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1) Explain the need for standardization of language.

A1) Language is a means of communication and is a tool to pass on knowledge from one generation to another. The knowledge is being continuously created through the course of time but it's correct understanding and decoding it to gain the true meaning is of utmost importance and relevance as of today. With the passage of time, language undergoes significant changes in the way it is spoken or written. The same effect is observed spatially where one can observe minor differences in the way people speak within a radius of 30 to 50 km. Due to these, temporal and spatial barriers it almost becomes impossible to understand the texts of the old time. With such vast differences, accumulating over centuries and decades without some standardization of language would lead to a loss of literature and culture as well as heritage as people won't be able to pass on information without loss of its actual context. Hence, there is a need for standardization of language achieved through grammar so that the old texts and heritage can beat spatial and temporal barriers.

2) Explain the process of standardization of a language adopted in the Indian tradition.

A2) Sanskrit संस्कृत or grammar was developed as a tool to introduce standardisation of the Indian language so that the texts of the old time could be properly read and pass the spatial and temporal barriers. The literal meaning of Sanskrit is to polish and is used to bring standard to the language.

Grammar is a rule created to ensure the knowledge can be decided at all places and at all times. Panini's भाष्य is a culmination of all previous attempts to create a sound grammar of Sanskrit. The objective of grammar is to distinguish between correct usage from not so correct usage of sentences and words. The word भाष्य literally means to cut and so we try to cut the sentences into words and words into further meaningful units. Hence, Panini was the first to provide a detailed set of rules for Sanskrit grammar in his book अष्टाध्यायी in order to standardize the Indian language.

3) Explain the terms प्रतिपदपाठ, असंग, अपवाद.

A3) The पठपाठ of Vedic मंत्र by Shakyas is also भाष्य. In the पठपाठ, Shakyas has shown the segmentation of words in the मंत्र. प्रतिपदपाठ is a process of recitation marked by conscious pause after every word. It is a way of learning and memorizing the texts. The महाभाष्य of पतंजलि discusses the exact ways in which भाष्य distinguishes मंत्र and असंग शब्द. It is well known that for each मंत्र शब्द there are many असंग शब्द so giving an exhaustive list of मंत्र शब्द is the shortest way but even this list is very long. So, it is very difficult to create a प्रतिपदपाठ and it becomes a lengthy process. That is why, grammarians came up with a set of default rules called असंग and exceptions called अपवाद. असंग is the set of rules which are used widely and create almost 90% of the words of the language in a general context. अपवाद is the set of exceptions which is applicable only in some special contexts and accounts for the creation of the remaining 10% words in the language.

4) Explain in short the contents of the सूत्रपाठ

A4) सूत्रपाठ is contained in two books : अष्टाध्यायी सूत्रपाठ and श्राद्ध सूत्रपाठ. The अष्टाध्यायी सूत्रपाठ is a book of 8 chapters where each chapter is divided into 4 sub-chapters (पाद). Each of the sub-chapters contain a varying number of सूत्र. These सूत्र are the rules (नियम) that lead us to correct usage of the words (लक्षणा) with the inputs from the एतद्भाष्य and the गणपाठ. It contains about 4000 सूत्र with the first 5 chapters concerned with analysis and the last 3 chapters with the synthesis of the words. The श्राद्धसूत्रपाठ contains those सूत्र whose scope of application is much lesser than the अष्टाध्यायी. It is divided into 5 chapters containing around 750 सूत्र. Each सूत्र here mentions a small list of एतद्भाष्य and a suffix that can be applied to only the members of that small set of एतद्भाष्य to derive a small set of words.

5) Explain in short the contents of the एतद्भाष्य.

A5) The एतद्भाष्य is almost an exhaustive collection of all the verbal roots (एतद्भाष्य) that are used in Sanskrit language. The rule - श्रुवादिश्री एतद्भाष्य assigns the name एतद्भाष्य to all the words enlisted in the एतद्भाष्य. Applying prefix (उपसर्ग) and/or suffix (प्रत्यय) to these एतद्भाष्य gives rise to new words. The current version of the एतद्भाष्य also provides the most prevalent meaning of each of these एतद्भाष्य. The एतद्भाष्य is divided into 10 classes : 1) श्रुवादि, 2) अदादि, 3) जुहोत्यादि, 4) दिवादि, 5) स्वादि, 6) कृदादि, 7) श्वादि, 8) लब्धादि, 9) श्रमादि, 10) घृणादि. एतद्भाष्य contains around 2000 एतद्भाष्य. It does not contain around 50 एतद्भाष्य obtained from the Vedas.

In अणुपाठ meaning is given after each अणु or after enlisting several अणु. 964 अणु have a single meaning; 243 अणु have two meanings; 99 have 3 meanings; 25 have 4, 16 have 5, 4 have 6; 2 have 7; 1 has 8; 1 has 13 and 1 has 19 meanings. Sanskrit has this unique feature where all its words can be generated by a small set of अणु.

6) Explain in short the contents of the शतपाठ.

A6) The शतपाठ is a collection of various nominal roots (प्रतिपद) that are to be treated uniformly according to certain rules of अष्टाध्यायी. The grouping is based on similar context/meaning to ease the process of making rules. The शतपाठ has 861 शत. The meaning of शत is शतक (group). When a lot of words have to do the same work then the group is named by adding शत to the first word of the group. The rules of the अष्टाध्यायी then refer to this group by the name formed above. Eg: शतदिप्ति means those words of which शत is in the beginning. Then one refers to the शतपाठ to find the group whose first member is शत. This group is referred to as शतवर्ग by the शतपाठ. It then uses this term शतवर्ग to describe the derivational process that only the words in this group undergo.

7) What is descriptive linguistics and why Panini came to be known as the first descriptive linguist?

Ans) Descriptive linguistics and prescriptive linguistics are two sub-fields of linguistics. Descriptive linguistics attempt to present a description of various aspects of a language at a given time without reference to its history. It attempts to describe the phonological system, grammatical components, semantic structures etc. of a particular language. It studies what a language is like and descriptive grammarians focus analysis on how all kinds of people in all sort of environment communicate. Francois and Ponsomet call Panini as the 'First Descriptive linguist' as Panini's work on Sanskrit grammar was the first known earliest work to standardize and formulize the way Indian language is spoken and written. It represents one of the greatest monuments of human intelligence. He describes with the minutest detail, every inflection, derivation and composition and every syntactic usage of Sanskrit. He creates a meta language to describe the Sanskrit grammar. This was for the first time, a complete and accurate description of a language was provided based not upon theory but upon observation. That is why, he has been rightly called the 'father of linguistics' as well.

8) Explain how the सूत्र of Panini are based on the principle of economy.

Ans) Linguistic economy principle is the mechanism, the objective of which is to save more time and energy by conveying more information with less effort. The most noteworthy aspect of entire mechanism in the Paninian workshop is economy. Economy reigns supreme in his grammar. अर्थेन वृत्तिरिति in his commentary said

that it is impossible for a sound in the sutra to be useless. Panini has introduced about 200 grammatical technical terms. They are of two types: significant and meaningless. Terms such as $\overline{\text{पठ्ठमोपद}}$, $\overline{\text{आमोपद}}$ are meaningful while $\overline{\text{ह्रि}}$, $\overline{\text{ऌ}}$, $\overline{\text{य}}$ have no meaning of their own. Also, he introduces terms like $\overline{\text{तदी}}$ and $\overline{\text{नित्यस्य}}$ which are samples for the classes they denote. $\overline{\text{तदी}}$ means a feminine noun ending in $\overline{\text{इ}}$ or $\overline{\text{उ}}$. The term $\overline{\text{तु}}$ stands for masculine and feminine nouns ending in $\overline{\text{इ}}$ and $\overline{\text{उ}}$. He uses $\overline{\text{प्रगाथे सूत्रे}}$ to denote a certain list of sounds. Eg. $\overline{\text{अदि}} \rightarrow \overline{\text{अ, इ, उ, ए, ओ}}$; $\overline{\text{इच}} \rightarrow \overline{\text{इ, उ, ए, ... अ}}$. This helps him to achieve brevity by avoiding mention of long lists. Thus $\overline{\text{अच}}$ stands for all vowels; $\overline{\text{ह्रि}}$ for all consonants; $\overline{\text{अम}}$ for all nasals; $\overline{\text{ऌ}}$ for $\overline{\text{ऌ, ड, ण, ण, इ}}$ and similarly many more. In this way, Panini achieves economy in his sutras.

9) Explain what is meant by $\overline{\text{अनुवृत्ति}}$ and how it helps in bringing about Brevity.

10) $\overline{\text{अनुवृत्ति}}$ is the process by which repetition of words is avoided in the text. At the beginning, a sutra with all the relevant terms to a topic is written. To avoid duplication, the subsequent सूत्र are written without those common words and these words are implicitly carried forward. When a सूत्र with a word in-contrast to the previously carried forward word is found, the domain of the previous word finishes and of the new word starts.

Eg:

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| 1.3.2 → | $\overline{\text{उपदेशे अच अनुनासिकः इत्}}$ |
| 1.3.3 → | $[\overline{\text{उपदेशे}}] \overline{\text{ह्रि अनुनासिकः इत्}}$ |
| 1.3.4 → | $[\overline{\text{उपदेशे}}] \overline{\text{न निवर्तते}} [\overline{\text{अनुनासिकः}}] \overline{\text{पुष्पाः इत्}}$ |
| 1.3.5 → | $[\overline{\text{उपदेशे}}] \overline{\text{आदिः गि-डु-डु}} [\overline{\text{इत्}}]$ |
| 1.3.6 → | $[\overline{\text{उपदेशे}}] \overline{\text{घः प्रत्ययश्च}} [\overline{\text{आदिः}}] [\overline{\text{इत्}}]$ |
| 1.3.7 → | $[\overline{\text{उपदेशे}}] \overline{\text{चु-डु}} [\overline{\text{प्रत्ययश्च}}] [\overline{\text{आदिः}}] [\overline{\text{इत्}}]$ |

1.3.8 → [उपदेश] ल-प्र-पु [प्रत्ययस्य] [आदि:] अतिवृत्त्य [इत्]

1.3.9 → [उपदेश] ल-प्र-पु [इत्]

We can see that in these 8 सूत्र itself he saves around 20 words. In a study, it was found that Panini saved around 40,000 words in his सूत्राणि. Hence अत्युत्तम helped him concise and shorten his text and bring brevity.

10) How do you think is Paninian Grammar a case of structured thinking and representation?

110) Although from above, it seems that Paninian Grammar is un-organized a close scrutiny enables me to extract the main topics and their arrangement. Panini has arranged his subject matter on the binary principle consisting of synthesis and analysis. The first 5 chapters deal with the analysis of linguistic units further divided into the study of roots and suffixes. The roots are further divided into verbal and nominal and suffixes into inflectional and derivational. The last 3 chapters deal with the synthesis of new linguistic units. He has given prime importance to अत्युत्तम while arranging the subject matter. He has brought together rules belonging to different topics whenever they share a common content and thus enable him to save some words. Thus, the arrangement into पाद (sub-chapters) does not necessarily coincide with the division of topics but lies concealed behind the principle of अत्युत्तम. Another interesting feature is that although Panini has not provided a table of contents, it is evident and implicit in his grammar. He has grouped rules under different topics and has given a section-heading to each group. These constitute the table of contents and are called उपविष्टा सूत्रा. There are around 55 उपविष्टा. To sum up, Paninian Grammar is a case of structured thinking and representation and shows prime intelligence.