



Panini's Ashtadhyayi & Grammar's Greatest Puzzle

Why in News?

Recently, a Cambridge scholar Dr Rishi Rajpopat's has claimed to have solved **Sanskrit's biggest puzzle**—a grammar problem found in the '**Ashtadhyayi**'.

What is Ashtadhyayi?

- Written more than 2,000 years ago, **Ashtadhyayi or 'Eight Chapters'**, is an ancient text written by the **scholar Panini towards the end of the 4th century BC**.
- It is a linguistic text that set the **standard for how Sanskrit was meant to be written and spoken**.
- It delves deep into the **language's phonetics, syntax and grammar**, and also offers a 'language machine', where one can feed **in the root and suffix of any Sanskrit word**, and get **grammatically correct words** and sentences in return.
- The Ashtadhyayi laid down more than 4,000 grammatical rules.
 - Later Indian grammars such as the Mahabhasya of Patanjali (2nd century BC) and the Kasika Vritti of Jayaditya and Vamana (7th century AD), were **mostly commentaries on Panini**.

What was the Puzzle?

- **Confusing Rules:**
 - In Ashtadhyayi, there were **two or more of the rules of Grammar that could apply at the same time, causing confusion**.
 - To resolve this, Panini had provided a '**meta-rule**' (a rule governing rules), which had **historically been interpreted as-** In the event of a conflict between two rules of equal strength, the rule that comes later in the **serial order of the 'Ashtadhyayi'** wins.
 - However, it kept producing exceptions, for which **scholars had to keep writing additional rules**. This is where Dr Rishi Rajpopat's discovery came through.
- **Solution:**
 - The Scholar took a simpler approach, arguing that the **meta-rule has been wrongly interpreted throughout history**; what Panini actually meant was that for rules applying to the left and right sides of a word, **readers should use the right-hand side rule**.
 - Using this logic, Dr Rajpopat found that the '**Ashtadhyayi**' could finally become an **accurate 'language machine'**, producing **grammatically sound words and sentences almost every time**.

▪ **Significance:**

- The discovery now makes it possible to construct millions of Sanskrit words using Panini's system—and since his grammar rules were exact and formulaic, they can act as a Sanskrit language algorithm that can be taught to computers.

Who was Panini, the Father of Linguistics?

- Panini probably lived in the 4th century BC, the **age of the conquests of Alexander and the founding of the [Mauryan Empire](#)**, even though he has also been dated to the 6th century BC, the age of The [Buddha](#) and [Mahavira](#).
- He likely lived in **Salatura (Gandhara)**, which today would lie in **north-west Pakistan**, and was probably associated with the **great university at Taksasila**, which also produced **Kautilya and Charaka**, the ancient Indian masters of statecraft and medicine respectively.
- By the time Panini's great grammar, the 'Ashtadhyayi' was composed, Sanskrit had virtually reached its classical form — and developed little thereafter.
- Panini's grammar, which built on the work of many earlier grammarians, effectively **stabilised the Sanskrit language**.
- The earlier works had recognised the root as the basic element of a word, and had classified **some 2,000 monosyllabic roots which**, with the addition of prefixes, suffixes and inflexions, were thought to provide all the words of the language.

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