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ORDER OF OPERATIONS IN THE FORMATION OF SANSKRIT
COMPOUNDS:
WITH SPECIAL REFERENCE TO INTRODUCTION OF SAMĀŚANTA
ELEMENT AND DELETION OF CASE ENDINGS

Pavankumar Satuluri,
K. V. Ramakrishnamacharyulu,
Amba Kulkarni

1 BACKGROUND

Sanskrit is rich in compound formation with almost one among every fifth
word in a text being a compound. The effort of building an exhaustive lexicon
for a select few thousand texts, including the compounds occurring in these texts
with their constituency analysis, is ongoing at the Deccan College. But even after
the availability of such a lexicon, we still would not have a list of all the compounds
found in Sanskrit literature, since only a few thousand texts are being used for
building this dictionary. In addition, no matter what the extent of textual material,
it would not exhaust the possibilities of a productive system, captured by rules.
Though compound formation is productive, not every lexical item can combine
with every other lexical item and yield a compound. A compound formation is
governed by the dictum of samarthah padavidhiḥ (A2.1.1). Two components can
undergo a process of compound formation only if the components are semantically
and syntactically related (samartha). Therefore, building a compound analyser is
a challenging task. One can at the most build an analyser that provides ‘guessed’

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1. This estimate is based on the corpus developed by the Sanskrit Consortium for
the project on ‘Development of tools for Analysis of Sanskrit texts and Sanskrit-
Hindi Machine Translation System’ funded by Deity (2008-12), Government of
India.
solutions, which are subject to verification for their correctness through a compound generator.

Pāṇini deals with compounds very thoroughly, handling exceptional cases in great detail. Out of around 4000 sūtras in Āstādhyāyī a little more than 400 sūtras deal with the compound formation. Further, following Pāṇini, in Indian grammatical tradition, there is an abundant discussion of compounds both at the level of the compound formation (prakriyā) involving morphology and phonology', and at the level of meaning analysis (artha). In recent years, many scholars have worked on compounds on both these aspects. Joshi (1968) gives a detailed account of the discussion involved in the Indian tradition on semantic compatibility and meaning compositionality. Pataskar (1996) has discussed the use of the dvandva compounds in Pāṇini-sūtras in relation to their case endings. Bhandare (1995) has discussed the structural and semantic aspects of dvandva compounds. He discusses the complete process of dvandva compound formation and observes that unlike other compounds dvandva compounds enjoy some free word order among its components. Mahavir (1986) talks about the process of generating a compound from its paraphrase (vigrāhavākya). Compounds are always binary with an exception of conjunctive (dvandva) and some exocentric (bahuvrihi) compounds. Individual components of the compounds can themselves be compounds, thus allowing recursion in the formation of compounds. For understanding such compounds the underlying constituency structure is important. Gillon (2009) proposes an extended phrase structure syntax to represent the underlying constituent structure of the compounds. On the computational front, Kumar (2012) has proposed a computational process for the analysis of Sanskrit compounds. While this system uses Pāṇini's rules for identification of the type and analysis of exceptional compounds, the frequent compound type identification and analysis are done using the statistical properties of the corpus. Goyal and Huet (2013) describes computational analyses of avyayibhāva compounds.

With the goal of building a compound generator, we looked at Pāṇini's system afresh. The sūtras related to compound formation are distributed in different chapters in the Āstādhyāyī according to the kind of operation described therein. In the fourth pada of the first chapter of the Āstādhyāyī sūtras from
ūryādīcvidāśca (A1.4.61) to jīvikopanisādāv-aupamye (A1.4.79) assign to given items under stated conditions the label gati, and members of this class form compounds. Śūtras starting from samarthah padavidih (A2.1.1) to cārthe dvandvah (A2.2.29) are related to the formation of a compound. Śūtras from upasarjanam pūrvam (A2.2.30) to kadārāh karmadhāraye (A2.2.38) are related to the word order in the compounds. In the fifth chapter sūtras from samāsāntāh (A5.4.68) to niśpravāniśca (A5.4.160) introduce special entities related to compounds and called samāsānta. The third section of the sixth chapter has several sūtras which deal with various stages of compound formation. Śūtras from alug uttarapade (A6.3.1) to vibhāsa svasrpatyoh (A6.3.24) prohibit the deletion of the case endings, and the sūtras from kustumburūṇi jātiḥ (A6.1.143) to pāraskaraprabhīrtī ca samjñāyām (A6.1.157) and from ānāt rto dvandve (A6.3.25) to mitre carsau (A6.3.130) transform the first constituent and second constituent of a compound.

2 COMPOUND FORMATION PROCEDURE

We describe below the steps involved in the process of compound formation followed in the Pāṇinian tradition.

1. Analytical paraphrase (alaukikavigraha)

Assume that a speaker wants to express a concept ‘a person who is a servant of a king’. There are three basic elements involved in this concept, viz. a person, a king and a servant-master relation between them. The servant-master relation (svēya-sevaka-bhāva) in Sanskrit is expressed by the genitive case suffix. This concept is represented in the form of a linguistic expression as

rājan + Nas puruṣa + sU

where the words rājan and puruṣa denote a king and a man respectively, Nas and sU are the genitive and nominative case suffixes respectively. This representation showing the linguistic analysis of a compound is called an alaukikavigraha and is the starting point of the derivation of a compound.
2. (a) Assignment of the label samāsa:

The compound formation is purely under the control of the desire of a speaker (vaktṛvivakṣadhīnām) to express. In the derivation process, corresponding to an alaukikavigrāha, the speaker has an option to produce either a sentential expression or a compound expression\(^2\). The choice is governed by a condition that the components involved are mutually syntactically and semantically related\(^3\). In other words, there should be some rule in the grammar which guarantees the formation of a compound with given components and the desired meaning. In the above example, the components rājan and puruṣa are semantically related (samartha), and hence if the speaker has an intention to form a compound, the Pāṇinian sūtra ṣaṣṭhi (A2.2.8) sanctions the formation of such a compound. Such an alaukikavigrāha then gets the designation samāsa.

(b) Introduction of a samāsānta element:

There are certain suffixes which are added to the compound at the end of an alaukikavigrāha. And also there are certain replacements which take place at the end of an alaukikavigrāha. These are called samāsānta elements. For example, the sūtra avayāyīhāve śaratprabhṛḥtibhyah (A5.4.107) adds a suffix TaC if the compound is of the type avayāyīhāva and one of the word is from a special list that starts with śara. Thus

\[ śarad + Nas upa \rightarrow śarad + Nas upa TaC \]

3. Designation of prātipadika:

Such an expression then gets designated with a label prātipadika\(^4\).

---

2. Strictly speaking, there are certain compounds which are termed as nityasamāsas (avigrāhah asvapadavigrāho vā nityasamāsah – PMa (I:568)) whose sentential paraphrase necessarily involves components that are not constituents of the compound. Such compounds are governed by the sūtras falling in the range A2.1.5 to A2.1.10. Barring these, all the compounds can optionally be expressed as a sentential paraphrase as well.

3. samarthah padavidhiḥ (A2.1.1)

4. kṛttaddhitasamāśaśca (A1.2.46)
4. Determining the order of constituents by assigning the label *upasarjana*

The position of the head (*viśesya*) of a compound more or less depends on the type of a compound. A *tatpurusa* (endocentric) compound has the second component as its head while an *avyayībhāva* has the first component as the head. In the case of a *bahuvihi* (exo-centric) the head is the one which this compound modifies and in the case of a conjunctive compound, every component has equal importance. However there are many exceptions to this general observation. So the mere type of a compound does not help us in deciding the word order. Pāṇini uses a special mechanism to mark the order of words in a compound. Pāṇini labels a component that will occupy the first position by the term *upasarjana*. The designator of a word in nominative case in the governing rule, which sanctions the compound formation and decides the compound type, is the one which gets the designation *upasarjana*. For example consider the *alaukikavigraha*

\[ \text{śarad + ānas upa} \]

The *sūtra*\(^5\) which sanctions the compound formation for this input consists of two words. Among these the word *avyayam* in the *sūtra* is in nominative. Hence that word in the *alaukikavigraha* which is an *avyaya* gets the label *upasarjana*. In the above-mentioned example *upa* being an *avyaya*, it gets the label *upasarjana*.

5. Changing the order of the components (*pūrvanipāta*)

The consequence of assigning a label *upasarjana* is to place the word having designated as *upasarjana* in the first position. This operation is termed as *pūrvanipāta*. In the above-mentioned example, *upa* which got the label *upasarjana* occupies the first position changing the *alaukikavigraha* to

\[ \text{upa šarad + ānas} \]

---

5 *avyayam vibhakti samipa samṛddhi-vyṛddhyarthābhāvātāvyāśaṃpratir-śabdaprādurbhāva paścādyathānupūrvyā-yaugapadya sādṛśya sampatti-śākalyāntvacanesu* (A2.1.6)
Bahuvrihi and dvandva deserve special mention. The governing sūtra in bahuvrihi is anekamanyapadārtha (A2.2.24). Here the word in nominative case is anekam which refers to all the components together (undergoing the compound formation). And thus, each of the components gets upasajana label. In the case of dvandva, the governing rule is cārthe dvandvah (A2.2.29). In this sūtra there is no word that ends in a nominative case. Hence, there is no scope for assigning the label upasajana. In such cases Pāṇini gives special rules to decide the first component (pūrvanipāta).

6. Deletion of case suffixes (subluk)

Typically in a compound formation the case suffixes of all the components get deleted. There are, however, certain exceptional cases when the case suffix of the initial component does not get elided⁶. For example, in the following case

\[ \text{yudh} + \text{Ni}^7 \text{sthira} + sU \]

Ni is retained. But in the case of

\[ \text{rājan}+\text{Na} \text{puruṣa}+sU \]

Na is deleted. In either case the case suffix of the second component is deleted. This transforms the above two cases into \text{yudh} + \text{Ni} \text{sthira} and \text{rājan puruṣa} respectively.

7. Transformation of the components (padakārya)

In certain cases, the first component undergoes certain transformations if the second component fulfills certain conditions. For example, pāda changes to pad⁸ if it is followed by either āji, āti, ga or upahata.

\[ \text{pāda} + \text{āti} \rightarrow \text{pad} + \text{āti} \]

In certain cases, the second component also undergoes certain changes if

6. aluguttarapade (A6.3.1)
7. haladantāt saptamyāḥ samjñāyām (A6.3.9)
8. pādasya pādājyātigopahateṣu (A6.3.52)
the first component fulfills certain conditions. For example, *sthira* changes to *ṣṭhira*\(^9\) in the presence of *yudhi*.

\[ yudhi + sthira \rightarrow yudhi ṣṭhira \]

Each of the components thus transformed may undergo certain operations that are independent of the other words in the context. For example, in the case of *rājan* the final *n* gets deleted\(^{10}\).

8. **Euphonic transformations at the juncture (sandhikārya)**

The two components thus transformed undergo euphonic transformations. For example,

\[ rāma ālaya \rightarrow rāmālaya^{11} \]

9. **Deciding gender, number and accent**

Such a stem is now all set to undergo word formation rules. But before that, a stem should get its proper gender, number and accent. Gender is an intrinsic property of a nominal stem\(^{12}\). The type of a compound helps in deciding the gender of the new lexeme formed. An *avyāyībhāva* compound stem is always in neuter gender\(^{13}\), while in the case of *tatpuruṣa* and *dvandva* compounds\(^{14}\) the gender of the compound stem is the same as that of the second component and in the case of *bahuviḥi* the gender is the same as that of the word it modifies\(^{15}\). There are of course a few exceptional cases which are dealt with by Pāṇini with special rules.

---

9  *gaviyudhībhyaṁ sthiraḥ* (A8.3.95)
10 *nalaṣaḥ praṭīpādikāntasya* (A8.2.7)
11 *akāh savame dirghah* (A6.1.101)
12 *ekam dvikam trikam cāthā catuskam pañcakam tathā nāmārtha iti sarveḥmi paksāḥ śāstre nirūpitāḥ* - Vīśa(nāmārthanīryāyaḥ 216 (1)
13 *avyāyībhāvaśca* (A2.4.18)
14 *paravallingam dvandvatatpuruṣayoh* (A2.4.26)
15 *anekamanyapadārtthe* (A2.2.24)
In the case of a tatpurusa the number is the same as the number of its primary component. A bahuvrihi compound gets its number from its referent. Avyayibhāva and samāhāra-dvandva are always singular in number. In case of an itaretara-dvandva, the number of the resulting compound depends on the nature and the number of its components.

A compound is characterized by a single accent. Usually the final vowel in a compound is udātta (high-pitched). Tatpurusa and avyayibhāva compounds have a high pitch at the end (antodātta). Bahuvrihi, and dvandva compounds have the same accent as that of the pūrvapada. These are the general rules and there are some exceptions to them.

10. Word formation

The final step is the word formation with an appropriate case ending.

3 THEORETICAL ISSUES IN COMPOUND FORMATION

As is well-known, the Pāṇinian system does not give an explicit step by step procedure to derive a compound from its components. Rather what it describes is what transformations take place when certain conditions are met. In order to decide the order of these steps, to develop an algorithm (‘how’) to generate a compound from its components, we looked at some worked-out examples from Pāṇiniya-vyākaranodāharana-kośa and the appendices of Aṣṭādhyāyī-bhāsyā-prathomārvitī by Brahmadatta Jijñāsu.

A typical process of compound formation followed by several teachers and important collection of meticulously worked-out examples such as Pāṇiniyavyākaranodāharanakośa is sketched below. The generation process of a compound starts with an alaukikavigraha, and this expression gets the designation samāsa, followed by another designation, prātipadika. This is followed by the elision of case endings (subluk) in the case of non-aluk compounds. Then

16 samāhāra grahaṇam kartavyam (Vārttika 1559) MBh A2.4.1 (II.534))
17 samāsasya (A6.1.223)
18 bahuvrihau prakṛtyā pūrvapadam (A6.2.1)
19 supo dhātuprātipadikayoḥ (A2.4.71)
assignment of the label upasarjana and consequent placement as prior or subsequent constituent take place. At this point, entities called samāsānta come into effect. There follow operations on prior constituents (pūrvarapatkāra), subsequent constituents (uttarapatkāra), word operations (padakārya), and phonological operations that apply at junctures (sandhikārya); finally, the gender, number and accent of the newly formed lexeme are decided and an appropriate case ending is added to get the compound. This process is shown as a flow chart in Figure 1.

The derivation of uparajam as found in Pāṇiniyavākaraṇakosā and Aṣṭādhyāyibhāṣya-prathamāvṛtti is shown in figures 2 and 3 respectively.

Figure 1 : Process of Compound Generation (1)
उपराजमु

राजन् + अस् + उप अवर्ग विभाषित... 2.1.006/0652 समीपत्वकरण उप इति अवयवकरण राजनस्वेत्र अवयवभाषासमासः

कृत्विद्वितसपारमाण्यः 1.2.046/0179 समासस्त्राश् अवयवमूर्तिकेशाः

राजन् + उप जूनो पानार्तति... 2.4.071/0650 अवयवमूर्तिकेशाप्रवचन सुपी लुकः

प्रमाणिनिर्दिष्टमु... 1.2.043/0653 समासस्त्राश् प्रमाणाणेन निर्दिष्टस्य उप इति उपसर्जनस्यसंज्ञा

उप + राजन् उपसर्जनमु पूर्वमु... 2.2.030/0654 उपसर्जनस्य उप इति उपसर्जनानिधिः

उप + राजन् + अ अस्त्र... 5.4.108/0678 अस्त्रस्य अवयवभाषा दधः

उप + राज + अ नस्तसङ्गेः 6.4.144/0679 नास्तः भस्ताकरण देशीः

उपराज + यू नीससामीह... 4.1.002/0183 प्रमाणितवकी एकदम्ये सुमार्तम्

उपराज + अस् नाथचारिनाः... 2.4.083/0657 अवनाशत्वप्रभावतः मरणः सोः अमावः

उपराजहः अमि पूर्व... 6.1.107/0194 अवनाशत्वप्रभावतः मरणः सोः उपवः

दिर्यानीः राजः समीपमु उपराजमु । उपकृष्णवत् ‘अवर्गः’

विभक्तिसुसमीपस्यकृत्वसुदृढ्यप्रभाववातश्चान्त्रसमाशि...’ 2.1.006/0652 इति सुदृढ्य समीपस्य उपवास्तवम् अवर्गमिति। समासस्त्राश्च अवयवस्य प्रमाणित्ववकी निर्देशानि अत्र समीपस्यकरण उप इत्यवास्तवम् उपसर्जनसंज्ञा । ‘अस्त्रः’ 5.4.108/0678 इति सुदृढ्य उदाहरणम् । अनेन सुदृढ्य अवनाशत्वात् अवयवभाषात्। समासान्तः दधः अस्त्रः । ‘नस्तसङ्गेः’ 6.4.144/0679 इति नास्तः भस्ताकरण अस्त्रः। इति तू प्रायः भस्ताकरण सोः। अवनाशत्वात् अवयवभाषासमासः ‘अवर्गायतः’ 2.4.082/0452 इति प्रायः उपस्य वाप्तिकवकी सोः। अमावः

Figure 2 : Example from Paññiniyāvākaraṇidāharaṇakośa
परिः समासान्तः (5.4.68)

राजः समीपम् = उपराजम्

उप सु उज्जु इसु पूर्ववत् उपकुम्भम् के समान समीपाङ्ग में अव्ययभावमार्य होकर

उपराजम् अनात् (5.4.108) से समासान्ता टवू प्रत्यय होकर

उपराजम् टवू पूर्वकु यु आकर

उपराजम् अ सु यवि भग् (1.4.18), भग्न (6.4.129), नसलिनि (6.4.144) से दि भाग का लोप होकर

उपराजम् अ सु अव्ययभाव संज्ञा उपराज की तो है है; किन्तु टवू प्रत्यय के समास के अवयव होने के कारण टवू वस्तुण्डित उपराज अव्ययभाव कहलाया। अतः नाथ्यविभावादतो (2.4.83) के अक्सरान्त्र अव्ययभाव मानकर सु को अम हो गया।

उपराज अम् अमि पूर्वः (6.1.107)से पूर्वस्थ होकर

उपराजम् बना

राजसु अविचक्तम् अधिराजम् में विभक्तियों में समास होकर शेष सब कार्य पूर्वत हुए हैं टवू को समास का अवयव मानने से शेष पूर्ववत् ही लाभ है।

Figure 3 : Example from Aṣṭādhyāyībhāṣyaprathamāvṛtti
In both these derivations, we observe that the *samāśanta-pratyāya tac* is added only after deciding the order of the components. Brahmadatta Jijnāsu adds the following note: *uparāja* gets the designation *avyayībhāva*. But since *TaC* is a part of the compound, *uparāja* followed by *TaC* will get the designation *avyayībhāva.* This note intrigued us, and made us look at the original commentaries. There are differences of opinion regarding the order of operations shown in Figure 1, especially with reference to the deletion of case suffixes and addition of a *samāśanta* element. In the following sections we will discuss the arguments in favour and against the two questions:

1. When should case suffixes be elided?
   Should they be elided before assigning the label *upasarjana* or after?

2. At what stage should the *samāśanta* element be introduced?
   Should we introduce it at the beginning of the compound formation process or after deciding the order of the components?

4. **WHEN SHOULD CASE-SUFFIXES BE ELIDED?**

If one deletes case suffixes before assigning the label *upasarjana*, it poses a problem in several cases. The designator of a word in nominative case in the governing rule, which sanctions the compound formation and decides the compound type, is the one which gets the label *upasarjana*. So when a governing rule has a nominative word indicating a case suffix, say X, that component in the *alaukikavigrahā* which has the case suffix 'X' will get the label *upasarjana*. If this case suffix is deleted from the *alaukikavigrahā*, then there is no room to assign the *upasarjana* label. We illustrate this with an example.

Consider the *alaukikavigrahā rājan + Nas puruṣa + sU*. The governing *sūtra*, in this case, for compound formation is *saśthi* (A2.2.8). The *sūtra prathamānirdeśam samāsa upasarjanum* (A1.2.43) says that in the *sūtra* providing for the formation of a compound (*samāsa vidhayakasūtra*), the referent of the

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20. अक्षरोपणमां संहः अपराध की ती है ही; किलकू दृश्यत् प्रत्यय के घातक के अहर्भक होगे के कारण दृश्य सहिः अपराध अक्षरोपणमां कहलाता। अन्तः नाशत्यानकारद्वितीय (२.५.८४) के अं-कारणा अक्षरोपणमां ग्राम्यत्व यो हो गया।

*Aṣṭādhyāyībhāṣyaprathāmāvṛtti* by Brahmadatta Jijnāsu
word in nominative case in the sūtra will get designated as upasarjana. Now in the sūtra ṣaṣṭhi (A2.2.8), there is only one word, and it is in nominative. Hence the word with a genitive ending (ṣaṣṭhi vibhakti) in the alaukikavigraha viz. rājan + Nas gets designated as upasarjana.

Now if the case suffix is deleted first, then in the absence of a genitive case marker, it is not possible to assign rājan the label upasarjana. In such a situation, with the help of a sūtra prayayalope prayayalaksanam (A1.1.62) (‘an operation conditioned by an affix applies even if the affix has been replaced by zero’), one can still assign it the label upasarjana even after the deletion of a nominal ending (subluk). See for example, Figure 2. There is no blocking (bādhyabādhaabhāva) between the two operations - subluk and assigning the label upasarjana.

However, as is evident from this discussion even if there is no bādhyabādhaabhāva, in order to designate a label upasarjana after the deletion of case suffixes, one needs to invoke another sūtra, prayayalope prayayalaksanam (A1.1.62). Thus there is an extra effort involved in the process leading to prolixity (gaurava). If we first designate the word with a label upasarjana based on the case suffix and then we delete it, we need not invoke prayayalope prayayalaksanam (A1.1.62). This results in brevity (lāghava).

5 AT WHAT ŚṬAGE SHOULD THE SAMĀSAṬTA ELEMENT BE ADDED?

Pāṇini introduced 20 entities called samāsaṭṭa in the Aṣṭādhyāyī from samāsaṭṭah (A5.4.68) to nispravāniśca (A5.4.160). They are: DaC, a, aC, ahnādesa, TaC, SaC, Sa, aP, aC, aslC, anIC, iC, jñu, anAN, niN, it, lopa, datr, hṛt, and kaP.

The sūtra saṁaśaṭṭah (A5.4.68) says that “The taddhita affix introduced, henceforth, occurs at the end (anta) of a nominal stem termed compound (samāsa)”.


22. It is appropriate to call it an element rather than affix, since in some cases it represents a replacement.

In what follows we will first state Bhaṭṭoji Dikṣita's position, where he treats samāsānta element sometimes as a terminating part of a compound and sometimes as a terminating part of the second component. We will argue that Bhaṭṭoji's treatment is faulty providing evidence from Mahābhāṣya, and also a supportive commentary by Nāgeśa.

1 Bhaṭṭoji on samāsānta

In the Praudhamanorāma, Bhaṭṭoji Dikṣita writes

Samāsāntā iti | Samāsasya samāsārthottarapadasya vā
caramāvayava ityarthah | tenopaśaradamityatra 'nāvyayībhāvāt'
(A2.4.83) ityam, dvipūrityādau 'dvigoḥ'(A4.1.21) iti niḥ ca
sidhyati|

According to Bhaṭṭoji Dikṣita, the samāsānta suffix can be either the terminating part of the complete analytical paraphrase or of the uttarapada of the samāsa. According to him, there are cases in which one needs to treat the samāsānta suffix as a part of the analytical paraphrase and cases where one needs to consider the samāsānta suffix as a part of an uttarapada. We explain both these cases with an example each.

Consider the formation of the compound upaśaradām.

Example 1:

alaukikavigrahāḥ : śarad + āṣa upa

samāsāntāḥ : śarad + āṣa upa [T]a[CF]

Here the whole expression gets the label samāsa.

pratipadikasamjñā : śarad + āṣa upa a, now it gets the label pratipadika\(^5\)

upaśarjanasamjñā : śarad + āṣa upa\(^6\) a, upa gets the label upaśarjana

24. avayībhāve satprabhṛtibhyāḥ (A5.4.107)
25. krtāddhitasamāsāṣcā (A1.2.46)
26. pratamanirdistam samasa upaśarjanam (A1.2.43)
pūrvanipātaḥ : upa\textsuperscript{27} śarad + Ñas a
subluk : upa śarad a\textsuperscript{28}
sandhiśrayam : upaśarada
linganirdhāraṇam : upaśarada, neuter gender\textsuperscript{29}
vibhaktikārayam : upaśarada + sU → upaśarada + am, due to the replacement of sU by am\textsuperscript{30}. upaśarada + am → upaśaradam\textsuperscript{31}

Now we look at another example, which Bhaṭṭoji Dikṣita used to show the necessity of considering samāsānta suffix as a part of an uttarapada. The example is generation of the compound dvipūrī.

Example 2:

alaukikavigrahāḥ : dvi + os pur + os
samāsāntah : [dvi + os (pur + os) a]\textsuperscript{32}
prātipadikasamijnā : [dvi + os (pur + os) a]\textsuperscript{33}
upasarjanasamijnā : [dvi + os\textsuperscript{35} (pur + os) a]
pūrvanipātaḥ : [dvi + os\textsuperscript{36} (pur + os) a]
subluk\textsuperscript{37} : [dvi (pur) a]

27. upasarjanam pūrvam (A2.2.30)
28. supo dhāturprātipadikayoh (A2.4.71)
29. avyayibhāvaśca (A2.4.18)
30. nāvyayībhāvādato mtvapaṇcanyāḥ (A2.4.83)
31. ami pūrvaḥ (A6.1.107)
32. ṛkprabdhūḥ pathāmanaksc (A5.4.74)
33. We have marked the expression that gets samāsāsamijnā by () and an expression in () is the uttarapada. Note here that a of the samāsānta suffix is now part of the uttarapada but not of the samāsā.
34. kṛtaddhitasamāsāśca (A1.2.46)
35. prathamānirdiṣṭam samāsā upasarjanam (A1.2.43)
36. upasarjanam pūrvam (A2.2.30)
37. supo dhāturprātipadikayoh (A2.4.71)
sandhikāryam : [dvi(pur) a ]
linganirdhāranam : [dvi(pur) a ], feminine gender
vibhaktikāryam : [dvi(pur) a ] → dvipura + ŋip → dvipurī.

In this example the samāśānta suffix a is a part of an uttarapada. Hence by the vārtika akārāntottarapado dviguḥ striyām bhāṣyataḥ iti vaktavyam the feminine suffix will be added to the entire compound. The vārtika says that in a dvigu compound if the uttarapada is a prātipadika ending in a then the feminine suffix ŋip is added to the compound.

From these two examples, it is clear that in one example, to arrive at the desired form one has to accept a samāśāntasuffix as a part of the alaukikavigraha while in the other, as a part of the uttarapada.

2 Patañjali on samāśānta

If we look at Patañjali’s commentary, then it is clear that he subscribes to only the first view viz. that the samāśānta suffix is a part of complete alaukikavigraha, and not the uttarapada. The discussion on the status of samāśānta elements in Mahābhāṣya appears under the commentary of the sūtra gostriyorupasajarānasya (A1.2.48) (‘The final long vowel of a prātipadika) ending in a word ‘go’ or a feminine suffix (at the end of a word which occur) as ‘upasjarāna’ (gets shortened’).

The part of the commentary relevant for our purpose is stated below
(692 Quoted Objection (ākṣepavārtikam)

kapi ca 4

kapi ca pratiśedho vaktavyah bahukumārikah bahuvṛṣalikah

Tr: In the case of kap also the prohibition (of the shortening of the final long vowel) be stated, (as in the case of) bahukumārikah, bahuvṛṣalikah.

Note: During the process of compound formation bahu · Jas kumārī · Jas there is a possibility of the introduction of a samasanta suffix kap, by the sūtra nadyṛtaśca (A5.4.153). There is also a possibility of the shortening of the final

38. MBh A2.4.20 (II.480.6)
vowel \( i \), by the \( sūtra \) *gostriyopasārjanasya* (A1.2.48). However, in the presence of *kap* vowel shortening in such cases should be prohibited. On this *Bhāsyakāra* comments

(694 Quoted Answer (*sāmadhānavārttikam*))

\[
\begin{align*}
\text{uktam vā | kimuktam? | kapi tāvaduktaṃ - "na kapi" iti} \\
\text{pratipṛḍhah - iti |} \\
\text{(nirākāraṇabṛśyam) naitadastyuktaṃ | ke'nah iti yā hrasyapṛṭītasyāḥ pratipṛḍhah iti |} \\
\text{kuta etat? | anantarasya vidhīrvā bhavati pratipṛḍhah vā iti ||} \\
\text{avaśyāṃ caitadevaṃ viñjeyam | yo hi manyate yā ca yāvati va} \\
\text{hrasyapṛṭītasyāḥ sarvasyāḥ pratipṛḍhah iti, ihāpi tasya} \\
\text{pratipṛḍhah prasajyeta - priyam grāmanī brāhmaṇa kulamasya} \\
\text{priyagrāmanikah, priyasenānikah ||}
\end{align*}
\]

Tr: It (The prohibition of the vowel shortening in the above mentioned cases) is already mentioned. What is mentioned? *na kapi* (A7.4.14), states the prohibition (of shortening of the final long vowel, when it is followed by a suffix *kap*). It (the prohibition of in the presence of the affix *kap*) is not stated. The prohibition of the vowel shortening that is possible due to the *sūtra ke'nah* (A7.4.13) is stated. On what basis? A rule either prescribes or prohibits only that which is nearest to it. This should definitely be accepted. (Otherwise) If one accepts the applicability of the shortening of the vowel at all places then in the example *priyagrāmanikah* also the prohibition would be affected. The paraphrase of *priyagrāmanikah* is *priyamgrāmanī brāhmaṇakulam asya*. The component *grāmapi* in the paraphrase is neuter because of the coreferential word *brāhmaṇakulam*. Hence, the short vowel replacement that could apply here is by *hrasvo napumṣake prātipadikasya* (A1.2.47).

Note: Here the argument is that, there is no necessity of the *vārttika* ‘*kapi ca*’, on the ground that the *sūtra* ‘*na kapi*’ (A7.4.14) already provides such a prohibition. But this argument is ruled out on the ground that the prohibition or prescription is always with respect to the nearest rule, and thus ‘*na kapi*’ (A7.4.14) prohibits its previous rule *ke'nah* (A7.4.13) and not any *sūtra*. If it were not so,
then 'na kapi' (A7.4.14) would have prohibited the shortening of the long vowel in the case of priyagramanikaḥ as well. But as we notice that the shortening of the vowel does not happen in priyagramanikaḥ, one must accept that na kapi (A7.4.14) prohibits only ke'nah (A7.4.13) and as such, we do require the vārttika 'kapi ca'.

Now Bhāsyakāra presents another argument against the necessity of the vārttika. The argument goes like this

(uktyantarabhāsyam)

idam tarhyuktam - 'kapi kṛte anantasyavād hrasvatvam na bhaviṣyati'; idamīha sampśadhāryaṁ - kap kriyataṁ,
hrasvatvamiti kimatra kartavyam?; paratvāt kap antaraṅgaṁ
hrasvatvam antaraṅgataraṁ kap

Tr: Then one may state this: after the addition of kap suffix the long vowel would not be in the final position and hence, there is no possibility of its shortening. Here it is to be decided: introduction of kap suffix or the shortening of the final vowel? Which one will take precedence? (Since the sūtra introducing kap nadyṛtaśca (A5.4.153) is later in the Aṣṭādhyāyī than the sūtra gostriyorupasaranjanasya (A1.2.48) resulting in the vowel shortening, following vipratisedhac param kāryam (A1.4.2)) kap should be introduced first. (On the other hand,) the vowel shortening operation is internally conditioned. (Following the paribhāṣā asiddham bahirangamantaranēa vowel shortening takes precedence). (The introduction of the suffix) kap is intensely internally conditioned (antaraṅgatara = prakarasena antaraṅga). But this kap is called a samasanta. (Thus it is externally conditioned. How can it be intensely internally conditioned?)

Objection (ākṣepabhāsyam)
until kap samāsanta ityucyate

Objection Rejected (ākṣepābhādhakabhāsyam)

tādarthyaattacchabdyam bhaviṣyati yeśāṁ padānāṁ samāsāḥ na tāvattesamanyaddbhavati kapam tāvat pratikṣate

The maxim is 'the use of a word x (to refer to y) on account of (y), being for
the sake of the item denoted by x. The alaukikavigraha which is going to get a label samāsa will not undergo any operation till the samāsānta affix (in this case kap) is introduced.

Note: Here the basic argument is after the introduction of the affix kap the long vowel is no longer the final one, and hence there would not be shortening of the long vowel, and hence there is no need to state the vārttika kap ca. But then the main question is on what basis the conflict between the introduction of kap and the shortening of vowel is resolved? The introduction of kap is by the sūtra nadyṛtaśca (A5.4.153), while the shortening of the long vowel is by the sūtra gostriyorupasarjanasya (A1.2.48), and hence on the basis of vipratisedhe param kāryam (A1.4.2) the introduction of kap is preferred over the vowel shortening. However there is another way of resolving the conflict, based on the conditions causing the operations. On this basis, the vowel shortening being internally conditioned should take precedence over the introduction of the samāsānta affix which is externally conditioned. However, Bhāsyakāra argues that the introduction of samāsānta affix is not externally conditioned, rather it is intensely internally conditioned. In support of this he quotes a maxim tādārthātvācchabdyāṁ bhāvisyati. The word samāsa in samāsānta refers to the alaukikavigrahavākya which is going to get a label samāsa. And till the samāsānta affix is introduced (at the end of the samāsa which refers to alaukikavigraha) other operations pertaining to compound formation will not take place. Therefore the introduction of samāsānta is intensely internally conditioned, and only after this other operations will resume.

On this Udyotakāra Nagesa comments as:

\[
\text{samāsāsabdena tādarthamuttarapadāṁ lakṣyata iti bhāva iti kaścit vāstutastu samāsārthan. vigrahavākyam lakṣyata iti bhāsyāśayastathāvānyatra diśatvatvā}\]

Tr: Some argue that the term samāsa in the sūtra samāsāntah refers to the subsequent component. However, in reality, the intension of the Bhāsyakāra as observed at other places is that the term samāsa refers to the alaukikavigrahavākya.

39. MBh A1.2.48 (I.57)
Similarly, in the commentary on the Praudhamanaramā, we note the following observation under the commentary on samāsāntāḥ (A.5.4.68).

evaṁcālaukikavigrahabhāgye samāsasamajnā samakālameva
samāsānta iti siddhāntaḥ
d40

Tr: Therefore the finally established opinion is in the alaukikavigrahabhāgya the introduction of samāsānta affix and the assignment of the label samāsa take place simultaneously.

6 CONCLUSION

Based on the above discussions we conclude that the samāsānta suffix is a part of an analytical paraphrase (alaukikavigraha) only, and the alaukikavigraha along with the samāsānta suffix gets the designation samāsa. Dīkṣita’s view on samāsānta suffix as a part of an utarapada is not acceptable. The reason being lack of any evidence (pramaṇa) that tells us the word samāsa in samāsānta as an utarapada. Dīkṣita has extended the meaning of the word samāsa in samāsānta as an utarapada by laksanā to explain the correct forms such as dvipuri, dvidhuri etc. In the Mahābhāṣya, nowhere do we find any support for this explanation. Now one may wonder, what does Patañjali has to say about the forms such as dvipuri etc. Patañjali rejects the vārttika akārāntottarapado dviguḥ striyām bhāṣyataḥ iti vaktavyam, because in the sūtra dvigoh (A.4.1.21) he says that the feminine suffix is added to the entire dviguh compound ending in a. So, there is no need to consider the suffix a to be part of an utarapada following the vārttika. In conclusion, the samāsānta suffix is a part of the analytical paraphrase only.

Thus the generation process of the compounds, which is inferred from the traditional commentators viz. Patañjali and Nagesā, starts with the alaukikavigraha, then samāsāntā suffix is added to it. The whole string now gets the designation samāsa and such a samāsa gets the designation prātipadika. This is followed by the aluk related operations (in case of aluk compounds). Then assignment of the label upasajjana and consequent placement as prior or subsequent constituent take place. At this point, entities called samāsānta come into effect. There follow
operations on prior constituents पुर्वपदाकार्य, subsequent constituents उत्तरपदाकार्य, word operations पदाकārya, and phonological operations that apply at junctures सांड्हिकार्य; finally, the gender, number and accent of the newly formed lexeme are decided and an appropriate case ending is added to get the compound. Figure 4 shows this process of the generation of Sanskrit compounds. This process has been implemented computationally, and the software is available for access at http://sanskrit.uohyd.ac.in/scl → tools → Compound Generation

Figure 4: Process of Compound Generation (2)
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References

A: Āstādhyāyī. See Pandü.


Kale Gangadhar Bapurao J.P 1935 Viṣayakaranabhūṣanāsāraḥ by Kaundabhatṭa with the commentary of Śaṅkara by Śaṅkaraśāstrī, pages 216 217 Anandashram, Pune


MBh: Patañjali’s *Mahābhāṣya*. See Bhargava Shastri.


PBs: *Paribhāṣenduśekharāḥ*. See Ganesha Shastri.

PMA: *Praudhamanorāmā*. See Sadasivasarma Shastri


Ramakrishnamacharya K. V 2010 *Bhūṣanasāratattvaprakāśikā*, Rashtriya Sanskrit Vidyapeetam, Tirupati


2000a *Ibid.* : Volume IV, English translation of adhyāyas four and five with Sanskrit text, translation, word-boundary, Anuvṛtti, explanatory notes, Derivational History of examples and Indices,


Shastri Ganesha *Paribhāṣenduśekharāḥ with the commentary of Gada by Vaidyanātha*, published by Anandashramgranthavali, granthāṅk A72, Pages 84-106, Pune

Shastri Sadasivasarma 1935 The *Praudhamanorāmā* by M. M. Bhattoji Dikṣita Vol. I avyayībhāvānta, with the commentary Laghuśabdaratna by Hari Dikṣita and Śabdaratna commentary by M. M. Bhairava Miśra and Prabha Notes by M. M. Sri Madhav Sastri Bhandari and Śabdaratna Pradipaka Notes on avyayībhāvānta Portion
Satuluri Pavankumar and Amba Kulkarni 2013 'Generation of Sanskrit Compounds,' Proceedings of ICON 2013, the 10th International Conference on NLP, Pages 77-86, Noida, India


Srimannarayana Murti M. 1974 Sanskrit Compounds. A Philosophical Study. The Chowkamba Sanskrit series Office, Varanasi, India

Vibhis: Vaiśyākaraṇabhūṣanasāraḥ See J.P Gangadhar Bapurao Kale