

Generative Grammar

A diagram consisting of a large oval divided into three horizontal sections by two thin lines. The top section contains the word 'SOUND', the middle section contains 'GRAMMAR', and the bottom section contains 'MEANING'. All text is in a bold, black, sans-serif font.

SOUND

GRAMMAR

MEANING

What is a word?

- It's a kind of sign
- It has sound, grammar, and meaning
- There are three kinds of sign
 - Indexes (natural signs)
 - Icons (look like something)
 - Symbols (just agreed in culture)

Index (natural sign)



Icon (looks like something)



Symbol (just decided in culture)

あ



SOUND

GRAMMAR

MEANING

Sound

- A scream – a natural sign that someone is scared or shocked
- Moo, miaow (“Iconic” sounds that kind of sound like something, an animal for example)
- All other sounds in words (symbolic: just decided in culture)

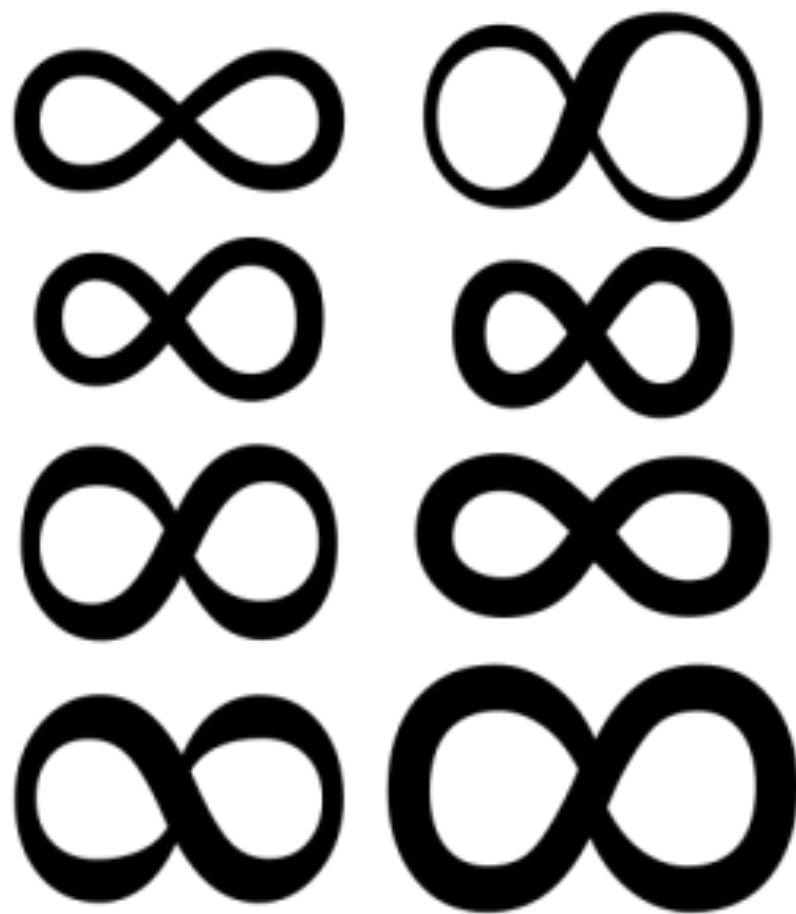


SOUND

GRAMMAR

MEANING

Infinite Creativity of language



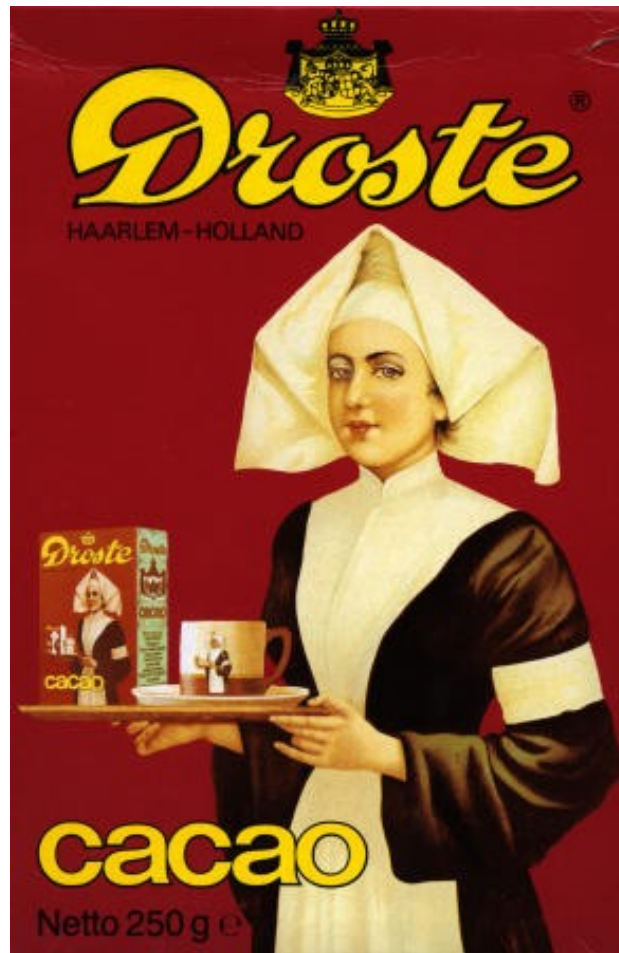
Infinitely creative? Really?

- I saw the book
- I saw the book on the table
- I saw the book on the table in the living room
- I saw the book on the table in the living room at my friend's house
- I saw the book on the table in the living room at my friend's house in the countryside

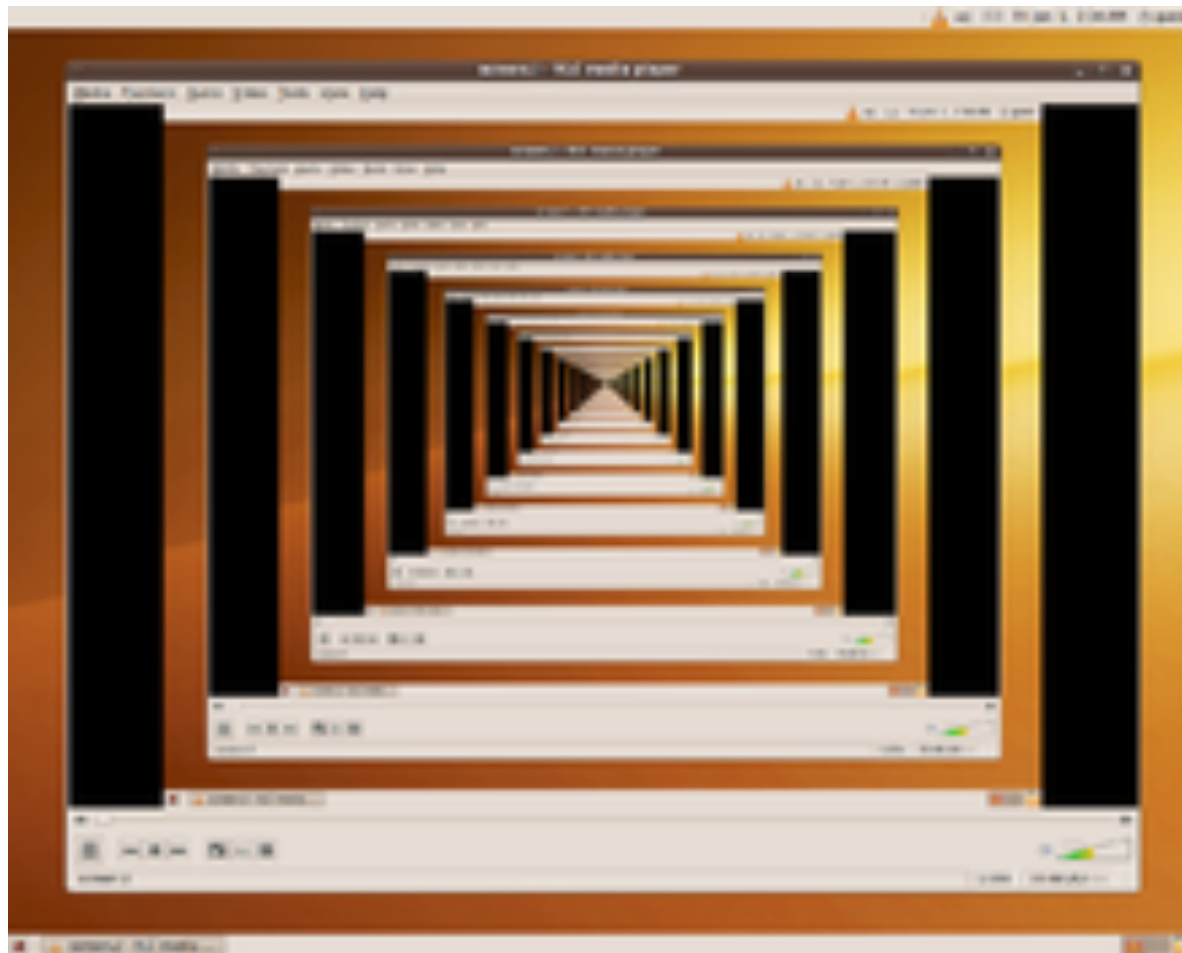
- I saw the book on the table in the living room at my friend's house in the countryside
- I saw the book on the table in the living room at my friend's house in the countryside near a river
- I saw the book on the table in the living room at my friend's house in the countryside near a river next to a mountain

- I saw the book on the table in the living room at my friend's house in the countryside near a river next to a mountain in a village
- I saw the book on the table in the living room at my friend's house in the countryside near a river next to a mountain in a village above a valley
- And so on

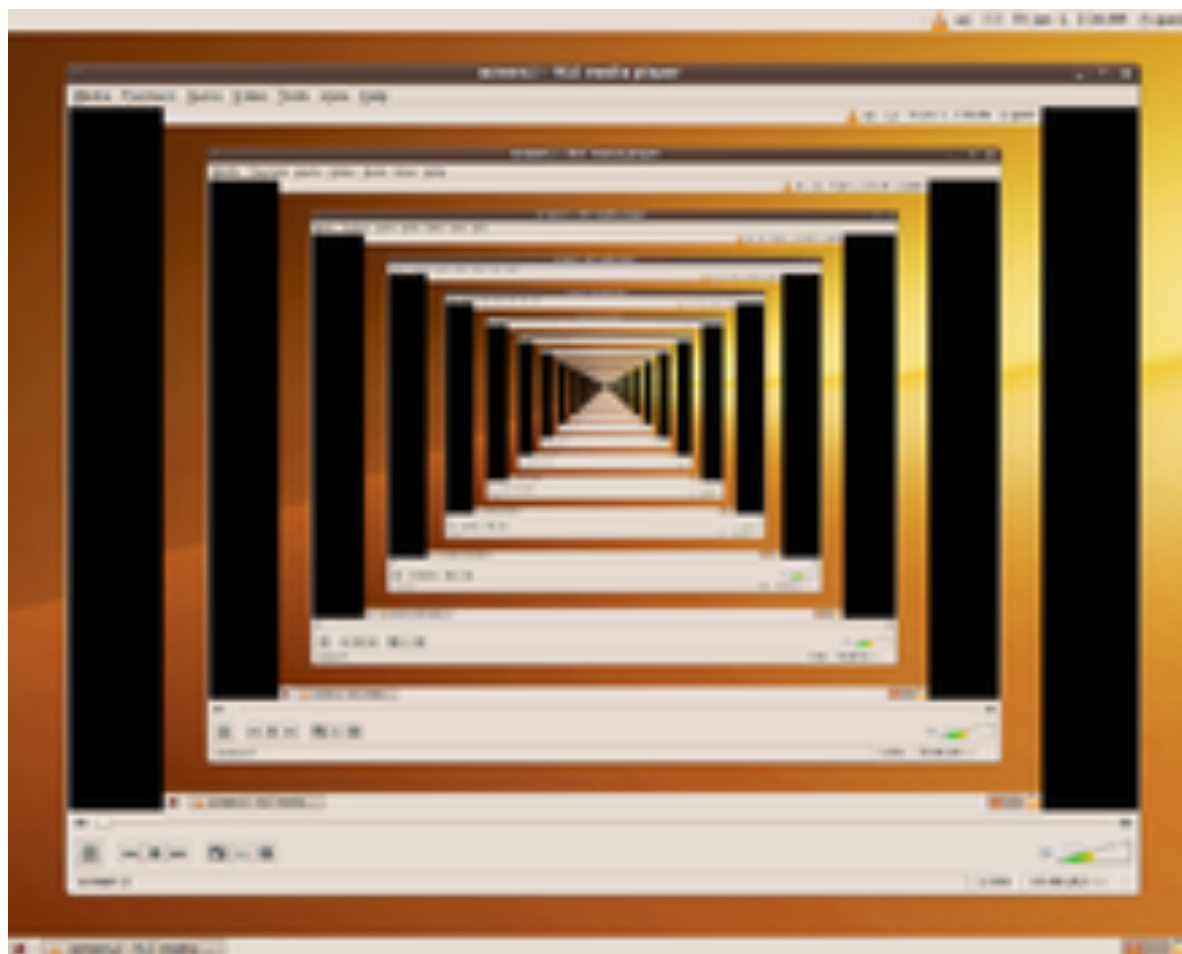
Is it really infinite?



Recursion



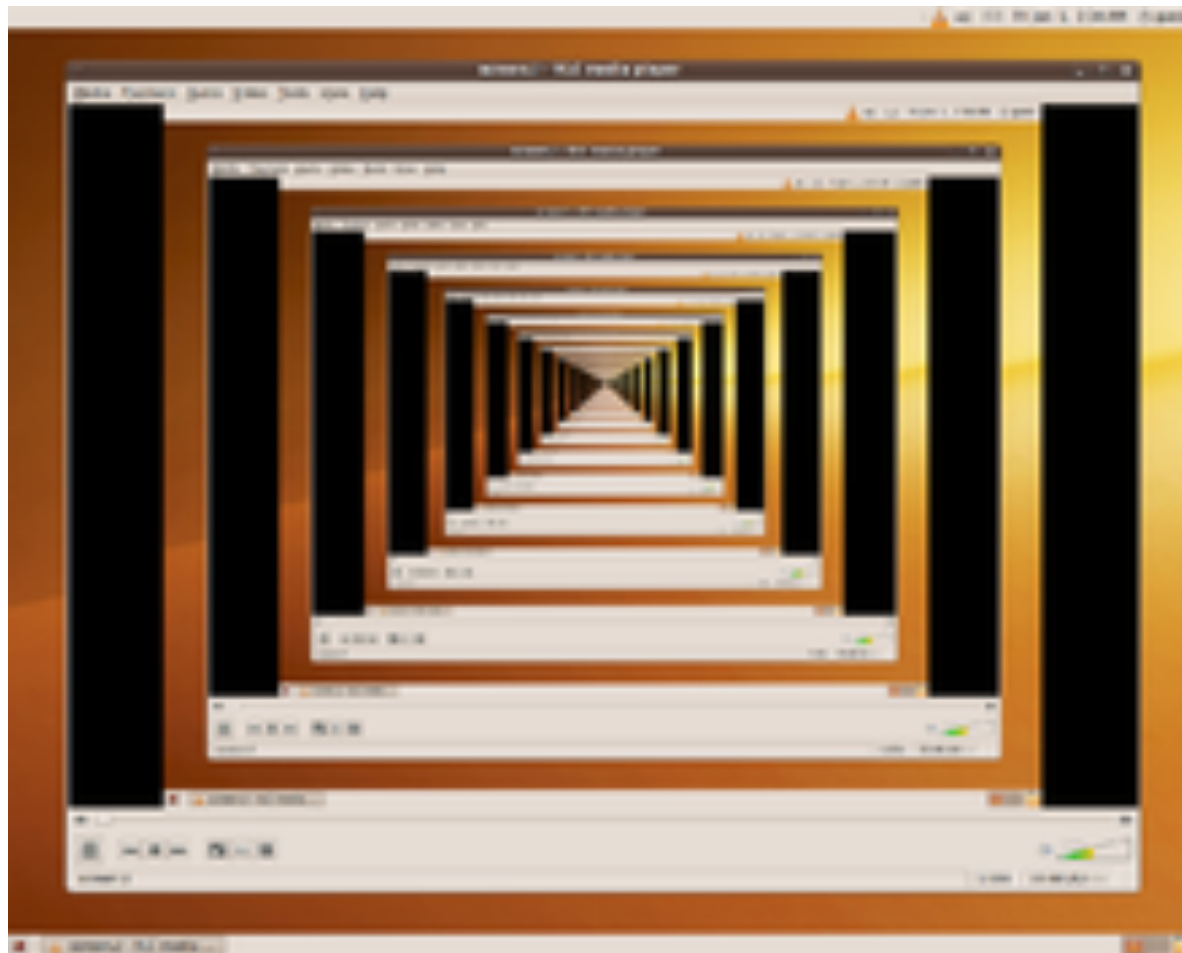
再帰性



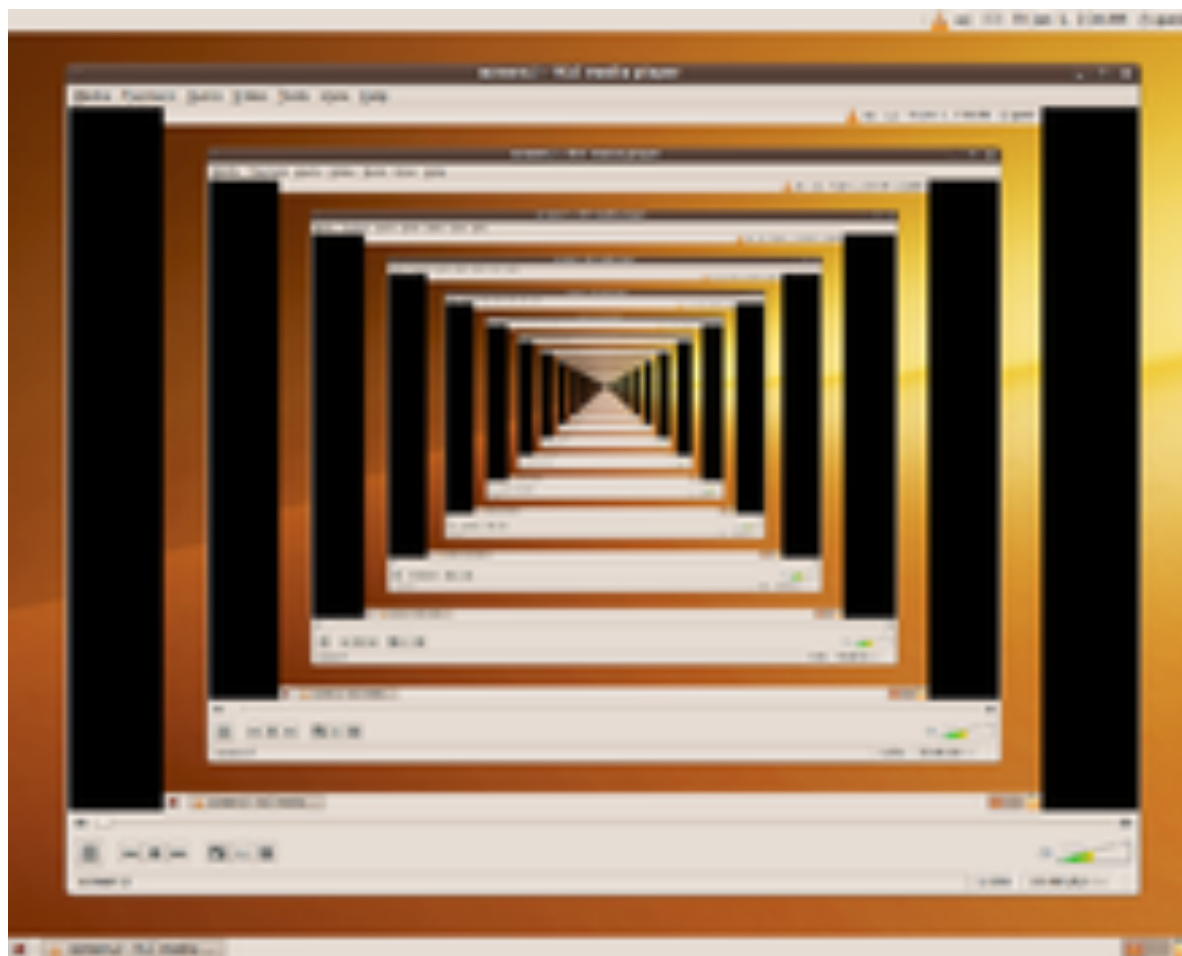
What does that mean?

- Just keep doing the same thing
- Over and over
- And over
- And over
- And over
- And over
- And over
- again

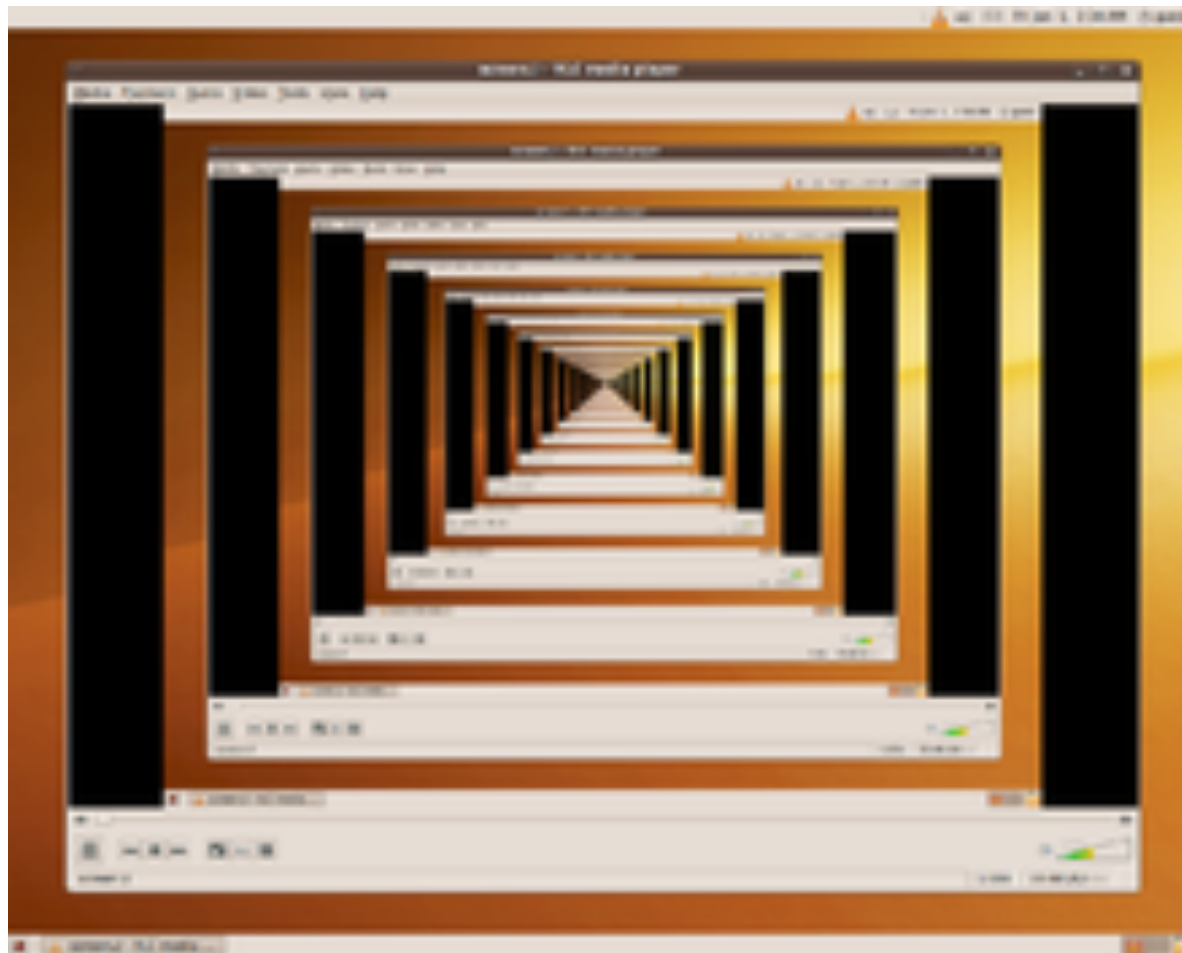
Recursion



Any problems?



The picture gets blurred



This gets more difficult

- I saw the book on the table in the living room at my friend's house in the countryside near a river next to a mountain in a village above a valley

You get bored

- I saw the book on the table in the living room at my friend's house in the countryside near a river next to a mountain in a village above a valley

You get confused

- I saw the book on the table in the living room at my friend's house in the countryside near a river next to a mountain in a village above a valley

You fall asleep

- I saw the book on the table in the living room at my friend's house in the countryside near a river next to a mountain in a village above a valley

You die

- I saw the book on the table in the living room at my friend's house in the countryside near a river next to a mountain in a village above a valley

Is it REALLY infinite?

- I saw the book on the table in the living room at my friend's house in the countryside near a river next to a mountain in a village above a valley

Kursaal Flyers 1976

- Little does she know that I know that she knows that I know she's two-timing me
- Little does she know that I know that she knows that I know she's cheating on me

This doesn't get difficult to generate

- [illegible]

Although it's very difficult

- [illegible]

... to know what it means

- [illegible]

Silly 70s band



Reminds me of 騎士団



I remember listening to the Kursaal
Flyers in 1976



British pop band from the 70s



I thought OK but ...



... what does that MEAN?



Kursaal Flyers 1976

- Little does she know that I know that she knows that I know she's two-timing me
- Little does she know that I know that she knows that I know she's cheating on me

Infinite loops seem to have natural
limits

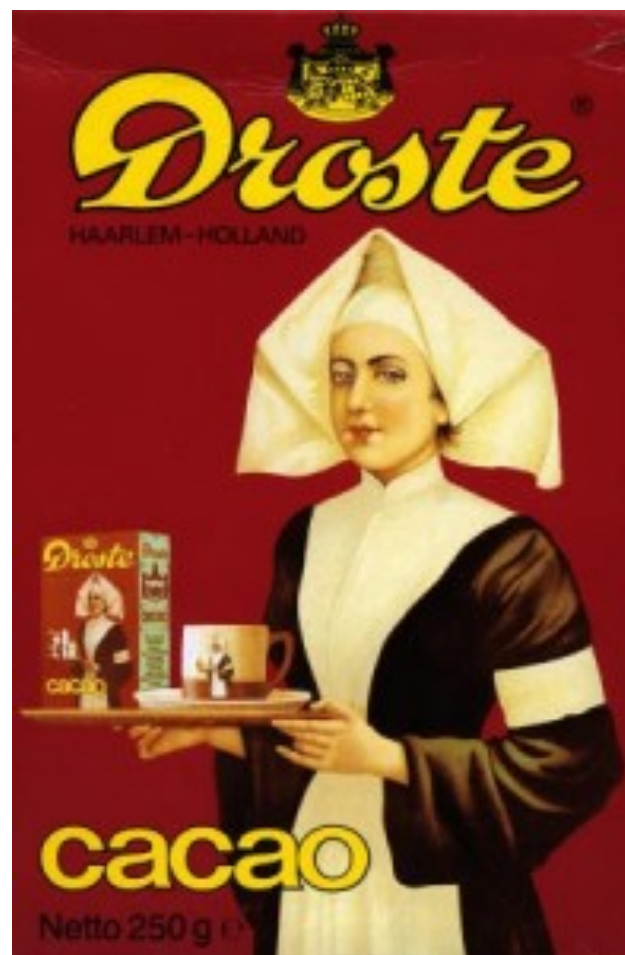


You can't make Matryoshka dolls
forever

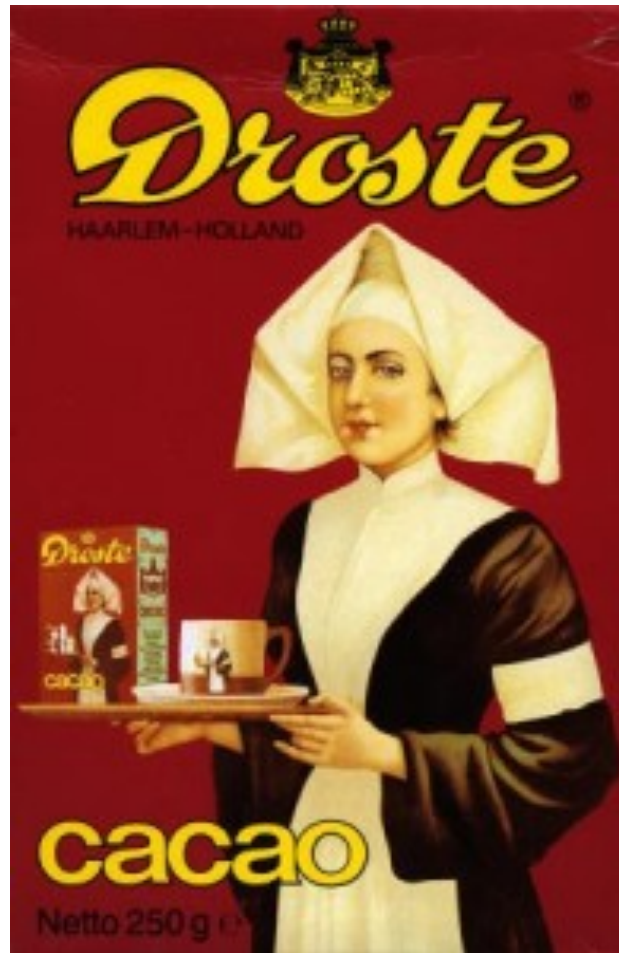


Pictures get blurred





But you get the IDEA of infinite creativity



We CAN use language to express
ANYTHING



We CAN use language to express
ANYTHING?



With PRACTICAL limits



So you can keep doing things again
and again

- But how do you get started?

How do you get started?

- Take 1 thing
- Take another thing
- Put them together

How do you get started?

- 1
 - 1
 - $1 + 1$
 - $=$
 - 2
-
- Is Linguistics difficult?

That's too easy! Let's do a difficult one

- I have a pen
- I have an apple
- Apple-pen

That's too easy! Let's do a difficult one

- I have a pen
- I have pineapple
- Pinepple-pen

That's too easy! Let's do a difficult one

- Apple-pen
 - Pineapple-pen
 - Pen-pineapple-apple-pen
-
- Take two things
 - Put them together
-
- Merge
 - Recursion

Linguistics is VERY difficult!

- Merge
 - Take one thing
 - Take another thing
 - Combine them
-
- Recursion
 - Do this again

Merge

- I have a pen
- I have pineapple
- Pinepple-pen

Recursion (do merge again)

- Apple-pen
- Pineapple-pen
- Pen-pineapple-apple-pen

Syntax



アッポー ？



アッポー Phonology?



- Let's see how this works in language

Metaphor

You ain't nothin' but
a hound dog
Cryin' all the time...

METAPHOR

*Poetically calling
things something else.*

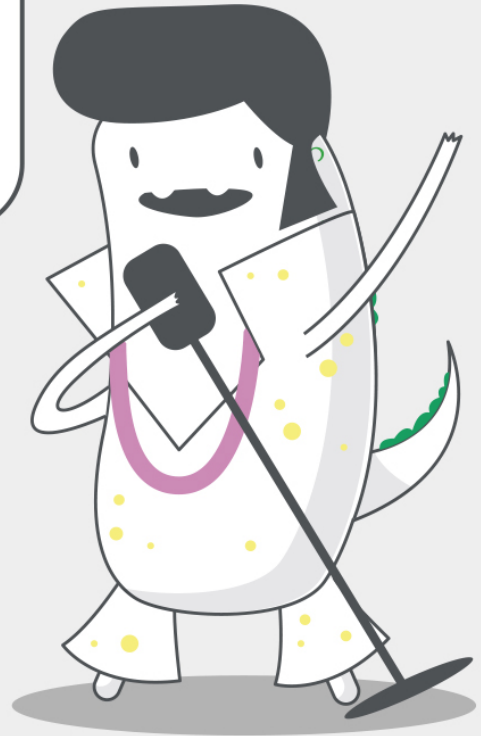


I have a you

You ain't nothin' but
a hound dog
Cryin' all the time...

METAPHOR

*Poetically calling
things something else.*



I have a hound dog

You ain't nothin' but
a hound dog
Cryin' all the time...

METAPHOR

*Poetically calling
things something else.*



Uh ... hound dog-you

You ain't nothin' but
a hound dog
Cryin' all the time...

METAPHOR

*Poetically calling
things something else.*



The class was a nightmare

- I have the class
- I have a nightmare
- Uh ... nightmare-class

My teacher is a pussycat

- I have my teacher
- I have a pussycat
- Uh ... pussycat teacher

She has a heart of gold

- I have her heart
- I have gold
- Uh ... gold-heart

- You get the idea

Linguistics is a piece of cake

- I have linguistics
- I have a piece of cake
- Uh ... piece of cake-linguistics
- Piece of cake? Nice, sweet, just sitting on a plate waiting for you to take it

Pen-pineapple-apple-pen

- Why not apple-pen-pineapple-pen?
- Why does it have to merge this way?
- You need the pens on the ends to hold it together

Pen-pineapple-apple-pen

- You hold the pens in each hand
- You push the pens together
- You need the pens on the ends to hold it together!

Pen-pineapple-apple-pen

- Merge
- Recursion
- How does it work with words?

Verb

Verb

蹴った

Verb

蹴った

kicked

Verb	Valency <>
蹴った	
kicked	

Verb	Valency <SUBJ>
蹴った	
kicked	

Verb	Valency <SUBJ, OBJECT>
蹴った	
kicked	

Verb Valency <SUBJ, OBJECT>
蹴った
kicked

VP

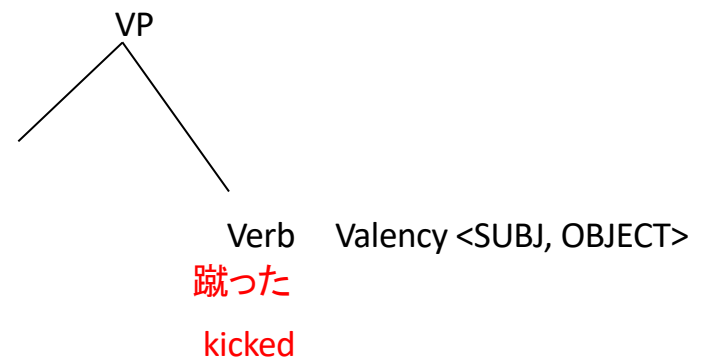


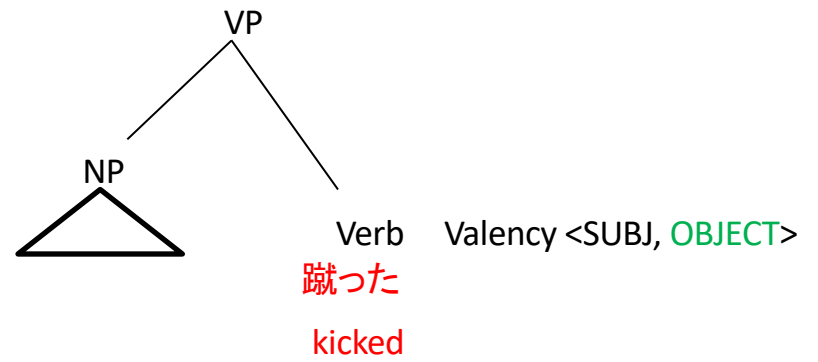
Verb

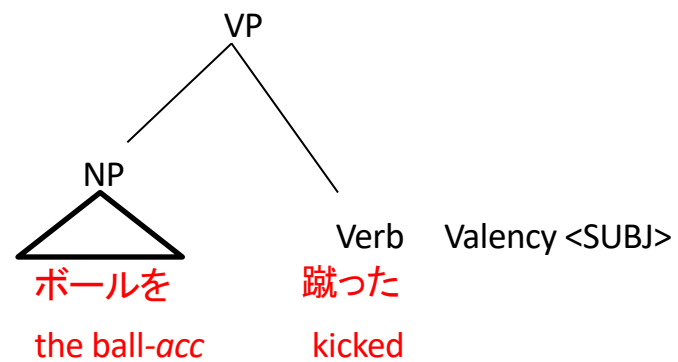
Valency <SUBJ, OBJECT>

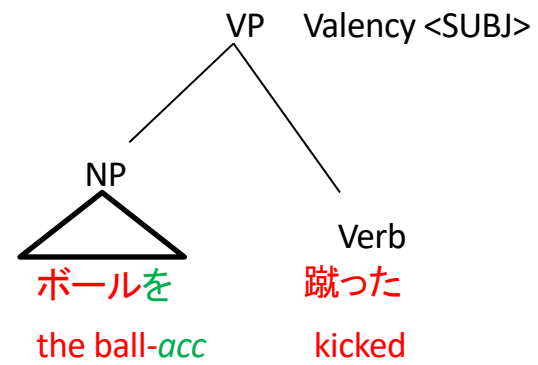
蹴った

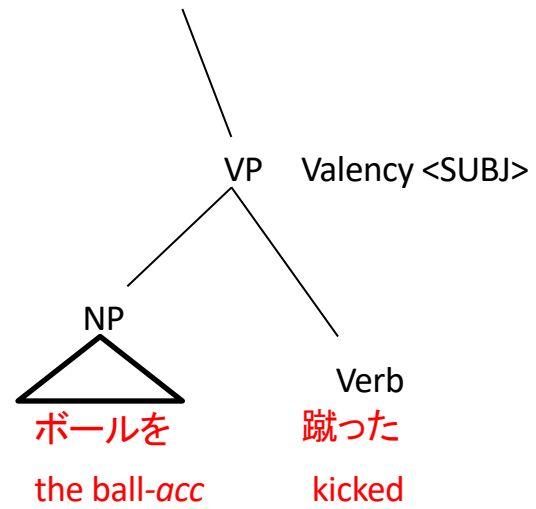
kicked

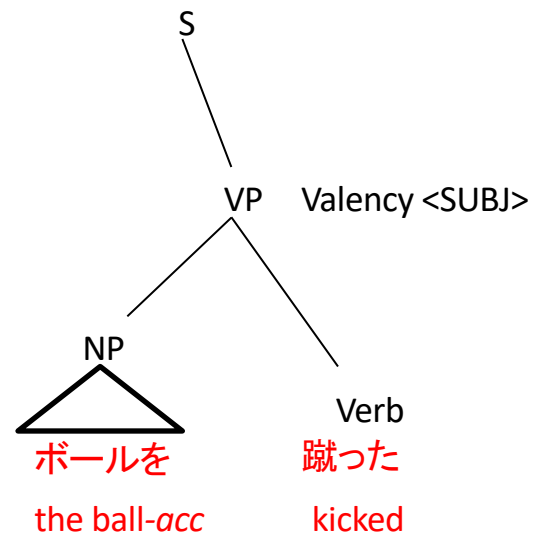


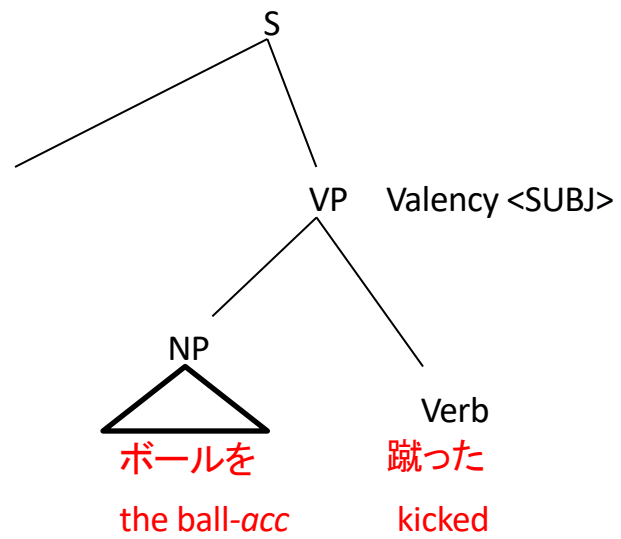


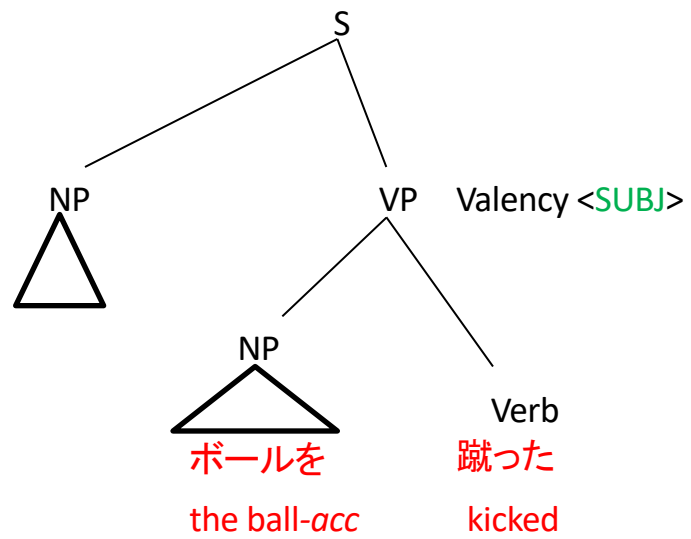


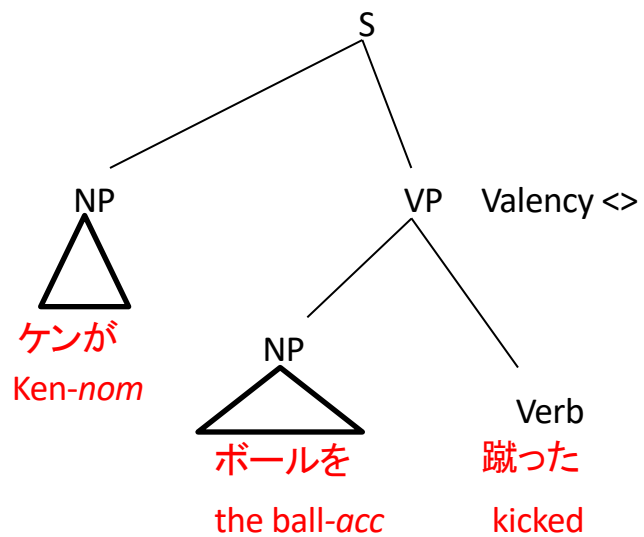


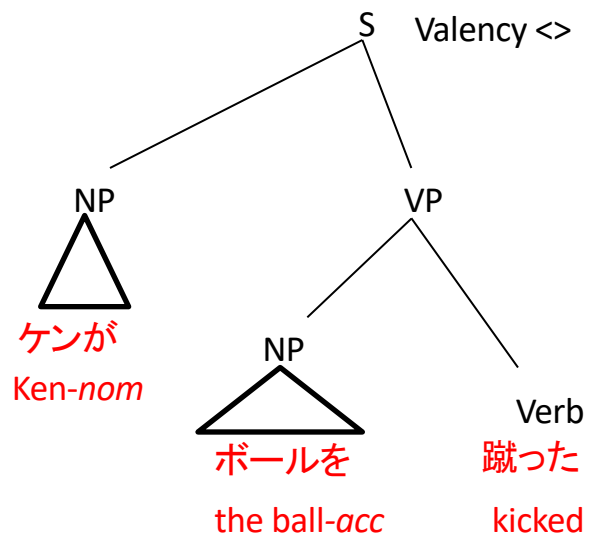












Pikotaro is a genius!



He invented syntax!



And metaphor



And genetics



And molecules



And everthing in the universe!



Actually ... no



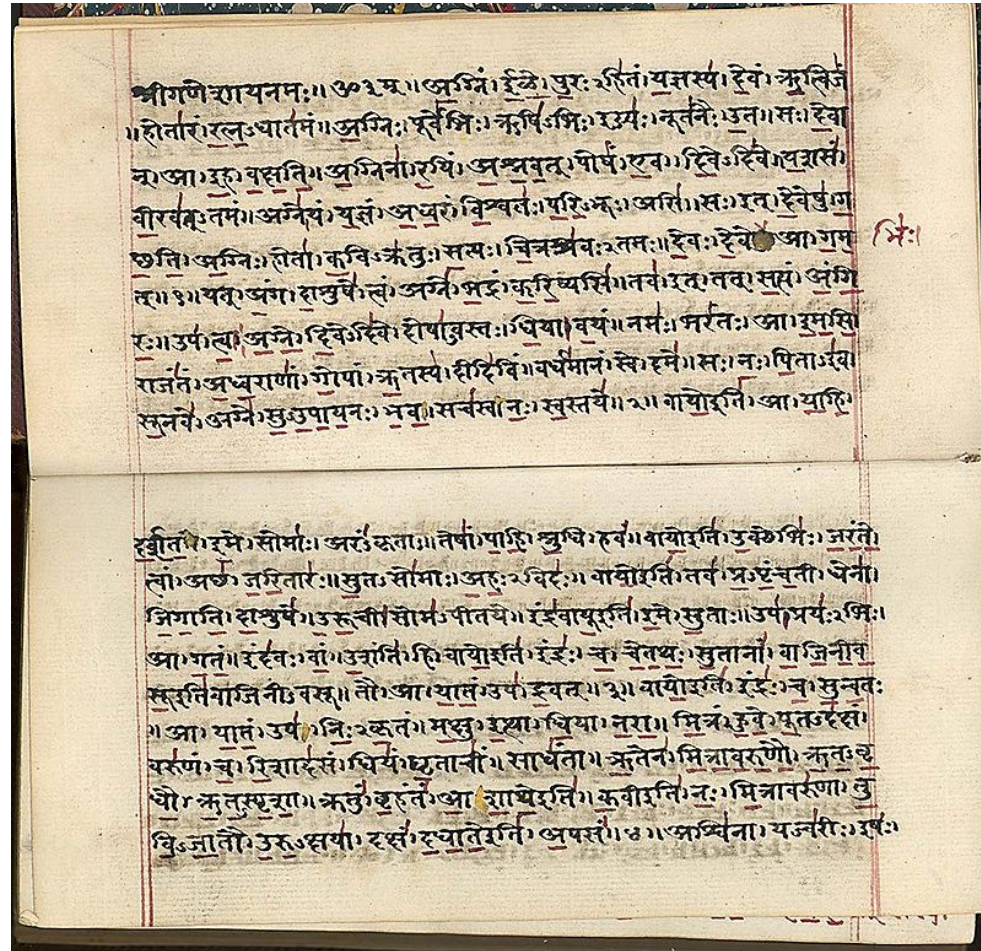
This is a very OLD idea



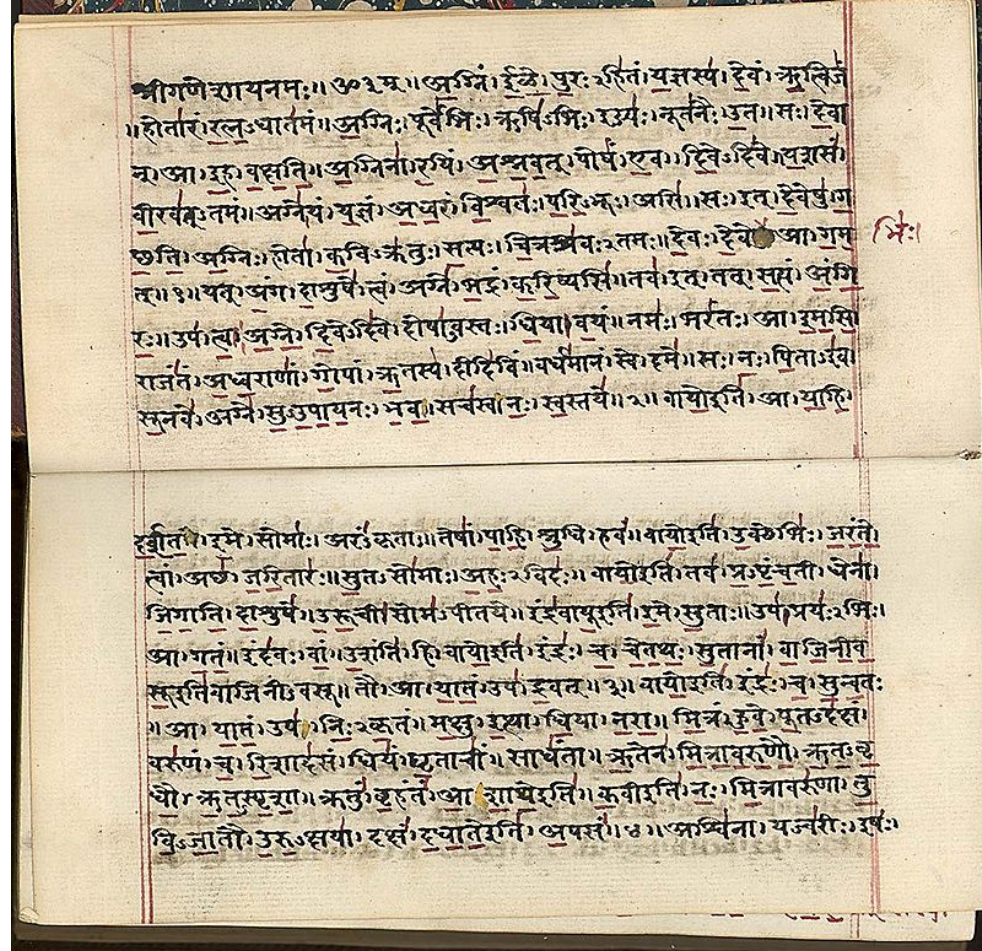
First evidence: about 2500 years ago

संस्कृतम्

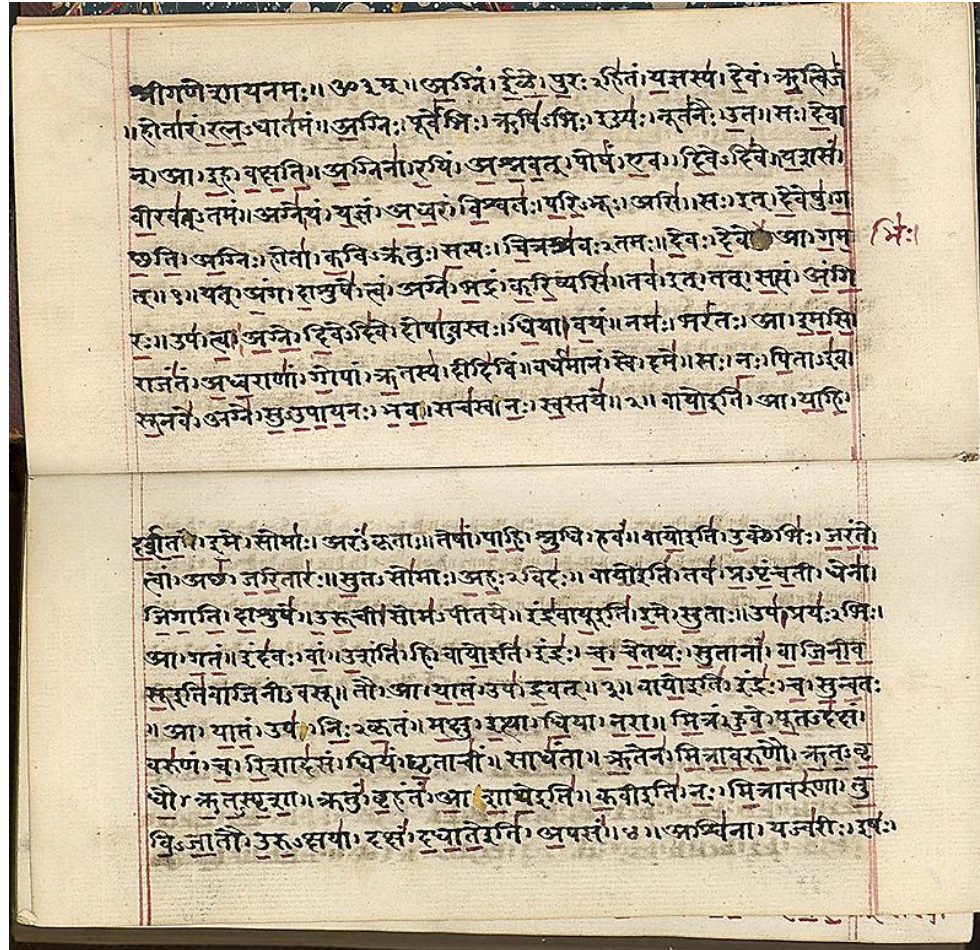
A guy in Pakistan called Panini



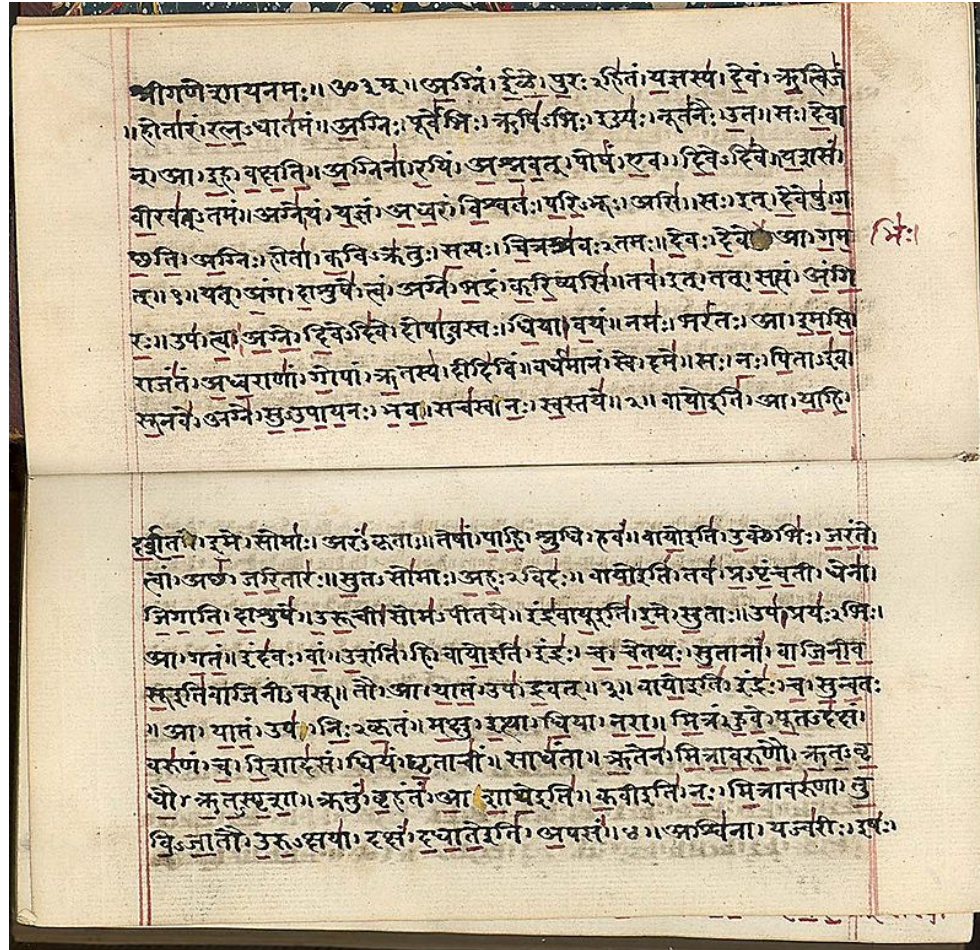
Grammatical rules of Sanskrit



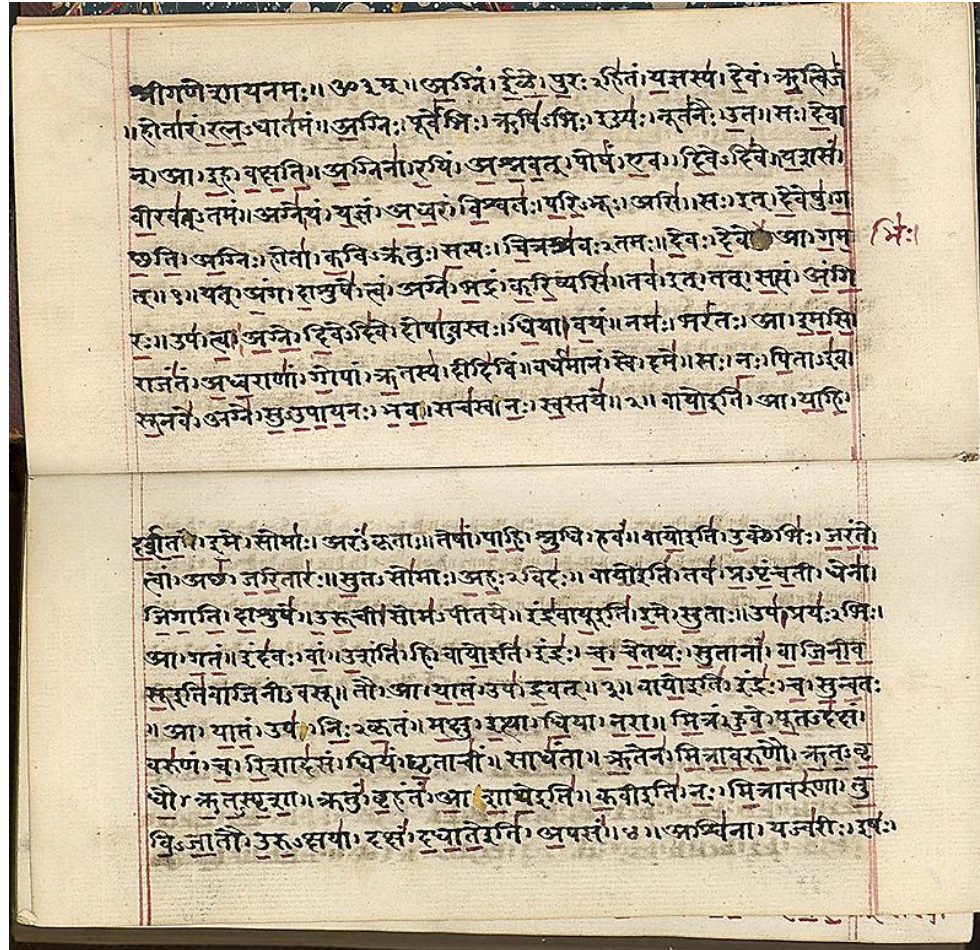
Panini's rules



Infinitely creative



Panini -- this



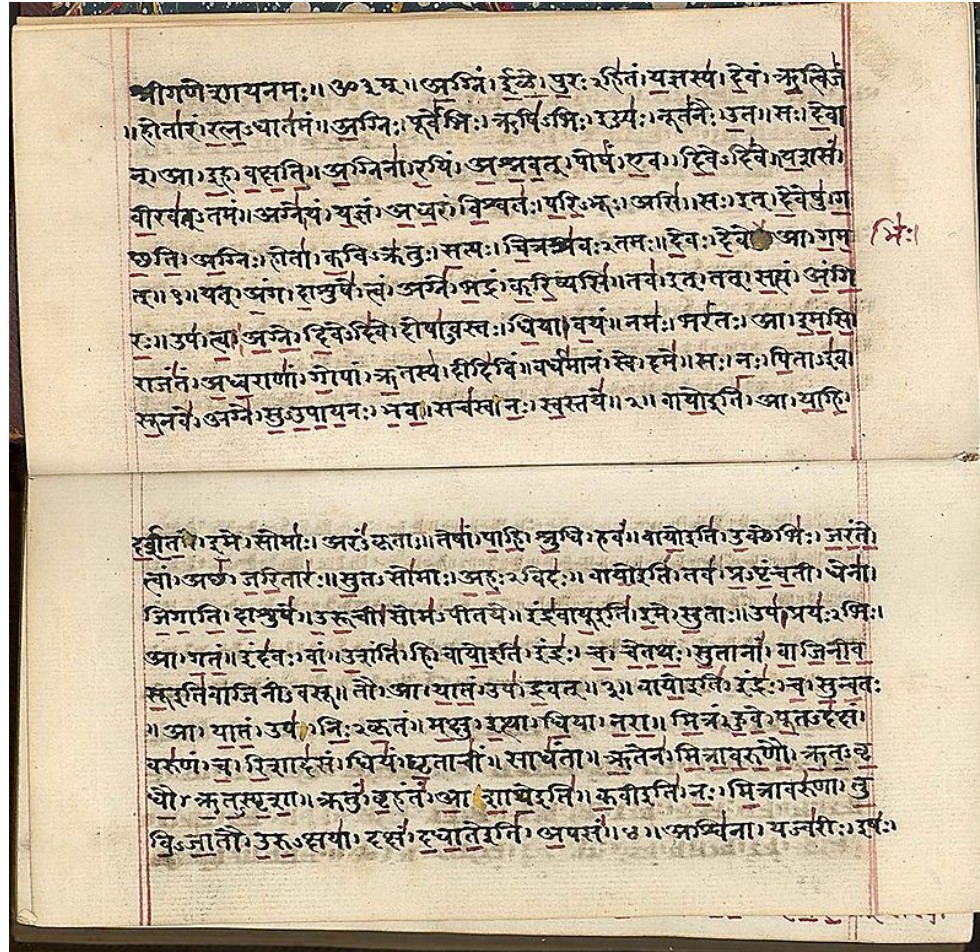
Not this



Rib eye steak panini



Infinitely creative rules Panini



Anyway, forget about Panini



It was a long time ago



Apple and brie panini with pumpkin!



I said forget about panini!



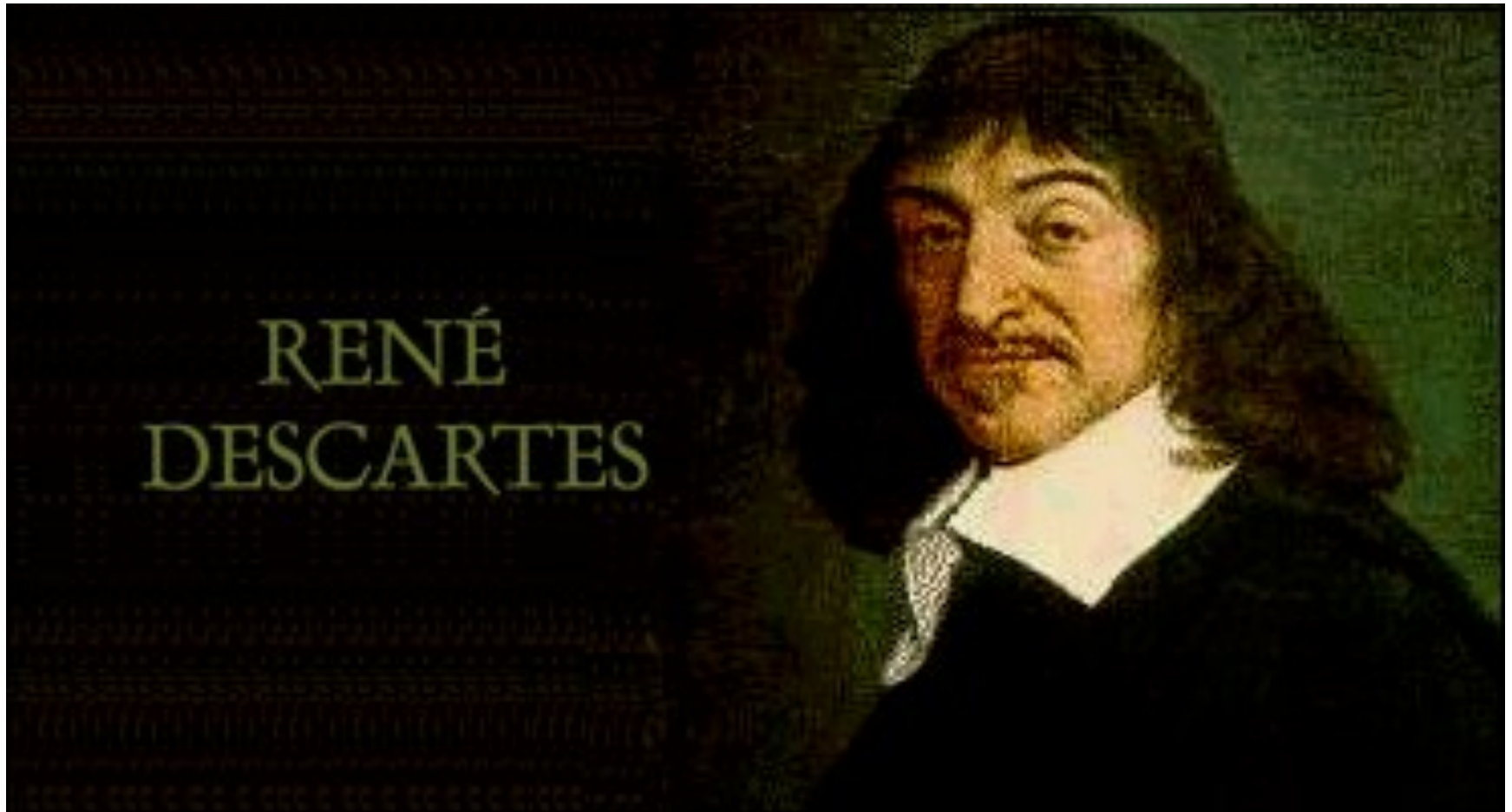
Infinitely creative rules for Sanskrit



Over 2500 years old



Fast forward




First half of the seventeenth century

Rene Descartes



1596 – 1650

The Enlightenment

A portrait of Rene Descartes, a French philosopher, mathematician, and scientist. He is shown from the chest up, wearing a dark, high-collared garment. He has long, dark, wavy hair and a small mustache. The background is dark and indistinct.

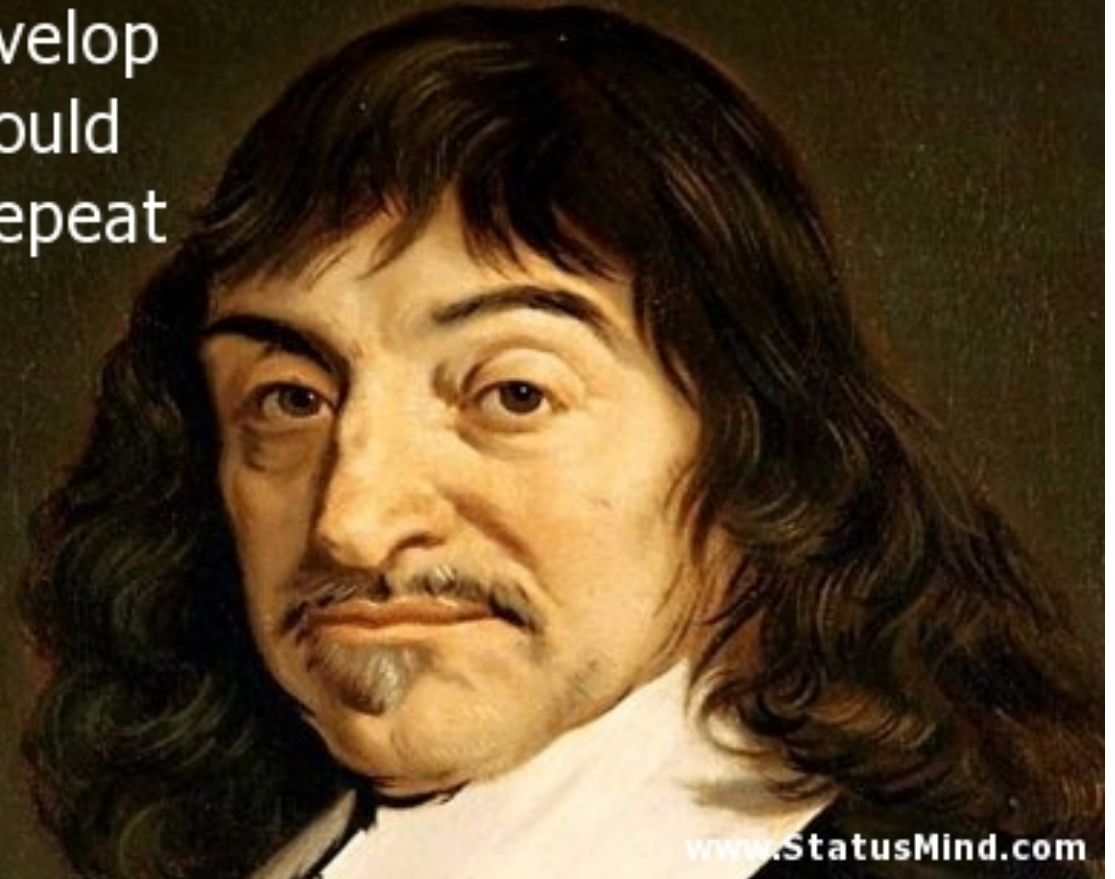
IT IS NOT
ENOUGH TO HAVE
A GOOD MIND;
THE MAIN THING
IS TO USE IT
WELL.

Rene Descartes
www.quote-coyote.com

The power of thought

If you want to develop
your mind you should
think more, not repeat

~ Rene Descartes ~



www.StatusMind.com

Human reason



"If you would be a real seeker after truth, it is necessary that at least once in your life you doubt, as far as possible, all things."

Rene Descartes

Infinitely creative



"If you would be a real seeker after truth, it is necessary that at least once in your life you doubt, as far as possible, all things."

Rene Descartes

Infinitely powerful



"If you would be a real seeker after truth, it is necessary that at least once in your life you doubt, as far as possible, all things."

Rene Descartes

Reason depends on LANGUAGE



"If you would be a real seeker after truth, it is necessary that at least once in your life you doubt, as far as possible, all things."

Rene Descartes

Our ability to think depends on language



"If you would be a real seeker after truth, it is necessary that at least once in your life you doubt, as far as possible, all things."

Rene Descartes

We need LANGUAGE to think!

"I THINK, THEREFORE I AM."

- RENE DESCARTES

We know we exist because of
LANGUAGE!

"I THINK, THEREFORE I AM."

- RENE DESCARTES

Different from animals



Humboldt developed the idea



Language makes infinite use of finite media.

(Wilhelm von Humboldt)

1836

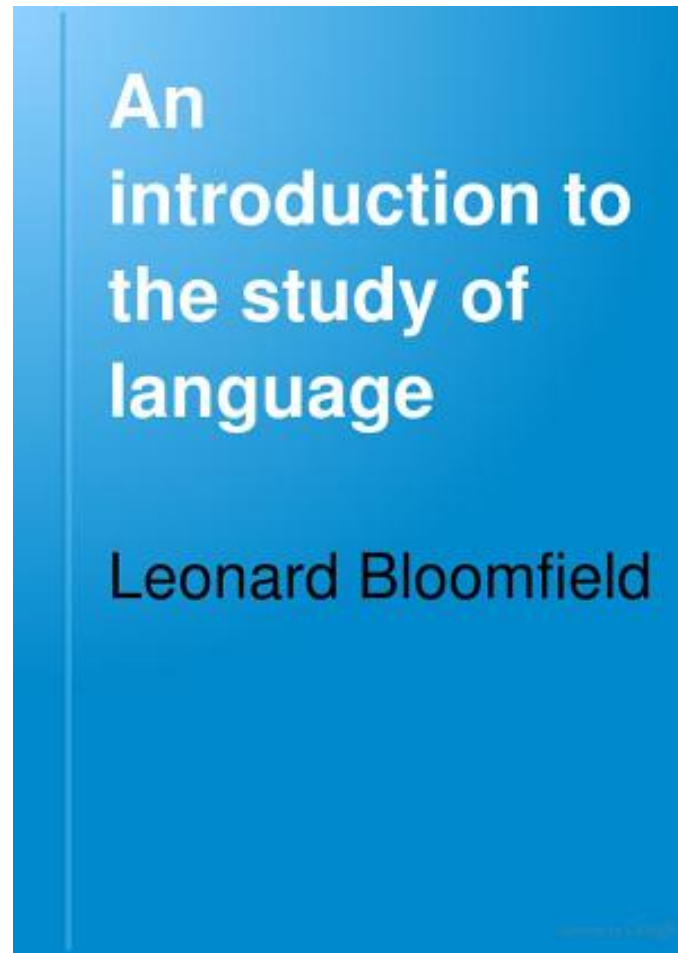


Language makes infinite use of finite media.

(Wilhelm von Humboldt)

izquotes.com

Bloomfield 1914



Zellig Harris (1951)

AMERICAN STRUCTURALISM

17

- American structuralism was the most direct ancestor of generative grammar. Zellig Harris, one of the most prominent American structuralists, was the teacher of Noam Chomsky.



ZELLIG HARRIS, 1909-1992



NOAM CHOMSKY

Chomsky's teacher!

AMERICAN STRUCTURALISM

17

- American structuralism was the most direct ancestor of generative grammar. Zellig Harris, one of the most prominent American structuralists, was the teacher of Noam Chomsky.



ZELLIG HARRIS, 1909-1992



NOAM CHOMSKY

So why is Chomsky so important?

AMERICAN STRUCTURALISM

17

- American structuralism was the most direct ancestor of generative grammar. Zellig Harris, one of the most prominent American structuralists, was the teacher of Noam Chomsky.



ZELLIG HARRIS, 1909-1992



NOAM CHOMSKY

HOW can language be infinitely creative?



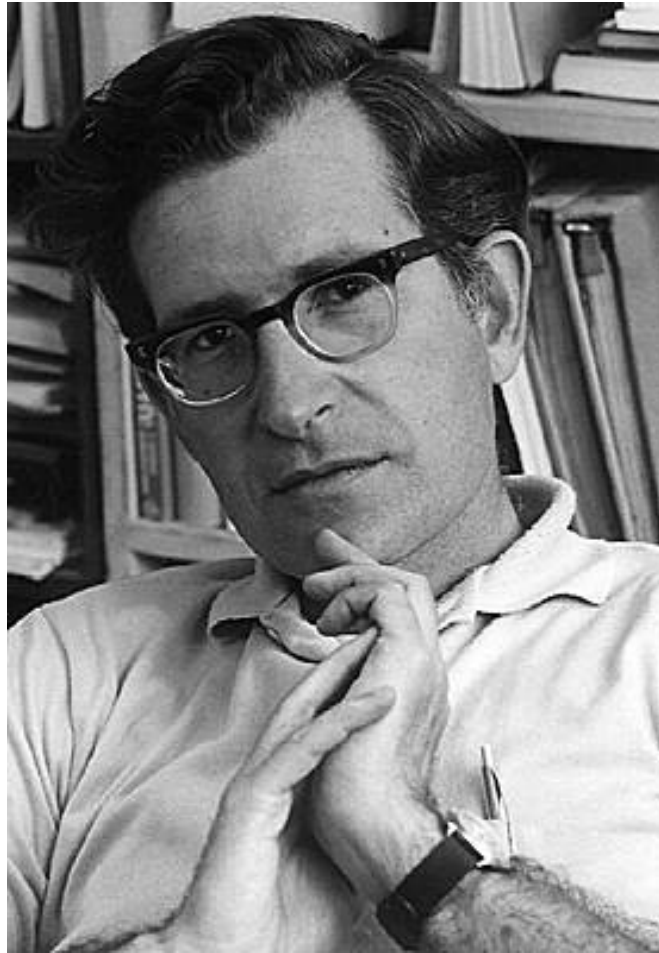
Not just grammatical rules



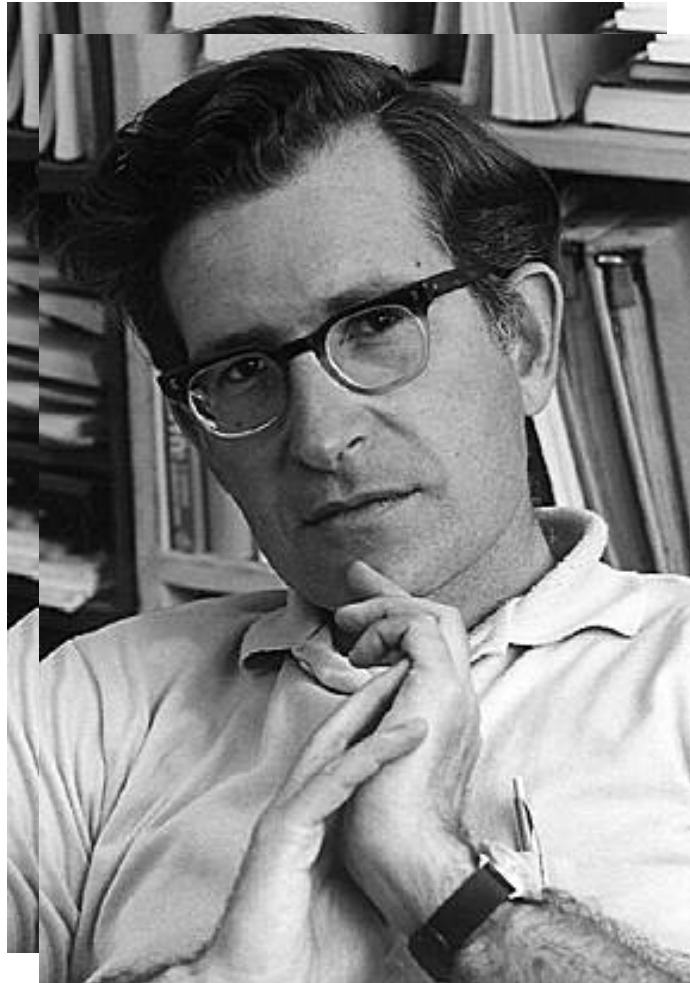
Maybe there's something really
different and special about our
language ability



Maybe language has SPECIAL rules



Maybe we have a SPECIAL language module in our brain



Our brains are HARD-WIRED for language?

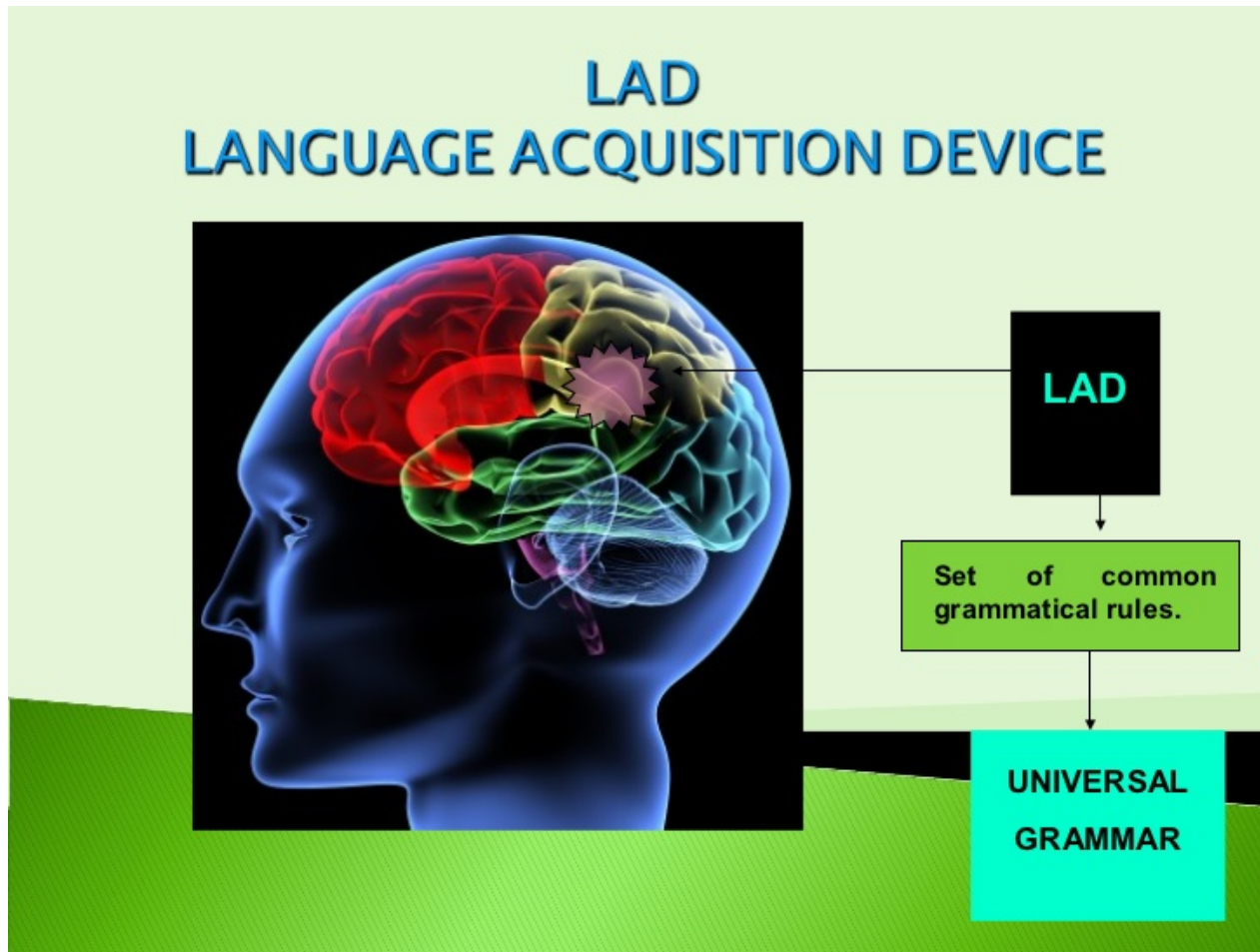


Universal Grammar!?

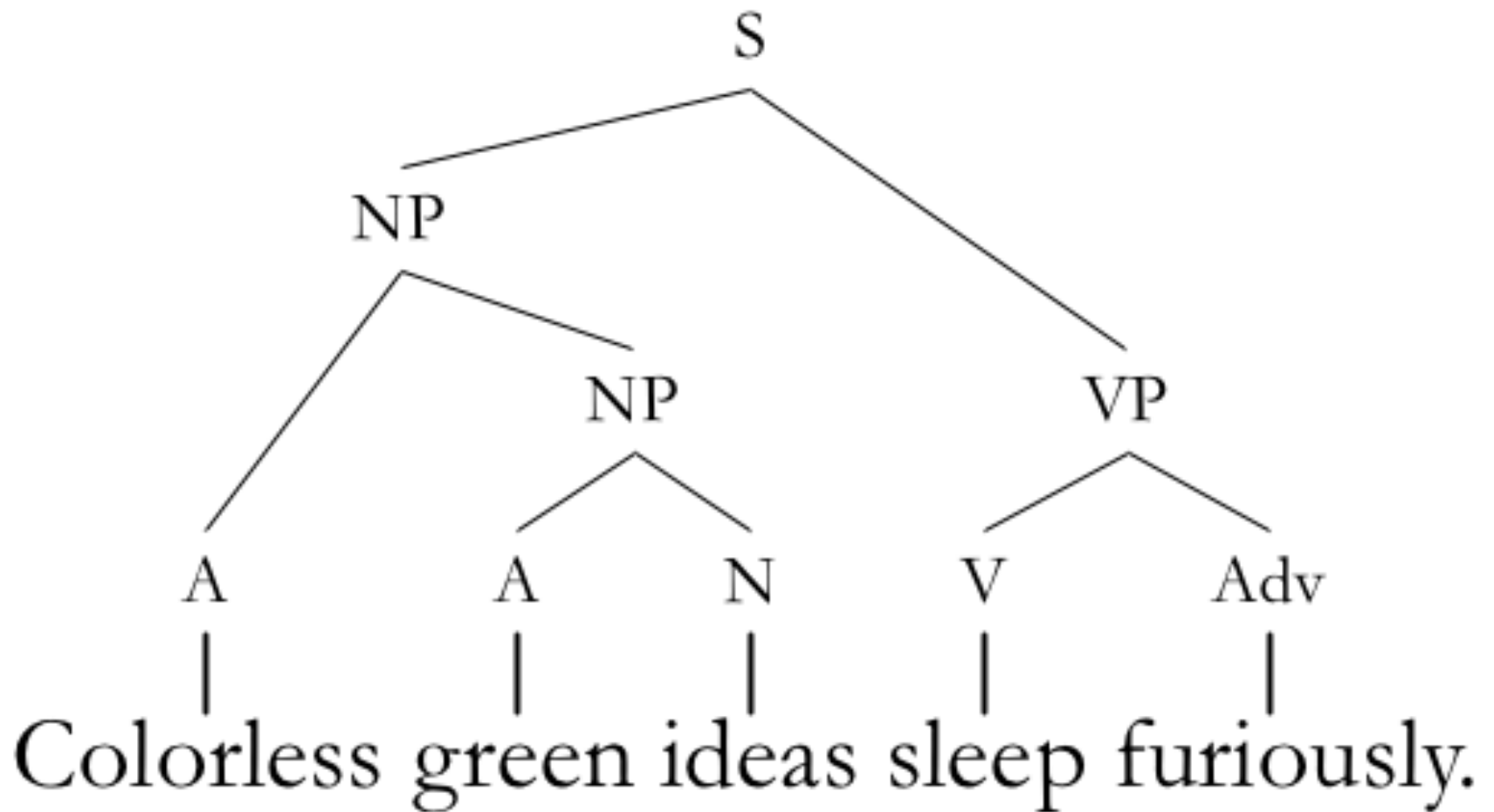


The theory suggests that linguistic ability manifests itself without being taught and that there are properties that all natural human languages share. It is a matter of observation and experimentation to determine precisely what abilities are innate and what properties are shared by all languages.

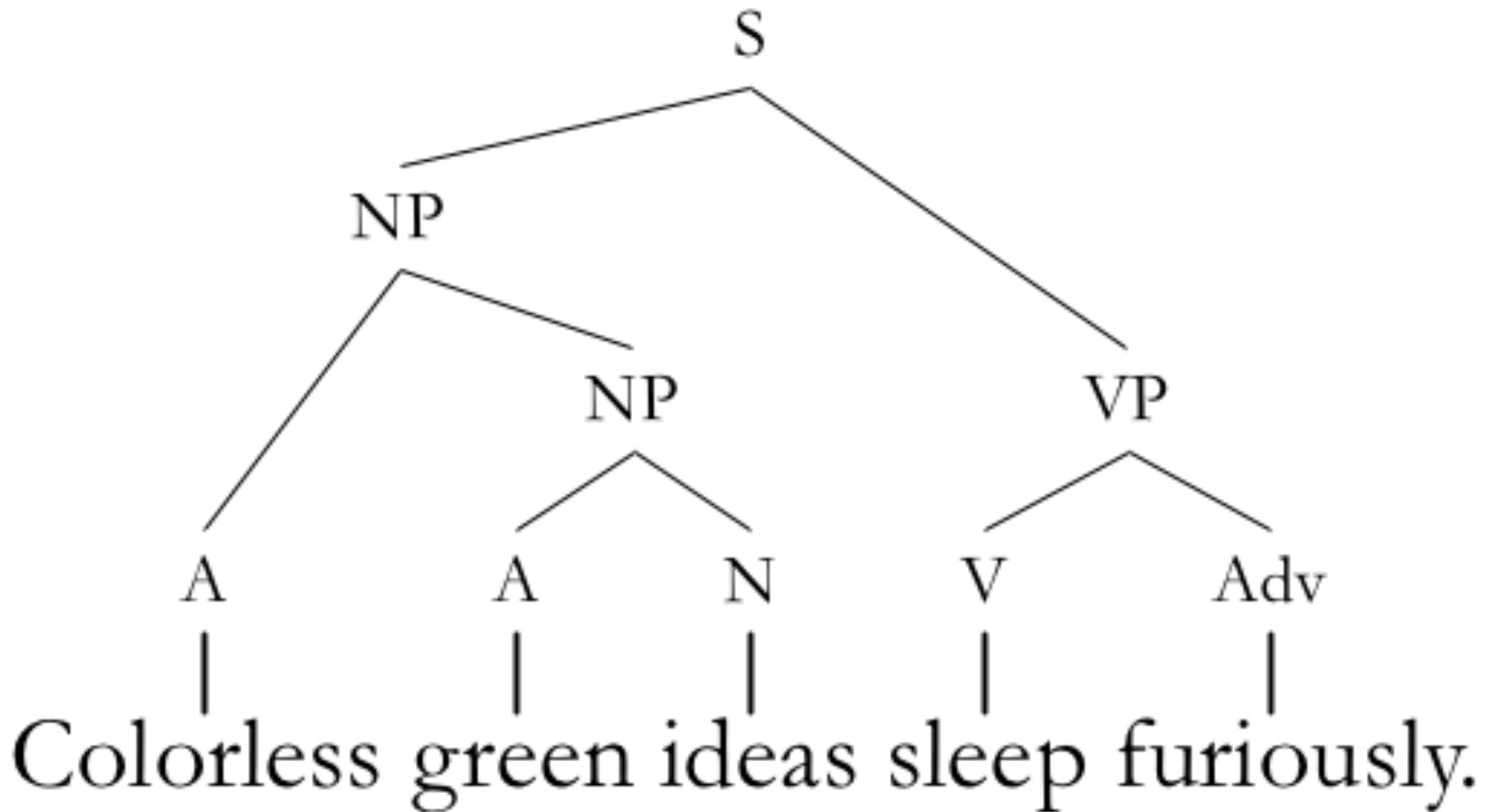
Hard-wired in a special part of our brain



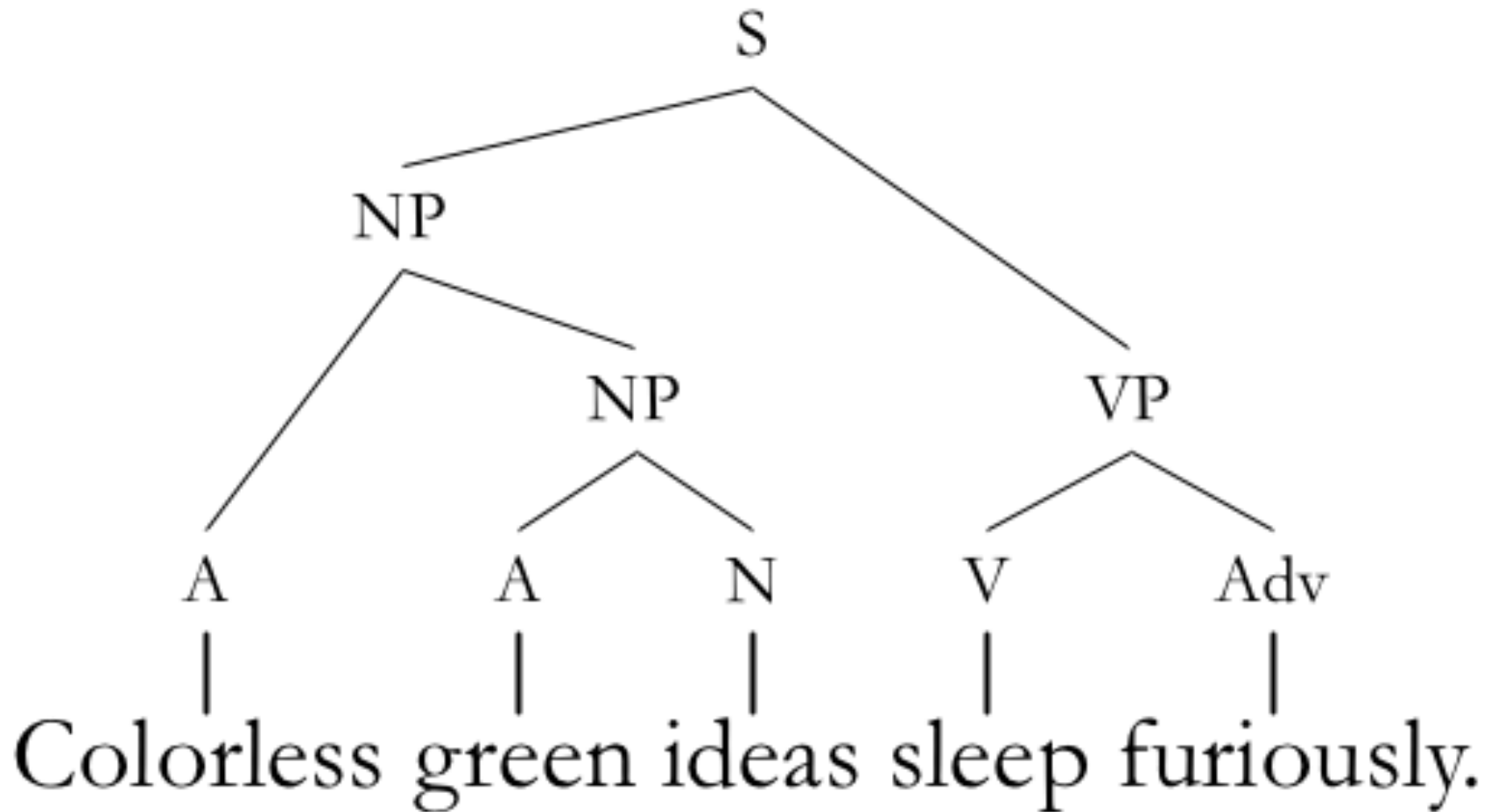
We can analyse grammar ...



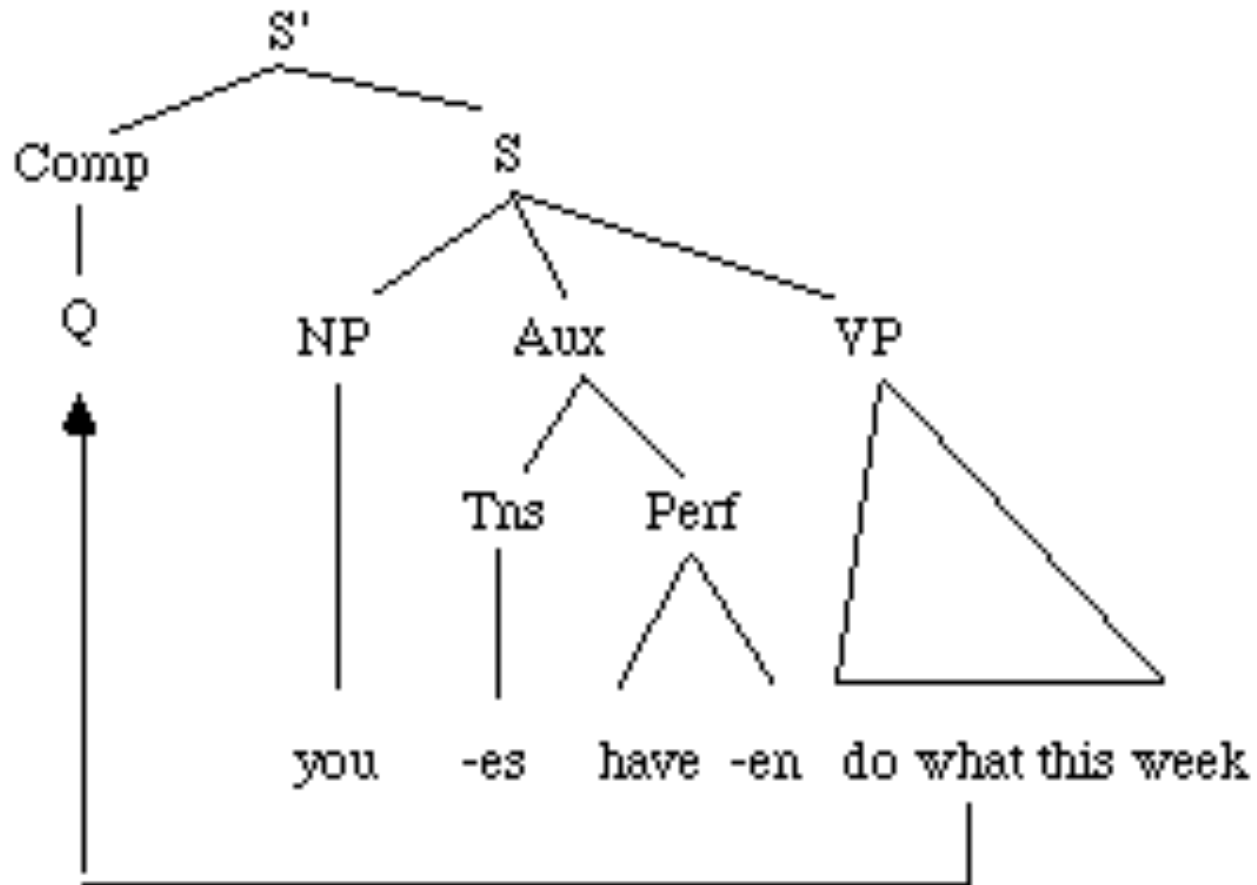
... and understand how our BRAINS
work!



Wow!! Grammar is BIOLOGY!



We can look at the DEEP DEEP structure



Back in the 60s it seemed so exciting



It was going to change the world!



So what about now?



Have we proved Universal Grammar is
real?



I said forget about panini!



Do we know language ability is innate?



Is the language faculty real?



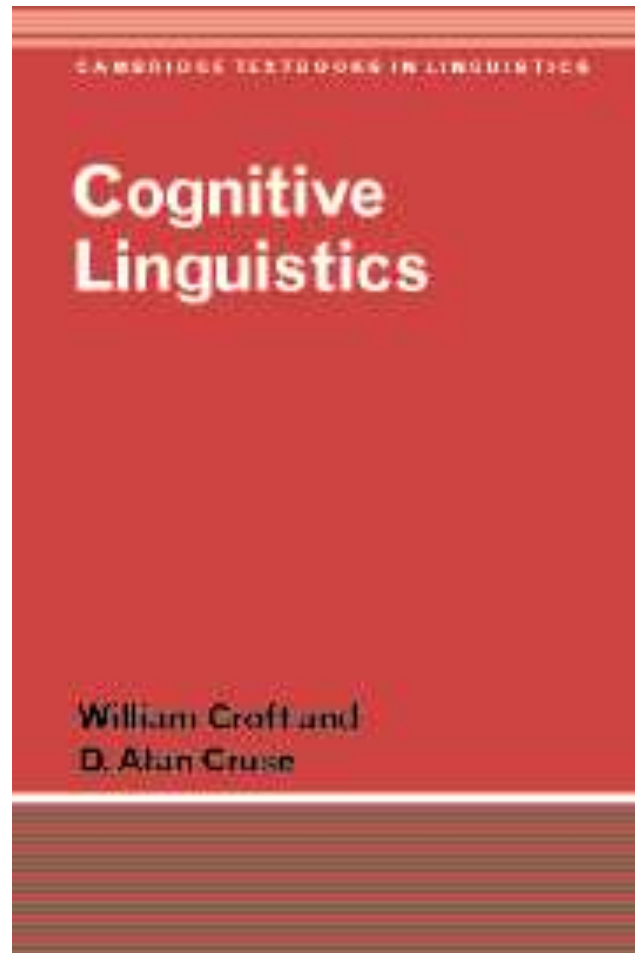
Honest answer



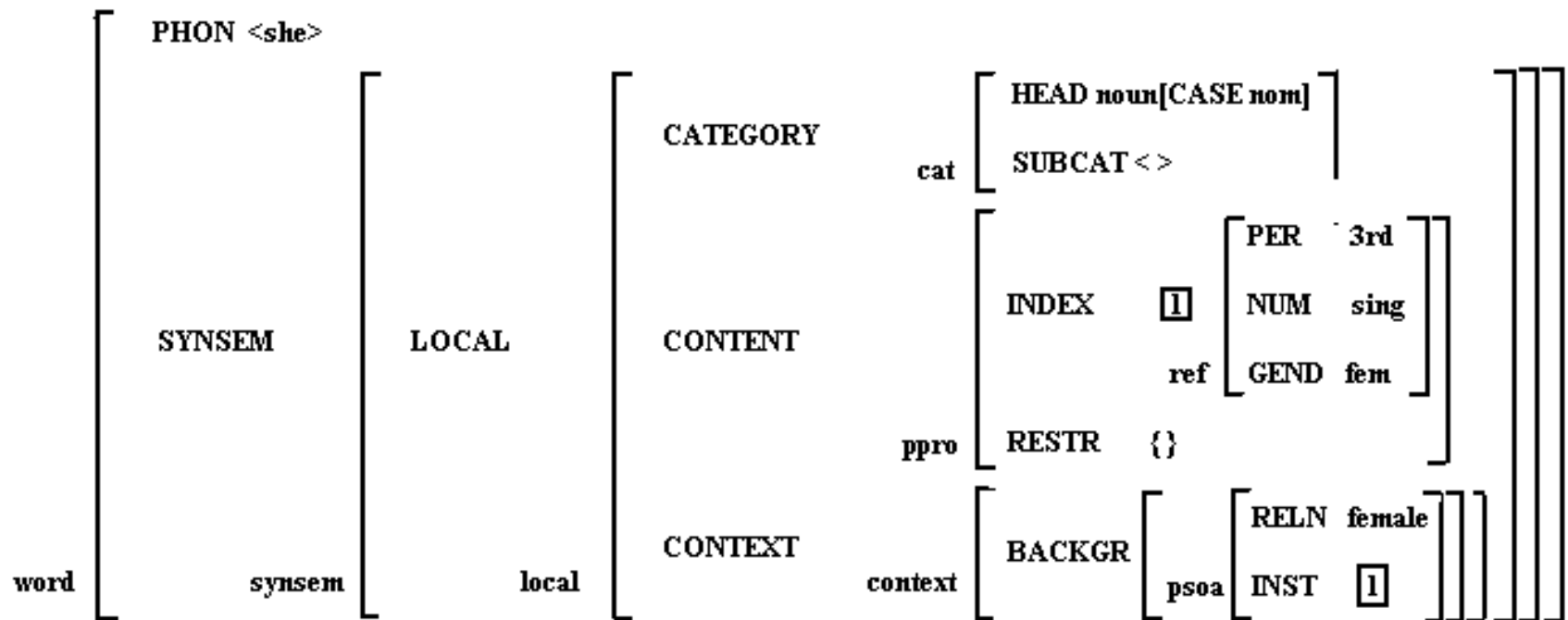
We don't know



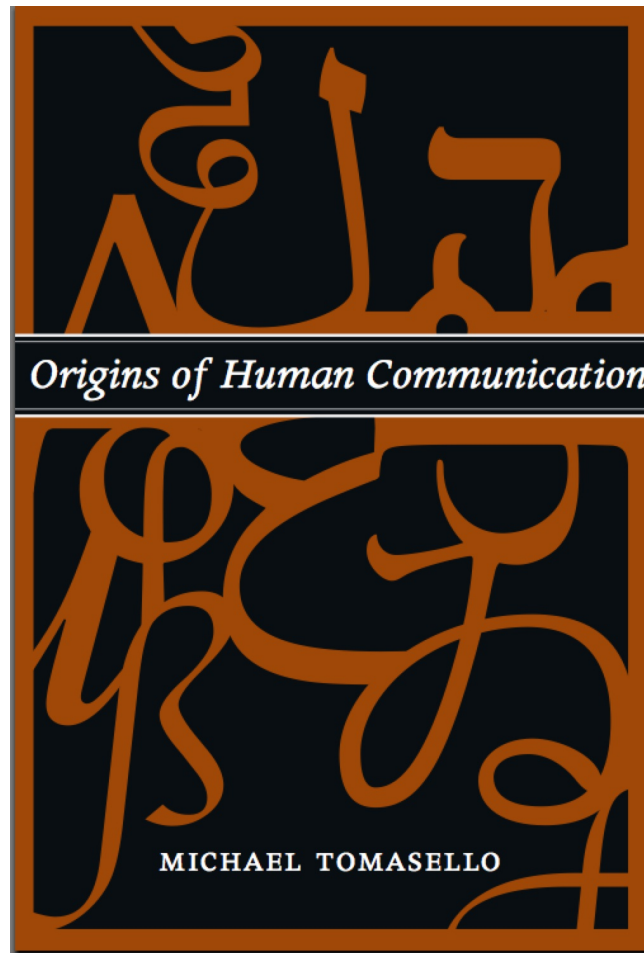
But there are lots of interesting ideas



Different ways of doing grammar



Different ideas about language



Nobody has all the answers



But we can think about it



You can make up your own minds



As we look at the history



And think about the problems



We don't know



It's better to admit it



Than PRETENDING we do



So let's not pretend

