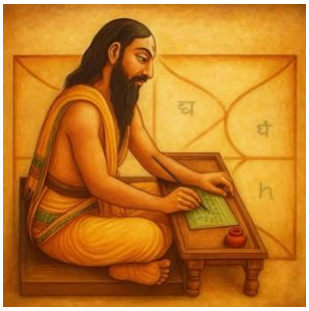

हरिः ओ३म्

नमः पाणिनये

(Salutation for Maharṣi Pāṇini)

Maharṣi Pāṇini's Algorithmic Masterpiece - Aṣṭādhyāyī

Forget what you think you know about Ancient Indian history. Over 2,500 years ago, a genius Indian Sage named **Maharṣi Pāṇini** didn't just write a grammar book for saṃskṛtam ; he coded the world's first Algorithmic Grammar, the **Aṣṭādhyāyī**. This wasn't a dry textbook—it was a revolution. While other grammars of his time were written in sentences or poetic verses, **Maharṣi Pāṇini** did something unheard of. Using saṃskṛtam he created an hybrid programming language called sautrikā and used it to write elegant codes to explain saṃskṛtam grammar.

He didn't just create a hybrid language; he engineered it. His codes are packed with concepts we consider modern, like **compiler directives**, **character classes**, **keywords**, **meta-rules**, and even **inheritance** and **overriding**. The **Aṣṭādhyāyī** is the most precise and efficient grammar text ever created, and its brilliance lies in its structure—it's a perfect algorithm. While we can't say for sure that whether computers existed in his time or not, but one thing is clear that **Maharṣi Pāṇini's** mind foresaw the principles of computer science centuries before the technology to run them was produced .

Building on this foundation, we'll begin our exploration of **Maharṣi Pāṇini's** ingenious algorithm. His codes are organized under various **adhikārāḥ (compiler directives/headings)** एच dedicated to a specific area of grammar. We'll start by delving into one such heading: the **Saṃhitā**.. This is where we'll study the codes that govern the changes that occur when two letters are placed next to each other, revealing how this 2,500-year-old text is not just ancient wisdom, but a masterpiece of it's own kind .

For whom is this PDF meant ? For everyone

Even if you aren't a programmer by memorising the codes under **Saṃhitā adhikāraḥ** (heading) you will be able to separate or join saṃskṛtam ślokāḥ on your own without any expert advice.

Before we embark on this journey, I extend a humble request to all—especially to Gen Z and the following generations: Do not lose hope.It is time to rise, to embrace, and to learn our ancient and divine language **Saṃskṛtam**, together with the timeless systems developed by our ancestors. Why ? Because when bhārata was flourishing all the knowledge was jotted down in just one language **Saṃskṛtam**. I repeat if we want to flourish again like bhārata did when it was a viśvaguru we need to study the ancient systems developed by us during that period which is only possible through taking up and learning **Saṃskṛtam** so that we avoid any propagated translations of our own scriptures !!!!

The aim of this series is to offer new-generation programmers a refreshing perspective on how the principles of coding were once envisioned and used, and perhaps inspire new ways of approaching the challenges of the modern world programming.

Pro tip : To easily access all the codes at one place visit : https://ashtadhyayi.com

And finally excuse if any typos occur ☺

Skip the next 2 pages if you are not a programmer

Maharṣi Pāṇini's system is built upon a set of core components that serve as its foundational building blocks.

Analogies for Programmers

- **Śiva Sūtrāṇi: The Fundamental Alphabet** The **Śiva Sūtrāṇi** are a set of 14 aphorisms that systematically list all the phonemes . They are the core phonetic inventory from which all other rules are built, functioning as the **fundamental alphabet** of the system. In computer science, this is akin to a character set like ASCII, which provides the basic building blocks for all data.

- **Pratyāhāra: The Character Class** A **pratyāhāra** is a brilliant, two-letter code for a group of sounds defined by the Śiva Sūtrās. This mechanism allows for incredible brevity and efficiency in the rules. This is a direct parallel to a **character class** in a programming language's regular expressions (e.g., `[a-z]` or `\d`), which represents a set of characters in a single, concise notation.

Rule & Logic Components

The grammar employs a hierarchy of rules and modifiers that guide the system's operations.

- **Adhikāra Sūtra: The Compiler Directive** An **adhikāra sūtra** is a governing rule that does not perform an action itself but sets a context or scope for a series of subsequent rules. This is the exact function of a **compiler directive**, an instruction (e.g., `#include`) that guides the compiler's behavior without becoming part of the executable code.

- **Vibhakti & Paribhāṣā Sūtrāṇi: The Syntactic Modifiers and Meta-Rules** A **vibhakti** is a specific tag attached to a linguistic term that acts as a **syntactic modifier**, defining the term's exact role within a rule. These specific instructions are interpreted by the broader **meta-rules** of the grammar. The **paribhāṣā Sūtrāṇi** (meta-rules) provide the high-level logic that resolves ambiguities and governs the correct application of all other rules. Together, the `vibhakti` provides the specific command, and the `paribhāṣā sūtra` ensures that command is executed correctly and unambiguously, much like a compiler's parser uses its internal logic to interpret and validate commands.

Architectural Principles

The system's genius is also reflected in its core architectural principles, which mirror modern software design.

- **Anuvṛtti: Inheritance Anuvṛtti** is the mechanism by which a term from a previous rule is implicitly carried forward and applied to subsequent rules. This principle promotes code efficiency and reduces redundancy. It is an elegant parallel to **inheritance** in object-oriented programming, where a new class inherits properties and behaviors from a parent class without having to redefine them.

- **Utsarga-Apavāda: Overriding** The **utsarga-apavāda** principle states that a more specific rule (**apavāda**) always overrides a more general one (**utsarga**). This is the key to handling exceptions and resolving conflicts. In programming, this is known as **overriding**, where a subclass's more specific method takes precedence over a general one inherited from a superclass.

- **Pūrvatrāsiddham: The Compiler Pass Pūrvatrāsiddham** is a guiding principle that enforces a strict, one-way flow for rule application. It dictates that once a rule from a later section is applied, its results cannot affect a rule from an earlier section. This is exactly what a **compiler pass** does. It processes code in a specific, irreversible sequence, ensuring logical, unidirectional flow and preventing conflicts or circular dependencies.

Note : These are just few basic concepts.

More interesting ones exist in the brilliant **Aṣṭādhyāyī**

प्रारभामहे (Let's begin)

To understand **Maharṣi Pāṇini's** Algorithm , we must initially master **seven** concepts :

1. शिवसूत्राणि / śiva sūtrāṇi (fundamental alphabet)

2. प्रत्याहाराः / pratyāhāraḥ (character classes)

3. विभक्तिः / vibhaktiḥ (additional case endings)

4. परिभाषासूत्राणि / paribhāṣā Sūtrāṇi (meta-rules)

5. अनुवृत्ति / anuvṛtti (carry forwarding/inheritance)

6. पूर्वत्रासिद्धम् / pūrvatrāsiddham (rule of non existence)

7. आनुपूर्वी / ānupūrvī (breaking words into letters)

If you master these **seven** , you will understand how **Maharṣi Pāṇini's** Algorithm functions.

Step 1: शिवसूत्राणि (śiva sūtrāṇi)

According to tradition, at the end of his divine dance, **Lord Śiva**, who was desirous of uplifting great sages such as Sanaka etc, resonated his **ḍamarū** fourteen times . From this 14 highly structured sūtra's came into existence, which were simultaneously perceived by **Maharṣi Pāṇini.**

नृत्तावसाने नटराजराजो ननाद ढक्कां नवपञ्चवारम् ।
उद्धर्तुकामः सनकादिसिद्धान् एतद्विमर्शे शिवसूत्रजालम् ॥

॥ अथ माहेश्वरसूत्राणि ॥

अ इ उ ण्

ऋ ऌ क्

ए ओ ङ्

ऐ औ च्

ह य व र ट्

ल ण्

ञ म ङ ण न म्

झ भ ञ्

घ ढ ध ष्

ज ब ग ड द श्

ख फ छ ठ थ च ट त व्

क प य्

श ष स र्

ह ल्

Important:

- Short vowels in **śiva sūtrāṇi** list automatically represent and carry their long (दीर्घ) forms along with themselves .
- अ → आ
- इ → ई
- उ → ऊ
- ऋ → ॠ
- ऌ → (has **no long vowel**)

Code behind this rule:

अणुदित् सवर्णस्य चाप्रत्ययः

Meaning: All the **non-इत् letters** between अ and ण् represent all their variations.

Imp : In this code the second ण् is taken from **śiva sūtrāṇi** list.

Non-इत् letter - letter with no line below (अ झ ज श....)

इत् letter - letter with a line below (क् च् ङ् .....)

Although it is not visible in **śiva sūtrāṇi** list ,

अ represents and carries all 18 sounds of itself,

	उदात्त		अनुदात्त		स्वरित	
	निरनु०	सानु०	निरनु०	सानु०	निरनु०	सानु०
ह्रस्व	अ	अँ	अ̱	अँ̱	अ́	अँ́
दीर्घ	आ	आँ	आ̱	आँ̱	आ́	आँ́
प्लुत	अ३	अँ३	अ̱३	अँ̱३	अ́३	अँ́३

उदात्त means a higher tone, अनुदात्त means lower tone and स्वरित means mid tone (mix of उदात्त and अनुदात्त)

निरनुनासिक means without nasal and सानुनासिक means with nasal .

ह्रस्व means १ मात्रिक, दीर्घ means २ मात्रिक and प्लुत means ३ मात्रिक .

Hypothetically if ह्रस्वस्वरः is taking 1 sec , दीर्घ will take 2 sec and प्लुत will take 3 sec

Combining all of the above said concepts we get a total of 18 variations for अ.

Similarly

इ represents and carries 18 sounds of itself ,

उ represents and carries 18 sounds of itself ,

ऋ represents and carries 18 and 12 of ऌ too, similarly

ऌ represents and carries 12 of itself and 18 of ऋ too,

(edited code **ऋऌवर्णयोः मिथः सावर्ण्यम् वाच्यम्** explains the relationship between ऋ and ऌ stating that these both are सवर्ण of each other and they represent each others sounds .

ए represents and carries 12 sounds of itself ,

ओ represents and carries 12 sounds of itself , **(No short variations exist for ए ओ ऐ औ)**

ऐ represents and carries 12 sounds of itself ,

औ represents and carries 12 sounds of itself .

Although throughout our series we will only require the २ मात्रिक (दीर्घ) variation but it is good to know that more variations also exist !

सवर्णः ?

Code : तुल्यास्यप्रयत्नं सावर्ण्यम्

Two letters are called सवर्ण of each other if their mouth-based location of pronunciation वर्णोच्चारणस्थानम् and their internal effort आभ्यन्तरप्रयत्नम् are same as of each other.

वर्णोच्चारणस्थानानि (Places of pronunciation inside the mouth)

१) अकुहविसर्जनीयानां कण्ठः —Guttural (Throat) is pronunciation place of अ, क्, ख्, ग्, घ्, ङ्, ह् and ः

२) इचुयशानां तालु — Palatals (Palate) is pronunciation place of इ, च्, छ्, ज्, झ्, ञ्, य्, श्

३) ऋटुरषाणां मूर्धा — Retroflex (Cerebrum) is pronunciation place of ऋ, ट्, ठ्, ड्, ढ्, ण्, र्, ष्

४) ऌतुलसानां दन्ताः — Dentals (Teeth) is pronunciation place of ऌ, त्, थ्, द्, ध्, न्, ल्, स्

५) उपूपध्मानीयानाम् ओष्ठौ — Labials (Lips) is pronunciation place of उ, प्, फ्, ब्, भ्, म् , **उपध्मानीयः**

६) ञमङणनानां नासिका च — nasal is also the pronunciation place of ञ्, म्, ङ्, ण्, न्

But since nose is not a mouth based location as far as सवर्ण concept is concerned we don't need to worry about the nose.

७) एदैतोः कण्ठतालु — Guttural (Throat) + Palatals (Palate) is pronunciation place of ए, ऐ

८) ओदौतोः कण्ठोष्ठम् — Guttural (Throat) + Labials (Lips) is pronunciation place of ओ, औ

९) वकारस्य दन्तोष्ठम् — Dentals (Teeth) + Labials (Lips) is pronunciation place of व्

१०)जिह्वामूलीयस्य जिह्वामूलम् — Root of tongue is the pronunciation place of **जिह्वामूलीयः**

For now, let us not think or wonder about what उपध्मानीयः and जिह्वामूलीयः sounds are. We will discuss them further in the series when the code related to both of them comes.

वर्णानाम् आभ्यन्तरप्रयत्नाः (internal efforts of letters)

१) स्पृष्टं प्रयतनं स्पर्शानाम् – All the 25 group consonants have a touched internal effort (group consonants- starting from क् and ending at म्)

२) ईषत्स्पृष्टम् अन्तःस्थानाम् - य् व् र् ल् have a slightly touched internal effort

३) विवृतम् ऊष्मणां स्वराणां च – (except अ) All the vowels and श् ष् स् ह् have an open internal effort

४) ह्रस्वस्य अवर्णस्य प्रयोगे संवृतम् । प्रक्रियादशायां तु विवृतमेव ।

अ traditionally has a closed internal effort but in **Maharṣi Pāṇini's** algorithm it is artificially considered as open !!!!

Why ? To understand refer to video 3 page !!!!!!

So now tell me are आ and इ सवर्ण of each other ?

Both of them have a same internal effort but a different mouth based pronunciation place!

So **No** they aren't सवर्ण of each other

For any two letters to be considered as सवर्ण of each other their mouth based pronunciation location and their internal effort should be identical .

Your homework – find **सवर्ण** letters by matching the mouth based pronunciation location and internal effort provided in the वर्णोच्चारणस्थानानि and वर्णानाम् आभ्यन्तरप्रयत्नाः list.

With this basic concept of सवर्ण and a list of **śiva sūtrāṇi.**

Maharṣi Pāṇini will now form 2 letter short codes known as **pratyāhārāḥ**

These can also be compared with **character classes** of modern day programming.

Step 2: प्रत्याहारः (character class)

A **प्रत्याहारः** is a 2 letter short code !

आदिरन्त्येन सहेता → A **प्रत्याहारः** spans from its starting **non-इत्** letter up to the ending **इत्** letter and it includes all the **non-इत्** letters including itself.

***Non-इत्** letter - letter with no line below (अ झ ज श....)

इत् letter - letter with a line below (**क् च् ङ्** .....)

To understand which letters are **Non-इत्** and which letters are **इत्** please refer to list of **śiva sūtrāṇi**

Note: According to codes **हलन्त्यम् / तस्य लोपः / अदर्शनं लोपः**

इत् letter is just there to provide support and then disappear. It's data doesn't get stored in the प्रत्याहारः(character class)

Examples: (refer to **śiva sūtrāṇi** list)

- अक् →(अ इ उ ऋ ऌ)
- अच् → all vowels (अ इ उ ऋ ऌ ए ओ ऐ औ)
- एङ् → (ए ओ)
- एच् → (ए ओ ऐ औ)
- अल् → all letters of संस्कृतम्
- हल् → all consonants (ह् य् व् र् ल् ञ् म् ङ् ण् न् झ् भ् घ् ढ् ध् ज् ब् ग् ड् द् ख् फ् छ् ठ् थ् च् ट् त् क् प् श् ष् स् ह्)

Imp : ह् is mentioned 2 times for a specific purpose which is an advance topic. If needed I will mention it further but for now let us leave it aside.

Also it is worth noticing that in the **śiva sūtrāṇi** list all the consonants are written with a अ i.e. ह (ह् + अ) , य (य् + अ) , च (च् + अ) etc . These are written with अ so that we can pronounce them easily. But while expanding the प्रत्याहारः they will retain their original consonant form i.e. with a ् line below.

Note : Even though the long variations like आ , ई , ऊ may not be visible in प्रत्याहारः but while expanding the प्रत्याहारः they appear according to code **तुल्यास्यप्रयत्नं सवर्णम्**

If you are a programmer, think of अच् like a character class [aeiou] in regex.

This is like compressing a huge set of characters into a 2-letter variable!"

Sometimes **Maharṣi Pāṇini** just wants to mention one type of letter from **śiva sūtrāṇi** list and not all its variations.

Whenever he wants to do that he uses a powerful technique .

Blocking by त्

Code : **तपरस्तत्कालस्य**

→ A letter that follows or is followed by **'त्'** represents only those सवर्णाः which require the same time for pronunciation as that letter.

Example:

अत् – by this it means only 6 variations of अ should be known. Rest all the variations of आ and अ३ will be blocked.

आत् – by this it means only 6 variations of आ should be known. Rest all the variations of अ and अ३ will be blocked.

ईत् – by this it means only ई and it's variations should be known. इ and इ३ along with their variations will be blocked.

ऊत् – only ऊ and it's variations should be known. उ and उ३ with their variations will be blocked.

एत् / त्ए – only ए and it's variations should be known. ए३ along with it's variations will be blocked .

Note **त्** can come before a letter or after a letter. In both the cases it blocks all the unwanted variations

Now with the **pratyāhārāḥ** (character classes) being formed , **Maharṣi Pāṇini** will assign artificial meanings to these **pratyāhārāḥ** by attaching vibhaktis (additional endings) to them

Step 3: विभक्तिः (Additional Case Endings)

In spoken saṃskṛtam normal daily life meanings are attached to a base word by adding vibhaktis (additional endings)

राम (base word)

- रामः → rāma (subject)
- रामम् → to rāma (object)
- रामेण → by rāma
- रामाय → for rāma
- रामात् → from rāma
- रामस्य → of rāma
- रामे → In rāma
- हे राम → hey rāma

Notice how the endings of राम change to add additional meaning in it !

Although **Maharṣi Pāṇini's pratyahārāḥ** get vibhakti forms like rāma they don't get normal daily life meanings like rāma. Instead they get artificial meanings so that they can get sequence in any code.

Vibhakti (case forms) of different pratyahārāh

	इक्	यण्	अच्	
१.	इक्	यण्	अच्	→ replacement
२.	इकम्	यणम्	अचम्	
३.	इका	यणा	अचा	
४.	इके	यणे	अचे	
५.	इकः	यणः	अचः	→ change will happen immediately after
६.	इकः	यणः	अचः	→ place of change
७.	इकि	यणि	अचि	→ change will happen immediately before
८.	हे इक्	हे यण्	हे अच्	

Note : Mostly all of the **pratyahārāh** will have similar vibhaktis (additional endings) ! So you just need to memorise one table and you'll be good to go!!!

Example:

Take the code **इको यणचि** (इकः यण् अचि)

Here:

- इक् is in 6th vibhakti
- यण् is in 1st vibhakti
- अच् is in 7th vibhakti

And when this combination comes in any code what sequence do these प्रत्याहाराः will get that will be explained by our next step **परिभाषासूत्राणि (Meta Rules)**

Step 4: परिभाषासूत्राणि (Meta Rules)

Maharṣi Pāṇini's meta-rules are very much like the precedence and conflict-resolution rules used in a compiler's parser. They don't generate output themselves, but they control how and in what order the grammar rules are applied

Meta rules decide how the प्रत्याहाराः/शब्दाः get sequence in a code.

Sequence in 1st combination – (6^{th} 7^{th} 1^{st})

In context of संहिता

- षष्ठी स्थानेयोगा → Whatever is in 6th vibhakti comes first and becomes the place of change.
- तस्मिन्निति निर्दिष्टे पूर्वस्य → Whatever is in 7th vibhakti comes last, and the change happens immediately before it.
- Whatever is in 1st vibhakti replaces whatever is in 6^{th} vibhakti

So in इको यणचि (इकः यण् अचि)

since इक् is in 6^{th} case , अच् is in 7^{th} case and यण् is in 1^{st} case

- इक् will come first and will be followed by अच्,
- and then इक् will change into यण्.

Sequence in 2nd Combination – (5^{th} 7^{th} 1^{st})

Sometimes in **Maharṣi pāṇini's** codes we also get to see 5^{th} 7^{th} 1^{st} vibhakti combination of प्रत्याहाराः/शब्दाः

For that, the meta-rules say:

- तस्मादित्युत्तरस्य → Whatever is in 5th vibhakti comes first, and the change happens immediately after it.
- तस्मिन्निति निर्दिष्टे पूर्वस्य → Whatever is in 7th vibhakti comes last, and the change happens immediately before it.

- Whatever is in 1st vibhakti becomes the substitute (replacement) for both 5th and 7th

Why both?

Because the codes where 5th, 7th, and 1st vibhakti प्रत्याहाराः / शब्दाः are written together , these are mostly placed below a specific (heading/compiler directive) **अधिकारसूत्रम्** called as

- **एकः पूर्वपरयोः**

Which means the before and after प्रत्याहाराः / शब्दाः should become one

In this case they are 5th and 7th vibhakti प्रत्याहाराः / शब्दाः

अ	गुण	अच्
१. अः	गुणः	अच्
२. अम्	गुणम्	अचम्
३. एन	गुणेन	अचा
४. आय	गुणाय	अचे
५. आत्/आद्	गुणात्	अचः
६. अस्य	गुणस्य	अचः
७. ए	गुणे	अचि
८. हे अ	हे गुण	हे अच्

Note: every word has different **विभक्तिः**(case forms) according to their base endings and gender.

Example:

Code with 5th 7th and 1st combination

आद् गुणः

- आद् = 5th case (comes before and change will happen immediately after).
- गुणः = 1st case (the replacement for both).

But now the problem is we just have 2 प्रत्याहाराः/ शब्दाः in this code, one is in 5th and one is in 1st case. To execute the code we need one more प्रत्याहारः/ शब्दः

And here is where another revolutionary technique of **Maharṣi pāṇini** comes in Anuvṛtti

Step 5: Anuvṛtti (carry forwarding/inheritance)

इकः यण् अचि

आद् गुणः (अचि)

- अचि = 7th case (is carried down from इकोयणचि so that this code आद् गुणः is completed and, in this code too अचि indicates that the change will happen to an immediate entity before it. Why only अचि was brought down ? If you notice the code already had 1st and 5th vibhakti **pratyāhāraḥ /word** . So the only relevant option left for the algorithm was 7th vibhakti **pratyāhāraḥ** . Ingenious designing , isn't it ?

This "carry-forwarding" technique of **Maharṣi pāṇini** is called **Anuvṛtti**.

It's very close to inheritance of modern day programming — one code passes its प्रत्याहारः/शब्दः into the next so that the next code can inherit and complete it's meaning and ultimately generate a successful output.

Final equation after **Anuvṛtti**

आद् गुणः (अचि) means:

- When अ/आ (5th) is followed by अच् (7th),
- they both transform into गुणः (1st)

Note : Here it may look like त् is added after आ to block other variations and it may lead people into believing that only आ should be considered in this place but that's not the case. In this code अ letter's 5th vibhakti (refer vibhakti page of अ) is used so we have to consider all the 18 variations of अ . But as far as our series is concerned we will only need १ and २ मात्रिक variations, in this case it's अ and आ

And what is गुणः?

It doesn't look like a **प्रत्याहारः** right ?

Absolutely correct!

It's a संज्ञा (keyword) representing the set: अ, ए, ओ.

Just like in programming keywords are predefined similarly in **Maharṣi pāṇini's** algorithm too keywords संज्ञा are predefined.

Code predefining गुणः is **अदेङ् गुणः** (2nd code of the algorithm)

→ अत् एङ् are गुणः

- अदेङ् is broken as अत् and एङ्.
- and as per earlier **तपरस्तत्कालस्य** rule the **त्** is added after अ and before एङ् **pratyāhāraḥ** . The **ङ्** is an **इत्** letter hence it is disappears and only ए and ओ are taken from the **pratyāhāraḥ**

Result: (अ, ए, ओ) are stored as गुणः

This is the logic engine of **Maharṣi pāṇini's** grammar."

Isn't it elegant?

Now we jump onto yet another revolutionary concept of **Maharṣi Pāṇini** algorithm

Step 6: pūrvatrāsiddham (rule of non existence)

Aṣṭādhyāyī has **8 chapters** and each chapter is divided into **4 sections**

So a grand total of **32 sections**

These **32 sections** are further divided into **2 parts**

First part	Second part
सपादसप्ताध्यायी	त्रिपादी
(**29 sections**)	(**3 sections**)

Between these 2 parts lies the code at ८.२.१.(chap.8 sec.2 code1)

पूर्वत्रासिद्धम्

This code seperates **Aṣṭādhyāyī** into 2 parts and indicates that -

The codes in त्रिपादी are non existent with-respect-to the codes of सपादसप्ताध्यायी. Even within त्रिपादी, the later codes are non existent with-respect-to the former codes.

In simple words, most of the codes of 1st part cannot see work done by codes of 2nd part. And most of the former codes of 2nd part cannot see the work done by latter codes of 2nd part.

Example : वने + इति is the equation

1st part's code **एचोऽयवायावः** says transform the ए at the end of the वने into अय् . So now वने + इति will become वनय् + इति

Now the 2nd part's code **लोपः शाकलस्य** will come and say you can optionally make the य् disappear from the end of वनय् . So if we choose to apply this code then the final equation with us will be वन + इति.

Now if this is seen by **आद् गुणः** a code existing in 1st part what it will do is combine वन + इति and make it वनेति . But now there is a problem no word like वनेति exist in संस्कृतम् and hence our final output will be considered as wrong. To avoid this he cleverly separates his algorithm into 2 parts so that such errors are avoided automatically.

In short , almost all of the time once you apply a code from 2nd part you cannot go back and apply any code from the 1st part .

I know it may sound a bit confusing but once we progress through the series it will become easier.

Now we will jump onto the final step without which this entire series won't make sense !!!!

Step 7: आनुपूर्वी (Breaking a word into individual letters)

In संस्कृतम्, every pure consonant has a line ् below itself and no pure consonant can be pronounced or written without a vowel. If you understand this then you will easily be able to break down words further.

Example:

- क् + अ = क
- म् + ई = मी
- र् + उ = रु
- च् + ऋ = चृ
- ङ् + ए = ङे
- त् + र् + अ = त्र
- ज् + ञ् + अ = ज्ञ

In many indian regional languages consonants are written as क ग ङ ह but in संस्कृतम् they will always be written in their purest form i.e. with a line below क् ग् ङ् ह्

Let's break few words for better understanding

- रामः = (र् + आ + म् + अः)
- कृष्णः = (क् + ऋ + ष् + ण् + अः)
- सीता = (स् + ई + त् + आ)
- हनुमान्= (ह् + अ + न् + उ + म् + आ + न्)
- ब्रह्मर्षिः= (ब् + र् + अ + ह् + म् + अ + र् + ष् + इः)

This breakdown is crucial because **Maharṣi pāṇini's** codes apply at the letter level, not at the word level."

So we have built the foundation:

1. **śiva sūtrāṇi (fundamental alphabet)**
2. **Pratyāhāraḥ (character classes)**
3. **Vibhaktiḥ (additional case endings)**
4. **Paribhāṣā Sūtrāṇi (meta-rules)**
5. **Anuvṛtti (carry forwarding/inheritance)**
6. **pūrvatrāsiddham (rule of non existence)**
7. **Ānupūrvī (breaking words into letters)**

With these **seven key concepts ,** we can now start decoding **Maharṣi pāṇini's** algorithm like a programmer. From the next page we will see our first code in action .

But before moving ahead I would love to mention one important point ! Whenever we are stuck and need help regarding the codes of **Maharṣi Pāṇini's Algorithm** we go to **Maharṣi patañjali's mahābhāṣyam** a commentary on **aṣṭādhyāyī** , plus few **edited codes** of **Maharṣi vararuci**

Hence these 3 together : **महर्षिपाणिनिः / महर्षिपतञ्जलिः / महर्षिवररुचिः** are also known as त्रिमुनि of व्याकरणशास्त्रम् (grammar)

चलचित्रम्/Video १

All the codes / meta rules will now apply in systematic order

संहितायाम्

Anything told under this अधिकारः (heading/compiler directive)

Applies only in the context of संहिता

What is संहिता ?

परः सन्निकर्षः संहिता

"Extreme closeness of 2 letters is called संहिता."

So every sandhi-rule operates only when 2 letters come into close contact !

Our First code will apply under **संहिता**

इको यणचि

(इकः यण् अचि)

- इकः → 6th vibhakti (षष्ठी)
- यण् → 1st vibhakti (प्रथमा)
- अचि → 7th vibhakti (सप्तमी)

Now **परिभाषासूत्राणि (Meta Rules)** will apply to give it a sequence.

- **षष्ठीस्थानयोगा** → Whatever is in 6th vibhakti comes first and becomes place of change.
- **तस्मिन्निति निर्दिष्टे पूर्वस्य** → Whatever is in 7th vibhakti comes last and change happens immediately before it.
- 1st vibhakti → Is the substitute/replacement.

Therefore:

इक् + अच् → यण् + अच् (in context of संहिता).

But what are इक् अच् यण् ?

To expand them , शिवसूत्राणि list and all the necessary codes will come

आदिरन्त्येन सहेता / अणुदित् सवर्णस्य चाप्रत्ययः/ तुल्यास्यप्रयत्नं सवर्णम् / ऋऌवर्णयोः मिथः सावर्ण्यम् वाच्यम् (refer to 7 core concepts mentioned earlier)

With all of the above प्रत्याहाराः will expand now

Expansions of प्रत्याहाराः

- इक् = इ/ई, उ/ऊ, ऋ/ॠ, ऌ
- अच् = अ, आ, इ/ई, उ/ऊ, ऋ/ॠ, ऌ, ए, ओ, ऐ, औ
- यण् = य्, व्, र्, ल्

With the understanding of meta rules and expansion of प्रत्याहाराः

Now finally इक् will be replaced by यण् . But there is a problem which letters of यण् should replace which letters of इक्

Here comes another meta rule

स्थानेऽन्तरतमः – The Rule of Closest Substitute

Out of multiple possible आदेशाः(replacement), the one most similar in sound-properties is chosen.

That's why:

- इ/ई will be replaced by य् (both originate from तालु – palate)

- उ/ऊ will be replaced by व् (both originate from ओष्ठ – lips)
- ऋ/ॠ will be replaced by र् (both originate from मूर्धा – cerebrum of mouth)
- ऌ will be replaced by ल् (both originate from दन्त – teeth)

Final Meaning in Simple English

In, **संहिता** (closeness of 2 letters):

When an इक् letter is followed by an अच् letter (except its own सवर्ण), the इक् letter changes into the corresponding यण्.

- इ/ई + any vowel except इ/ई → य् + any vowel except itself
- उ/ऊ + any vowel except उ/ऊ → व् + any vowel except itself
- ऋ/ॠ + any vowel except ऋ/ॠ → र् + any vowel except itself
- ऌ + any vowel except ऌ → ल् + any vowel except itself

Examples :

कर्मणि + एव → कर्मण् इ + ए व → कर्मण् य् + ए व → कर्मण्येव

अस्तु + अकर्मणि → अस्त् उ + अ कर्मणि → अस्त् व् + अ कर्मणि → अस्त्वकर्मणि

पितृ + इच्छा → पित् ऋ + इ च्छा → पित् र् + इ च्छा → पित्रिच्छा

ऌ + आकारः → ऌ + आ कारः → ल् + आ कारः → लाकारः

⚠ "Any vowel" means any vowel except its own type — because self-combinations are handled by a different code which will be studied by us in the video २ .

And mind you when this code comes you will see one more powerful and modern concept of OOP being used by **Maharṣi pāṇini** **i.e. overriding**

चलचित्रम् /Video २

All the codes / meta rules will now apply in systematic order

संहितायाम्

Anything told under this अधिकारः (heading/compiler directive)

Applies only in the context of संहिता

What is संहिता ?

परः सन्निकर्षः संहिता

"Extreme closeness of 2 letters is called संहिता."

So every sandhi-rule operates only when 2 letters come into close contact.

Our Second code **अकः सवर्णे दीर्घः** will also apply under **संहिता**

But while it is being **applied**

One condition of **इको यणचि** will be overridden by it

अकः सवर्णे दीर्घः

(अकः सवर्णे दीर्घः)

- अकः→ 5th vibhakti (पञ्चमी)
- दीर्घः→ 1st vibhakti (प्रथमा)
- सवर्णे→ 7th vibhakti (सप्तमी)

Now **परिभाषासूत्राणि (Meta Rules)** will apply to give it sequence.

- **तस्मादित्युत्तरस्य** Whatever is in 5th vibhakti will come before and change will happen immediately after it
- **तस्मिन्निति निर्दिष्टे पूर्वस्य** → Whatever is in 7th vibhakti comes last and change happens immediately before it.

- 1st vibhakti → Is the substitute/replacement for both .

Therefore:

अक् + सवर्णे = दीर्घः

But what are अक् , सवर्णे , दीर्घः ?

To expand them , शिवसूत्राणि list and all the necessary meta rules come

आदिरन्त्येन सहेता / अणुदित् सवर्णस्य चाप्रत्ययः/ तुल्यास्यप्रयत्नं सवर्णम् / ऋऌवर्णयोः मिथः सावर्ण्यम् वाच्यम् (refer to 7 core concepts)

With all of the above rules प्रत्याहाराः will expand now

Expansions of प्रत्याहाराः

- अक् = अ/आ इ/ई उ/ऊ ऋ/ॠ ऌ

But now there is a problem only one प्रत्याहारः is available in the code.

So now algorithm will scan for the meaning of remaining 2 words

On scanning it finds out that सवर्णे means letters with same pronunciation and same internal effort inside the mouth according to **तुल्यास्यप्रयत्नं सवर्ण्यम्** but now it is looking for a प्रत्यहारः to scan सवर्ण from ! With one hint that सवर्ण is in 7th vibhakti (सवर्णे) it guesses the प्रत्यहारः also might be in 7th vibhakti because in संस्कृतम् adjectives and words have same vibhakti.

On scanning it finds out that by using **Anuvṛtti** technique it has to bring down अचि from **इकोयणचि** so that **अकः सवर्णे दीर्घः** can be completed as अकः सवर्णे अचि दीर्घः

It does that and jumps on to the next word दीर्घः

And it finds out that दीर्घः means long variation (२ मात्रिक)

With the scanning being completed it is finally able to put together a complete code :

अकः सवर्णे अचि दीर्घः

अक् + सवर्ण अच् = दीर्घः एकादेशः(become one)

Why एकादेशः ?

Because the code अकः सवर्णे दीर्घः is stored under **एकः पूर्वपरयो** अधिकारसूत्रम् (heading/compiler directive)

But now there is another question!

What will be the final दीर्घः letter ?

The answer is provided by our final meta rule

स्थानेऽन्तरतमः – The Rule of Closest Substitute

Out of multiple possible आदेशाः(replacement), the one most similar in sound-properties is chosen.

Since :

- अ and आ are pronounced through कण्ठ (throat)

Hence when they combine only आ can come as a replacement

- For इ and ई - only ई can come as a replacement (palate)
- For उ and ऊ - only ऊ can come as a replacement (lips)
- For ऋ and ॠ - only ॠ can come as a replacement (cerebrum of mouth)
- For ऌ - only ॠ can come as a replacement since ऌ doesn't have a दीर्घः and

according to edited code **ऋऌवर्णयोः मिथः सावर्ण्यम् वाच्यम्** ऋ and ऌ are सवर्ण of each other.

Final Meaning in Simple English

👉 In, **संहिता** (closeness of 2 letters):

When an अक् letter is followed by an सवर्ण अच् letter , both combine into the corresponding दीर्घः letter

- अ /आ + अ/आ = आ
- इ/ई + इ/ई = ई
- उ/ऊ + उ/ऊ = ऊ
- ऋ/ॠ + ऋ/ॠ = ॠ
- ऌ /ॡ + ऌ/ॡ = ॡ

Examples:

राम + आदेशः = रामादेशः

पार्वती + ईश्वरः = पार्वतीश्वरः

भानु + उदयः = भानूदयः

पितृ + ऋणम् = पितॄणम्

ऌ + ऌ = ॡ

होतृ + ऌकारः = होतॄकारः

Did you realise one condition इक् + इक् of our previous code **इको यणचि** was overriden by this code **अकः सवर्णे दीर्घः** !!! If you didn't , go through both the codes again and again.

Note : For अ and आ to combine and become दीर्घ we need help of another special code अ अ which will be discussed by us next !

चलचित्रम् /Video ३

Now we will see one of the 7 imp concepts of Maharṣi Pāṇini's Algorithm at work

पूर्वत्रासिद्धम्

Aṣṭādhyāyī has **8 chapters** and each chapter is divided in **4 sections**

So a grand total of **32 sections**

First part	Second part
सपादसप्ताध्यायी	त्रिपादी
(**29 sections**)	(**3 sections**)
7 chapters and 1 section	

Between these 2 parts lies the code

पूर्वत्रासिद्धम्

Meaning : codes of 1st part cannot see the work done by codes of 2nd part .

६.१.१०१ अकः सवर्णे दीर्घः	८.४.६८ अ अ
6th chapter 1st section Code no 101	8th Chapter 4th section Code no 68
Simple meaning of this code as studied by us	Here first अ is considered
In 2nd video i.e. अ/आ + अ/आ = आ	artificially open and second
	अ is traditionally closed

अ अ code is converting अ into a close sound at the end of the algorithm . But the work done by this code cannot be seen by the 1st part's code ६.१.१०१ अकः सवर्णे दीर्घः hence it always assumes that अ is an open sound and not a closed one .

But then why did **Maharṣi Pāṇini** write this code अ अ ?

Any which ways algorithm would have assumed and considered अ as an open sound .

He wrote it for us humans and to respect the traditional शिक्षाशास्त्रम् (science of pronunciation)

Because in शिक्षाशास्त्रम् and even in spoken saṃskṛtam अ is always a (संवृत) close sound

So if any student reads the code अकः सवर्णे दीर्घः and then reads the definition of सवर्ण through code **तुल्यास्यप्रयत्नम् सवर्णम्** he might say that **Maharṣi Pāṇini** made a mistake .

To avoid this at the end of his algorithm he writes अ अ .

Which means up until **Maharṣi Pāṇini's** algorithm is running अ is to be considered as an artificially open sound and once it ends अ retains its traditional close sound quality.

See even before invent of modern day computer science he was out there tweaking traditional rules respectfully so that his codes generate a successful output.

Absolute Genius !!!

चलचित्रम् /Video ४

संहितायाम्

Anything told under this अधिकारः (heading/compiler directive)

Applies only in the context of संहिता

What is संहिता ?

परः सन्निकर्षः संहिता

"Extreme closeness of 2 letters is called संहिता."

So every sandhi-rule operates only when 2 letters come into close contact !

Our 3rd code will also apply under संहिता

आद् गुणः (अचि)

The (अचि) is carry forwarded (inherited) from इको यणचि

- आत् → 5th vibhakti (पञ्चमी)
- गुणः → 1st vibhakti (प्रथमा)
- इकि → 7th vibhakti (सप्तमी)

Notice how we changed अचि to इकि that's because in context of this code we just need इक् and not complete अच् ! Code number 4 will make it more clear, till then let's stick with इकि as far as आद्गुणः is considered.

Now **परिभाषासूत्राणि (Meta Rules)** will come and apply to give it sequence.

- **तस्मादित्युत्तरस्य** Whatever is in 5th vibhakti will come before and change will happen immediately after it
- **तस्मिन्निति निर्दिष्टे पूर्वस्य** → Whatever is in 7th vibhakti comes last and change happens immediately before it.
- 1st vibhakti → Is the substitute/replacement for both .

Therefore:

आत् + इकि = गुणः

But what are आद् इकि and गुणः ?

To expand them , शिवसूत्राणि list and all the necessary meta rules come

आदिरन्त्येन सहेता / अणुदित् सवर्णस्य चाप्रत्ययः/ तुल्यास्यप्रयत्नं सवर्णम् / ऋऌवर्णयोः मिथः सावर्ण्यम् वाच्यम्

With all the above rules प्रत्याहाराः/शब्दाः will expand now

- आत् = अ/आ
- इक् = इ/ई उ/ऊ ऋ/ॠ ऌ
- गुणः = अ ए ओ

गुणः is not a प्रत्याहारः it is a keyword for अ ए ओ according to code **अदेङ्गुणः**

So at the final step our LHS + RHS will look like

अ/आ + इ/ई = गुणः

अ/आ + उ/ऊ = गुणः

अ/आ + ऋ/ॠ = गुणः

अ/आ + ऌ = गुणः

And for choosing the correct गुणः (अ / ए / ओ) letter as a replacement we will take help of

स्थानेऽन्तरतमः – The Rule of Closest Substitute

Out of multiple possible आदेशाः(replacement), the one most similar in sound-properties is chosen.

अ/आ (कण्ठ) + इ/ई (तालु) = ए (कण्ठतालु / throat+palate)

अ/आ (कण्ठ) + उ/ऊ (ओष्ठ) = ओ (कण्ठौष्ठ / throat+lips)

अ/आ (कण्ठ)+ ऋ/ॠ (मूर्धा) = अ (कण्ठ...../throat.....)

अ/आ (कण्ठ) + ऌ (दन्त) = अ (कण्ठ...../throat.....)

Now there is one more problem , from गुणः there is only one letter which matches the pronunciation place of the last 2 conditions and that is अ.

ए and ओ cannot come since they have तालु and ओष्ठ involved not मूर्धा and दन्त

So Here comes another code to the rescue

उरण् रपरः

In context of our code it simply means whenever अ comes as an आदेशः in place of ऋ and ऌ it should be followed by र् and ल्

Hence :

अ/आ (कण्ठ)+ ऋ/ॠ (मूर्धा) = अर् (कण्ठमूर्धा / throat + cerebrum of mouth)

अ/आ (कण्ठ) + ऌ (दन्त) = अल् (कण्ठदन्त / throat + teeth)

With all the codes and meta rules in place let us look at few examples

गण + ईशः →	गण् + अ + ई + शः →	गण् + ए + शः = गणेशः
गङ्गा + उदकम् →	गङ्ग् + आ + उ + दकम् →	गङ्ग् + ओ + दकम् = गङ्गोदकम्
ब्रह्म + ऋषिः →	ब्रह्म्+ अ + ऋ + षिः →	ब्रह्म्+ अर् + षिः = ब्रह्मर्षिः
तव + ऌकारः →	तव् + अ + ऌ + कारः →	तव् + अल् + कारः = तवल्कारः

Isn't it fascinating how elegantly **Maharṣi Pāṇini** coded so much information into a single code with few other meta rules !!!

Absolute Genius !!!!!!!!

चलचित्रम् /Video ५

संहितायाम्

Anything told under this अधिकारः (heading/compiler directive)

Applies only in the context of संहिता

What is संहिता ?

परः सन्निकर्षः संहिता

"Extreme closeness of 2 letters is called संहिता."

So every sandhi-rule operates only when 2 letters come into close contact !

Our 4th code will also apply under **संहिता**

(आत्) वृद्धिरेचि

(आत् वृद्धिः एचि)

The (आत्) is carry forwarded (inherited) from our previous code आद्गुणः

- आत् → 5th vibhakti (पञ्चमी)
- वृद्धिः → 1st vibhakti (प्रथमा)
- एचि → 7th vibhakti (सप्तमी)

Now **परिभाषासूत्राणि (Meta Rules)** will come and apply to give it sequence.

- **तस्मादित्युत्तरस्य** Whatever is in 5th vibhakti will come before and change will happen immediately after it
- **तस्मिन्निति निर्दिष्टे पूर्वस्य** → Whatever is in 7th vibhakti comes last and change happens immediately before it.
- 1st vibhakti → Is the substitute/replacement for both .

Why both ? Because the code **वृद्धिरेचि** code is stored under another **अधिकारः** (compiler directive /heading) **एकः पूर्वपरयोः** meaning the before and after will become one

Therefore:

आत् + एचि = वृद्धिः

But what are आत् एचि and वृद्धिः

To expand them , शिवसूत्राणि list and all the necessary meta rules come

आदिरन्त्येन सहेता / अणुदित् सवर्णस्य चाप्रत्ययः/ तुल्यास्यप्रयत्नं सवर्णम् / ऋऌवर्णयोः मिथः सावर्ण्यम् वाच्यम्

With all the above rules प्रत्याहाराः/शब्दाः will expand now

- आत् = अ/आ
- एच् = ए ओ ऐ औ
- वृद्धिः = आ ऐ औ

वृद्धिः is not a प्रत्याहारः it is a keyword for आ ऐ औ according to another code

वृद्धिरादैच् (first code of the algorithm)

वृद्धिः = आत् and ऐच्

आत् = आ according to code **तपरस्तत्कालस्य**

ऐच् = ऐ औ according to code **आदिरन्त्येन सहेता**

Therefore **वृद्धिः = आ ऐ औ**

So at the final step our LHS + RHS will look like

अ/आ + ए = वृद्धिः

अ/आ + ओ = वृद्धिः

अ/आ + ऐ = वृद्धिः

अ/आ + औ = वृद्धिः

And for choosing the correct **वृद्धिः** (आ / ऐ/ औ) letter as a replacement we will take help of

स्थानेऽन्तरतमः – The Rule of Closest Substitute

Out of multiple possible आदेशाः(replacement), the one most similar in sound-properties is chosen.

अ/आ (कण्ठ) + ए (तालु) = ऐ (कण्ठतालु / throat+palate)

अ/आ (कण्ठ) + ओ (ओष्ठ) = औ (कण्ठौष्ठ / throat+lips)

अ/आ (कण्ठ)+ ऐ (तालु) = ऐ (कण्ठतालु / throat+palate)

अ/आ (कण्ठ) +औ (ओष्ठ) = औ (कण्ठौष्ठ / throat+lips)

With all the codes and meta rules in place let us look at few examples

तथा + एव → तथ् + आ + ए + व → तथ् + ऐ + व = तथैव

महा + ऐश्वर्यम् → मह्+ आ + ऐ + श्वर्यम् → मह् + ऐ + श्वर्यम् = महैश्वर्यम्

गङ्गा + ओघः → गङ्ग् + आ + ओ + घः → गङ्ग् + औ + घः = गङ्गौघः

वन + औषधम् → वन् + अ + औ + षधम् → वन् + औ + षधम् = वनौषधम्

चलचित्रम् /Video ६

संहितायाम्

Anything told under this अधिकारः (heading/compiler directive)

Applies only in the context of संहिता

What is संहिता ?

परः सन्निकर्षः संहिता

"Extreme closeness of 2 letters is called संहिता."

So every sandhi-rule operates only when 2 letters come into close contact !

Our 5th code will also apply under **संहिता**

एचोऽयवायावः (अचि)

एचः अयवायावः (अचि)

The (अचि) is carry forwarded (inherited) from our 1st code इकोयणचि

- एचः → 6th vibhakti (षष्ठी)
- अयवायावः → 1st vibhakti (प्रथमा)
- अचि → 7th vibhakti (सप्तमी)

Now **परिभाषासूत्राणि (Meta Rules)** will come and apply to give it sequence.

- **षष्ठीस्थानयोगा** → Whatever is in 6th vibhakti comes first and becomes place of change.

- **तस्मिन्निति निर्दिष्टे पूर्वस्य** → Whatever is in 7th vibhakti comes last and change happens immediately before it.
- 1st vibhakti → Is the substitute/replacement

Therefore:

एच् + अच् → **अय् अव् आय आव्** + अच्

But what are एच् अच् ?

To expand them , शिवसूत्राणि list and all the necessary meta rules come

आदिरन्त्येन सहेता / अणुदित् सवर्णस्य चाप्रत्ययः/ तुल्यास्यप्रयत्नं सवर्णम् / ऋऌवर्णयोः मिथः सावर्ण्यम् वाच्यम्

With all the above rules प्रत्याहाराः/शब्दाः will expand now

- एच् = ए ओ ऐ औ
- अच् = अ, आ, इ/ई, उ/ऊ, ऋ/ॠ, ऌ, ए, ओ, ऐ, औ (any vowel)

Note : **अय् अव् आय् आव्** are nor प्रत्याहाराः neither संज्ञाशब्दाः they are आदेशाः

In simple terms they don't expand into anything they come as it is !

Therefore

ए + any vowel → **अय्** + any vowel

ओ + any vowel → **अव्** + any vowel

ऐ + any vowel → **आय्** + any vowel

ओ + any vowel → **आव्** + any vowel

Examples

सर्वे + एव → सर्व् + ए + एव → सर्व् + अय् + एव = सर्वय् एव

भानो + इह → भान् + ओ + इह → भान् + अव् + इह = भानव् इह

तस्मै + एतत् → तस्म् + ऐ + एतत् → तस्म् + आय् + एतत् = तस्माय् एतत्

करौ + एतौ → कर् + औ + एतौ → कर् + आव् + एतौ = कराव् एतौ

As soon as **एचोऽयवायावः** completes its work one more interesting code **लोपः शाकल्यस्य** comes and says :

According to शाकल्य, a वकार/यकार present at end of a पद and situated after अ/आ optionally gets removed when it is followed by a letter from अश् प्रत्याहारः in the context of संहिता.

Surprised right ?

There is no mention of **अ/आ** in the code **लोपः शाकल्यस्य** and also there is no mention of **य्** and **व्** too .

To complete the entire code we need to bring down words from previous few codes following an important technique **Anuvṛtti (inheritance)**

Next page will show you what and from where it is brought down.

८.३.१७ भो-भगो-अघो-(**अपूर्वस्य**) यः (**अशि**)

८.३.१८ (**व्योः**) लघुप्रयत्नतरः शाकटायनस्य

८.३.१९ (**अपूर्वयोः व्योः**) **लोपः शाकल्यस्य** (**अशि**)

Brilliant right ? Using a powerful technique like inheritance (carry forwarding) **Maharṣi Pāṇini** doesn't need to repeat everything again and again !!!!

Note : **अपूर्वस्य** changed to **अपूर्वयोः** to fit with **व्योः** विभक्ति परिणामः (change of vibhakti)

Now let's break down our newly completed code with the help of meta rules

(अपूर्वयोः व्योः) लोपः शाकल्यस्य (अशि)

- **अपूर्वयोः व्योः** → 6th vibhakti (षष्ठी)
- **लोपः** → 1st vibhakti (प्रथमा)
- **अशि** → 7th vibhakti (सप्तमी)
- **शाकल्यस्य** → 6th vibhakti (here 6th vibhakti is not used according to meta rules but natural rules of संस्कृतम् language)

Now **परिभाषासूत्राणि (Meta Rules)** will apply to give it a sequence.

- **तस्मादित्युत्तरस्य** Whatever is in 5th vibhakti will come before and change will happen immediately after it
- **तस्मिन्निति निर्दिष्टे पूर्वस्य** → Whatever is in 7th vibhakti comes last and change happens immediately before it.
- 1st vibhakti → Is the substitute/replacement for both

Therefore according to **परिभाषासूत्राणि (Meta Rules)** and शाकल्यस्य (According to शाकल्य)

Simple meaning of the code will be

अपूर्वस्य (After अ/आ) **व्योः** (व् and य्) will be replaced by **लोपः** (disappearance) when followed by **अश्** (to expand अश् refer to शिवसूत्राणि list)

अपूर्वयोः व्योः + अश् = अ/आ + लोपः + अश्

अ/आ + य् / व् + अश् = अ/आ + + अश्

Therefore when we apply this to our previous output after **एचोऽयवायावः** our final output will look like

सर्वय् एव = सर्व एव

भानव् इह = भान इह

तस्माय् एतत् = तस्मा एतत्

करावृ एतौ = करा एतौ

Now if you notice carefully with our final output being

सर्व एव

भान इह

तस्मा एतत्

करा एतौ

Codes from video 4 and 5 (आद्गुणः and वृद्धिरेचि) can come and apply here

And if they apply

सर्व + एव = सर्वैव

भान + इह = भानेह

तस्मा + एतत् = तस्मैतत्

करा + एतौ = करैतौ

But but but !!! We cannot apply आद्गुणः and वृद्धिरेचि since we have applied a code लोपः शाकल्यस्य which is from 2nd part and if you remember our Step 6: पूर्वात्रासिद्धम् (rule of non existence) **once we apply any code from part 2 we cannot go to part 1 and apply any other code .**

Genius !!!!!!!! Why ? Because if he wouldn't have divided his algorithm into 2 parts by Step 6: पूर्वात्रासिद्धम्, आद्गुणः and वृद्धिरेचि would have applied automatically and the final output would have become wrong !!!!!!

Note : If a word ending with **ए** and **ओ** will be followed by **अ** .

ए wont become अय् and ओ won't become अव् **Why ?? Will be answered by our next video**

चलचित्रम् /Video ७

संहितायाम्

Anything told under this अधिकारः (heading/compiler directive)

Applies only in the context of संहिता

What is संहिता ?

परः सन्निकर्षः संहिता

"Extreme closeness of 2 letters is called संहिता."

So every sandhi-rule operates only when 2 letters come into close contact !

Our 5th code will also apply under **संहिता**

(पूर्वः) एङः पदान्तादति

(पूर्वः) एङः पदान्तात् अति

The **(पूर्वः)** is carry forwarded (inherited) from a code above this code **अमि पूर्वः**

- पदान्तात् एङः → 5th vibhakti (पञ्चमी)
- पूर्वः → 1st vibhakti (प्रथमा)
- अति → 7th vibhakti (सप्तमी)

Now **परिभाषासूत्राणि (Meta Rules)** will come and apply to give it sequence.

- **तस्मादित्युत्तरस्य** Whatever is in 5th vibhakti will come before and change will happen immediately after it
- **तस्मिन्निति निर्दिष्टे पूर्वस्य** → Whatever is in 7th vibhakti comes last and change happens immediately before it.
- 1st vibhakti → Is the substitute/replacement for both

Why both ? Because the code **एङः पदान्तादति** is stored under another अधिकारः (compiler directive /heading) **एकः पूर्वपरयोः** meaning the before and after will become one

Therefore:

पदान्तात् एङ् + अत् = पूर्वः

But what are पदान्तात् एङ् , अत् and पूर्वः

To expand them , शिवसूत्राणि list and all the necessary meta rules come

आदिरन्त्येन सहेता / अणुदित् सवर्णस्य चाप्रत्ययः/ तुल्यास्यप्रयत्नं सवर्णम् / तपरस्तत्कालस्य

With all the above codes containing meta rules प्रत्याहाराः/शब्दाः will expand now

- पदान्तात् एङ् = word ending with ए , ओ
- अत् = अ
- पूर्वः (prior)

पूर्वः is not a प्रत्याहारः it simply means (prior) and similarly पदान्तात् simply means word ending

So at the end of any word if ए comes and if it is followed by अ both will combine to become one !

What is that one ?

A Prior letter!

Similarly ओ and अ will combine to become one (prior letter)

So at the final step

ए + अ = ए

ओ + अ = ओ

Examples

रामे + अत्र = रामेत्र

वने + अस्मिन् = वनेस्मिन्

सो + अहम् = सोहम्

को + अपि = कोपि

Now to indicate to the reader that there was a अ present initially अवग्रहः ` S ' symbol is used.

So now our final words will look like :

रामेऽअत्र

वनेऽस्मिन्

सोऽहम्

कोऽपि

Note: There is no special pronunciation for **S**

To show the presence of **S** we just elongate the sound present before .

Bonus Codes

संहितायाम्

Anything told under this अधिकारः (heading/compiler directive)

Applies only in the context of संहिता

What is संहिता ?

परः सन्निकर्षः संहिता

"Extreme closeness of 2 letters is called संहिता."

So every sandhi-rule operates only when 2 letters come into close contact !

Our bonus codes will also apply under **संहिता**

Bonus code 1

ईदूदेद्द्विवचनं प्रगृह्यम्

(ईत्-ऊत्-एत् द्विवचनम् प्रगृह्यम्)

Now the technique used by महर्षिपाणिनिः here will really blow your mind !!!

According to **तपरस्तत्कालस्य** → ईत् = ई , ऊत् = ऊ , एत् = ए

What he does is , he puts all dual (द्विवचनम्) words ending with **ई** , **ऊ** and **ए** in a keyword called **प्रगृह्य**

Dual words example : कवी (२ poets) भानू (२ suns) गङ्गे (२ gaṅgā's) एधेते (Both grow)

In simple terms any dual word (noun/verb/adjective) ending with ई, ऊ and ए will be put in a keyword called **प्रगृह्य**

and then he writes one more code for treating this keyword **प्रगृह्य**

प्लुतप्रगृह्या अचि नित्यम्

(प्रकृत्या) प्लुत-प्रगृह्याः अचि नित्यम्

प्रकृत्या is (carry forwarded / inherited) from a code above namely प्रकृत्याऽन्तःपादमव्यपरे.

Complete Meaning after inheritance :

प्लुत and **प्रगृह्य** when followed by अच् will retain their original form under **संहिता**

Note : If you remember the basics well, प्लुत is that vowel which is ३ मात्रिक.

प्लुत vowel ending words : राम३ , लते३ , गुरो३

Therefore:

प्लुत / **प्रगृह्य** + अच् = प्रकृत्या (Natural form)

Till now we all know **अच्** means any vowel !!!

So in simple terms any प्लुत or **प्रगृह्य** ,when followed by अच् will always (नित्यम्) retain its original form !!!!

Example:

कवी + एतौ → कवी एतौ

Note : According to **इको यणचि** (video 1) it should have become → कव्येतौ

But before कवी + एतौ is processed through **इको यणचि** it has to go through **इदूदेद्विवचनम् प्रगृह्यम्** and once it does that , the **ई** at the end of कवी is detected by algorithm as **प्रगृह्य** and hence it is blocked from undergoing any changes .

So कवी + एतौ → कव् + **ई** + एतौ = कवी एतौ ✅

Conclusion

Before any other codes from our series apply, every word goes through **इदूदेद्विवचनम् प्रगृह्यम्** for scanning and once the scan is completed , dual words that end with **ई ऊ** or **ए** are blocked for further changes!!! And hence no other codes can come and apply !

Isn't it brilliant how **महर्षिपाणिनिः** designed this entire system 2500+ years ago !!!!!

The next code's design will also blow your mind !

Bonus code 2

अदसो मात्

(ईद्-ऊद्-एद्) (प्रगृह्यम्) अदसः मात्

ईद्-ऊद्-एद् and प्रगृह्यम् are **carry forwarded/inherited** from our previous bonus code ईदूदेद्द्विवचनं प्रगृह्यम्

Complete framing after inheritance :

अदसः मात् ईत्-ऊत्-एत् प्रगृह्यम्

Meaning :

The forms of the अदस् word which end in **मी / मू / मे** are also put in the keyword **प्रगृह्य**.

अदस् (That)

Note : 2 types of ' **that** 'exist in **saṃskṛtam.** The above one is used for people or things that are visible to our eyes – for example : That girl , That boy , That cow, That book etc

Now check all the tables given below where a **अदस्** word is ending with **मी , मू** or **मे !!**

अदस् – Masculine

	एकवचनम्	द्विवचनम्	बहुवचनम्
प्रथमा	असौ	अमू	अमी
द्वितीया	अमुम्	अमू	अमून्
तृतीया	अमुना	अमूभ्याम्	अमीभिः
चतुर्थी	अमुष्मै	अमूभ्याम्	अमीभ्यः
पञ्चमी	अमुष्माद्, अमुष्मात्	अमूभ्याम्	अमीभ्यः
षष्ठी	अमुष्य	अमुयोः	अमीषाम्
सप्तमी	अमुष्मिन्	अमुयोः	अमीषु

सम्बोधनम्	-	-	-

अदस् – Feminine

	एकवचनम्	द्विवचनम्	बहुवचनम्
प्रथमा	असौ	अमू	अमूः
द्वितीया	अमूम्	अमू	अमूः
तृतीया	अमुया	अमूभ्याम्	अमूभिः
चतुर्थी	अमुष्यै	अमूभ्याम्	अमूभ्यः
पञ्चमी	अमुष्याः	अमूभ्याम्	अमूभ्यः
षष्ठी	अमुष्याः	अमुयोः	अमूषाम्
सप्तमी	अमुष्याम्	अमुयोः	अमूषु
सम्बोधनम्	-	-	-

अदस् –Neuter

	एकवचनम्	द्विवचनम्	बहुवचनम्
प्रथमा	अदः	अमू	अमूनि
द्वितीया	अदः	अमू	अमूनि
तृतीया	अमुना	अमूभ्याम्	अमीभिः
चतुर्थी	अमुष्मै	अमूभ्याम्	अमीभ्यः
पञ्चमी	अमुष्माद्, अमुष्मात्	अमूभ्याम्	अमीभ्यः
षष्ठी	अमुष्य	अमुयोः	अमीषाम्
सप्तमी	अमुष्मिन्	अमुयोः	अमीषु
सम्बोधनम्	-	-	-

On scanning we find out

in masculine **अमू (Dual)** and **अमी (Plural)**

in feminine **अमू (Dual)**

in neuter **अमू (Dual)**

Therefore only the above words :

अमू and **अमी** will be put in the keyword **प्रगृह्य**

And what happens with the words put in **प्रगृह्य ?**

We all know from our previous bonus code ! They don't go under any change when followed by अच्

Examples :

अमू + आङ्गिरसौ = अमू आङ्गिरसौ ✅

अमी + इक्षवः = अमी इक्षवः ✅

All the codes mentioned till now can be found with their numbers at

https://ashtadhyayi.com in **सूत्रपाठः**

From now I will just mention codes along with their one line meaning .

Whatever is marked in blue is **अधिकारसूत्रम्** (compiler directive)

Whatever is marked in green is **परिभाषासूत्रम्** (meta rules)

Whatever is marked in orange is **विधिसूत्रम्** (main code)

चलचित्रम् /Video ८

पदस्य **(Of word)**

संहितायाम् **(In context of संहिता)**

परः सन्निकर्षः संहिता **(Closeness of 2 letters is संहिता)**

मोऽनुस्वारः (हलि) **(हलि is carry forwarded from previous code हलि सर्वेषाम्)**

मः (6^{th}) **अनुस्वारः**(1^{st}) **हलि** (7^{th})

षष्ठीस्थानयोगा **(6^{th} will come first and will be the place of change)**

तस्मिन्निति निर्दिष्टे पूर्वस्य **(7^{th} will come last and change will happen before it)**

(1^{st} will be the change)

Therefore :

पदान्त म् + हल् (any consonant) → ं + हल् (any consonant)

In simple terms : When the म् at the end of पद (word) is followed by any consonant it changes itself to अनुस्वारः (ं)

Examples:

सत्यम् + वद = सत्यं वद

धर्मम् + चर = धर्मं चर

सत्यम् + ब्रूयात् = सत्यं ब्रूयात्

अहम् + करोमि = अहं करोमि

Note : when the पदान्त म् is followed by any vowel , it simply combines with the vowel

अहम् + इच्छामि = अहमिच्छामि

अहम् + उपविशामि = अहमुपविशामि

ईश्वरम् + इच्छामि = ईश्वरमिच्छामि

Now the most interesting part is that in general this code will also apply to the name of our language !

संस्कृतम्

This word is made of 3 parts

सम् + स् + कृतम्

Before combining the 3 parts mentioned above मोऽनुस्वारः will come and convert the म् at the end of सम् into a ं

Hence our final result looks like - संस्कृतम्

So as far as correct breakdown of the word संस्कृतम् is considered it is सम् + स् + कृतम् ✅

Some people might wonder that the how did मोऽनुस्वारः apply in the middle of the word . The answer to this is , It didn't!

सम् is a prefix and in saṃskṛtam language prefixes are also considered as words . Hence technically the म् in सम् is at the end of a word .

Important twist :

Although it make look like मोऽनुस्वारः applied the reality is another code समः सुटि and few other codes have applied ☺

And I am purposely not mentioning the entire process of how समः सुटि and the rest because it is a very lengthy process!!

Interested readers can go on youtube and search for the same .

In short , both the processes convert the म् to ं

नश्चापदान्तस्य झलि (मः अनुस्वारः)

अपदान्तस्य मः नः (6th) झलि (7th) अनुस्वारः (1st) च (अव्यय)

Note : अव्यय doesn't have any vibhakti ! It is used to add a meaning of natural language, च in spoken संस्कृतम् means **(and) ,** here also it means the same !

Simple meaning :

In the context of संहिता, a मकार and a नकार which do not occur at the end of a पद (अपदान्त) are converted to अनुस्वार when followed by a झल् letter.

According to शिवसूत्राणि list

झल् (झ् भ् घ् ढ् ध् ज् ब् ग् द् ख् फ् छ् ठ् थ् च् ट् त् क् प् श् ष् स् ह्)

अपदान्त **न्** / **म्** + झल् → ं + झल्

यशान् + सि = यशांसि

आक्रम् + स्यते = आक्रंस्यते

गम् + गा = गंगा

चम् + चलः = चंचलः

घम् + टा = घंटा

दम् + तः = दंतः

शम् + भुः = शंभुः

Important : when अपदान्त न् / म् are followed by य् व् र् ल्

They do not become अनुस्वारः ✗

Examples:

गम् + यते = गम्यते

Less to none examples are found of अपदान्त न् / म् being followed by व् र् ल्

Note : In the words like गंगा , चंचलः , घंटा , दंतः , शंभुः

अनुस्वारः doesn't retain its original form !

It changes to a अनुनासिक letter , which will be seen by us in next code .

चलचित्रम् /Video ९

संहितायाम् **(In context of संहिता)**

परः सन्निकर्षः संहिता **(Closeness of 2 letters is संहिता)**

अनुस्वारस्य ययि परसवर्णः

अनुस्वारस्य (6th) **परसवर्णः** (1st) **ययि** (7th)

षष्ठीस्थानयोगा **(6th will come first and will be the place of change)**

तस्मिन्निति निर्दिष्टे पूर्वस्य **(7th will come last and change will happen before it)**

(1st will be the change)

Therefore:

ं + यय् → परसवर्णः + यय्

Simple Meaning :

In context of संहिता ं when followed by a यय् वर्ण is converted to the परसवर्णः

यय् **(य् व् र् ल् ञ् म् ङ् ण् न् झ् भ् घ् ढ् ध् ज् ब् ग् ड् द् ख् फ् छ् ठ् थ् च् ट् त् क् प्)**

What is परसवर्णः ?

A letter which has similar pronunciation quality of the next letter !

So in this case the **अनुनासिकः** letter of the following letter's group can be called as **परसवर्णः**

What is **अनुनासिकः** letter ?

One whose pronunciation involves nose and mouth !

And where to choose **अनुनासिकः** letter from ?

From the group of the letter that follows the अनुस्वारः

Groups of all the pure consonants of संस्कृतम्

कवर्ग - क् ख् ग् घ् ङ्

चवर्ग - च् छ् ज् झ् ञ्

टवर्ग - ट् ठ् ड् ढ् ण्

तवर्ग - त् थ् द् ध् न्

पवर्ग - प् फ् ब् भ् म्

य् व् र् ल्

श् ष् स् ह्

We will now take help of this list to chose our replacement **अनुनासिकः** letter

१. गं + गा → ग + ं + ग् + आ → ग + ङ् + ग् + आ = गङ्गा

Since ं was followed by ग् we chose ङ् as a replacement !

Why ?

Because ं has nasal quality and ग् is spoken via कण्ठ(throat)

Hence we need a letter which has both nasal and throat involved .

And from the group of ग् there is only ङ् that can come as replacement.

२. चं + चलः → च + ं + चलः → च + ञ् + चलः = चञ्चलः

why we chose ञ् as a replacement ?

Because ञ् is a nasal + palatal (नासिक्य + तालव्य) sound !

३. घं + टा → घ + ं + टा → घ + ण् + टा = घण्टा

why we chose ण् as a replacement ?

Because ण् is a nasal + cerebral (नासिक्य + मूर्धन्य) sound !

४. दं + त् → द + ं + तः → द + न् + तः = दन्तः

why we chose न् as a replacement ?

Because न् is a nasal + dental (नासिक्य + दन्त्य) sound !

५. शं + भुः → श + ं + भुः → श + म् + भुः = शम्भुः

why we chose म् as a replacement ?

Because म् is a nasal + labial (नासिक्य + ओष्ठ्य) sound !

Note :

य् व् ल् don't have a dedicated group

But they have their respective अनुनासिक letters such as **यँ् वँ् लँ्**

So when ं is followed by य् व् ल्

यँ् वँ् लँ् come as a replacement for ं

Note : No अनुनासिक letters exist for र् ह् श् ष् स् hence when अनुस्वारः is followed by these it retains its original form i.e. ं

If you still didn't get the replacement logic kindly read the above statements again and again and take the help of basic step 1 where I have mentioned the pronunciation places of different letters !

वा पदान्तस्य

This code is basically an extension of our previous code **अनुस्वारस्य ययि परसवर्णः** which basically means

whatever changes **अनुस्वारस्य ययि परसवर्णः** does to अपदान्त न् and म्

वा पदान्तस्य can **optionally** do the same changes for पदान्त न् and म् as well.

*अपदान्त – not at the end of a word

पदान्त – at the end of a word

Examples :

अहं + करोमि = अहं करोमि / अहङ्करोमि

गृहं + तत् = गृहं तत् / गृहन्तत्

सं + यमः = संयमः / सय्ँयमः

सं + वत्सरः = संवत्सरः / सव्ँवत्सरः

As discussed earlier सम् is a prefix and prefixes are considered as words in संस्कृतम्

Now we Will discuss few other codes which weren't mentioned in the series but their application is seen more often in most of the संस्कृतं texts

झलां जशोऽन्ते

झलाम् (plural 6th) जशः (plural 1st) अन्ते (7th)

Simple meaning:

झल् letter occurring at end of a पद (word) is converted to the corresponding जश् letter.

Note : while replacing a letter from any प्रत्याहारः make sure the replacement matches the internal effort and mouth based pronunciation location!

Refer to सवर्ण rule.

पदान्त झल् → जश्

Examples :

वाक् → वाग् अच् → अज् तत् → तद्

लिढ् → लिड् षष् → षड् त्रिष्टुप् → त्रिष्टुब्

झयो होऽन्यतरस्याम् (पूर्वस्य) (परसवर्णः)

झयः (5th) हः (6th) अन्यतरस्याम् (7th) पूर्वसवर्णः (1st)

Simple meaning :

A हकार following a झय् letter is optionally converted to the पूर्वसवर्ण (i.e. वर्गचतुर्थ).

झय् + ह् → झय् + (4th letter of the corresponding झय् letter)

Examples:

वाग् + ह् अरिः	→	वाग् + घ् अरिः	→	वाग्घरिः
अज् + ह् अलौ	→	अज् + झ् अलौ	→	अज्झलौ
लिड् + ह् असति	→	लिड् + ढ् असति	→	लिड्ढसति
तद् + ह् इतम्	→	तद् + ध् इतम्	→	तद्धितम्
त्रिष्टुब् + ह् इ	→	त्रिष्टुब् + भ् इ	→	त्रिष्टुब्भि

यरोऽनुनासिकेऽनुनासिको वा (पदान्तस्य)

यरः (6th) अनुनासिके (7th) अनुनासिकः (1st) वा (अव्यय)

पदान्तस्य (6th)

Simple meaning :

A यर् letter occurring at end of a पद is optionally converted to an अनुनासिक when it is followed by an अनुनासिक.

पदान्त यर् + अनुनासिक (5th letter of any वर्ग) → अनुनासिक + अनुनासिक

Examples:

वाग् + म् उलम्	→	वाङ् + म् उलम्	→	वाङ्मूलम्
षड् + म् उखः	→	षण् + म् उखः	→	षण्मुखः
चिद् + म् अयः	→	चिन् + म् अयः	→	चिन्मयः
त्रिष्टुब् + न् मति	→	त्रिष्टुम् + न् अमति	→	त्रिष्टुम्नमति

खरि च (झलाम्) (चर्)

झलाम् (Plural 6th) खरि (7th) चर् (1st) च (अव्यय)

Simple meaning :

A झल्-letter is converted to a corresponding चर्-letter when followed by a खर्-letter.

झल् + खर् → चर् + खर्

Examples:

वाग् + प् आलः	→	वाक् + प् आलः	→	वाक्पालः
षड् + क् अर्मः	→	षट् + क् अर्मः	→	षट्कर्मः
एतद् + प् आशर्वम्	→	एतत् + प् आश्र्वम्	→	एतत्पाश्र्वम्
अनुष्टुभ् + छ् अन्दः	→	अनुष्टुप् + छ् अन्दः	→	अनुष्टुप्छन्दः

स्तोः श्चुना श्चुः

Now for the first time in the entire pdf we will see a different vibhakti in the words/प्रत्याहारः of a code

स्तोः (6th) श्चुना (3rd) श्चुः (1st)

Any **प्रत्याहारः** written in 3rd vibhakti, can come before or after any other **प्रत्याहारः** . Unlike 5th and 6th , which have to come before and 7th , which has to come later !!!!!

Simple meaning :

In the context of संहिता, A सकार and a तवर्ग letter are converted (respectively) to a शकार and चवर्ग letter when associated with a शकार or a चवर्ग letter.

स् / त् थ् द् ध् न् + श् / च् छ् ज् झ् ञ्

↓

श् / च् छ् ज् झ् ञ् + श् / च् छ् ज् झ् ञ्

Or

श् / च् छ् ज् झ् ञ् + स् / त् थ् द् ध् न्

श् / च् छ् ज् झ् ञ् + श् / च् छ् ज् झ् ञ्

Note: The order doesn't matter , स् and तवर्गः should be in contact with श् and चवर्गः

In Place of स् only श् will come and in place of त् थ् द् ध् न्

च् छ् ज् झ् ञ् will come in order .

Examples :

हरिस् + श् एते	→	हरिश् + श् एते	→	हरिश्शेते
सत् + च् इत्	→	सच् + च् इत्	→	सच्चित्
प्रतिपत् + च् अन्द्रः	→	प्रतिपच् + च् अन्द्रः	→	प्रतिपच्चन्द्रः
यज् + न् अः	→	यज् + ञ् अः	→	यज्ञः
हनुमत् + ज् अयन्ती	→	हनुमज् + ज् अयन्ती	→	हनुमज्जयन्ती

तत् + श् लोकः → तच् + श् लोकः → तच्श्लोकः

मृत् + श् कटिकम् → मृच् + श् कटिकम् → मृच्शकटिकम्

These last 2 examples go under one optional change which will be discussed by us in the next code

शश्छोऽटि (झयः) (अन्यतरस्याम्)

शः (6th) छः (1st) अटि (7th) झयः (5th) अन्यतरस्याम् (7th)

Note: instead of अटि we need to take अमि according to edited code

छत्वम् अम् इति वाच्यम्

Simple meaning :

A शकार sandwiched between a झय् letter on the left and an अम् letter on the right is optionally converted to a छकार.

झय् + श् + अट् → झय् + छ् + अट्

Example:

तच्श्लोकः → तच् श् ल् ओकः → तच् छ् ल् ओकः → तच्छ्लोकः

मृच्शकटिकम् → मृच् श् अ कटिकम् → मृच् छ् अ कटिकम् → मृच्छकटिकम्

ष्टुना ष्टुः (स्तोः)

ष्टुना (3rd) ष्टुः (1st) स्तोः (6th)

Simple meaning :

In the context of संहिता, A सकार and a तवर्ग letter are converted (respectively) to a षकार and टवर्ग letter when associated with a षकार or a टवर्ग letter.

स् / त् थ् द् ध् न् + ष् / ट् ठ् ड् ढ् ण्

ष् / ट् ठ् ड् ढ् ण् + ष् / ट् ठ् ड् ढ् ण्

Or

ष् / ट् ठ् ड् ढ् ण् + स् / त् थ् द् ध् न्

ष् / ट् ठ् ड् ढ् ण् + ष् / ट् ठ् ड् ढ् ण्

Examples :

रामस् + ष् अष्ठः → रामष् + ष् अष्ठः → रामष्षष्ठः

आकृष् + त् अः → आकृष् + ट् अः → आकृष्टः

षण् + न् आम् → षण् + ण् आम् → षण्णाम्

तद् + ड् अमरुः → तड् + ड् अमरुः → तड्डमरुः

तोर्लि (परसवर्णः)

तोः (6th) लिः (7st) परसवर्णः (1st)

Simple meaning :

A letter of तवर्ग is converted to a परसवर्ण when followed by a लकार.

त् थ् द् ध् न् + ल् → लँ् / ल् + ल्

Note : In the actual code , replacement is mentioned as परसवर्णः(similar letter to the next letter)

Examples :

तत् + ल् अयः → तल् + ल् अयः → तल्लयः

जगत् + ल् अयः → जगत् + ल् अयः → जगल्लयः

पठन् + ल् इखति → पठलँ् + ल् इखति → पठलँ्लिखति

जनान् + ल् अब्ध्वा → जनालँ् + ल् अब्ध्वा → जनलँ्लब्ध्वा

Note : the only difference between first 2 and last 2 examples is that

When ल् comes at a replacement for न् ,it carries the nasal property too!

I will now share few more changes that happen when the न् is at the end of a पद (word) without the codes since they are difficult to grasp

If पदान्त न् is followed by छव् , it changes itself to ं and a स् comes in between both of them !

पदान्त न् + छव् → ं + स् + छव्

Examples :

प्राणान् + त्यक्त्वा → प्राणां स् त्यक्त्वा → प्राणांस्त्यक्त्वा

तान् + च → तां स् च → तांस्च

→ तांश्च (स्तोः श्चुना श्चुः)

एतान् + छात्रान् → एतां स् छात्रान् → एतांस्छात्रान्

→ एतांश्छात्रान् (स्तोः श्चुना श्चुः)

श्लोकान् + टीकाभिः → श्लोकां स् टीकाभिः → श्लोकांस्टीकाभिः

→ श्लोकांष्टीकाभिः (ष्टुना ष्टुः)

Note : This code doesn't apply to प्रशान् word

प्रशान् + तनोति → प्रशान्तनोति

If पदान्त न् is followed by स् a ध् comes in between both of them optionally !

पदान्त न् + स् → पदान्त न् ध् स्

Examples :

सन् + सः → सन् ध् सः → सन्धसः / सन्सः

If पदान्त न् is followed by श् a त् comes in between both of them optionally !

पदान्त न् + श् → पदान्त न् त् श्

Examples :

सन् + शम्भुः → सन् त् शम्भुः → सन्तशम्भुः → सञ्चछम्भुः

(the final word ~~सञ्चछम्भु~~ः looks like this because some of our earlier codes have also applied ! I won't mention their names , it's your homework !!

If a (ह्रस्व) small अच् letter is followed by पदान्त ङ् / ण् / न् and then these are followed by अच् , then additional ङ् / ण् / न् are added to the already existing ones !

ह्रस्व अच् + पदान्त ङ् ण् न् + अच्

ह्रस्व अच् + पदान्त ङ् ण् न् + ङ् ण् न् + अच्

Examples :

गच्छन् अस्मि → गच्छ् अ न् अ स्मि → गच्छ् अ न् न् अ स्मि → गच्छन्नस्मि

लिखन् एव → लिख् अ न् ए व → लिख् अ न् न् ए व → लिखन्नेव

तस्मिन् इह → तस्म् इ न् इ ह → तस्म् इ न् न् इ ह → तस्मिन्निह

पचन् अस्मि → पच् अ न् अ स्मि → पच् अ न् न् अ स्मि → पचन्नस्मि

From the next page we will understand, in **पाणिनीय व्याकरणम्** what exactly a विसर्गः is and how it undergoes different changes.

विसर्गः सन्धिः

Before jumping onto विसर्गः सन्धिः , we need to understand one important concept of **पाणिनीय व्याकरणनम्**

There is always a **base word** to which 21 different suffixes are attached to add additional meanings . First 3 suffixes are repeated for सम्बोधन !

राम

	एकवचनम् (Singular)	द्विवचनम् (Dual)	बहुवचनम् (Plural)
प्रथमा	राम + सुँ	राम + औ	राम +जस्
द्वितीया	राम + अम्	राम + औट्	राम +शस्
तृतीया	राम + टा	राम + भ्याम्	राम +भिस्
चतुर्थी	राम + ङे	राम + भ्याम्	राम +भ्यस्
पञ्चमी	राम + ङसिँ	राम + भ्याम्	राम +भ्यस्
षष्ठी	राम + ङस्	राम + ओस्	राम +आम्
सप्तमी	राम + ङि	राम +ओस्	राम +सुप्
सम्बोधनम्	हे राम + सुँ	हे राम + औ	हे राम+जस्

Note: These suffixes are artificial in nature ! These aren't naturally occurring suffixes , these are inventions of महर्षिपाणिनिः

Now **multiple codes** will apply and the suffixes will undergo transformations to attach with the base words !!!!

राम

	एकवचनम् (Singular)	द्विवचनम् (Dual)	बहुवचनम् (Plural)
प्रथमा	रामस्	राम + औ	रामास्
द्वितीया	राम + अम्	राम + औट्	राम +शस्
तृतीया	राम + टा	राम + भ्याम्	रामैस्
चतुर्थी	राम + ङे	राम + भ्याम्	रामेभ्यस्
पञ्चमी	राम + ङसिँ	राम + भ्याम्	राम +भ्यस्
षष्ठी	राम + ङस्	राम + ओस्	राम +भ्यस्
सप्तमी	राम + ङि	राम +ओस्	राम +सुप्
सम्बोधनम्	हे राम + सुँ	हे राम + औ	हे राम+जस्

I have purposely transformed only those words which we will be using hereafter.

All the non-highlighted ones , are transformed !

At this stage we have four words

रामस् (rāma)

रामास् (many rāma)

रामैस् (by many rāma)

रामेभ्यस् (for many rāma)

पदस्य , अलोऽन्तस्य (of the ending अल् letter of word)

Note : when पदस्य , अलोऽन्तस्य are mentioned together, they combine to give a meaning that change will happen only on the last अल् letter of a word !

ससजुषो रुः

स-सजुषोः (Dual 6th) रुः (1st)

Simple meaning :

The सकार at end of a पद, and the षकार at end of the सजुष् पद get a रुँ-आदेश ।

पदान्त स् → रुँ

सजुष् → सजुरुँ

Examples :

रामस् → रामरुँ

रामास् → रामारुँ

रामैस् → रामैरुँ

रामेभ्यस् → रामेभ्यरुँ

सजुष् → सजुरुँ

अतो रोरप्लुतादप्लुते (अति) (उत्)

अप्लुतात् अतः(5th) रोः (6th) अप्लुते अति (7th) उत् (1st)

Simple meaning :

A रुँ letter that is sandwiched between an अप्लुत-ह्रस्व-अकार from each side is converted to an उकार.

अ + रुँ + अ → अ + उ + अ

Examples :

रामरुँ + अत्र → राम् अ रुँ अत्र → राम् अ उ अत्र → राम् ओ अत्र

रामोअत्र → रामोऽत्र

If you observe carefully after 3rd step one of the earliest code **आद्गुणः**

applied to make अ + उ = ओ and then another code **एङःपदान्तादति**

applied to make रामो अत्र = रामोऽत्र

This is how the entire system functions ! Nothing is left unambiguous !!!!

हशि च (अप्लुतात्) (उत्) (अतः) (रो)

अप्लुतात् अतः(5th) रोः (6th) हशि (7th) उत् (1st)

Simple meaning :

A रुँ letter that follows an अप्लुत-ह्रस्व-अकार and is followed by a हश् letter is converted to an उकार.

अ + **रुँ** + हश् → अ + उ + हश्

Examples

रामरुँ + हसति → राम् अ रुँ ह् असति → राम् अ उ ह् असति → रामो हसति

रामरुँ + गच्छति → राम् अ रुँ ग् अच्छति → राम् अ उ ग् अच्छति → रामो गच्छति

भो भगो अघो अपूर्वस्य योऽशि (रोः)

भो-भगो-अघो-अपूर्वस्य रोः (6^{th}) यः (1^{st}) अशि (7^{th})

Simple meaning :

In the context of संहिता, A पदान्त रुँ that is present either at the end of भोस्/भगोस्/अघोस्, or after the letter अ/आ is converted to यकार when followed by a letter from the अश् प्रत्याहार.

भो, भगो, अघो, अ/आ + रुँ + अश्

↓

भो, भगो, अघो, अ/आ + य् + अश्

Examples

भोरुँ + अत्र → भोय् अत्र

भगोरुँ + आगच्छ → भगोय् आगच्छ

अघोरुँ + इदानीम् → अघोय् इदानीम्

रामेभ्यरुँ + अस्ति → रामेभ्यय् अस्ति ✕ → रामेभ्यउ अस्ति → रामेभ्योऽस्ति

Note: **this code doesn't apply for** रामेभ्यरुँ अस्ति **because it's application is overridden by code** अतो रोरप्लुतादप्लुते

रामाऱुँ + इच्छन्ति → रामाय् इच्छन्ति

Now the य् at the end of words भोय् भगोय् अघोय् when followed by अश् is compulsorily removed due to code **ओतो गार्ग्यस्य**

भोय् अत्र → भो अत्र

भगोय् आगच्छ → भगो आगच्छ

अघोय् इदानीम् → अघो इदानीम्

And the य् appearing after अ/आ and when followed by अश् is optionally removed due to one of our earlier codes **लोपः शाकल्यस्य**

रामाय् इच्छन्ति → रामायिच्छन्ति / रामा इच्छन्ति

हलि सर्वेषाम् (भो-भगो-अघो–अपूर्वस्य) (व्योः) (लोपः)

भो-भगो-अघो-अपूर्वस्य व्योः (6^{th}) हलि (7^{th}) लोपः (1^{st}) सर्वेषाम् (Plural 6^{th})

Simple meaning :

In the context of संहिता, all the grammarians say that the normal यकार as well as the लघु-उच्चारण-यकार is removed when it is followed by a हल्-letter, provided that such a यकार occurs at end of a पद and comes after the letter अ , or if such a यकार occurs at the end of the words भोस्, भगोस्, or अघोस्.

भो, भगो, अघो, अ/आ + य् + हल् (any consonant)

भो, भगो, अघो, अ/आ + + हल् (any consonant)

Examples:

भोय् + ज् अनाः → भो जनाः

भगोय् + द् एवाः → भगो देवाः

अघोय् + र् आक्षसाः → अघो राक्षसाः

रामाय् + ग् च्छन्ति → रामा गच्छन्ति

After these codes apply the रुँ undergoes a change , in order for remaining codes to do their work !

रुँ is nothing but (र् + उँ)

The below 3 codes , apply and transform the रुँ into र्

उपदेशेऽजनुनासिक इत्

तस्य लोपः

अदर्शनं लोपः

Finally our words will look like

रामरुँ → रामर्

रामारुँ → रामार्

रामैरुँ → रामैर्

रामेभ्यरुँ → रामेभ्यर्

खरवसानयोर्विसर्जनीयः (रः)

खर-अवसानयोः (Dual 7th) विसर्जनीयः (1st) रः (6th)

Simple meaning :

A र् present at end of a पद is converted to a विसर्ग when it is either followed by nothing, or when it is followed by a खर् letter in the context of संहिता.

What is अवसानम् ?

विरामोऽवसानम् **(Absence of letters is called अवसानम्)**

पदान्त र् + खर् → ः + खर्

OR

पदान्त र् + → ः

Examples :

रामर् + शेते → रामः शेते

रामैर् + क्रियते → रामैः क्रियते

रामेभ्यर् → रामेभ्यः

रामार् → रामाः

रो रि (लोपः)

रः (6th) रि (7th) लोपः (1st)

Simple meaning :

रेफ is removed when it is followed by another रेफ in the context of संहिता.

र् + र् → + र्

Examples :

रामर् + रचयति → राम रचयति

रामर् + रमते → राम रमते

ढ्रलोपे पूर्वस्य दीर्घोऽणः

अणः पूर्वस्य (6th) ढ्रलोपे (7th) दीर्घः (1st)

Simple meaning :

After अण् letter , when ढकार or रेफ are deleted when followed by ढकार or रेफ respectively , the अण् letter gets a दीर्घः आदेशः

Note : In our previous code the र् was removed and hence any अण् letter that is present before this deleted र् will become long (दीर्घ)

राम् अ रचयति → राम् आ रचयति → रामा रचयति

राम् अ रमते → राम् आ रमते → रामा रमते

विसर्जनीयस्य सः (खरि)

विसर्जनीयस्य (6th) खरि (7st) सः (1st)

Simple meaning :

A विसर्ग occurring at end of a पद is converted to a सकार when followed by a letter from the खर् प्रत्याहार.

ः + खर् → स् + खर्

Examples :

राम: + तत्र → राम स् + तत्र → रामस्तत्र

रामा: + तिष्ठन्ति → रामा स् + तिष्ठन्ति → रामास्तिष्ठन्ति

रामै: + च → रामै स् + च → रामैस्च

रामेभ्य: + टीका → रामेभ्यस् + टीका → रामेभ्यस्टीका

Note : After रामैस्च is derived, one of our earlier code **स्तोः श्चुना श्चुः** will apply and change it to रामैश्च and after रामेभ्यस्टीका is derived one of our earlier code **ष्टुना ष्टुः** and change it to रामेभ्यष्टीका

वा शरि (विसर्जनीयस्य) (वीसर्जनीयः)

विसर्जनीयस्य (6^{th}) शरि (7^{st}) वीसर्जनीयः (1^{st}) वा (अव्यय)

Simple meaning :

When a विसर्ग is followed by a letter from the शर् प्रत्याहारः , the विसर्ग optionally remains as विसर्ग.

ः + श् / ष् / स् → स् + श् / ष् / स्

Or

ः + श् / ष् / स्

Examples :

राम: + श् एते → रामश् + श् एते → रामश्शेते / रामः शेते

रामेभ्यः + स् पृहयते → रामेभ्यस् + स् पृहयते → रामेभ्यस्स्पृहयते / रामेभ्यः स्पृहयते

कुप्वोः ≍क≍पौ च (विसर्जनीयस्य)

कुप्वोः (Dual 7th) ≍क≍पौ (Dual 1th) विसर्जनीयस्य (6st)

Simple meaning :

When a विसर्ग is followed by a ककार or a खकार, it is converted either to a जिह्वामूलीय or to a विसर्ग. When a विसर्ग is followed by a पकार or a फकार, it is converted either to a उपध्मानीय or to a विसर्ग.

◌ः + क् / ख् → ≍ क्/ख्

◌ः + प् / फ् → ≍ प्/फ्

Or

◌ः can optionally remain ◌ः as well .

Note : ≍ क् is pronounced from जिह्वामूलीय (root of tongue)

≍ प् is pronounced from उपद्धमानीय (from the lips)

Examples :

रामैः + क् रियते → रामै≍ क् रियते → रामै≍क्रियते / रामः क्रियते

राम: + ख् आदति → राम≍ ख् आदति → राम≍खादति /

रामः खादति

राम: + प् आति → राम≍ प् आति → राम≍पाति /

रामः पाति

रामेभ्य: + फ् अलति → रामेभ्य≍ फ् अलति → रामेभ्य≍फलति/

रामेभ्यः फलति

शर्परे विसर्जनीयः (खरि) (विसर्जनीयः)

विसर्जनीयस्य (6^{th}) खरि (7^{st}) शर्परे (7^{th}) विसर्जनीयः (1^{st})

Simple meaning :

A विसर्ग is converted to विसर्ग if it is followed by a खर् letter after which a शर् letter is present.

ः + खर् + शर् → ः + खर् + शर्

Note : This code as an exception for the previous code !

Examples :

राम: + क्षत्रियः → राम : + क् ष् त्रियः → राम: क्षत्रियः

If you observe carefully our previous code कुप्वोः ≍क≍पौ can also apply here .

Because ः is being followed by क् , but in the above example one more specific condition is seen , the क् is being followed by a शर् letter .

Hence कुप्वोः ≍क≍पौ application will be blocked by our current code and the ः will remain ः

Sharing one final condition without the actual code , since the code for this is complicated .

A visarga after स / एष when followed by any except अ is deleted

स / एष + ः + any letter (except अ)

↓

स / एष + + any letter (except अ)

Examples:

स: + तत्र → स तत्र

स: + आगच्छति → स आगच्छति

एष: + सर्वेश्वरः → एष सर्वेश्वरः

एष: + गच्छति → एष गच्छति

All the codes that we discussed till now, are a part of **अष्टाध्यायी** the ingenious algorithm of महर्षिपाणिनिः which is a very important part of a revolutionary system **पाणिनीय व्याकरणम् .**

धातुपाठः पाणिनीय शिक्षा प्रत्याहारावली

उणादिपाठः **पाणिनीय व्याकरणम्** शिवसूत्राणि

गणपाठः अष्टाध्यायी लिङ्गानुशासनम्

All of these combined together form the world's first and most efficient grammar system which is able to explain the vastness of saṃskṛtam language without taking too much storage !!!

Hard to believe , read the next page!

If I were to explain all the सन्धि rules strictly by using Maharṣi pāṇini's technique then it would just take me 1.5 pages instead of 100 . Have a look 👇

१.१.१ वृद्धिरादैच्
१.१.२ अदेङ्गुणः
१.१.८ मुखनासिकावचनोऽनुनासिकः
१.१.९ तुल्यास्यप्रयत्नं सवर्णम्
(ऋऌवर्णयोर्मिथः सावर्ण्यं वाच्यम्)
१.१.१० नाज्झलौ
१.१.११ ईदूदेद्द्विवचनं प्रगृह्यम्
१.१.१२ अदसो मात्
१.१.४९ षष्ठी स्थानेयोगा
१.१.५० स्थानेऽन्तरतमः
१.१.५१ उरण् रपरः
(लपर इति वक्तव्यम्)
१.१.५२ अलोऽन्त्यस्य
१.१.६० अदर्शनं लोपः
१.१.६६ तस्मिन्निति निर्दिष्टे पूर्वस्य
१.१.६७ तस्मादित्युत्तरस्य
१.१.६९ अणुदित् सवर्णस्य चाप्रत्ययः
१.१.७० तपरस्तत्कालस्य
१.१.७१ आदिरन्त्येन सहेता
१.३.१० यथा सङ्ख्यमनुदेशः समानाम्
१.४.१०९ परः सन्निकर्षः संहिता
१.४.११० विरामोऽवसानम्
६.१.७२ संहितयाम्

६.१.७७ इकोयणचि
६.१.७८ एचोऽयवायावः
६.१.८४ एकः पूर्वपरयोः
६.१.८७ आद्गुणः
६.१.८८ वृद्धिरेचि
६.१.१०१ अकः सवर्णे दीर्घः
६.१.१०९ एङः पदान्तादति
६.१.११३ अत र रप्लुतादप्लुते
६.१.११४ हशि च
६.१.१२५ प्लुतप्रगृह्या अचि नित्यम्
६.३.१ अलुगुत्तरपदे
६.३.१११ ढ्रलोपे पूर्वस्य दीर्घोऽणः
६.३.११४ संहितायाम्
८.२.१. पूर्वत्रासिद्धम्
८.२.३९ झलां जशोऽन्ते
८.२.६६ ससजुषोः रुः
८.३.७ नश्छव्यप्रशान्
८.३.१४ रो रि
८.३.१५ खरवसानयोर्विसर्जनीयः
८.३.१७ भोभगोअघोअपूर्वस्य योऽशि
८.३.१९ लोपः शाकल्यस्य
८.३.२० ओतो गार्गस्य

८.३.२२ हलि सर्वेषाम्

८.३.२३ मोऽनुस्वारः

८.३.२४ नश्चापदान्तस्य झलि

८.३.३० नश्च

८.३.३१ शि तुक्

८.३.३२ ङमो ह्रस्वादचि ङमुण्नित्यम्

८.३.३४ विसर्जनीयस्य सः

८.३.३५ शर्परे विसर्जनीयः

८.३.३६ वा शरि

(खर्परे शरि वा विसर्गलोपो वक्तव्यः)

८.३.३७ कुप्वोः ≍क≍पौ च

८.४.४० स्तोः श्चुना श्चुः

८.४.४१ ष्टुना ष्टुः

८.४.४५ यरोऽनुनासिकेऽनुनासिको वा

(प्रत्यये भाषायां नित्यम्)

८.४.५५ खरि च

८.४.५८ अनुस्वारस्य ययि परसवर्णः

८.४.५९ वा पदान्तस्य

८.४.६० तोर्लि

८.४.६२ झयो होऽन्यतरस्याम्

८.४.६३ शश्छोऽटि

(छत्वम् अम् इति वाच्यम्)

८.४.६८ अ अ

This is how powerful Maharṣi pāṇini's entire algorithm अष्टाध्यायी is !

धन्यवादः

Everything shared so far has only been possible through **Īśvarakṛpā** and the guidance of countless **gurus** who have preserved **Pāṇinīya Vyākaraṇam** through the ages. Drawing parallels between it and modern-day programming was indeed a bold step from my side! I'd love to hear your thoughts and reflections — my mailbox is always open at *yawork06@gmail.com*

All the codes mentioned can be found at https://ashtadhyayi.com

Kindly excuse any typos ☺