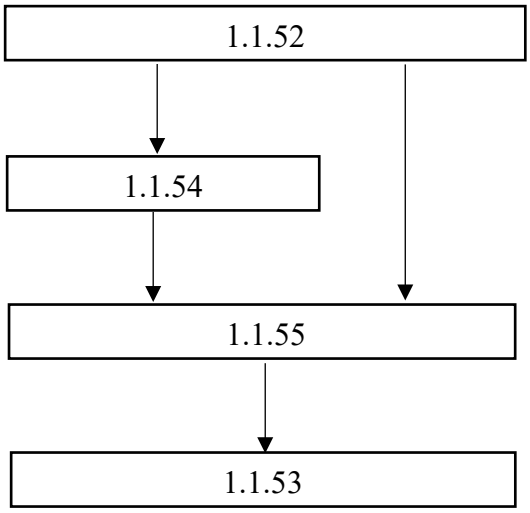
[2] *Alo'ntyasya ity asyāpavādaḥ* (SK on 1.1.54).

[3] *Alo'ntyasūtrāpavādaḥ* (SK on 1.1.55).

[4] *Sarvasya ity asyāpavādaḥ* (SK on 1.1.53).

[5] *Aṣṭābhya auś* (7.1.21) *ityādau deḥ parasya ity etad api paratvād anena bādhyate* (SK on 1.1.55).

Below, I have represented this information in the form of a diagram. The arrows point towards the winning rules.



Let us go back to the rule 7.1.35 *tuhyos tātaṅ āśiṣy anyatarasyām.* It teaches the substitute *tātAṄ* for *tu*. The metarules eligible to govern the application of 7.1.35 are 1.1.52, 1.1.53 and 1.1.55. 1.1.55 is an exception of 1.1.52 and 1.1.53 is an exception of 1.1.55. Thus, 1.1.53 should govern the application of 7.1.35, which leads to *tātAṄ* replacing only the final sound of *tu*. However, this gives the incorrect form **likhattāt.* In his only *vārttika* on 1.1.53[6], Kātyāyana recognizes this problem and says that the operation concerning *tātAṄ* should not be governed by 1.1.53 *ṅit ca* because here the only purpose of *anubandha Ṅ* is to block any potential *guṇa* or *vṛddhi* substitution in the preceding base (cf. 1.1.5 *kṅiti ca*), rather than facilitate the substitution of the last sound (cf. 1.1.53). However, we know that, in Pāṇini's grammar, if a certain item is marked with *Ṅ*, then it automatically possesses all the properties associated with *Ṅ*-marking, unless Pāṇini has said something to the opposite effect. One cannot arbitrarily choose which function of *Ṅ* is relevant to a particular rule and which function is not. Thus, Kātyāyana's explanation is not acceptable.

Is there a way to derive the correct form *likhatāt* without flouting Pāṇini's metarules? To answer this question, let me discuss this problem from my perspective. To begin with, let me

[6] *Tātaṅi ṅitkaraṇasya sāvakāśatvād vipratiṣedhāt sarvādeśaḥ* (1) 'Because the *Ṅ* of *tātAṄ* is *sāvakāśa* 'useful elsewhere' [we can infer that] there is a *vipratiṣedha* 'conflict' (between 1.1.55 *anekālśit sarvasya* and 1.1.53 *ṅit ca*) [and thus, the *para* rule, which teaches] *sarvādeśa*, [wins]' (Mbh I.131.1).

present my interpretation of 1.1.54 *ādeḥ parasya*, which is different from that of the tradition. I think that there is no evidence in the wording of 1.1.54 or elsewhere to suggest that the presence of an ablative form in an operational rule constitutes a necessary condition for the application of 1.1.54. So, according to me, 1.1.54 governs any *para* or right-hand side (RHS) operation.

Let us look at the implications of these two interpretations of 1.1.54. According to the traditional interpretation, since an ablative form is not present in 7.1.35 *tuhyos tātaṅ āśiṣy anyatarasyām*, 1.1.54 would not be able to govern it. However, according to my interpretation, 1.1.54 is eligible to govern 7.1.35 simply because the operand *tu* is *para* i.e., placed to the right-hand side of *likha*.

I also disagree with the tradition with respect to the scope of 1.1.52 *alo'ntyasya* and 1.1.53 *ṅic ca*. According to the tradition, 1.1.53 is applicable to any substitute marked with *Ṅ*. However, I think that, since Pāṇini has specifically taught 1.1.54 for RHS substitutions, he has likely taught both 1.1.52 and 1.1.53 only for LHS substitutions. I agree with the tradition on the scope of 1.1.55: I think that Pāṇini has taught 1.1.55 for both LHS and RHS substitutions. Let us now establish general-exception relationships separately for LHS and RHS substitutions.

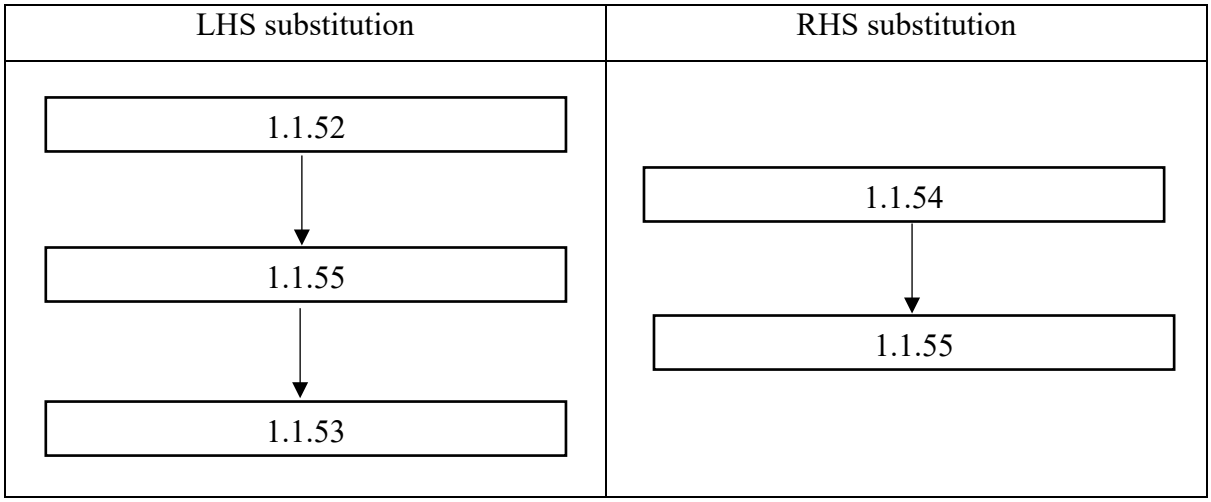
First, let us consider LHS substitutions, which can potentially be governed by 1.1.52, 1.1.53 and 1.1.55.

(i) While 1.1.55 *anekālśit sarvasya* can govern only those substitutes which contain multiple sound segments or are marked with *Ś*, 1.1.52 *alo'ntyasya* can govern any substitute. Thus, 1.1.55 is an exception of 1.1.52.

(ii) In case of substitutes which are made up of multiple sounds and marked with *Ṅ*, there arises competition between 1.1.53 *ṅic ca* and 1.1.55 *anekālśit sarvasya*. I think the only reason behind teaching a rule (i.e., 1.1.53) specially dealing with *Ṅ*-marked substitutes is to suggest that *Ṅ*-marked substitutes, despite containing multiple sounds, replace only the final sound of the operand, and not the entirety of it. Thus, I think 1.1.53 is an exception of 1.1.55.

Now let us consider RHS substitutions, which can potentially be governed by 1.1.54 and 1.1.55. Since 1.1.55 has been specifically taught for substitutes made up of multiple sounds, it is an exception of 1.1.54.

This information can be diagrammatically represented as follows. The arrows point towards the exception / specific rule:



Thus, we can conclude that 7.1.35, which deals with an RHS substitute, i.e., *tātAṄ*, cannot be governed by 1.1.52 and 1.1.53, which have been taught only for LHS substitutions. The only rules that can potentially govern 7.1.35 are 1.1.54 and 1.1.55. Since 1.1.55 has been specifically taught for substitutes made up of multiple sounds, it is more specific than 1.1.54. Therefore, by 1.1.55, *tu* is entirely replaced with *tātAṄ*, giving the correct form *likhatāt*.

Appendix B[1]*: 1.1.66 and 1.1.67 in the Context of Augmentation*

To better understand the interaction between 1.1.66 *tasminn iti nirdiṣṭe pūrvasya* and 1.1.67 *tasmād ity uttarasya*, let us look at the operational rule 7.1.52 *āmi sarvanāmnaḥ suṭ* (*āt*) which the tradition interprets, based on the two *paribhāṣā*s mentioned above, as follows: the augment *sUṬ* is introduced to affix *ām* when it occurs after a *sarvanāman* 'pronominal base' ending in *a*. Even though I think this is indeed the correct interpretation, I disagree with the tradition on the process through which it arrives at this interpretation. Let us first consider the individual parts of this *sūtra*:

āmi = locative singular form of *ām*

sarvanāmnaḥ (*āt*) = ablative singular forms of *sarvanāman* and *a* respectively

sUṬ = nominative singular form of *sUṬ*

Since Pāṇini has used the locative singular form *āmi*, 7.1.52 could potentially be governed by the metarule 1.1.66 *tasminn iti nirdiṣṭe pūrvasya* which the tradition interprets as follows: if an item is mentioned in the operational rule in the locative, then the item to its left undergoes the operation.[2] Similarly, since Pāṇini has used the ablative forms *sarvanāmnaḥ* and *āt*, 7.1.52 could potentially be governed by the metarule 1.1.67 *tasmād ity uttarasya* which the tradition interprets as follows: if an item is mentioned in the operational rule in the ablative, then the item to its right undergoes the operation.[3]

In sum, according to the tradition, in x + y, if rule K is applicable, then:

(i) if y is mentioned in the locative, then, by 1.1.66, x undergoes the operation taught by K.

(ii) if x is mentioned in the ablative, then by 1.1.67, y undergoes the operation taught by K.

Consider the derivation of the genitive plural of the pronominal stem *sarva* 'everything'[4]*: sarva + ām*. Here the pronominal stem *sarva* ends in *a* and is followed by *ām*. So, 7.1.52 *āmi sarvanāmnaḥ suṭ* (*āt*) is applicable. By 1.1.66, the augment *sUṬ* should be attached to *sarva*

[1] Please read the 'Introduction' section of Appendix A before reading further.

[2] *Kāśikā* on 1.1.66: *tasminn iti saptamyarthanirdeśe pūrvasyaiva kāryaṁ bhavati nottarasya*.

[3] *Kāśikā* on 1.1.67: *tasmād iti pañcamyarthanirdeśa uttarasyaiva kāryaṁ bhavati na pūrvasya.*

[4] Note that I have not mentioned instances of DOI and SOI at different steps of this derivation, since our focus is on the competition between *paribhāṣā* rules. Nonetheless, I follow my method of dealing with SOI and DOI in this derivation.

but by 1.1.67, the augment *sUṬ* should be attached to *ām*. Which of the two metarules should be chosen to govern 7.1.52?

Through his *vārttika*s on 1.1.67, Kātyāyana offers a solution to this problem. He says that when both locative and ablative forms have been used in a rule like 7.1.52, the ablative prevails (vt. 3: *ubhayanirdeśe vipratiṣedhāt pañcamīnirdeśaḥ*)[5], and the locative should be reinterpreted as a genitive (vt. 14: *yathārthaṁ vā ṣaṣṭhīnirdeśaḥ*)[6]. Therefore, according to Kātyāyana, 7.1.52 *āmi sarvanāmnaḥ suṭ* (*āt*) means *āmaḥ sarvanāmnaḥ suṭ* (*āt*): the augment *sUṬ* is introduced to affix *ām* when it occurs after a *sarvanāma* 'pronominal base' ending in *a*.

By 1.1.46 *ādyantau ṭakitau* (which, according to the tradition, teaches that items marked with *Ṭ* and items marked with *K* should be attached to the beginning and end respectively of items taught in the genitive[7]), the augment *sUṬ* is attached at the beginning of *ām*. The derivation proceeds as follows: *sarva* + *ām* → *sarva* + *sām* (7.1.52 *āmi sarvanāmnaḥ suṭ*) → *sarve* + *sām* (6.1.97 *bahuvacane jhaly et*) → *sarveṣām* (8.3.59 *ādeśapratyayoḥ*).

But does Kātyāyana's solution enable us to correctly interpret all of Pāṇini's operational rules which teach augments? No, it fails to help us correctly interpret rules which teach the insertion of augments marked with *K* and contain ablative and / or locative forms e.g., 6.1.75 *dīrghāt* (*che tuk*), 6.1.76 *padāntād vā* (*dīrghāt che tuk*), 7.2.82 *āne muk* (*ataḥ*) and 8.3.31 *śi tuk* (*naś ca*). Let us discuss the rule 6.1.76 *padāntād vā* (*dīrghāt che tuk*). In order to correctly interpret this rule, let us first analyse its parts. *che* is a locative form, and *dīrghāt* and *padāntāt* are both ablative forms. Since Pāṇini has used the locative form *che*, 6.1.76 could potentially be governed by the metarule 1.1.66 *tasminn iti nirdiṣṭe pūrvasya*, but since Pāṇini has used the ablative forms *dīrghāt* and *padāntāt*, 6.1.76 could also be governed by the metarule 1.1.67 *tasmād ity uttarasya.*

Consider the compound *kuṭīcchāyā* 'shade of a hut'. When deriving this form, at step *kuṭī* + *chāyā*, since *kuṭī* ends in a long vowel and since *chāyā* begins with a *ch*, 6.1.76 is applicable. By 1.1.66, the augment *tUK* should be attached to *kuṭī* but by 1.1.67, the augment *tUK* should be attached to *chāyā*. Which of the two metarules should be chosen to govern 6.1.76? By *vārttika*s 3 and 14, when there is a competition between the ablative and the locative, the

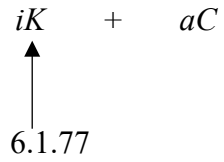
[5] Mbh I.173.1.

[6] Mbh I.174.6.

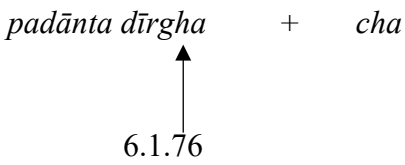
[7] On 1.1.46, the *Kāśikā* says: *ādiḥ ṭit bhavati antaḥ kit bhavati ṣaṣṭhīnirdiṣṭasya*.

ablative prevails and the locative is reinterpreted as a genitive. Thus, according to the aforementioned *vārttika*s, 6.1.76 *padāntād vā* (*dīrghāt che tuk*) means: *padāntād vā dīrghāt chaḥ tuk* 'the augment *tUK* is optionally introduced to the item beginning with *cha* when it is preceded by a *pada* ending in a long vowel'. By 1.1.46 *ādyantau ṭakitau*, the augment *tUK* is attached at the end of *chāyā.* However, this gives the incorrect form: **kuṭīchāyāt.* To get the correct form, we need to attach the augment *tUK* at the end of *kuṭī*: *kuṭī-t-chāyā* → *kuṭīcchāyā* (8.4.40 *stoś ścunā ścuḥ*). This shows that Kātyāyana's *vārttika*s cannot help us correctly interpret augment-insertion rules like 6.1.76.

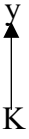
Let me now expound on how I tackle this problem. In my opinion, Kātyāyana's interpretation of the metarules 1.1.66 and 1.1.67 is not correct. Kātyāyana interprets *pūrvasya* and *uttarasya* in 1.1.66 and 1.1.67 as 'in the place of the LHS item' and 'in the place of the RHS item' respectively. In my opinion, this is not warranted. I think that that we can infer 'in the place of X' only when X has been mentioned (or continued by *anuvṛtti*) in the genitive in the operational rule (cf. 1.1.49 *ṣaṣṭhī sthāneyogā*, which teaches that a genitive ending, which is not otherwise interpretable in its context, signifies the relation 'in the place of'). Let me explain what I mean by this through examples. In 6.1.77 *iko yaṇ aci*, *iK* is mentioned in the genitive and *aC* in the locative. Thus, by 1.1.49 *ṣaṣṭhī sthāneyogā* and 1.1.66 *tasminn iti nirdiṣṭe pūrvasya* respectively, we can interpret 6.1.77 as:



However, notice that in 6.1.76 *padāntād vā* (*dīrghāt che tuk*), Pāṇini has not used a genitive form, so we cannot interpret it as:



I interpret *pūrvasya* in 1.1.66 merely as an indication of the left-hand side and similarly *uttarasya* in 1.1.67 merely as an indication of the right-hand side. The best way to offer clarity on this is to summarize the difference between the traditional and my interpretations of 1.1.66 and 1.1.67 with diagrams. In the table below, I have stated the case in which the word is mentioned in the operational rule in round brackets:

	Traditional interpretation	My interpretation
1.1.66 *tasminn iti nirdiṣṭe pūrvasya*		
1.1.67 *tasmād ity uttarasya*		

Let me now explain how I interpret the operational rules 7.1.52 *āmi sarvanāmnaḥ suṭ* (*āt*) and 6.1.76 *padāntād vā* (*dīrghāt che tuk*), based on my interpretations of 1.1.66 and 1.1.67 respectively. Let us start with 7.1.52.

According to me, there is no competition between metarules 1.1.66 and 1.1.67. In fact, I think that both 1.1.66 and 1.1.67 are required to interpret 7.1.52:

(a) 1.1.66 tells us that the augment *sUṬ* should be placed to the left of affix *ām.*

sUṬ ām

(b) 1.1.67 tells us that the augment *sUṬ* should be placed to the right of *sarvanāman* 'the pronominal base'.

sarva sUṬ

Now, if we put together the teachings of metarules 1.1.66 and 1.1.67, we get:

sarva sUṬ ām

Before we continue, note that there is a difference between *Kāśikā*'s and my interpretation of 1.1.46 *ādyantau ṭakitau*. *Kāśikā*'s interpretation is: *ādiḥ ṭit bhavati antaḥ kit bhavati ṣaṣṭhīnirdiṣṭasya* 'items marked with *Ṭ* and items marked with *K* should be attached to the beginning and end respectively of items taught in the genitive.' I do not think that we should take the liberty to read *ṣaṣṭhīnirdiṣṭasya* 'taught in the genitive' into this rule. I think 1.1.46 simply means 'items marked with *Ṭ* and items marked with *K* should be attached to the beginning and end respectively'. Coming back to 7.1.52, we have:

sarva sUṬ ām

sUṬ lies between the end of *sarva* and the beginning of *ām*. By my interpretation of 1.1.46 *ādyantau ṭakitau, sUṬ* should be attached to the beginning of an item. Thus, it is attached to

(the beginning of) *ām*. We get: *sarva* + *sām* which, as seen above, leads to the correct form *sarveṣām*.

Now let us interpret 6.1.76 *padāntād vā* (*dīrghāt che tuk*) using my interpretation of 1.1.66 and 1.1.67. As stated above, I do not think that there is any competition between 1.1.66 and 1.1.67. In fact, I think that both 1.1.66 and 1.1.67 are required to interpret 6.1.76.

(a) 1.1.66 tells us that the augment *tUK* should be placed to the left of *ch.*

tUK *chāyā*

(b) 1.1.67 tells us that the augment *tUK* should be placed to the right of the long vowel.

kuṭī *tUK*

Now, if we put together the teachings of metarules 1.1.66 and 1.1.67, we get:

kuṭī *tUK* *chāyā*

tUK lies between the end of *kuṭī* and the beginning of *chāyā*. By my interpretation of 1.1.46 *ādyantau ṭakitau*, *tUK* should be attached to the end of an item. Thus, it is attached to (the end of) *kuṭī.* We get *kuṭīt* + *chāyā* which, as seen above, leads to the correct form *kuṭīcchāyā*.

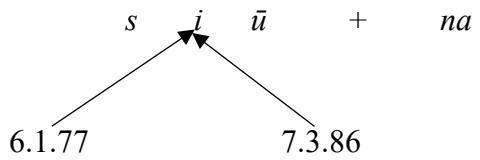
I have shown that, using my interpretation of 1.1.46, 1.1.66 and 1.1.67, we can correctly interpret Pāṇini's operational rules which teach the insertion of augments marked with *Ṭ* or *K* using ablative and locative forms. Kātyāyana's *vārttika*s, on the other hand, are not able to accomplish the same.

Appendix C: 'Conflicts' Between Antaraṅga and Bahiraṅga Rules

In this appendix, I will discuss some traditional examples of 'conflict' between *antaraṅga* and *bahiraṅga* rules, and present my opinion on them. Before we begin, let us revise the basic definition of *antaraṅga*. According to the *Paribhāṣenduśekhara*[1], '*antaraṅga* is (a rule) the causes (of the application) of which lie within (or before) the sum of the causes of a *bahiraṅga* rule'.[2] An *antaraṅga* rule is stronger than and thus defeats a *bahiraṅga* rule.[3]

However, note that Kātyāyana and Patañjali, despite talking about *antaraṅga* and *bahiraṅga*, do not define these terms and consequently do not explain why a certain rule is to be regarded as *antaraṅga*. In vt. 8 on 1.4.2 *vipratiṣedhe paraṁ kāryam*, Kātyāyana says: *antaraṅgam ca*. On this *vārttika*, Patañjali elaborates: *antaraṅgam ca balīyo bhavatīti vaktavyam* 'It should also be said that [an] *antaraṅga* [rule] is stronger [than a *bahiraṅga* rule]'. Let us examine some examples discussed by Patañjali (Mbh I.304.10 onwards) while commenting on various *vārttika*s on 1.4.2.

(1) Let us follow Patañjali's method to derive *syona* 'a stitched item i.e., a sack'. First, we add *na* to *siv* 'to stitch' by 3.3.1 *uṇādayo bahulam*.[4] By 6.4.19 *chvoḥ śūḍ anunāsike ca* (which teaches that *ch* and *v* are replaced with *ś* and *ūḌH*, respectively, when an affix beginning with a nasal, or affix *KvI*, or one beginning with *jhaL* i.e., a non-nasal stop or a fricative, and marked with *K* or *Ṅ*, follows), we get *siū* + *na*. According to Patañjali, two rules are simultaneously applicable to *siū* + *na*:



6.1.77 *iko yaṇ aci*: *iK* (*i*, *u*, *ṛ*, *ḷ*) is replaced with *yaṆ* (*y, v*, *r*, *l*) when *aC* (any vowel) follows.

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[1] See Pbh 50 in Abhyankar's reprint (1960: 221-222) of Kielhorn's translation of the *Paribhāṣenduśekhara*.

[2] The Sanskrit text is as follows: antarmadhye bahiraṅgaśāstrīyanimittasamudāyamadhye 'ntarbhūtāny aṅgāni nimittāni yasya tad antaraṅgam. evaṁ tadīyanimittasamudāyād bahirbhūtāṅgakaṁ bahiraṅgam. See the first two lines under Pbh 50 in Paribhāṣenduśekhara edited by Abhyankar (1962: 76).

[3] Antaraṅgabahiraṅgayor antaraṅgo vidhir balīyān (Pbh 115, Vyāḍiparibhāṣāpāṭha).

[4] The specific *Uṇādisūtra* teaching this is 289 *siveṣ ṭer yū ca.*

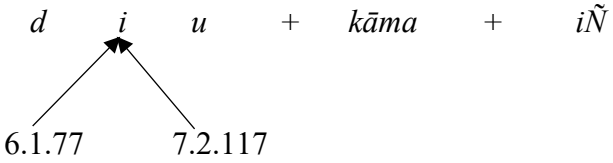
7.3.86 *pugantalaghūpadhasya ca*: *guṇa* replaces *iK* of a verbal base which ends in the augment *pUK* or which has a *laghu* 'light' vowel as its penultimate sound when a *sārvadhātuka* or *ārdhadhātuka* affix follows.

According to Patañjali, the rule teaching substitution with *yaṆ* (6.1.77) is *antaraṅga* with respect to the rule teaching *guṇa* (7.3.86). This is corroborated by the definition of *antaraṅga* given by the commentary on Pbh 50 of the *Paribhāṣenduśekhara*: the cause of application of 6.1.77 (i.e., *ū*) lies before i.e., to the left of the cause of application of 7.3.86 (i.e., *na*). Let us use this example to speculate about how Kātyāyana might have defined *antaraṅga* and *bahiraṅga*. Note that the cause of application of 6.1.77 lies inside (*antar*) the *aṅga siū*, while the cause of application of 7.3.86 lies outside (*bahir*) it. Thus, the term *antaraṅga* could stand for *aṅgasya antaḥ* and the term *bahiraṅga* for *aṅgād bahiḥ*.

The *antaraṅga* rule 6.1.77 wins, and thus the derivation proceeds as follows: *siū* + *na* → *syū* + *na* (6.1.77) → *syona* (7.3.84 *sārvadhātukārdhadhātukayoḥ*).

Now let me present my opinion about this example. There is no evidence that Pāṇini has composed the *Uṇādi sūtra*s. Therefore, this derivation, which requires us to add *na* to *siv* as per an *Uṇādisūtra* (289) is not Pāṇinian at all.

(2) Let us use Patañjali's method to derive the form *dyaukāmi* 'male offspring of *dyukāma*'. We start by adding the *taddhita* affix *iÑ* to the *bahuvrīhi* compound made up of *div* and *kāma* by 4.1.95 *ata iÑ* (which teaches that the *taddhita* affix *iÑ* occurs to denote an offspring after a syntactically related nominal stem which ends in *a*). After deleting the inflectional affixes inside the compound by 2.4.71 *supo dhātuprātipadikayoḥ*, we get *div* + *kāma* + *iÑ*. Here, by 6.1.131 *diva ut* (which teaches that the final sound of the *pada div* is replaced with *uT*), we get *diu* + *kāma* + *iÑ*. At this stage, according to Patañjali, two rules are simultaneously applicable:

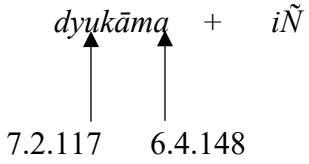


6.1.77 *iko yaṇ aci*: same as above.

7.2.117 *taddhiteṣv acām ādeḥ*: the first vowel of the base undergoes *vṛddhi* when an affix marked with *Ñ* or *Ṇ* follows in *taddhita* derivations.

This example is similar to the previous one: the cause of application of 6.1.77 (i.e., *u*) lies before, namely to the left of the cause of application of 7.2.117 (i.e., *iÑ*). Here too, Patañjali says that 6.1.77 is *antaraṅga* and thus wins. The derivation proceeds as follows: *diu* + *kāma* + *iÑ* → *dyu* + *kāma* + *iÑ* (6.1.77) → *dyau* + *kāma* + *iÑ* (7.2.117) → *dyaukāmi* (6.4.148 *yasyeti ca*[5]).

In my opinion, no such conflict arises in the first place. We want to derive a word that means: *dyukāmasya apatyam pumān* 'male offspring of *dyukāma*'. Since we are talking about *dyukāma*'s offspring, and not (*div* + *kāma*)'s offspring, the derivation should start with *dyukāma* and not with *div* + *kāma*. Thus, we have: *dyukāma* + *Ṅas* + *iÑ*. *Ṅas* is deleted by 2.4.71 *supo dhātuprātipadikayoḥ* and we get *dyukāma* + *iÑ*. Here two rules are simultaneously applicable:



7.2.117 *taddhiteṣv acām ādeḥ*: same as above.

6.4.148 *yasyeti ca*: same as above.

This is a case of DOI. By my interpretation of 1.4.2, we apply the RHS rule 6.4.148 and get *dyukām* + *iÑ*. Then we apply 7.2.117 and get *dyaukāmi*, which is the correct form. [6]

Several other examples discussed by Patañjali in his comments on different *vārttika*s on 1.4.2, such as *sautthatiḥ*, *kādraveyaḥ*, *stairṇiḥ*, *khaṭvīyati*, *kāmaṇḍaleya*, *cauḍi* etc. are similar to this example. For instance, in the derivation of the nominal base *sautthati*, Patañjali starts with *su* + *utthita*, whereas one should actually start with *sūtthita*.

(3) Let us follow Patañjali's method to derive the form *dudyūṣati* 'desires to shine'. We start by adding the desiderative affix *saN* to the root *div* 'to shine' by 3.1.7 *dhātoḥ karmaṇaḥ samānakartṛkād icchāyāṁ vā* (which teaches that the affix *saN* is optionally introduced after a verbal stem, the action denoted by which is the object of a verbal stem expressing desire and both actions have the same agent). Thereafter, by 6.4.19 *chvoḥ śūḍ anunāsike ca* (see

[5] The final *i* or *a* of a *bha* item is replaced with *LOPA* when it is followed by *ī* or a *taddhita* affix.

[6] Note that I have not added the nominative singular affix here for the purpose of brevity.

translation in example 1), we get *diū + saN*. Here, according to Patañjali, two rules are simultaneously applicable:

$$\{d \quad [i]\} \quad \bar{u} \quad + \quad saN$$

6.1.77 *iko yaṇ aci* is applicable to *i* while 6.1.9 *sanyaṅoḥ*[7] is applicable to *di.* Notice that the cause of application of 6.1.77 (i.e., *ū*) lies to the left of the cause of application of 6.1.9 (i.e., *saN*). Patañjali says that 6.1.77 is *antaraṅga* and thus wins, thereby giving: *dyū + saN*. Thereafter, 6.1.9 applies and we get *dyūdyū + saN.* After applying other rules, we get the correct form *dudyūṣati.*

In my opinion, such a conflict does not arise in the first place. I interpret *sanyaṅoḥ* as a genitive form, not as a locative form[8]. So, in my view, 6.1.9 *sanyaṅoḥ* teaches that a verbal base ending in *saN* or *yaṄ*, which has not undergone reduplication, is reduplicated[9]. Note that *diū + saN* is not a verbal base ending in *saN*, but instead two separate items, namely *diū* and *saN*. So, 6.1.9 is not applicable here. However, 6.1.77 is applicable here, and on applying it, we get *dyū + saN*. Now, since no other rules can be applied here, we can fuse the two items *dyū* and *saN* into a single item *dyūṣa*, which we can call a verbal base ending in *saN*. Therefore, 6.1.9 applies here and we get *dyūdyūṣa*. After applying other rules, we get the correct verbal base *dudyūṣa* (and the correct final form *dudyūṣati*).

The examples *jujñaudanīyiṣati* and *ātestīryate* discussed by Patañjali are similar to this one.

(4) Patañjali says that in the string *ayaja + i + indram* 'I worshipped Indra', two rules are simultaneously applicable: 6.1.87 *ād guṇaḥ*, which is applicable to *a + i* and 6.1.101 *akaḥ savarṇe dīrghaḥ*, which is applicable to *i + i*. He adds that 6.1.87 is *antaraṅga* and thus win, thereby giving the correct form: *ayaje indram*.

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[7] If we interpret *sanyaṅoḥ* as locative, as I think Patañjali does in this case, then this rule teaches that a verbal base which has not undergone reduplication is reduplicated when followed by *saN* or *yaṄ*. Note that, the whole base does not undergo reduplication. Instead, only one syllable does. See 6.1.1 *ekāco dve prathamasya* and 6.1.2 *ajāder dvitīyasya*.

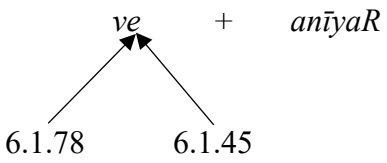
[8] If we interpret it as locative, it is not possible to derive the form *aṭiṭiṣati* (Cardona 1997: xviii). Thus, we must interpret it as a genitive.

[9] The whole base does not undergo reduplication. Instead, only one syllable does. See 6.1.1 *ekāco dve prathamasya* and 6.1.2 *ajāder dvitīyasya*.

I do not think that such a conflict arises at all. I think that, in the Pāṇinian system, all possible rules that can be applied while constructing a word ought to be applied before the word is considered within the context of the sentence. In other words, these rules, which contribute towards the construction of a word, cannot be applied after the word enters the sentence. Here, the rule 6.1.87 applies to *ayaja* + *i*, giving the form *ayaje*. Now that the word is ready, it enters the sentence: *ayaje indram*[10].

Other examples of this nature discussed by Patañjali include *agnir indraḥ*, *pacatv atra.*

(5) Let us derive the form *vānīya* 'should be weaved' using Patañjali's method. We add the affix *anīyaR* to *veÑ* 'to weave' by 3.1.96 *tavyattavyānīyaraḥ.* Here, according to Patañjali, two rules are simultaneously applicable:



6.1.78 *eco'yavāyāvaḥ*: the sounds represented by *eC* (*e*, *o*, *ai*, and *au*) are replaced with *ay*, *av*, *āy*, and *āv*, respectively, when a vowel follows.

6.1.45 *ād eca upadeśe'śiti*: the final sound of a verbal root which ends in *eC* (*e*, *o*, *ai*, and *au*) in the *Dhātupāṭha* is replaced with *ā*, when an affix which is not marked with *Ś* follows.

Patañjali says that 6.1.45 is *antaraṅga* with respect to 6.1.78 and thus wins. Note that this contradicts what the commentary on Pbh 50 tells us. We would expect the cause of application of the *antaraṅga* rule to be within or before that of the *bahiraṅga* rule. But here, the cause of application of the *bahiraṅga* rule 6.1.78 (i.e., *a* at the beginning of *anīyaR*) lies inside the cause of the *antaraṅga* rule 6.1.45 (i.e., *anīyaR*). This exemplifies the fact that the *antaraṅga* tool is poorly defined and not always useful.

According to me, this is a case of SOI, and we do not need the *antaraṅga* tool to deal with cases of SOI. In case of SOI, the more specific rule wins. Let us compare the two rules:

[10] Here, the following operations take place: *ayaje indram* → *ayajay indram* (6.1.78 *eco'yavāyāvaḥ*) → *ayaja indram* (8.3.19 *lopaḥ śākalyasya*).

6.1.78

***e* / *o* / *ai* / *au* + vowel**

6.1.45

***e* / *o* / *ai* / *au* (end of verbal root) + vowel (beginning of affix not marked with *Ś*)**

e / *o* / *ai* / *au* (end of verbal root) + non-vowel (beginning of affix not marked with *Ś*)

6.1.45 is more specific because it applies only when the affix is not marked with *Ś*. Thus, it wins, giving us the correct form *vā* + *anīya* → *vānīya* (6.1.101 *akaḥ savarṇe dīrghaḥ*).

Other examples discussed by Patañjali such as *glācchatram*, *agnicid idam* are similar to this one.

Finally, Patañjali does not simply say that *antaraṅga* rules defeat *bahiraṅga* rules in case of conflict. He goes a step further to claim: *asiddhaṁ bahiraṅgam antaraṅge* 'a *bahiraṅga* rule is *asiddha* with respect to an *antaraṅga* rule'. Thus, he implies that an *antaraṅga* rule cannot see a *bahiraṅga* rule, and therefore cannot see the outcome of the application of the *bahiraṅga* rule either. This is true not only for cases of Same Step Rule Interaction (including conflict) but also for any pair of *antaraṅga-bahiraṅga* rules which are not simultaneously applicable. Consider the following example.

(6) Consider *pacāva* + *idam*. By 6.1.87 *ād guṇaḥ*, we get *pacāvedam*. Here, Patañjali claims that by 3.4.93 *eta ai* (which teaches that *eT*, which is a substitute of the first-person replacement of *LOṬ*, is replaced with *ai*), the *e* in *pacāvedam* could get replaced with *ai*, thereby giving the incorrect phrase **pacāvaidam*. He says that this is prevented by the fact that the rule 6.1.87 is *bahiraṅga* and thus *asiddha* with respect to the *antaraṅga* rule 3.4.93. Thus, 3.4.93 cannot apply to *e*, which is the outcome of the application of 6.1.87. This ensures that we get the correct phrase: *pacāvedam*.

I do not agree with Patañjali. As stated before, according to me, in the Pāṇinian system all possible rules that can be applied while constructing a word ought to be applied before the word is considered within the context of the sentence. In other words, these rules, which contribute towards the construction of a word, cannot be applied to the word after it enters the sentence. Note that, 3.4.93 *eta ai* is a rule which helps the construction of a word (e.g., *edhāvahai*) and, therefore, it is not applicable at sentence level.

In conclusion, I think that the *antaraṅga* tool is completely unnecessary in both SSRI and non-SSRI contexts. Most examples (like 1, 2, 3, 4 and 6) which it allegedly solves are not problematic in the first place. Some examples (like 5) it deals with are actually ordinary cases of SOI which can be solved by choosing the more specific rule.

Appendix D: Tables of Concordance

In this thesis, I have examined some derivational examples which have been previously discussed by prominent modern scholars such as Kiparsky (1982), Bronkhorst (2004) and Joshi and Kiparsky (2005). Below I give two tables of concordance.

1) Kiparsky, P. (1982). The Ordering of Rules in Pāṇini's Grammar. In *Some Theoretical Problems in Pāṇini's Grammar* (pp. 77-120). Bhandarkar Oriental Research Institute.

Note that:

C4 S3 E01 = Chapter 4, Section 4.3, Example 1

Example	Kiparsky's example number	My example number
śvayitvā	01	C4 S3 E01
tad	02	C2 S7 E08
āghnīya	06	C4 S3 E33
hata	07	C4 S3 E02
vanitvā	08	C4 S3 E32
kramitva	09	C4 S3 E04
atikramya	10	C4 S3 E05
randhayati	14	C4 S3 E11
asmai	16	C2 S7 E12
śiṣṭāt	17	C4 S3 E09
aupyata	19	C4 S2 E04
dadhati	20	C4 S2 E02
pratīcaḥ	27	C3 S2 E01
seduṣaḥ	28	C3 S2 E02
prasthāya	30	C4 S3 E06
adhītya	55	C5 S2 E01
6.1.77, 6.1.101, 6.1.87	58	C2 S8 E03, E05
tarati	after Ex. 60, pp. 117-118.	C4 S4 E03

2) Joshi, S.D., & Kiparsky, P. (2005). The Extended Siddha-Principle. *Annals of the Bhandarkar Oriental Research Institute*, *86*, 1-26.

and

Bronkhorst, J. (2004). *From Pāṇini to Patañjali: The Search for Linearity.* Bhandarkar Oriental Research Institute.

(Bronkhorst frequently quotes an unpublished draft of Joshi and Kiparsky in his paper. I think this draft is the aforementioned paper that was published in 2005, after the publication of Bronkhorst's paper in 2004. It is for this reason that I have mentioned both papers together here).

Example	Joshi & Kip. (Pg. no)	Bronkhorst (Pg. no.)	My thesis
kālimmanyā	-	12	C3 S2 E08
devaiḥ / *vṛkṣaiḥ*	-	15	C2 S7 E01
dadhati	16-17	17	C4 S2 E02
gārgīyāḥ	-	18-19	C3 S2 E05
aupyata	13-14	20	C4 S2 E04
jatune / *vāriṇe*	-	33-34	C2 S8 E10
rājabhiḥ	2-3	-	C5 S2 E03
tad	5-6	-	C2 S7 E08
adhītya	9-10	-	C5 S2 E01
seduṣaḥ	11-12	-	C3 S2 E02
śvayitvā	15-16	-	C4 S3 E01
asmai	18-19	-	C2 S7 E12

Appendix E: Some Thoughts on the Siddha Principle

Let us begin by looking at the fundamental justification given by Joshi and Kiparsky (1979) for their *siddha* principle and will present my ideas on the same. In 'The Ordering of Rules in Pāṇini's Grammar' (1982), Kiparsky gives a detailed explanation of the *siddha* principle. I will quote from this paper here.

Kiparsky proposes the *siddha* principle on the basis of a *vārttika* on 6.1.86 *ṣatvatukor asiddhaḥ* 'a single replacement in place of the preceding and the following sound segments is suspended[1] with respect to any potential replacement with *ṣ* or insertion of augment *tUK*'. Kiparsky explains: "Kātyāyana says that making a rule *asiddha* has two functions: (*ṣatvatukor*)[2] *asiddhavacanam ādeśalakṣaṇapratiṣedhārtham utsargalakṣaṇabhāvārthaṁ ca* (6.1.86, vt. 1). *Utsarga* here means *sthānin*, the element which undergoes substitution in a rule."[3]

I translate this *vārttika* as follows: 'the statement that *ṣ* [replacing *s*] and [the insertion of the augment] *tUK* are *asiddha* [has been made] for the purpose of preventing the operations that are due for application to the substitute, and facilitating the operations that are due for application to the substituendum (original item)'.

Kiparsky then says: "to use terms common in linguistics, *asiddhatva* blocks bleeding and feeding between rules." Before going further, let us understand what he means by feeding and bleeding: A feeds B if the application of A facilitates the application of B, and P bleeds Q if the application of P obstructs the application of Q.

Kiparsky concludes: "it can be said that *asiddha* and the other devices are restrictions (*niyama*s) on a general *paribhāṣā* that determines how rules interact when no special statement about their ordering is made in the grammar. This *paribhāṣā* is not stated in the grammar itself but it is presupposed by the correct operation of rules in it and implied by the various restrictions on it that *are* stated in the grammar. It is to be formulated as '*sarvatra siddham*' and we refer to it as the *siddha* principle."[4] He continues: "[W]hat the *siddha* principle says is that in the general case we have *ādeśalakṣaṇabhāva* and *utsargalakṣaṇapratiṣedha*…in short, the *siddha* relations

[1] When A is suspended with respect to B, B cannot acknowledge A.

[2] The *vārttika* (Mbh III.65.9) has the word *ṣatvatukor* in it, but when Kiparsky quotes the *vārttika*, he excludes this word from it.

[3] Kiparsky 1982: 77.

[4] Ibid., 79.

of bleeding and feeding are given free by the underlying theory of the *Aṣṭādhyāyī* and if we must *not* have them in some particular case, *then* only something must be said in the grammar itself."[5]

Further, he says, "As far as feeding is concerned, this really goes without saying. In almost any derivation, the application of one rule creates scope for another rule to apply, that rule applies creating scope for a third rule and so on. That all rules in such a chain of rules are to be applied is taken for granted in the tradition."[6] He adds, "By this point anyone familiar with the topic will already have recognized that the principle of bleeding order is simply equivalent to the *nitya*-principle in the traditional inventory of the *paribhāṣā*s."[7]

Thus, we can say feeding and bleeding together are simply equivalent to *nityatva* in the Pāṇinian tradition. And the *siddha* principle, which means the maximization of feeding and bleeding, is tantamount to the maximization, wherever possible, of the use of *nityatva* for rule conflict resolution, that is, in all cases involving unidirectional blocking.

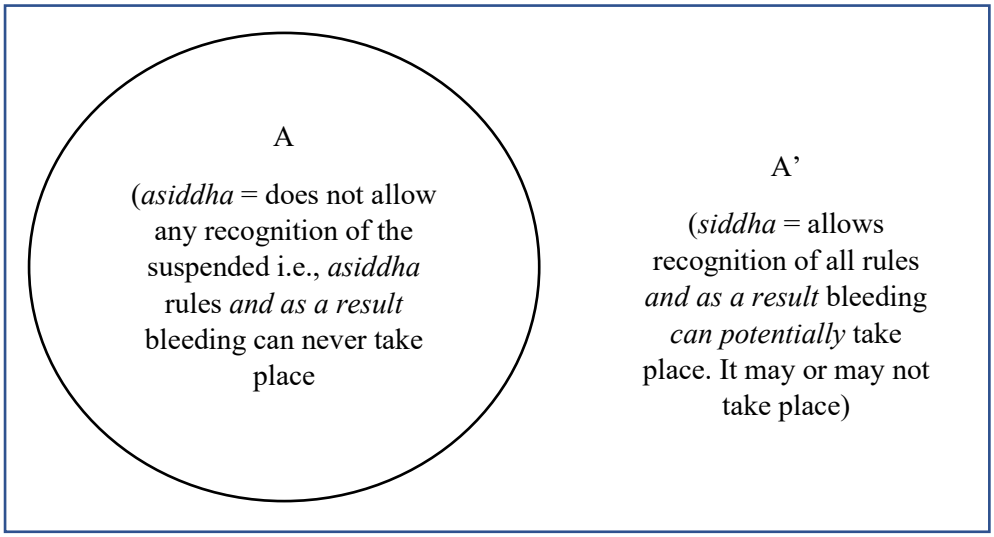
[5] Ibid.

[6] Ibid.

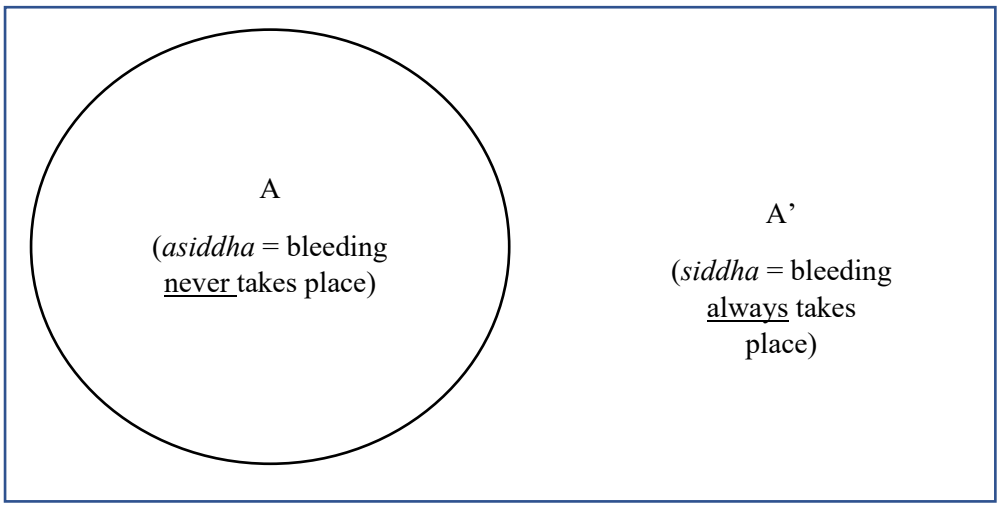
[7] Ibid., 84-85.

Now, using diagrams, I will explain why I think Joshi and Kiparsky have made a logical error in interpreting the aforementioned *vārttika*. I will focus on bleeding and not on feeding, because as Kiparsky himself says, what he calls 'feeding' is built into the Pāṇinian system, and there is no controversy about it.

What Kātyāyana's *vārttika* implies:



Kiparsky takes the liberty to interpret this as:



Let us use an analogy to understand this, just like Patañjali often does. Imagine that a young boy, who is obedient to his parents, can be given one of two possible instructions by his parents about going near the fire:

Parental instruction	What this instruction actually entails	What Kiparsky assumes it entails
You are not allowed to go near the fire. (These rules are *asiddha.*)	The child will never burn his hand. (Bleeding will never take place).	The child will never burn his hand. (Bleeding will never take place).
You are allowed to go near the fire. (These rules are *siddha.*)	The child can potentially burn his hand. He may or may not burn his hand. (Bleeding can potentially take place. It may or may not take place.)	The child will always burn his hand. (Bleeding will always take place).

I conclude that it is not logically possible to infer the *siddha* principle from vt. 1 on 6.1.86.

Regardless of that, let me briefly comment on the following question: how useful is the *siddha* principle in dealing with cases of SSRI? As stated in chapter 6, the *siddha* principle rejects the *antaraṅga* tool and essentially resorts to the *nitya* tool to solve not only those cases which the tradition solves using *nityatva*, but also those which it solves using *antaraṅgatva*. Of course, this means that the *siddha* principle is able to tackle cases of unidirectional blocking but not of mutual blocking – which is one of its drawbacks.[8] Another drawback of the *siddha* principle is that it pays little attention to and offers no solutions for those cases of SSRI which do not involve any blocking at all ('non-conflict').

How useful is the *siddha* principle in dealing with cases of unidirectional blocking? Since the *siddha* principle is no different from the *nitya* principle, albeit with a wider scope of application than the traditional one, the answer to this question is the same as the answer to the question about the potency of the *nitya* principle, which I have given in footnote 62 of chapter 4, and which I reproduce here: "This is exactly why the traditional *nitya* tool which teaches that the *nitya* rule defeats the *anitya* rule, always correctly resolves cases of DOI involving

[8] As stated towards the end of section 6.2 in chapter 6, Joshi and Kiparsky admit that, for mutual blocking, "no general solution has been found" (Kiparsky 1987: 295) by them.

unidirectional blocking: the *nitya* rule is applicable to the RHS operand and the *anitya* rule to the LHS operand. By (my interpretation of) 1.4.2, the RHS rule (which is also the *nitya* rule) defeats the LHS rule (which is the *anitya* rule)." However, I do not know if the *nitya* / *siddha* principle is always correctly able to solve cases of SOI involving unidirectional blocking. A majority of the examples discussed in Kiparsky (1982) involve DOI and not SOI.

A major shortcoming of the *nitya*, and therefore the *siddha* principle, is its propensity to look ahead into the derivation: one needs to know what will happen at the next step *if*, hypothetically speaking, a certain rule is applied at the present step. I think this very much qualifies as 'looking ahead', even though it involves considering merely the potential – and not the actual – future course of the derivation. Joshi and Kiparsky (2005) take this a step further by proposing the extended *siddha* principle which 'scans entire candidate derivations…'[9] thanks to its 'global (trans-derivational) "lookahead" condition on derivations'[10] '…and chooses the one in which *siddha*-relations (i.e., bleeding and feeding)[11] are maximized'[12].[13] In simple words, they ask us to choose, from amongst all possible derivational paths, that derivational path in which the *nitya* tool has been applied the highest number of times.

Why does the derivational path in which *siddha* relations are maximized lead to the correct answer though? It is easy to explain this with respect to DOI. In case of DOI, Pāṇini teaches us (according to my interpretation of 1.4.2) that we must pick the RHS rule. But as we know (see the footnoted reproduced above), it is the RHS rule which is also the *nitya* rule in cases of DOI involving unidirectional blocking. So, it is natural that, of all the possible derivational paths, the correct one has the highest number of instances in which the *nitya* (RHS rule) defeats the *anitya* (LHS) rule – in cases of DOI involving unidirectional blocking. It is difficult to verify if Joshi and Kiparsky's extended-*siddha* principle holds true with respect to SOI.

Now let us ask: how useful is the extended *siddha* principle in resolving cases of SSRI? If one has to chart out all possible derivational paths to make a decision, how is choosing the derivational path in which *siddha*-relations are maximized any better than simply choosing the derivational path which gives the correct grammatical form – which we know thanks to our

[9] Joshi and Kiparsky 2005: 7.

[10] Ibid.

[11] The contents in brackets have been added by me.

[12] Joshi and Kiparsky 2005: 7.

[13] I discuss this in a related context in section 1.3 of Chapter 1.

knowledge of Sanskrit? And in the latter case, why perform derivations at all if we have to rely on the correct final form to choose the correct derivational path?

Joshi and Kiparsky have discussed several examples in the aforementioned papers, a number of which I have solved using my method in this thesis. Please see Appendix D for relevant tables of concordance. While it is not within the scope of this thesis to discuss in detail Joshi and Kiparsky's solutions for individual examples, we ought to study the work produced by them in greater depth in the future to gain new insights into the functioning of Pāṇini's grammar.

Appendix F: List of Sūtras Containing the Term Para

Group A (non-technical):

1.1.34 *pūrvaparāvaradakṣiṇottarāparādharāṇi vyavasthāyām asaṁjñāyām*

1.4.109 *paraḥ saṁnikarṣaḥ saṁhitā*

3.2.39 *dviṣatparayostāpeḥ*

3.3.138 *parasmin vibhāṣā*

3.4.20 *parāvarayoge ca*

4.3.5 *parāvarādhamottamapūrvāc ca*

5.2.92 *kṣetriyac parakṣetre cikitsyaḥ*

5.3.29 *vibhāṣā parāvarābhyā*

6.3.8 *parasya ca*

Group B (technical):

1.1.47 *mid aco 'ntyāt paraḥ*

1.1.51 *ur aṇ raparaḥ*

1.1.54 *ādeḥ parasya*

1.1.57 *acaḥ parasmin pūrvavidhau*

1.1.70 *taparas tatkālasya*

1.2.40 *udāttasvaritaparasya sannataraḥ*

1.4.2 *vipratiṣedhe paraṁ kāryam*

1.4.62 *anukaraṇaṁ cānitiparam*

1.4.81 *chandasi pare'pi*

2.1.2 *sub āmantrite parāṅgavat svare*

2.2.31 *rājadantādiṣu param*

2.4.26 *paravalliṅgaṁ dvandvatatpuruṣayoḥ*

3.1.2 *paraś ca*

6.1.84 *ekaḥ pūrvaparayoḥ*

6.1.94 *eṅi pararūpam*

6.1.112 *khyatyāt parasya*

6.1.115 *prakṛtyā ’ntyaḥpādam avyapare*

6.1.120 *anudātte ca kudhapare*

6.2.199 *parādiś chandasi bahulam*

6.4.156 *sthūladūrayuvahrasvakṣiprakṣudrāṇāṁ yaṇādiparaṁ pūrvasya ca guṇaḥ*

7.3.22 *na indrasya parasya*

7.3.27 *nātaḥ parasya*

7.4.80 *oḥ puyaṇjy apare*

7.4.88 *ut parasyātaḥ*

7.4.93 *sanval laghuni caṅpare ’naglope*

8.1.2 *tasya param āmreḍitam*

8.1.56 *yaddhituparaṁ chandasi*

8.2.92 *agnīt preṣaṇe parasya ca*

8.3.4 *anunāsikāt paro ’nusvāraḥ*

8.3.6 *pumaḥ khayy ampare*

8.3.26 *he mapare vā*

8.3.27 *napare naḥ*

8.3.35 *śarpare visarjanīyaḥ*

8.3.87 *upasargaprādurbhyām astir yacparaḥ*

8.3.110 *na raparasṛpisṛjispṛśispṛhisavanādīnām*

8.3.118 *sadisvañjyoḥ parasya liṭi*

8.4.28 *upasargād anotparaḥ*

8.4.58 *anusvārasya yayi parasavarṇaḥ*

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Nyāsa (Jinendrabuddhi): see *Kāśikāvṛtti* (2) and (3).

Padamañjarī (Haradatta): see *Kāśikāvṛtti* (2) and (3).

Paribhāṣenduśekhara (Nāgeśa):

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