Indian Grammatical Tradition: Pāṇinian Grammar

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अनदिनिधनं ब्रह्म शब्दतत्त्वं यदक्षरम्।
विवर्ततेऽर्थभावेन प्रक्रिया जगतो यतः॥

Learning Outcomes:

A line or two on Pāṇini are invariably found in the beginning of any introductory book or article on linguistics. He is sometimes called as 'father of linguistics' and sometimes as 'the first descriptive linguist'. This kindles curiosity about who he was? Which were his major works? And what were his achievements through those works? This article puts together a few key concepts from the original sources and secondary material aiming to give the readers a glimpse into the works of this venerable figure in the Indian grammatical tradition.

Introduction:

We find deliberations on 'language' in two ancient civilizations, namely (i) the *Vedic* and (ii) the Greek. In Greek civilization language was just one part of discussions spanning across variety of other topics. Greeks studied alphabet, discourse, rhetoric, parts of speech etc. However, their understanding of the system of language was relatively simple when compared to the tradition of language study in India. While the Greek civilization collapsed early, there is an unbroken continuum of linguistic studies in India for at least last 3000 years[i]. The study of Indian Grammatical tradition is of interest to modern linguists for two reasons - (i) its peculiar and time-tested outlook towards language, and (ii) the influence it has upon many important figures of modern linguistics.

This chapter intends to introduce the Indian Grammatical Tradition starting from the *Vedic* period and continuing till date. It discusses the *Vedic* outlook towards language and phases of development of linguistic analysis. As Pāṇini's grammar of Sanskrit was the culmination of linguistic thought in India, the chapter introduces the primary texts, the approach and the descriptive techniques of Pāṇinian grammatical system. It ends with a discussion on the influence of this system on the field of linguistics, grammars of other Indian languages and recent trends in researches on Pāṇinian grammatical system. The contents of this chapter are as follows -

1. Approach towards 'Language' in *Vedic* culture
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1. Approach towards 'Language' in *Vedic* culture

Language was considered divine in the *Vedic* culture. We come across *Vāgāmbhṛṇi-sūkta* (also called as *Vāk-sūkta*) in the 10th*maṇḍala* of the Ṛg-veda. Here *Vāk* or speech praises her own self as follows -

<div align="center">
मयासो अन्नमत्ति यो विपश्यति यः प्राणिति य ईं शृणोत्युक्तम्।

अमन्तवो मां त उप क्षियन्ति श्रुधि श्रुत श्रद्धिवं ते वदामि॥४॥
</div>

<div align="right">-(Ṛg-veda - 10.125.4)</div>

(Translation by H. H. Wilson - He who eats food (eats) through me; he who sees, who breaths, who hears what is spoken, does so through me; those who are ignorant of me perish; hear thou who hast hearing, I tell thee that which is deserving of belief.)

The following *mantra* also occurs in Ṛg-veda and is commented upon by the grammarian Patañjali -

<div align="center">
चत्वारि शृङ्गा त्रयो अस्य पादा द्वे शीर्षे सप्त हसतासो अम्य।

त्रिधा बद्धो वृषभो रोरवीति महो देवो मर्त्याँ आविवेश॥
</div>

<div align="right">-(Ṛg-veda 4.58.3)</div>

Here Patañjali comments as follows - *mahān devaḥ śbdaḥ* (The great god is none other than *śbdaḥ* i.e., speech).

Even in the *Atharva-veda* there is the following line -

<div align="center">
यामाहुर्वाचं कवयो विराजम्। (*Atharva-veda* 7.2.5)
</div>

That 'speech' whom the seers called as '*virāt*' or the all-encompassing being.

There are many more references in the *Vedas* where 'speech' is depicted as divine. Even in the Amarakoṣa, one of the oldest extent Sanskrit lexicons written in around 6th CE, following synonyms of 'speech' can be found -

<div align="center">
'ब्राह्मी' तु 'भारती' 'भाषा' 'गीः' 'वाक्' 'वाणी' 'सरस्वती'। (*Amarakośa 1.6.352*)
</div>

Clearly here, speech has been raised to the position of a deity.

STOP and THINK 1 -
1. Even today people worship Goddess Saraswati by applying *kumakuma* to their neck as a place from where *Vāg-devī* or speech manifests. Do you think it is appropriate to consider Language as a goddess?
2. Think and make a list of areas where language (in terms of speech or writing or even gestures) plays a role (like in the office, school, conversation with friends, reading a news paper, interacting with machines etc.) and those where language is not involved. Do you think it pervades all aspects of existence?
3. What is language? Is it words or the intention expressed through the medium of words or something else?
4. In your view is language a skill that one can acquire through practice, or is it an intangible faculty that develops gradually after birth?

2. Phases of development of Linguistic Analysis prior to Pāṇini

As is clear in 1., language was raised to the level of divine in the *Vedic* literature. Language analysis and training were important concerns in *Vedic* culture. Out of 6*Vedaṅgas* or disciplines that aid to the study of *Vedas*, 4 (i.e., *Śikṣa, Vyākaraṇa, Chandas* and *Nirukta*) are dedicated to one or the other aspect of language. Linguistics in the initial period was both reflective and descriptive. It was concerned with both (i) the metaphysics of language an d (ii) empirical analysis of language usage (speech, including recitation and therefore, meter). The initial phase was hence, the phase of phonetics, etymology, lists/lexicons and morphology. Phonetics may have developed as the first science and a *Vedāñga* in order to preserve intact, articulate accurately and transmit exactly the *Vedic mantras*. The sophistication of the phonetic analysis, classification and the principles of sound change in context enabled Yaska, the etymologist to account for language change in the sound shape of the form in course of its derivation form from the root to the final form. The detailed classification of sounds on the basis of place of articulation and manner of articulation also laid the foundations of the *Pratyāhara-sūtras* and a comprehensive *sandhi* rules found in Pāṇini[ii].

The *Vedic Saṃhitā* texts were analysed into *padas*. The *padas* were then recited and memorized in various combinations of increasing complexity in order to facilitate the reconstruction of texts at any point of time. *Padas* were the constituents of *Saṃhitā* that could be prepared on the basis of precise phonetic and morphological analysis. There was also a tradition of preparing *Pāṭhas* or lists of verbal roots (*Dhātupāṭha*), nominal stems (*Gaṇapāṭha*), prefixes (*Upasarga*), indeclinables (*nipāta* and *avyaya*) etc.

Vyākaraṇa developed as an activity of identifying, analysing and synthesising roots and suffixes in Sanskrit. We shall refer to it as 'Grammar' as grammar is a tem closest to the concept of *Vyākaraṇa*. In the first volume of his work '*Sanskṛta Vyākaraṇa-śāstra kā Itihāsa*' Yudhishthir Meemamsak remarks, "*Vyākaraṇa śāstra kī utpatti kaba huī, isa kā uttara atyanta duṣkara hai| hāṃ itanā nissandigdharūpa se kahā jā sakatā hai ki upalabdha vaidika padapāṭhoṃ (3200 vi. pū.) kī racanā se pūrva vyākaraṇa śāstra apanī pūrṇatā ko prāpta ho cukā*

thā| prakṛti-pratyaya, dhātu-upasarga aura samāsa-ghaṭita pūrvottara padoṃ kā vibhāga pūrṇatayā nirdhārita ho cukā thā" Meemamsak (1994: 59).With the help of numerous evidences Meemamsak claims that *Vyākaraṇa Śāstra* had already attained completeness before the available *Vedic padapāṭha* were composed at least 5200 years ago. The word '*Vyākaraṇa*' in the sense of 'Science of Words' can be found in Sanskrit texts as old as the Rāmāyaṇa, the Muṇḍakopaniṣat, the Gopathabrāhmaṇa and the Mahābhārata. Some important terms of *vyākaraṇa* like *vibhakti, nāma, ākhyāta, liṅga, prātipadika,* can be found in texts like the Maitrāyaṇī Saṃhitāand the Aitareya Brāhmaṇa. References to *Vyākaraṇa Śāstra* can be found in almost the entire *Vedic* literature excepting the *saṃhitā* portion. From all these evidences Meemamsaka concludes that *Vyākaraṇa* must have developed completely and entered into the Indian education system before the creation on the entire *Vedic* literature.

Traditionally it is believed that lord Brahmā preached this science of words to Bṛhaspati. Bṛhaspati taught it to Indra. Indra introduced the *prakṛti-pratyaya* (or root-suffix) division into the study of *Vyākaraṇa.* Numerous scholars learnt and taught this science from then onwards. Pāṇini is the most important landmark in the history of Sanskrit *Vyākaraṇa*. Pāṇini in his work named Aṣṭādhyayī refers to the following ten *Vaiyākaraṇas* who existed prior to him –

1. *Senaka*	2. *Śākalya*	3. *Śākṭāyana*	4.*Kāśyapa*	5. *Sphoṭāyana,*
6.*Gārgya*	7.*Gālava,*	8. *Bhāradvāja,*	9. *Āpiśali*	10.*Cākravarmaṇa*

However, Meemamsak has found the names of 85 predecessors of Pāṇini. It is evident from the above discussion that there is a long tradition of *Vyākaraṇa* prior to Pāṇini. On Pāṇini's rule '*hīne* (1.4.86)' the 7th century CE commentary 'Kāśikā' gives the following example - *anuśākaṭāyanaṃ vaiyākaraṇāḥ| Kāśikā's* commentary named 'Nyāsa' explains, "*śākaṭāynāpekṣayānye vaiyākaraṇā hīnāiti|*"(Translation: Other grammarians are inferior to Śākaṭāyana). This tells us about pre-eminence of one of the pre-*pāṇinian* grammarian 'Śākaṭāyana'. Based on many evidences Meemamsak believes that Pāṇini's *vyākaraṇa* is based on the *vyākaraṇa* of his predecessor named Āpiśali[iii].   However none of the *vyākaraṇas* written prior to Pāṇini are available today in entirety. Probably Pāṇini's grammar become so popular, that the traditions of studying previous grammars gradually ended. Consequently, the oldest available Sanskrit *Vyākaraṇa* complete in all respects, today, is the *Vyākaraṇa* composed by Pāṇini.

After Panini, there is an elaboration of linguistic thought into areas beyond description -- for example, the theory of grammar (Patañjali), the philosophy of grammar and of language in relation to thought and reality (Bhartṛhari), the language of literature (Bharata, Bhamaha and Vamana) and language in Philosophy (Mimamsa)[iv].

CHECK YOUR PROGRESS 1:
State whether the following statements are true or false with reasoning –
1. We find deliberations on 'language' in only one ancient civilization
2. Pāṇini was the first person in the Indian grammatical tradition to present his thoughts about 'language'
3. Four out of six *vedaṅgas* are dedicated to the study of different aspects of language.

4. Bṛhaspati introduced the *prakṛti-pratyaya* (or root-suffix) division into the study of *Vyākaraṇa*
5. The *Vedic Saṃhitā* texts were analysed into *padas*

3. Foundational Texts in Pāṇinian Grammatical System

The tradition of furthering the knowledge tradition in a discipline by writing commentaries and sub-commentaries of the initial authentic work is common in Vedic tradition. Pāṇini's rules are very concise and therefore, easily committable to memory. Kātyāyana's one-sentence commentaries on some rules of Pāṇini shed light on their implicit aspects. Patañjali's Mahābhāṣya is a detailed commentary exhausting all the aspects of selected Pāṇini's rules and Kātyāyana's brief one-sentence commentaries on them. What is known today as *Pāṇinīya Vyākaraṇa Tantra* or Pāṇinian Grammatical System is the sum total of contributions from these three *Munis* or sages, namely - Pāṇini, Kātyāyana and Patañjali. That is why this system is also known as *Tri-muni Vyākaraṇa*.

3.1. Who was Pāṇini

Though many Sanskrit *vyākaraṇas* were composed before and after Pāṇini, only Pāṇini's *vyākaraṇa* enjoys the status of '*Vedaṅga*' in tradition. In his work named Aṣṭādhyāyī, Pāṇini through a very small set of brief statements (called 'Sūtras'), has succeeded in giving a comprehensive description of *Vedic* as well as *laukika* or popular Sanskrit. On his rule *Āṅ maryādābhividhyoḥ* (2.1.13), the commentary *Kāśikā* gives the following example - *ākumāraṃ yaśaḥ pāṇineḥ* (Translation - Pāṇini is well known to everyone including children).

Pāṇini's grammar influenced the works of Leonard Bloomfield (an eminent American linguist) and Ferdinand de Saussure (a Swiss linguist widely considered to be one of the founders of 20th century linguistics). Scholars like James Robert Ballantyne (a Scottish Orientalist) and Bothlingk (a Russian German Indologist) called Pāṇini the 'Father of Linguistics'. Francois and Ponsonnet in their article on Descriptive Linguistics call him the 'First Descriptive Linguist'. Bloomfield in his celebrated book 'Language' (1933, p.11) says, "This grammar that dates from somewhere around 350 to 250 B.C., is one of the greatest monuments of human intelligence. It describes with the minutest detail, every inflection, derivation, and composition, and every syntactic usage of its author's speech. No other language to this day, has been so perfectly described". He further adds, "The Indian grammar presented to European eyes, for the first time, a complete and accurate description of a language, based not upon theory but upon observation".

Hardly any authentic information about Pāṇini is available today. There are various opinions about the period of his existence. As per the most accepted one, Pāṇini lived between 600 BCE to 500 BCE. From a references available in various works in Pāṇinian grammatical tradition like the Mahābhāṣya, Pradīpa and Gaṇaratnamahodadhi, scholars have compiled the following information about Pāṇini -

- His mother's name was Dākṣī. That is why he is also known as Dākṣīputra.
- He lived in a village named Śālatura which is now known as Lahur. It is located towards the northwest of Rawalpindi in today's Pakistan.
- His father's name was Pāṇina and he was born in the lineage of Paṇin.

3.2. Pāṇini's works

Five books of grammar are ascribed to Pāṇini. Among them, the Aṣṭādhyāyi Sūtrapāṭha is central to the entire system of Pāṇiniyan grammar. The Dhātupāṭhaand the Gaṇapāṭha provide the input database of verbal roots and nominal bases respectively which is processed as per the Aṣṭādhyāyi rule-base to generate grammatically correct forms. The Uṇādi-sūtrapāṭha also

provides a similar but relatively smaller rule-base as Aṣṭādhyāyi. The Liṅgānuśāsana helps in determining the genders of the words generated from the Aṣṭādhyāyi aiding to their further processing resulting into final word-forms.

3.2.1. The Aṣṭādhyāyi

The name 'Aṣṭādhyāyi' itself suggests that there are 8 *adhyāyas* or chapters in it. Each of these chapters is further divided into 4 sub-chapters. Each of these sub-chapters contains *Sūtras* or rules of Sanskrit *Vyākaraṇa*.

Bhate (2002: 19) observes that, "Pāṇini has arranged his subject matter on the binary principle consisting of analysis and synthesis. The first part of this grammar gives analysis of the linguistic matter into basic linguistic units....The second part which deals with the synthesis of these units consists of a mechanism which combines these units into different word forms". Broadly, the 'analysis' part is covered in chapters 1 to 5 and the 'synthesis' part is covered in chapters 6 to 8.

3.2.2. The Dhātupāṭha

The Dhātupāṭha is almost an exhaustive list of verbal roots that are used in Sanskrit. The version of Dhātupāṭha available today also mentions (not all but just) the most popular meanings of each root. There are two *sūtras* in the Aṣṭādhyāyi that define a *Dhātu*, namely - (i) *bhūvadayo dhātvaḥ* (1.3.1)and *sanādyantā dhātavaḥ* (3.1.32). Of these two rules, the first one labels all the words listed in the Dhātupāṭha as *dhātus*. The second one labels all the words ending in one of the suffixes belonging to the *sanādi* group as *dhātus*. Various suffixes that can be added to the *dhātus* are then discussed in chapter 3 of the Aṣṭādhyāyi. These *dhātus* are divided into ten major classes and numerous sub-classes (like *pacādi, ghaṭādi, nandyādi* etc.) in order to account for various patterns of declensions that they follow and various suffixes that they can take.

3.2.3. The Gaṇapāṭha

Just as the Dhātupāṭha is a list of verbal roots, the Gaṇapāṭha is a list of nominal bases. However, unlike the Dhātupāṭha, the Gaṇapāṭha is not an exhaustive list of all the nominal bases. Well known nominal bases that are inflected in the default pattern and default rules, are not included in the Gaṇapāṭha. Only those words to which some special operations are ordained can be found in the Gaṇapāṭha. There are many *sūtras* in the Aṣṭādhyāyi wherein the word *ādi* occurs, like - *sarv**ādīni** sarvanāmāni* (1.1.27), *svar**ādi**nipātamavyayam* (1.1.37) and **cādayo**'sattve (1.4.57). *Ādi* means 'first'. So '*sarvādī*' means 'the group of words whose first member is the word *sarva*'. One has to now go the Gaṇapāṭha to find the entire list of words that come under the *sarvādi* group. Few of these *Gaṇas* are *niyata-gaṇas* i.e., groups with fixed number of members, whereas others are *ākṛti-gaṇas* i.e., open ended groups, wherein new members undergoing operations similar to the enlisted members can be included in the group.

3.2.4. The Uṇādisūtrapāṭha

Here also we find verbal roots, and suffixes to be added to them just as in the Aṣṭādhyāyi Sūtrapāṭha. However, the scope of these *sūtras* is limited up to derivation of only a small number of forms. The rules for modification (reduplication, replacement, deletion, augmentation etc.) that are mentioned in the Aṣṭādhyāyi are applicable to the Uṇādisūtrapāṭha as well while synthesizing the roots and suffixes. *Vaiy*ākaraṇas believe that most of the nominal bases can be derived by adding some or the other suffix to the verbal roots. However they do not claim that similar derivation can be shown for all the nominal bases. Some nominal bases derive their meaning through convention. Such nominal bases are called as *avyutpanna-prātipadika*. Pāṇini's *Vy*ākaraṇa attempts to show the derivation of most of the words but not all. If someone is too insistent about showing the derivation of such words whose derivations have not been covered

under the Aṣṭādhyāyi, they may try to comprehend the meaning of the word they want to derive and accordingly select a verbal root and imagine a suffix that can be added to it for showing the derivation. There is just one rule in the Aṣṭādhyāyi, namely *uṇādayo bahulam|* (3.3.1) which directs us to look up the Uṇādisūtrapāṭha for the derivations of the words whose derivational processes have not been shown in the Aṣṭādhyāyi.

3.2.5. The Liṅgānuśāsana

In Sanskrit, genders are assigned to even inanimate objects. This assignment of genders is by and large arbitrary. One can come to know the genders of most of the Sanskrit words through Liṅgānuśāsana. This is based mostly on the ending words and suffixes with which they are derived. There are following 5 sections in Liṅgānuśāsana -

(i) *Stryadhikāra* - covering types of words that are feminine in gender
(ii) *Puṃliṅgādhikāra* - covering types of words that are masculine in gender
(iii)*Napuṃsakādhikāra* - covering types of words that are neuter in gender
(iv)*Strīpuṃsādhikāra* - covering words that may be deemed to be in masculine or feminine in gender
(v) *Puṃnapuṃsakādhikāra* - covering words that may be deemed to be in masculine or neuter in gender

STOP and THINK 2 –

1. Inputs have to be taken from all the 5 books of Pāṇinian grammar in the process of deriving grammatically correct words. Why would Pāṇini not have considered writing just one book covering the implications of all five?

2. There are languages where the terms indicative of only human beings are assigned masculine or feminine gender. Others are all to be considered as neuter gender words. There are other languages wherein terms indicative of inanimate things can be found in all genders. What is the gender arrangement in your mother tongue? Try to find out the name of one language where there is complete absence of neuter gender.

3. Make a list of 50 most common verbs used in your mother tongue. Try to decide upon a *dhātu* in each one of them and create a *Dhātupāṭha* of 50 verbal roots.

4. Pāṇini's approach[v]

4.1. Selection of a language for description

Knowledge forms itself in language (Bhartṛhari's Vākyapadīya 1.123). Languages change uncontrollably with space and time. Thus the information coded in a language at one place may not be interpretable at the other. Information coded in a language at one point in time may not be interpretable several centuries later. *Vyākaraṇa* is a *Vedaṅga* i.e., one of the six auxiliary disciplines that developed with a view to conserve the *Vedic* literature. The great grammarian Patañjali proclaims, "*Rakṣārthaṃ vedānām adhyeyaṃ vyākaraṇam*", i.e., the most important objective behind the development of *Vyākaraṇa* is to protect the *Vedas*. *Vyākaraṇa* therefore in Indian tradition is meant to ensure that the *Vedas* remain interpretable everywhere and at all times in future. The *vaiyākaraṇas* or the grammarians therefore chose one among numerous variants of the *Bhāṣā*[vi] that must have co-existed at that time; the one which had close affinity to the language of *Vedas*. They called it 'Lakṣya' or target language, and started formulating '*Lakṣṇas*' or rules describing it in minute details. They knew that in course of

several centuries, the *lakṣya* will evolve so drastically that it will then become impossible to interpret the material that was composed in it during their time. This is when this detailed rule base of *vyākaraṇa* or the '*lakṣṇas*' being composed by them will come in handy to recover almost the entire *lakṣya* (or the form of the language when the rule base was written) leading to interpretability of all the material composed in it. This *lakṣya* or target language of which numerous linguistic facts were observed and documented through *vyākaraṇa* came to be known as Sanskrit (or a rule bound variant among all the ones available at that time).This exercise of the grammarians also availed the writers of the post-*vedic* literature, of a language-variant that is so well rule-bound that any literature composed in it is likely to be interpreted almost completely across the ages.

4.2. Descriptive approach

Overtly Pāṇini's grammar looks like a manual validating the usages that are deemed to be acceptable only among the elite class. It presents intransgressible rules validating only certain types of usages in a language. It does not take into account dialectical variations, rather deems them 'wrong'.

However, a closer look at it allows us to understand that unlike any 'traditional grammar' Pāṇini's grammar is essentially a 'descriptive' rather than a 'prescriptive' grammar. Pāṇini's rules are observations rather than commands.

Pāṇini has adopted the 'default-exception' model for framing his rule in order to account for various forms in a language that was already widely in use at his time. His 'Gaṇapāṭha' mostly consists of collection of words that follow exceptional pattern of declensions or lead to exceptional forms. As mentioned in 3.2.3, he has a provision of open-ended *gaṇas* or *ākṛti-gaṇas* in his system. This allows even a future inflow of exceptional forms. His rule '*pṛṣodarādīni yathopadiṣṭam* (6.3.109)' clearly spells out that words like '*pṛṣodara*', '*balāhaka*' etc. are to be deemed correct merely by virtue of their use by *śiṣṭas* (or virtuous people). At numerous occasions he has taken 'context' and 'mood' into account while giving the rules for derivation of *samāsa* (compounds) and *taddhita-ghaṭita* forms (nouns derived by adding suffixes to other nouns). His rule '*khaṭvā kṣepe* (2.1.26)' permits compounding of the word '*khaṭvā*' in accusative case with a word ending in suffix *kta* only when *kṣepa* i.e., censure is implied. He has given similar rules in contexts such as *praśaṃsāyām* (while praising), *garhāyām* (while criticising), *prahāse* (when joke is implied) and *ākroṣe* (while cursing). Some of his rules attempt to take into account regional variations like '*udīcāṃ vṛddhādagotrāt* (4.1.157)' implies that in the northern regions, the son of *āmragupta* can be called as *āmraguptāyani* where as the same would be called as *āmragupti* elsewhere. According to Paul Kiparsky, Pāṇini has also taken a note of preference among the speakers for optional forms by using three different terms - *vā, vibhāṣā* and *anyatarasyām* to indicate options in different *sūtras*.

4.3. A mechanism for generating grammatically correct words and sentences

Pāṇini's system can be described as a machine for generation of correct words and sentences. It takes the meaning intended to be expressed by the speaker as its input and converts it into sound sequence expressing the same. As a sort of transformational generative grammar, the meaning or *vigraha-vākya* (a sentence expressing the meaning) is at the deep structure level of this machine. It gets converted into surface structure in form of a sound sequence as it passes through several stages of transformation. Let us take some examples to understand the process -

If the meaning or *vigraha-vākya* - '*dāti anenai iti*' (the tool with which one can cut) is to be transformed into a *kṛdanta* (participle) - *dātra*, the process (simplified) in the Aṣṭādhyāyī is as follows -

Meaning or *vigraha-vākya*	*dāti anenai iti*
We first look up the *dhātupāṭha* for a root having the meaning 'to cut' and we get the root *dāp*. The *p* is removed by virtue of rules 13.3 and 1.3.9	*dā*
The sounds *ṣ* and *n* are now removed by virtue of rules 1.3.3, 1.3.6 and 1.3.9 and the sound *ṭ* changes to *t* due to the elision of *ṣ* prior to it	*dā+tra*
This is how we have the word -	*dātra*

There is a similar process which changes the intended meaning - *kuntāyāḥ apatyaṃ pumān* (Son of *kuntā*) to *kaunteya* and *pītam ambaraṃ yasya saḥ* (one who wears a yellow cloth) to *pītāmbaraḥ*.

Now let us see how Pāṇini explains the process of generation of a causal sentence from a simple sentences through transformational rules (simplified) -

Simple sentence at Deep structure level -	*rāmaḥ vanaṃ gacchati* (Rāma goes to the forest)
Transformation to causal meaning -	*daśaratha* causes *Rāma* to go to the forest.
In this second sense 'Daśaratha' is termed as *hetu* by Pāṇini's rule - *tatprayojako hetuśca* (1.4.55) and the suffix *ṇic* gets added to root *gam* in the verb by the rule *hetumati ca* (3.1.26)	*gam+ṇic*
ṇ and *c* are removed by virtue of rules 1.3.3, 1.3.7 and 1.3.9	*gam+i*
Rule 3.2.123	*gami+laṭ*
Rules 3.4.77 and 3.4.78	*gami+tip*
Rule 3.1.68	*gami+a+ti*
Rule 7.3.84	*game+a+ti*
Rule 6.1.78	*gamay+a+ti*
That is how the verb gets transformed to -	*gamayati*
Daśaratha is the new subject of the causal verb. Hence it takes the first case by virtue of the rule 2.3.46. While there is no change in the word *vanam*, the word Rāma gets termed as the object or *karman* by virtue of the rule 1.4.52 which says that the subject of the pure verb becomes the object of the causal verb under certain circumstances. That is how we have the causal sentence -	*daśarathaḥ rāmaṃ vanaṃ gamayati*|

4.4.   Adherence to *Vākyasaṃskāra-pakṣa*

Pāṇini's grammar is called as Śbdānuśāsana (Śabda-anuśāsana) i.e., teaching of śabda. Many therefore misunderstand this grammar as the grammar of words. Śabda in Pāṇini's grammatical system means that unit which can convey the entire meaning. If the entire meaning is conveyed by a discourse, than discourse is Śabda. If a conversation consists of only a single

sentence, then that single sentence is Śabda. If the meaning is conveyed in entirety through one single sentence only then Śabda is equivalent to a word. Pāṇini's grammar is thus a grammar that describes the sentential constructions in Sanskrit. Every word in this grammar is generated in context of its role in a sentence. In other words, Pāṇini adheres to *Vākya-saṃskāra-pakṣa* and not to *Pada-saṃskāra-pakṣa*.

Let us examine the derivation of the word *dātreṇa* (with a sickle) in context of the sentence - *rāmḥ dātreṇa tṛṇṃ kartayati* (Rama cuts the grass with a sickle)

In the first chapter of the Aṣṭādhyāyī, there is a rule *kārake* (1.4.23) which says, - "when a certain thing is participating in an action = connected to the verb (in a sentence)". Further in the same context it is said that, "*sādhakatamaṃ karaṇam* (1.4.42)" which means, 'when it is the most useful in bringing about that action then it is called as *karaṇa*'. In the sentence under consideration, it is only due to *dātra* that the action of cutting happens. Hence *dātra*[vii] becomes *karaṇa*. Now there is a rule '*kartṛ-karaṇayoḥ tṛtīyā*' in the second chapter of the Aṣṭādhyāyī which says that a suffix of the third case is to be added to *karaṇa*. The fact that the this suffix is to be added after the word is mentioned in the third chapter. The fourth chapter enlists the suffixes of different cases. Thus the process is as follows -

with *dātra* -- *dātra* becomes *karaṇa* -- suffix of third case -- to be placed after the word *dātra* -- *dātra+ṭā*

This suffix *ṭā* changes to *ina* by virtue of the rule 7.1.12. So the next step is- *dātra+ina*. Now the two are combined and we have *dātrena*. The second-last sound *n* changes to *ṇ* by virtue of the rule 8.4.2 and we have our final form *dātreṇa*. Thus we see how the step-by-step arrangement of topics in the Aṣṭādhyāyī also suggests that Paṇinian grammar is the grammar of sentences and words are generated in context of sentences. It is impossible to derive the word *dātrena* independently because the rule *kārake* (1.4.23) necessitates *dātra* to be connected to some verb in order to be called as *karaṇa* on which the attachment of the suffix of the third case depends. The way this system describes the generation of sentences in a cyclical manner can be understood from the following figure -
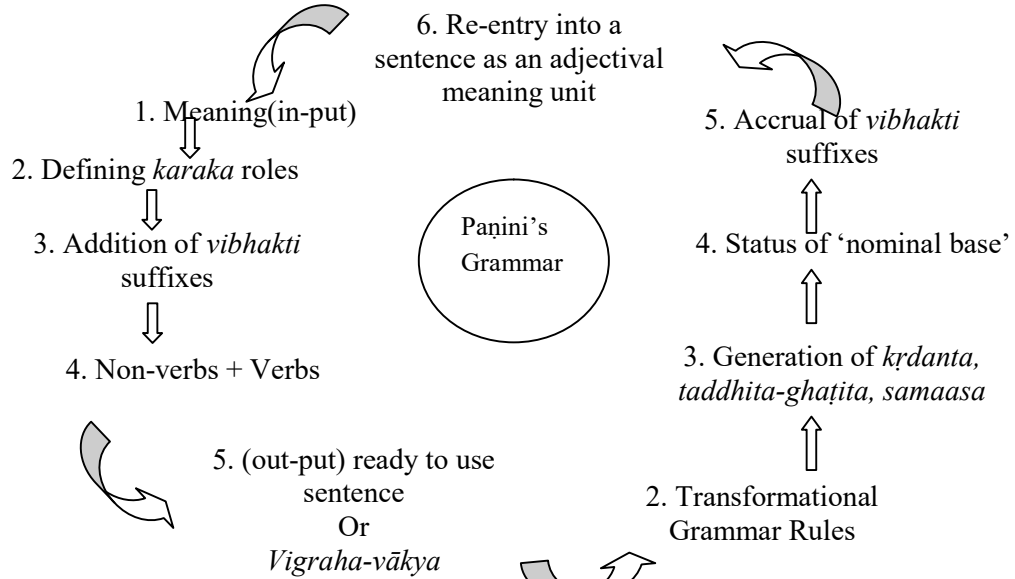

Figure 1[viii]

The first half of the above circle shows how a sentence is generated as Non-verb+verb. The sentence thus generated can be put to use for expressing meaning. However a sentence generated in this manner also serves as a deep structure for generation of participles, compounds and *taddhita-ghaṭita* forms by application of various transformational grammar rules. The words so generated again enter into sentences. This system thus turns round and round to generate infinite sentences and infinite words.

CHECK YOUR PROGRESS 2:

From the similarities in the forms, try to match the deep structure sentences with the surface structure words -

A	B
1. ***dāti*** *anena iti* (they **cut** with this)	a) *dātrahataḥ*
2. *dadataṃ prerayati* (makes someone cut)	b) *dātravān*
3. *dātreṇa hataḥ*	c) *dātra*
4. *dātram asya asti iti* (the one who has a sickle)	d) *dātrāṇi* (many sickles)
5. *dātraṃ ca dātraṃ ca dātram* (a sickle and a sickle and a sickle)	e) *dāpayati*

5. Descriptive Techniques of Pāṇinian Grammar

Few languages must have been described to the detail in which Sanskrit has been described by Paṇini. However there are merely around 10, 000 words in Pāṇini's Aṣṭādhyāyī. While attempting the most comprehensive description of a language, Pāṇini has managed to keep his work very concise. There is no compromise with the precision and clarity of the text as well. It therefore becomes interesting to examine the descriptive techniques employed by Pāṇini in this monumental work.

5.1. The Principle of Economy

Pāṇini's system is based on the principle of economy, an Occam's razor. Brevity has been given utmost importance in Pāṇini's writing style. Attempt has been made not to use a single word or even a single letter superfluously. There is also a famous saying about grammarians that, *"Ardha-mātrā-lāghavena putrotsavaṃ manyante vaiyākaraṇāḥ"*, which means that grammarians celebrate as if son is born to them if they could save half a *mātrā* (time required to pronounce a consonant) without losing out on the clarity of meaning.

5.2. The *Sūtra* style

Pāṇini's Aṣṭādhyāyī is considered as one of the best examples of *Sūtra* literature. The most authentic works in all important *Śāstras* in Sanskrit tradition are written in *Sūtra* style. These are then followed by commentaries of different lengths. *Sūtras* are essentially sentences. They are not to be written in any specific meter. At times they can be as short as a single syllable. For example - the *sūtra* - *śe* (1.1.13) in the Aṣṭādhyāyī. At the other time they can be quite long. For example - the *sūtra* - *avyayaṃ vibhaktisamīpasamṛddhivyṛddhyarthābhāvātyayāsampratiśabdaprādurbhāvapaścādyathānupūrv yayaugapadyasādṛśyasampattisākalyāntavacaneṣu* (2.1.6) in the Aṣṭādhyāyī, or the *sūtra* - *vyādhistyānasaṃśayapramādālasyāviratibhrāntidarśanālabdhabhūmikatvānavasthitatvāni cittavikṣepāste'ntarāyāḥ|* (Yoga Sūtra 1.30). The author has to make sure that they do not use

even a single word or even a letter superfluously. When composing *Sūtras* the author has to be point to point. They cannot indulge in giving long explanations, yet the topic should be conveyed in its entirety.

5.3.   Mnemonic Model

In words of Bhate (2002: 14), "The basic aim of Aṣṭādhyāyī is to recapitulate essentials of Sanskrit grammar and to present them in the most succinct form to facilitate memorization rather than to teach Sanskrit in a simple and easy manner. Pāṇini has presented Aṣṭādhyāyī as a mnemonic rather than a pedagogic model".

5.4.   Ellipses

Context plays an important role in determining the intention of the speaker in natural languages. Pāṇini has put this feature of natural languages to the best use by using ellipses or *Anuvṛtti* technique in his work. In each of his *sūtra* Pāṇini writes only selected words. Overtly they seem to be incomplete sentences. However, the *sūtras* draw rest of the material needed to give a complete meaning to the *sūtra* from the context set in the previous *sūtras*. For example take a look at the following *sūtras* -

(1) *upadeśe ac anunāsika it* (1.3.2)
(2) *upadeśe* **hal antyam** *it* (1.3.3)

Above, *sūtra* 1 says that the nasalized vowel that occurs in the enunciations of Pāṇini will be termed as '*it*'. *Sūtra* 2 merely says, "last (*antyam*) consonant (*hal*)". It is thus like an incomplete sentence. The *ākāṅkṣā* or expectancies as to -

(i) The last consonant of what? Leads to bringing down the word '*upadeśe*' to *sūtra* 2 and
(ii) What will the last consonant of *upadeśa* be called? Leads to bringing down the word '*it*' to *sūtra* 2.

This is called as '*Anuvṛtti*'. According to studies Pāṇini has managed to compress his work to 1/6th of what its size would have been had all *Anuvṛttis* been repeated with every *sūtra*

5.5.   Meta-language

The Aṣṭādhyāyī is written in Sanskrit. However, Pāṇini's Sanskrit hardly makes any sense to anyone who claims proficiency in Sanskrit. Since the task at hand was to describe the language itself, he had to elevate himself to some extent beyond the language being described. He therefore had to create his own meta-language for accomplishing the task.

5.5.1.   Technical Terminology

For the purpose of his description of Sanskrit, Pāṇini had to create and put use numerous technical terms in his grammatical system. Few terms like *it, ṭi, ghi,* and *ghu* do not carry any meaning beyond the one assigned them by Pāṇini exclusively for the purpose of his description of Sanskrit. These terms are meaningless outside Pāṇini's grammar. A few terms like *nadī, saṃkhyā, guṇa* and *vṛddhi* are defined and used in the Aṣṭādhyāyī in a very different and technical sense and may confuse a person who knows Sanskrit well but has no training in Pāṇini's grammar.

5.5.2. *Pratyāharas*

The first 14 *Sūtras* in Pāṇini's Aṣṭādhyāyī are called as 'Pratyāhāra Sūtras'. They just comprise of sounds that are used in Sanskrit language. The last sound in each *sūtra* is a consonant. The *sutras* are as follows -

1. *aiuṇ* 2. *ṛḷṛk* 3. *eoṅ* 4. *aiauc* 5. *hayavaraṭ* 6. *laṇ* 7. *ñamaṅaṇanam* 8. *jhabhañ* 9. *ghaḍhadhaṣ* 10. *jabagaḍadaś* 11. *khaphachaṭhathacaṭatav* 12. *kapay* 13. *śaṣasar* 14. *hal*

Pāṇini has given a technique of preparing *pratyāhāras* based on the 14 *sutras* above. The last sound of every *sūtra* above is to be ignored. The *pratyāhāra* '*ac*' for example covers the sounds '*a,i,u,ṇ,ṛ,lṛ,k,e,o,ṅ,ai,au,c.* i.e., all the vowels. Similarly for referring to all the unaspirated voiced stops he has used the *pratyāhāra* '*jaś*'. For representing the sounds *i, u, ṛ* and *lṛ* he uses the *pratyāhāra* '*ik*'. For representing all the semi-vowels he uses the *pratyāhāra* '*yaṇ*'. He has succeeded in bringing remarkable brevity in his *sūtra* by making use of these *pratyāhāras* to refer to various groups of sounds. For example - Pāṇini has given the rule that - *i, u, ṛ* and *lṛ* change to *y, v, r* and *l* respectively when followed by a vowel, in just three words as follows - *iko yaṇ-aci* (6.1.77).

5.5.3. *Anubandhas*

Consider the follow two derivations -

(i)   *pac + a = pāka*
(ii) *pac + a = paca*

The root *pac* is same in both the derivations above. The suffix *a* is added to *pac* in the first derivation in the sense of 'action' and in the second derivation in the sense of 'subject'. Though the meanings are different, the suffix is the same *a*. However, we see two changes happening in the root *pac* in the first derivation - i. *a* of *pac* changes to *ā*, and the *c* of *pac* changes to *k*. These two changes do not happen in the second derivation. As per Pāṇini, the suffix in the first derivation is *ghañ* and that in the second derivation is *ac*. There are following three sounds in - *gh+a+ñ*, out of which the initial *gh* and the final *ñ* are elided and only '*a*' remains to be added to the root *pac*. Even in the second derivation the final *c* is elided, thus only '*a*' remains. These words that form a part of Pāṇini's suffixes that are elided in the derivational process are called as 'Anubandha'. The secret of difference in final forms in two derivations discussed above, in spite of taking the same suffix lies in these *Anubandhas*. Pāṇini has taught specific operations that the root undergoes when suffixes possessing specific *Anubandhas* are added. In the first derivation, the change of *c* to *k* is due to Pāṇini's rule *cajoḥ ku ghiṇṇyatoḥ* (7.3.52). As per this rule the final *c* and *j* in roots change to *k* and *g* respectively when suffixes having *anubandha - gh* is added to them. The change of *a* to *ā* is due to Pāṇini's rule *ata upadhcyāḥ* (7.2.116). As per this rule the second-last '*a*' sound of roots change to *ā* if suffixes with *anubandha - ñ* are added to them. With the *anubandha* technique, for every modification that the root is required to undergo, Pāṇini now has to only add certain extra sound to the suffixes.

5.6. Conventions of interpretation

While Pāṇini set up his meta-language he was aware that there was a need to provide the decoding mechanism as well. He therefore mentions many rules for interpreting and applying his rules. These rules about the rules can be called as meta-rules. For example, there is a special meaning attached to the cases of words used by him in his *sūtras*. The genitive case is used in the sense of *sthāne* (i.e. on that place). The operation has to be performed on the sound unit behind the one mentioned in the locative case in his *sūtras*. In the rule *ikḥ yaṇ aci* (6.1.77) one easily understands that *yaṇ* replaces one set of sounds, but when there is confusion about whether that set of sounds is *ik* or *ac*, the meta-rules mentioned above clarify that the substitution is on the sound set mentioned in genitive case and that it will happen only when this sound set precedes

the sound set mentioned in the locative case and not otherwise. Pāṇini has given many such meta-rules to help decode his mechanism. However, many of them remain implied in his work.

5.7. Manner of Description

As described in point 2. above, traditionally Bṛhaspati learnt this science of words from Brahma and passed it on to Indra. As per the Mahabhaṣya, the aim of this science was to distinguish between the *sādhu śabda* i.e., the correct utterance and the *asādhu śabda* or the incorrect utterance. Bṛhaspati therefore recited all the *sādhu śabdas* in front of Indra as a part of his teaching. This process is lengthy as words are infinite. Indra therefore tried to dissect words into even smaller but finite meaningful units called as *prakṛti* and *pratyaya.* He tried to demonstrate how the meaning of infinite words produced from the combination of *prakṛti* and *pratyaya* can be understood from the meanings of their *prakṛti* and *pratyaya.* So now the task at hand was to identify the *prakṛti* and *pratyaya* and frame rules for modifications that they undergo when the two combine.

5.7.1. The *Utsarga-apavāda* model

The rules of combination of the *prakṛti* and *pratyaya* are given in form of *Utsarga* i.e., default rules and *apavāda* i.e., exceptional rule. For example when the suffix *ta* is added to the root we get their past participle forms like -

Snā - snāta,   *JñA - jñāta,*   *Smṛ - smṛta,*   *Kṛ - kṛta,*   *Ji* - *jita..*

and so on. However when *ta* is added to root *pac,* the final form is *pakva*. i.e., *c* of *pac* is changing to *k* and the *t* of suffix *ta* is changing to *v*. Similarly *śuṣ+ta* becomes *śuṣka*, *kṣai+ta* becomes *kṣāma* and *glai+ta* becomes *glāna*. A general rule is written to account for most of the forms that follow a common derivational procedure followed by exceptional rules for every exceptional case or group of cases. This model used by Pāṇini is called the *Utsarga-apavāda* model.

5.7.2. Ordering of rules and conflict resolution

In the derivations words *dātra* and *gamayati* it can be noticed that there is a rule that comes into play at every step of the derivation process. From the rule numbers given after them one can make out that rules are not ordered exactly one after the other. Then how does one come to know as to which rule is to be applied when? The conditions under which a rule gets activated and makes necessary modifications in the derivational process are coded in each *sūtra*. *Sūtras* thus get activated when their prerequisites are matched. At times prerequisites of 2 or more *sūtras* match. All of them become available impact the derivational process simultaneously in different ways. Pāṇini has devised several conflict resolution techniques to handle such situations. One among them comes through the *sūtra - vipratiṣedhe paraṃ kārym* (1.4.2) which says that when rules of equal force prohibit each other then the last in the order given in the Aṣṭādhyāyī takes effect. The placement of *sūtras* in the Aṣṭādhyāyī is thus of great significance from the view of *sūtras* like *vipratiṣedhe paraṃ kārym* (1.4.2) and also from the point of view of saving words through *anuvṛtti*.

STOP and THINK

1. It has been suggested that during 1860s, Bohtlingk pointed out periodic nature of Sanskrit alphabet to the Russian chemist Dmitry Mendeleev and thereby helped him in formulation of the periodic table. Try applying Pāṇini's descriptive technique to describe a problem or a procedure from some other field like music, art, physics or geography.
2. We see that there are default settings and an option to customise various features in a mobile phone. Identify few areas where the *Utsarga-apavāda* model is used.

3. Explore the digital versions of all the 5 books of Pāṇīnian Grammar with commentaries in English and many more features of the website - www.ashtadhyayi.org

6. Influence of Pāṇinian Grammar

Numerous Sanskrit *vyākaraṇas* were written after Pāṇini following similar frame work and *sūtra*style. Among the most remarkable once are Cāndravyākaraṇa by Candragomin, Jainendravyākaraṇa by Devanandin, Sarasvatīkaṇṭhābharaṇam by Bhojadeva, Siddhahaimaśabdānuśāsana by Hemachandrācārya and Sārasvatavyākaraṇa by Anubhūtsvarūpācārya.

Three main areas emerged in Pāṇini's *vyākaraṇa* with the composition of the Mahābhāṣya by Patañjali, namely -

(i) the *Prakriyā-pakṣa* or the derivational processes
(ii) the *Sūtrartha -pakṣa* or the interpretation of *sūtras,* and
(iii) the *Śabdārtha-patkṣa* or the conceptual understanding of terms and theories in *Vyākaraṇa*

An unbroken tradition of deliberations in all these areas continues till date in *Gurukulas* and University system of education. Among numerous important works composed in the Pāṇinian Grammatical System, the most important ones are - The Vākyapadīya of Bhartṛhari, the Pradīpa commentary of the Mahābhāṣya by Kaiyaṭa, the Kāśikā commentary of the Aṣṭādhyāyī by Vāmana and Jayāditya, the Vaiyākaraṇasiddhāntakaumudī by Bhaṭṭojidīkṣita, the Vaiyākaraṇabhūṣaṇasāra by Kauṇḍabhaṭṭa and the Paribhāṣenduśekhara and Vaiyākaraṇa-siddhāntamañjūṣā by Nāgeśabhaṭṭa.

As the west came in contact with the Indian wisdom many linguists and orientalists were influenced by Pāṇini's work. The Aṣṭādhyayī was translated with German commentary by Otto von Bohtlingk in 1840. An important works 'Panini: His Place in Sanskrit Literature and Investigation' by Goldstuker was written in 1860. Louis Renou rendered the Aṣṭādhyāyī into French between 1948 to 1954. Frits Staal (1930-1912) notes in his book 'The Science of Language' that the Idea of formal rules in language proposed by Ferdinand de Saussure in 1894 and developed by Noam Chomsky in 1957 - has origins in European exposure to formal rules of Pāṇinian Grammar.

The Pāṇinian Grammatical Tradition has a great influence on all the post Pāṇinian Indian grammarians. Many grammars written for later Indian languages have used the terminology (like *viśeṣaṇa, viśeṣya,pratyaya, upasarga,vibhakti,samāsa* and classification of *samāsa*) and frame work used by Pāṇini. There have also been attempts to develop grammars for modern Indian languages in Sūtra style. Grammars like a grammar of Maithili language named 'MithilāBhāṣāVidyotana' written in 1920 by DīnabandhuJha and a grammar of Telugu language named 'Bālavyākaraṇamu' written by Cinnayasūri imitate the sūtra style of Pāṇini's*Vyākaraṇa*. Some examples of grammars of modern Indian languages that have been composed in Sanskrit are - The Mahārāṣṭraprayogacandrikā of VeṃkaṭaMādhava written (in sūtra style) in 1826, the Āndhraśabdacintāmaṇiḥ written (in *Āryā*meter) by Nanna Bhatta in around 12th CE, the

Karṇāṭakabhāṣābhūṣaṇam written by Nāgavarmā around 12th CE and the Uktivyaktiprakaraṇam written in 11th CE by DāmodaraPaṇḍita.

CHECK your PROGRESS 3

Give one Sanskrit word for the following -

Example -

0. A rule that is written as an exception to the default rule - *apavāda*
1. Type of *gaṇa* in the *gaṇapāṭha* which is open-ended and new words can be included in it
2. A rule written in Sanskrit in minimum possible words and letters without compromising on its clarity and preciseness -
3. The process through which words in the previous rules get carried forward to the next rule -
4. Short name for a group of sounds that can be created with the help of 14 aphorisms at the beginning of the Aṣṭādhyayī -
5. Sounds that are elided from a suffix while combining it with the root -
6. A discourse, a sentence or a word whatever conveys the complete intention of the speaker
7. A correct word

7. Summary

In this chapter we discussed the way language is looked at in the *Vedic* culture. It is considered to be *Devī* synonymous to Saraswatī. Language is a container in which knowledge forms itself. It is not a skill with which human beings augment themselves, it is rather an innate faculty which has enable the human race access, share and store knowledge and thereby evolve much faster than compared to other species.

We saw how linguistic analysis evolved from detailed phonetic analysis during the early phases. This was followed by preparation of *padapāṭhas*. Both, sound phonetic analysis and *pāṭhas* aided the development of etymology and finally culminated into a complete system of *vyākaraṇa*.

We learnt about the grammarian Pāṇini and his five books. The Aṣṭādhyāyī is main book consisting of (i) the suffixes and (ii) rules of modification. It sources verbal roots from the *Dhātupāṭha* and some peculiar nominal bases from the *Gaṇapāṭha*. The *Uṇādisūtrapāṭha* and the *Liṅgānuśāsana* are the texts that may have been compiled either by Pāṇini himself or by some other grammarians prior to him but today all these five books form an integral part of the Pāṇinian grammatical system.

We learnt that language or *Bhāṣā* in *Vedic* tradition was looked upon as one whole with numerous spatial variations rather than different languages at different places. It was not the case that ancient grammarians wrote the grammar for Sanskrit, rather the variant for which ancient grammarians wrote the grammar came to be known as Sanskrit in contrast with other variants (*Prākṛts*) whose detailed grammars were not available, and the process of writing grammar itself is *Saṃskāra*.

We then tried to appreciate the 'Discriptive' nature of this grammar and how the *Vākya* is the end result (*Vākya-saṃskāra-pakṣa*) as well as the starting point (in form of *Vigraha-vākya*) of this machine that generates infinite *sādhu* words and sentences.

After understanding the attitude towards language and language analysis we discussed the specialty of the descriptive techniques employed by Pāṇini which enables him to convey his rules precisely in minimum words.

At last we read about the heavy influence of Pāṇini on grammarians and linguists in India and abroad.

8. Suggested Readings

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9. Discussion Points

It is surprising that Sanskrit grammarians including Pāṇini have nowhere used the word 'Sanskrit' as a proper noun of a particular language. They have used more generic words like *Bhāṣāyām* and *Chandasi.* The ideas expressed and theories proposed has therefore found application to language in general. Pāṇini's attitude to stick to his mission of creating a system that can generate correct words without entering into dualities like *vyutpatti-pakṣa* and *avyutpatti-pakṣa*, *jāti-pakṣa* and *vyakti-pakaṣa* is really insightful.

It is also interesting to see how the grammarians of ancient times with their intricate skills and deep thinking transformed an ever-changing language into an almost eternal medium of knowledge transfer. Their profound interest in treating only one language in this manner and indifference towards all others also arouses interest for deeper investigation

From the point of view of descriptive techniques, it is well known that Pāṇini was the fore-runner in using techniques similar to that of auxiliary markers (*Anubandha* technique) that was rediscovered by Emil Post in the 1920s, and the Bacus-Nour form. Technique similar to *anuvṛtti* is also used in computer programming. One can also draw parallels between Pāṇini's descriptive techniques and programming concepts such as subroutines, data separation, data encapsulation and information coding. It is from this point that revisiting the history of flow of ideas from Pāṇini to development of computers, logic and even chemistry and other modern fields can be interesting.

End Notes

[i] Based on Lecture and notes by Kapil Kapoor available at https://www.youtube.com/watch?v=TxevYXyV1aA and https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=0d/1X9CWmyPf9Hgtlh1uyw== (accessed on 12.11.2022)

[ii] Ibid.

[iii] Meemamsak remarks *"Isa atyantasādṛśya se pratīta hotā hai ki pāṇinīya vyākaraṇa kā pradhāna upajīvya āpiśala vyākaraṇa hai|"* See Meemamsak (1994: 156)

[iv] Based on Lecture and notes by Kapil Kapoor.

[v] Most of the ideas expressed in this entire section 3.3 have been drawn from a Gujarati book *Bhāṣāvijñānani Dṛṣṭie Pāṇinīya Vyākaraṇanuṃ Pariśīlana Tathā Aṣṭādhyāyī-sūtrapāṭha* by Prof. Vasant Kumar Bhatt.

[vi] We may identify the tongues of different areas as 'different languages' or alternatively as 'variants of one single language or *Bhāṣā*'. Sanskrit tradition seems to see all the tongues as variants of one single entity i.e., *Bhāṣā.*

[vii] It should be remembered that this word *dātra* itself has emerged as a surface structure from the deep structure sentence - *dāti anena iti*.

[viii] This figure is an English adaptation of a figure in Gujarati found in the book *Bhāṣāvijñānani Dṛṣṭie Pāṇinīya Vyākaraṇanuṃ Pariśīlana Tathā Aṣṭādhyāyī-sūtrapāṭha* by Prof. Vasant Kumar Bhatt.