

Language and Linguaging



אַ שפּראַך איז אַ דיאַלעקט מיט אַן אַרמיי און פֿלאָט

a shprakh iz a dialekt mit an armey un flot

A language is a dialect with an army and a navy

Max Weinreich

Reification: going beyond concrete particulars to treat of abstractions

Question: Can we confidently speak of “language”?
What are the concrete particulars we select?

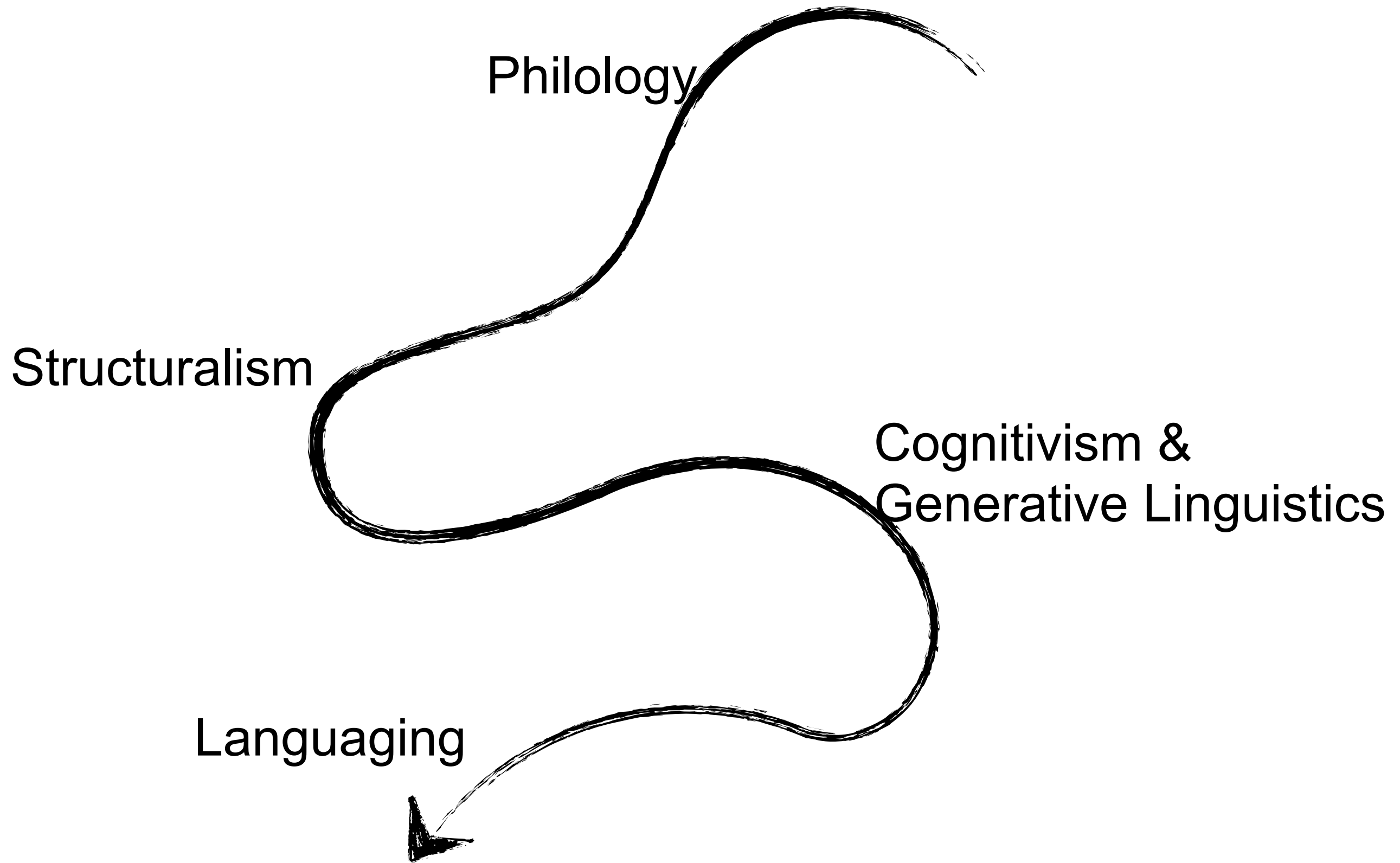
We might understand the object of our study differently, depending on how we ask “what is language”

(1) What is this apparently systematic means of communicating that can be done with voice or writing that allows coded messages to be passed from one person to another

or

(2) What happen to our species in the 5 or 6 Million years since the last common ancestor with the Chimpanzee?

It is not clear that these questions are “about” the same “thing”.



Philology

Before ca. 1800, language was studied for a variety of reasons, including

- * interpretation of religious texts
- * teaching of “grammar” to learners
- * teaching of foreign languages
- * study of highly respected authors

None of these is strictly scientific

Philology is the scholarly study of languages & texts, including deciphering, interpretation and history.

Ferdinand de Saussure (1857 - 1913)

Founder of structural linguistics & semiotics

Langue is the abstract system, of which concrete spoken instances are *Parole*



Creates the domain of Linguistics as an autonomous domain of scientific inquiry, with something called language as its object of study.

Language was seen to be *systematic*, and a new scientific goal arose: characterising the abstract system which underlies the slightly messy business of everyday language use

the international phonetic alphabet (2005)

consonants
(pulmonic)

	LABIAL		CORONAL				DORSAL				RATICAL		LARYNGEAL
	Bilabial	Labio-dental	Dental	Alveolar	Palato-alveolar	Retroflex	Alveolo-palatal	Palatal	Velar	Uvular	Pharyngeal	Epi-glottal	Glottal
Nasal	m	ɱ	n		ɳ		ɲ		ŋ	ɴ			
Plosive	p b		t d		ʈ ɖ		c ɟ		k ɡ	q ɢ			
Fricative	ɸ β	f v	θ ð	s z	ʃ ʒ	ʂ ʐ	ç ʝ	ç ʝ	x ɣ	χ ʁ	ħ ʕ	ħ ʕ	h ɦ
Approximant		ʋ	ɹ		ɻ		j		ɰ				
Tap, flap		ɹ̥	ɾ		ɽ								
Trill	ʙ		r							ʀ		ʁ	
Lateral fricative			ɬ ɮ		ɮ		ɬ		ɮ				
Lateral approximant			l		ɭ		ʎ		ʎ				
Lateral flap			ɭ		ɭ								

Where symbols appear in pairs, the one to the right represents a modally voiced consonant, except for murmured *f*.
Shaded areas denote articulations judged to be impossible. Light grey letters are unofficial extensions of the IPA.

1897 . . . 2014

Abstract
Universal
Systematic

Legend:

- Known in antiquity
- abundant in nature (Lavoisier published his list of elements (1789))
- known by Mendeleev (published his periodic table (1869))
- known by Dmitriy (published his periodic table (1925))
- known by Seaborg (published his periodic table (1945))
- also known (ak) up to 2020
- ak to 2012

Intellectual context: the Periodic
Table of the Elements

ca. 1871 (Mendeleev)

consonants (pulmonic)	LABIAL		CORONAL				DORSAL				RATIAL		LARYNGEAL
	Bilabial	Labio-dental	Dental	Alveolar	Palato-alveolar	Retroflex	Alveolo-palatal	Palatal	Velar	Uvular	Pharyngeal	Epi-glottal	Glottal
Nasal	m	ɱ	n		ɳ		ɲ	ŋ	ɴ				
Plosive	p b		t d			ɖ	c ɟ	k ɡ	q ɢ			ʔ	ʔ
Fricative	ɸ β	f v	θ ð	s z	ʃ ʒ	ʂ ʐ	ç ʝ	x ɣ	χ ʁ		ħ ʕ	ħ ʕ	h ɦ
Approximant		ʋ	ɹ			ɻ	j	ɰ					
Tap, flap		ɹ̥	ɾ			ɽ							
Trill	ʙ		r									ʀ	
Lateral fricative			ɬ ɮ				ɬ						
Lateral approximant			l			ɭ							
Lateral flap			ɭ										

Where symbols appear in pairs, the one to the right represents a modally voiced consonant, except for murmured *ɦ*.
Shaded areas denote articulations judged to be impossible. Light grey letters are unofficial extensions of the IPA.

Elements are defined by their position within a systematic ***structure*** of oppositions.

Thus to be voiced is the opposite of being voiceless

To be a vowel is to not be a consonant

This is how ***structuralism*** comes to construct its domains - abstracting from concrete particulars

Emphasis on descriptive adequacy.

With 2nd World War, need to systematise and improve the teaching of foreign languages

Origin of many depts of Linguistics in USA.

Language and the Cognitive Turn

1957: Chomsky: Syntactic Structures (based on 1955 thesis, introduced *transformational grammar*)

1959: Chomsky's review of Skinner's book "Verbal Behavior"

1975: Fodor: The Language of Thought

Cognitivism gradually replaces behaviourism as the dominant framework within psychology

The book: Verbal Behavior



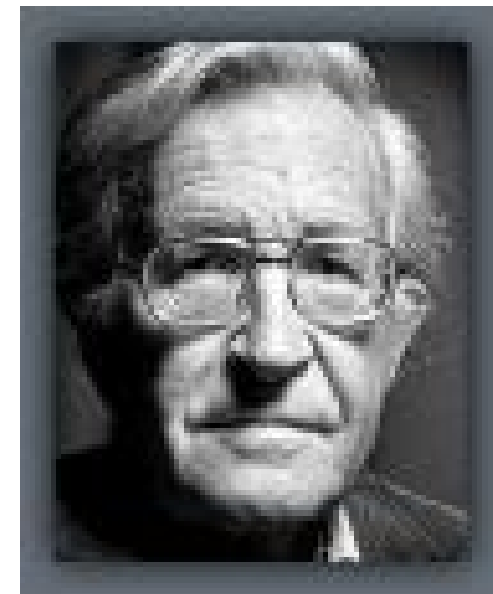
Skinner the Empiricist



To speak English is to have a set of behaviors which allow you to respond appropriately during an English conversation.

Chomsky the Rationalist

Behaviorist theories can never account for how children learn language. Language is used creatively, not parroted.



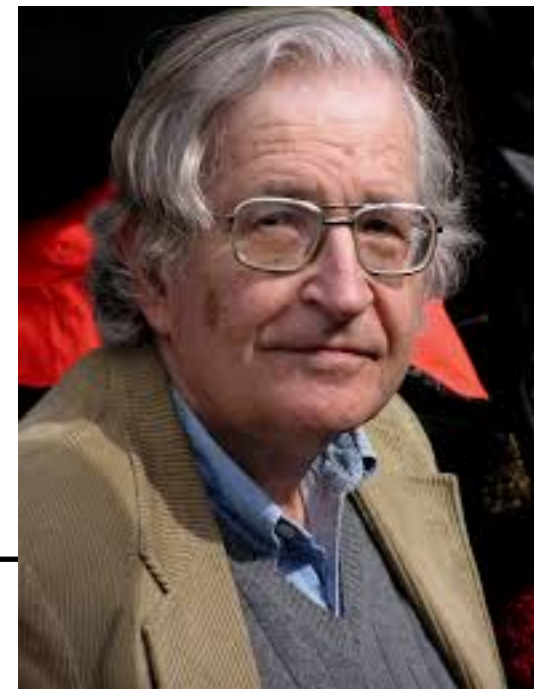
Modern Linguistics

Since about 1957, Linguistics has been dominated by a formal approach known as Generative Linguistics.

At the heart of this is the formal (mathematical) treatment of Syntax (more on that in a moment)

The rise of Generative Linguistics is intimately tied to the origin of Cognitive Psychology and the development of the modern Computer

Although many people have contributed, Noam Chomsky is very central to this development





Noam Chomsky:

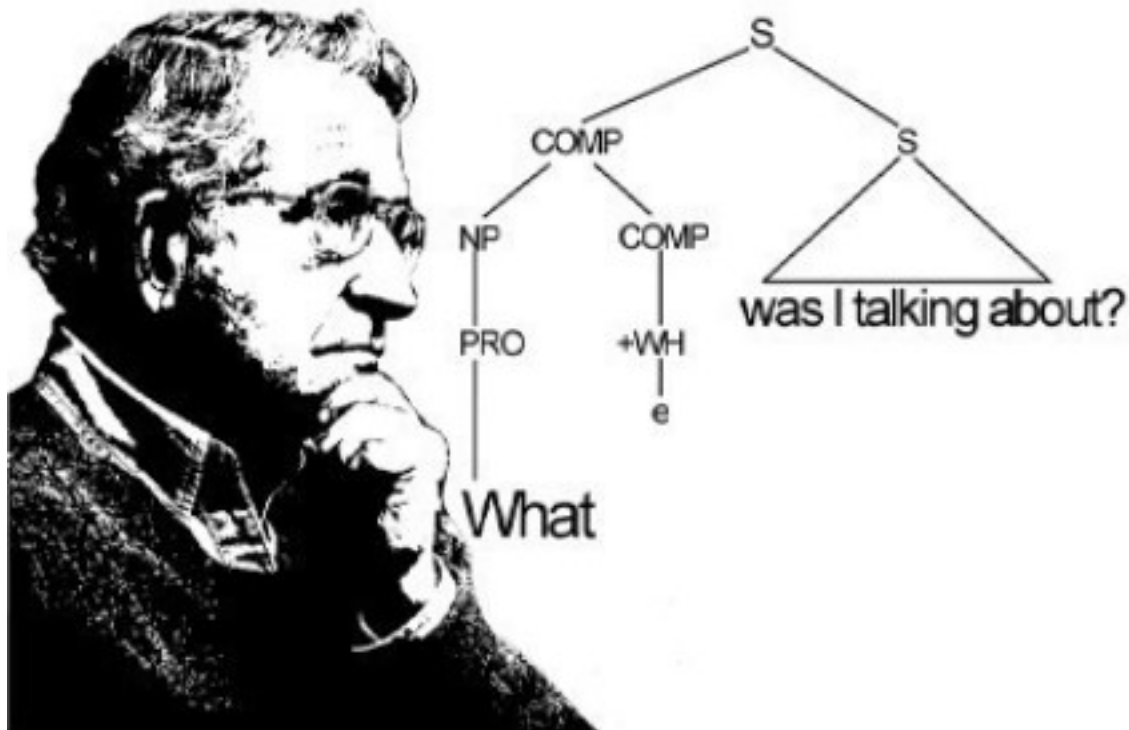
Claim: Language use and acquisition tells us that we are born with an *innate* readiness to learn and use language.

Claim: All humans possess a *Universal Grammar*. This dictates what the space of possible languages is. A learner simply selects among possible languages.

Claim: Poverty of the Stimulus

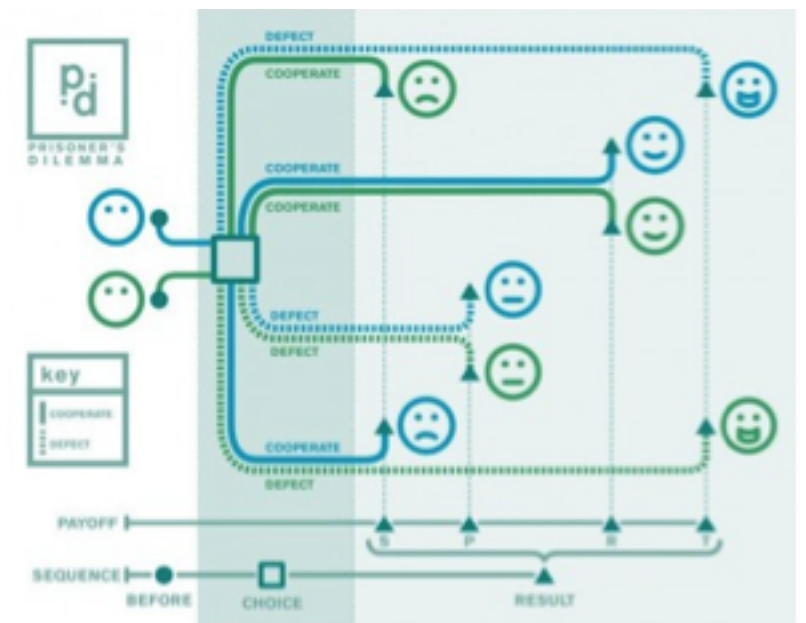
Note: Here “grammar” = syntax

What is Language (for Chomsky)?



Abstract
Universal
Systematic

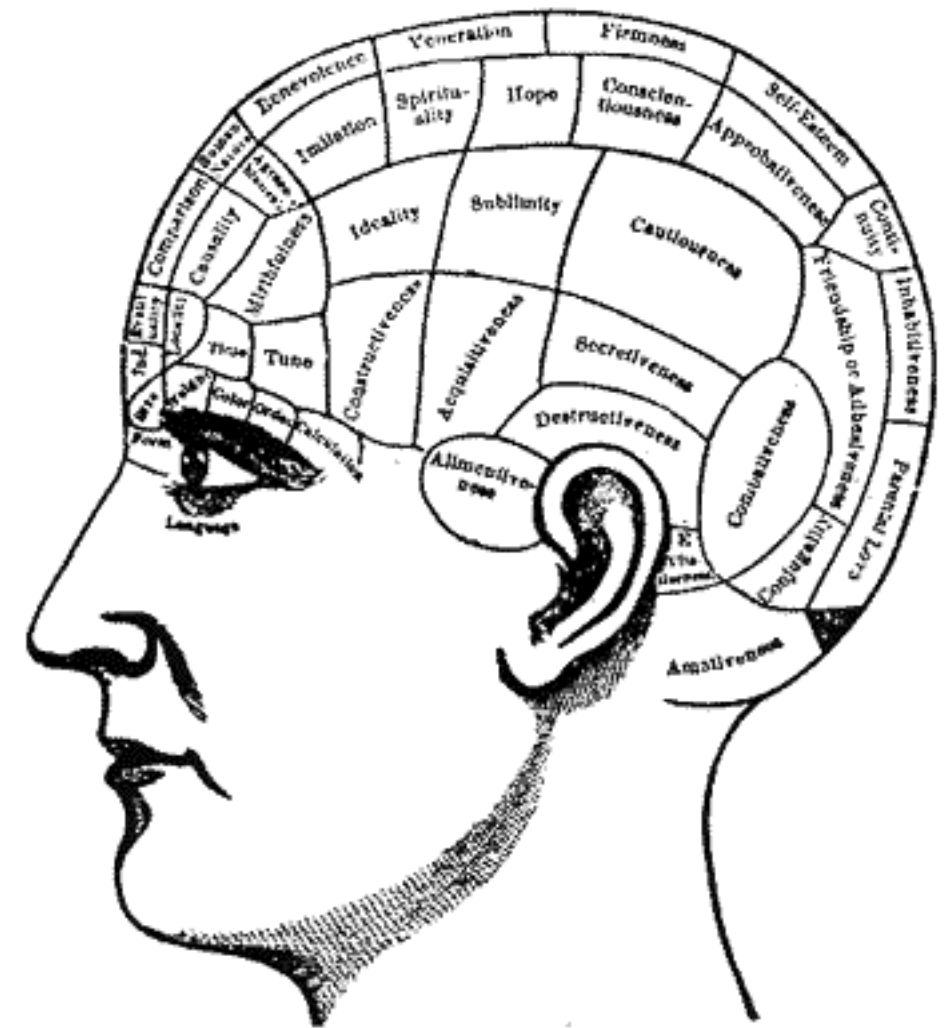
Intellectual Context:
Brain/Mind as Computer



Reification of *LANGUAGE*
extends the old notion of
psychological faculties,

and creates a monolithic
phenomenon

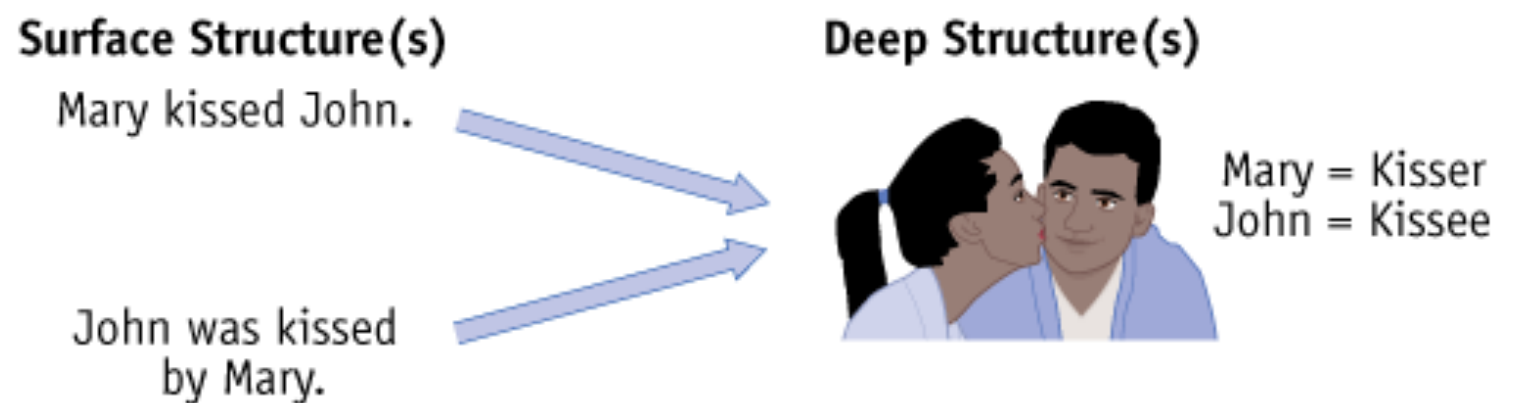
. . . . tasked with causal
responsibility for all that
is uniquely human



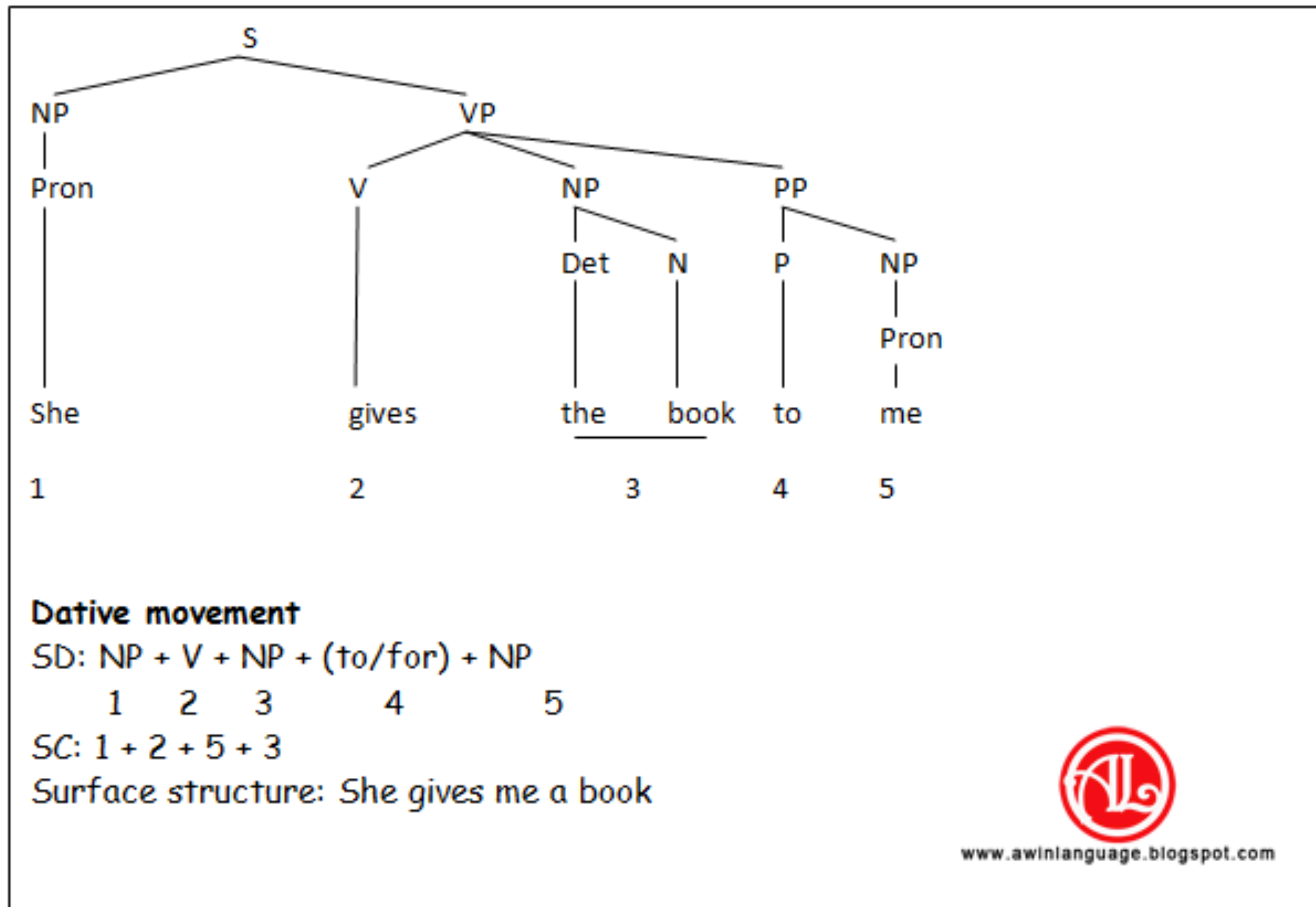
1960's & 1970's: Transformational Grammar

1980's & 1990's: Principles and Parameters

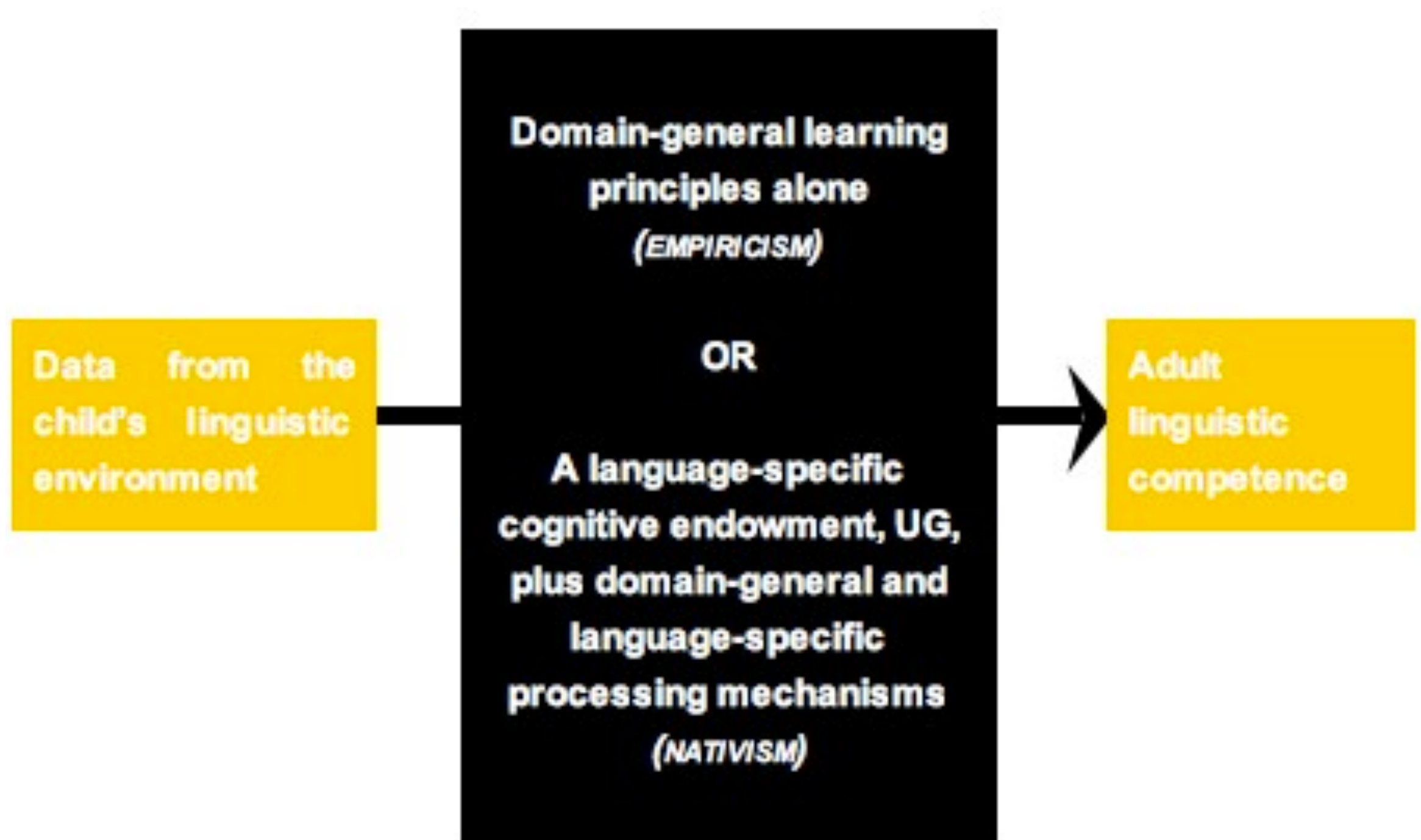
2000+: Faculty of Language Narrowly Conceived



Transformational Grammar: Deep vs Surface Structure



Principles & Parameters; Universal Grammar



The Faculty of
Language (narrowly
conceived) has
shrunk of late

Since Chomsky,
Hauser & Fitch (2002),
it is restricted to the
presence of *recursion*

to understand recursion
first you have to
understand recursion

Since 2005, the faculty of language has all but
disappeared as any kind of empirical phenomenon

The well documented existence of languages such as Pirahã that do not have recursion becomes something of an embarrassment (for some).



Dan Everett

AI and the dream of automatic translation

Modern (generative) linguistics grew hand in hand with Artificial Intelligence.

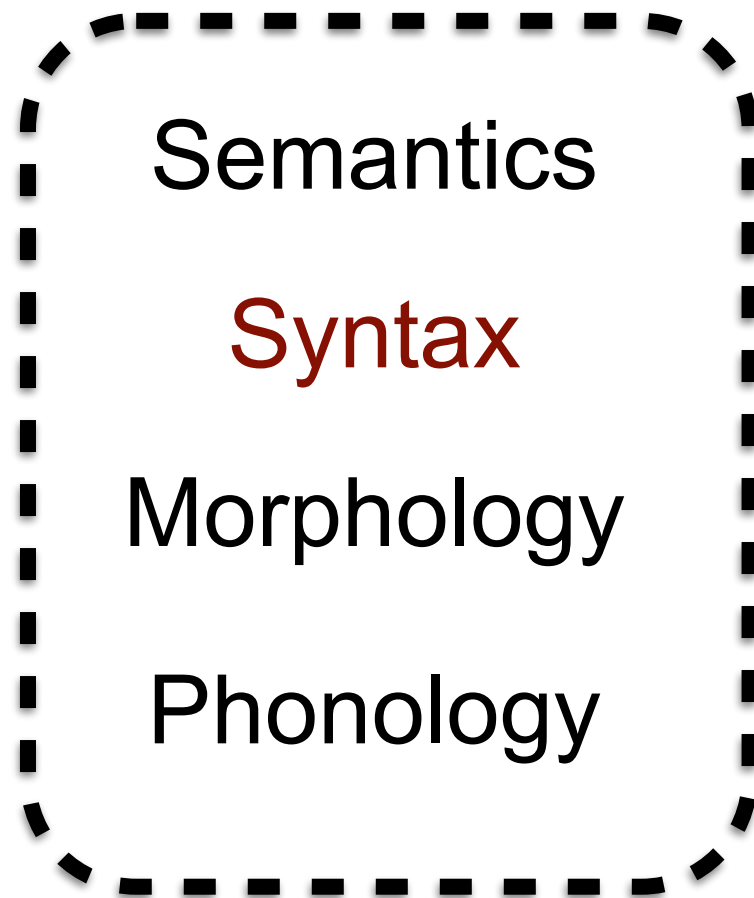
The pipe dream of speech-to-speech translation ensured funding from the military

This kept modern linguistics alive from about 1970 to about 1990, when funding dried up.

Then Google all but solved the problem without any theory.

There are many linguistic disciplines

Pragmatics



Phonetics

Cognitive Linguistics

Embodied Linguistics

Bio-linguistics

NLP

Conversational analysis

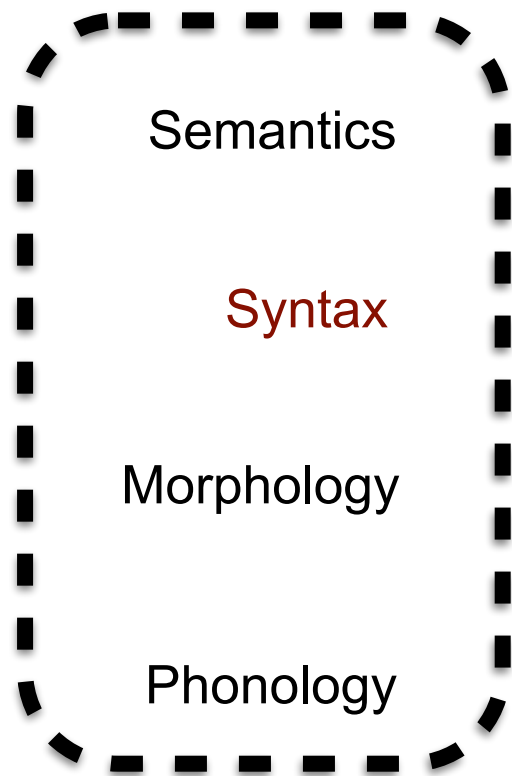
Developmental -

Neuro -

Socio -

.

Pragmatics



Phonetics

Cognitive Linguistics

Embodied Linguistics

Bio-linguistics

NLP

Conversational analysis

Developmental -

Neuro -

Socio -

.....

Different approaches
may reify the notion
of language or
linguaging in different
ways.

Modern Generative Linguistics has many sub-fields,
each attending to one form of regularity in language

1. Pragmatics
2. Semantics
3. Syntax
4. Morphology
5. Phonology
6. Phonetics

“Language is Use” Ludwig Wittgenstein

1. Pragmatics:

How does the thing someone says relate to what they want?

Do your sentences mean what you want to convey?

“Can you pass the salt?”

Grice's Conversational Maxims

In linguistic interaction, cooperation is the norm

Even conversational partners who are arguing typically exhibit cooperative behavior in selecting when to speak, how much information to provide, etc.

Grice's Conversational Maxims

- Truth:** Do not say what you believe to be false
Do not say that for which you lack adequate evidence
- Quantity:** Make your contribution as informative as is required
Don't make your contribution more informative than is required
- Relevance:** Be relevant
- Clarity:** Avoid obscurity of expression
Avoid ambiguity
Be brief
Be orderly

These are assumptions listeners make. They are not prescriptions. If you flout them, it probably means something

To pragmatics we might also apportion

Speech Act Theory: J. L. Austin and John Searle

Part of the *Ordinary Language Philosophy*
that takes seriously the unproblematic use of language
in everyday situations, and resists the leap to abstractions
and logic

Most famous book:

How To Do Things With Words (Austin, 1962)

2. **Semantics:** The study of (some aspects of) meaning.

All Dubliners are not dumb vs
Not all Dubliners are dumb

Do *student* and *pupil* refer to the same thing?

Many approaches use *formal logic*

Examples of semantic relations

Synonymy (same meaning), (example: sofa/couch)

Antonymy (opposite meaning), (ex: up/down)

Polysemy (several related meanings), (ex: chip)

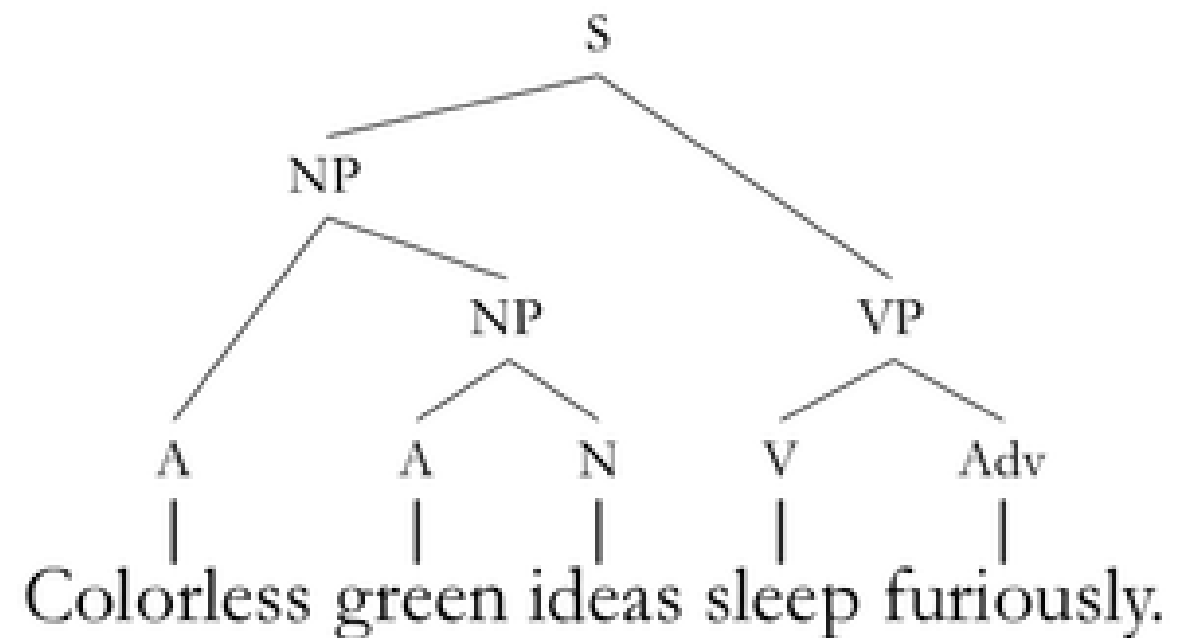
Homonymy (several unrelated meanings) (ex: bank)

Hyponymy (ex: triangle is a hyponym of polygon)

Where is the context of use here?

3. Syntax:

Sequences of words are highly structured, i.e. there are implicit rules about what can go with what.



Parts of speech
Phrase structure
Grammar

In linguistics, the word “Grammar” describes the regularities that determine what sequences of words can occur and what can not occur in a given language

When we say “rules” or “regularities” we are using the term as *scientists*, not as *teachers*.

The law of gravity is not the same kind of law as a law enacted by politicians.

Likewise a rule of syntax is not the same kind of rule as a rule made up by teachers.

Prescriptive vs Descriptive

Prescriptive: Lays down the law.

Appropriate for language learning texts

Descriptive: Attempts to describe actual use and structure

Scientific agenda

Data: actual sentences/speech

Goal: understand and describe what people do

Linguistics is a science. It is thus *descriptive*, and not *prescriptive*

Many Languages, Few Principles?

Principles: Languages do not vary arbitrarily. It is hard to make up an artificial language (Klingon?). A few *principles* of syntax determine the basic shape of all languages.

Parameters: Each language represents a specific choice among a small number of mutually exclusive options. E.g. most languages, English included, use the order

Subject Verb Object

for simple sentences.

Irish: lth mé arán (eat - I - bread)

Verb subject object

English: I eat bread

Subject verb object

(Yoda is not entirely consistent)

Yoda: Lost a planet Master Obi-Wan has.

Verb object subject



4. Morphology: Morpheme: the smallest unit of language which has some independent meaning. (More syntax, but within the word)

dog dogs doubtful cranberry
Strassenbahnritzenreinemachefrau

Word formation

Lexicon: mental vocabulary. What is stored (morphemes? sounds? spellings? meanings?)

Expletive infixation

5. Phonology: Systematic organization of sounds within a language.

Which of the following are potentially legal words of English:

scraw stlomp pfiff poink

Phontactics: the rules which determine legal combinations of sounds in a language. (Are all 'illegal' combinations equally bad?)

Basic Phonological Assumptions:

Speech is encoded in discrete units

There is some systematic relationship between the physical realisation of speech and its “underlying” sequence of units

Linguistic information is categorical. Non-categorical aspects to the speech signal are thus non-linguistic.

Note: One might choose to question any or all of these.

Phonology Example 1

What is the shape(s) of the plural marker(s) in English?

lip, rock, tree, latch, gum, myth, laugh, two, cove, toe, bell, wretch, rib, load, breeze, fudge, hen, law, fez, bar, bat, tea, garage

How do you know which one to use?

Phonology Example 2

Some American dialects pronounce some of these words differently than Irish locals:

pure, cute, tune, abuse, dues, argue, muse, mew, new, lewd, few, view, enthuse, suit, hue, spurious, beauty, bugle, cue

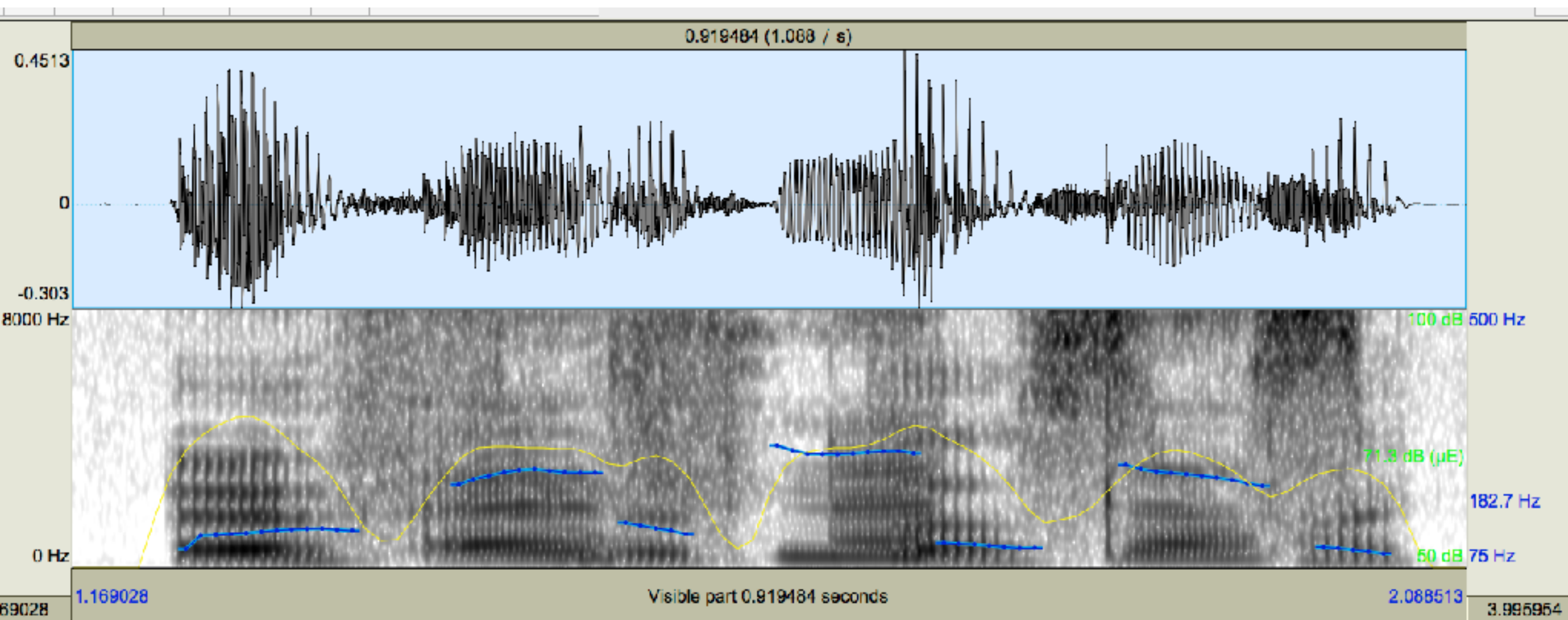
Which ones are subject to variation? Can you predict this for other words? Is the process regular?

Phonetics: The study of the production, transmission, and perception of speech.

In some respects, phonetics represents an interface between the world of meat & spit & noise & ears on the one hand, and the categorical units used in the systematic account of phonologists.

A hybrid discipline: Laboratory Phonology has a foot in both camps.

Speech signal, showing waveform, spectrogram, pitch contour, intensity contour



Don't confuse Phonetics and Phonology

Phonology deals with idealised symbolic units that can be combined according to formal rules

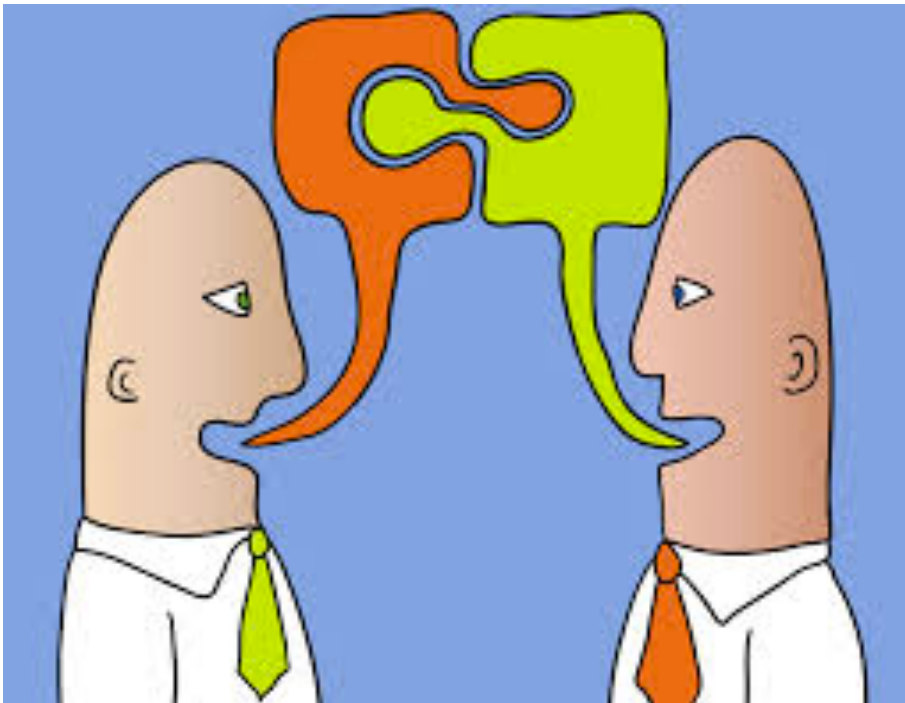
Phonetics deals with sound, meat, spit, and ears.

Both try to understand how language is made manifest in speech.

Practitioners may differ on how they choose to reify the term *language*.

Moving beyond the core disciplines of late 20th
Century generative linguistics ...

Why Have Language?



Communication



Thought

Is language-like thought clearly distinct from overt language?

Developmentally: Vygotsky observed that very young children literally think aloud, and only later learn to suppress overt speech. The inner voice is thus continuous with the outer.

Thinking: Yet More Reification

Nobody has managed to draw a clear line around any activity we might call “thinking”

Some conscious goings on is clearly language-like, though it may be idiosyncratic, compressed, fragmented

Fodor called this “inner” language *mentalese*

One of the longest running controversies in cognitive psychology concerns just how much of cognition is propositional (i.e. language like) in thought.

Thought and Language

Complex thoughts are built of simpler parts in structured compositions

Could you
have a
thought like
this without
language?

If three of us sneak in the back, we
can steal at least a bag of apples
without getting caught

Mentalese

Fodor coined the term “Mentalese” to refer to the inner language of thought.

Are your language-like thoughts in English?

Are they in your voice?

Do they have an accent?

Do you hear a voice when you read?

Consider the case of Sheba and the treats as recounted in Boysen et al. (1996). Sheba (an adult female chimpanzee) has had symbol and numeral training: She knows about numerals. Sheba sits with Sarah (another chimp), and two plates of treats are shown. What Sheba points to, Sarah gets. Sheba always points to the greater pile, thus getting less. She visibly hates this result but can't seem to improve. However, when the treats arrive in containers with a cover bearing numerals on top, the spell is broken, and Sheba points to the smaller number, thus gaining *more* treats.

Sheba

The use of numerals seems to have freed Sheba from the direct link between seeing and doing.



Source: Clark, A. *Supersizing the Mind*, 2008



Even the simple use of labels can radically change a problem

Language is a tool for solving problems

We can regard language as scaffolding for many kinds of higher cognition

Representation

Language of Thought Hypothesis suggests that *mental processes are computational processes defined over representations*

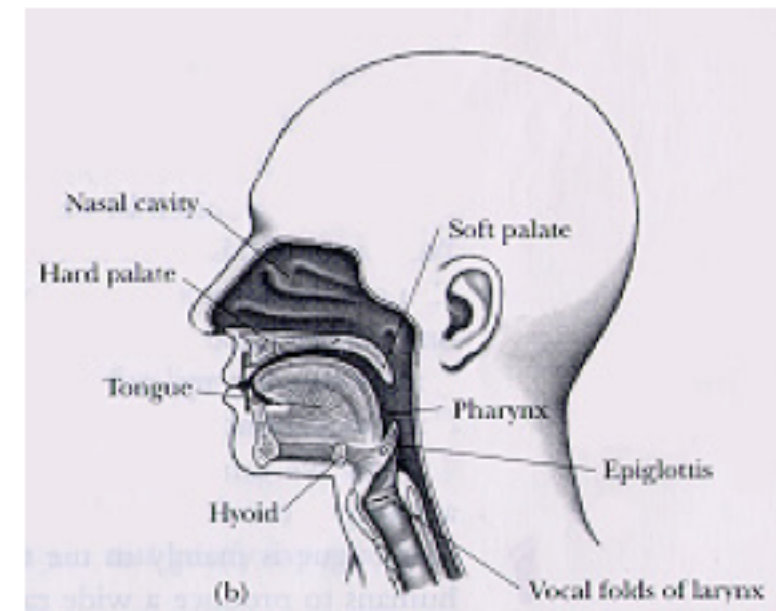
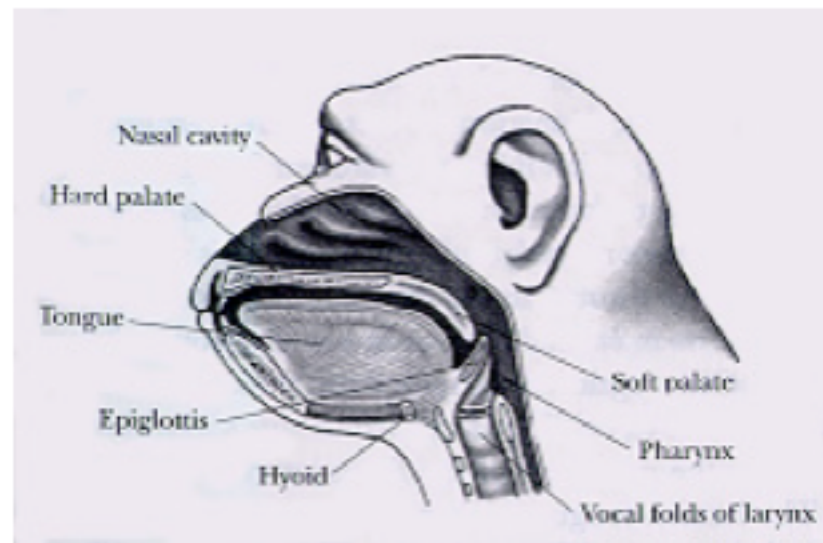
Representations are things that *stand for something*. They *symbolize, depict, or are about* external things (What does *external* mean here?)

Much of the *computational theory of mind* is concerned with identifying the *kinds of representations* used in thought.

Questions to you

- What is a thought?
- Are thoughts necessarily expressed in words?
- Do words allow you to think things you could not otherwise think?
- How much of your mental life is 'thought'?

Evolution of Language: Why? When? How?



What data? How might we study this?

In 1866, the French Academy of Science banned theories about the Evolution of Language. Why?

For science to work, we need to be able to distinguish between plausible and implausible stories. We need to reach consensus.

In the absence of empirical evidence, it seemed that there was no principled way to sort out the very many theories, hypotheses, and stories.

But perhaps we can do more than nothing:

Preadaptation: What structures and abilities needed to be in place for language to appear?

What part of your body is there for the purposes of language?

Computational approaches include simulation of interactions among societies of simple communicating agents

Genes?

If language is what makes us “human” (is it?), might there be a genetic story to tell? Could we find a gene that we have, but apes don’t, that might be held responsible?

Short answer: No! Genetic variation between us and the apes is minimal.

Also, our understanding of genetics has moved on from the simple idea that we could link a complex phenomenon in the organism to a single gene, or a few genes.

Genes?

Longer answer: No!, But there is one interesting avenue we have been exploring.

The KE family were identified in England. Over 3 generations, many, but not all, members of the family exhibited a rather rare language problem: Developmental Verbal Dyspraxia.

The pattern of inheritance perfectly matched that predicted by standard Mendelian genetics, with a single gene at fault. The gene is Fox-P2

Fox-P2 and Language

Fox-P2 is found in all mammals. It varies slightly from species to species, and there are slight differences between Fox-P2 in Chimpanzees and in Humans.

A single mutation on Fox-P2 is responsible for the deficits seen in the KE family.

But but but:

Those affected have many related symptoms, including cognitive deficits. So it is not a “gene-for-language”.

Some more on Fox-P2

In mice, birds, bats, humans, Fox-P2 influences the healthy development of brain and lungs.

Small wonder, then, that speech and language (and animal vocalisation) are affected if it is altered.

A word of caution:

In their eagerness for simple answers to hard questions, many initial reports on Fox-P2 and KE were very very misleading, making erroneous claims about finding “the language gene”. No such gene exists.



<https://www.youtube.com/watch?v=Fg2rLOkoL9Q>

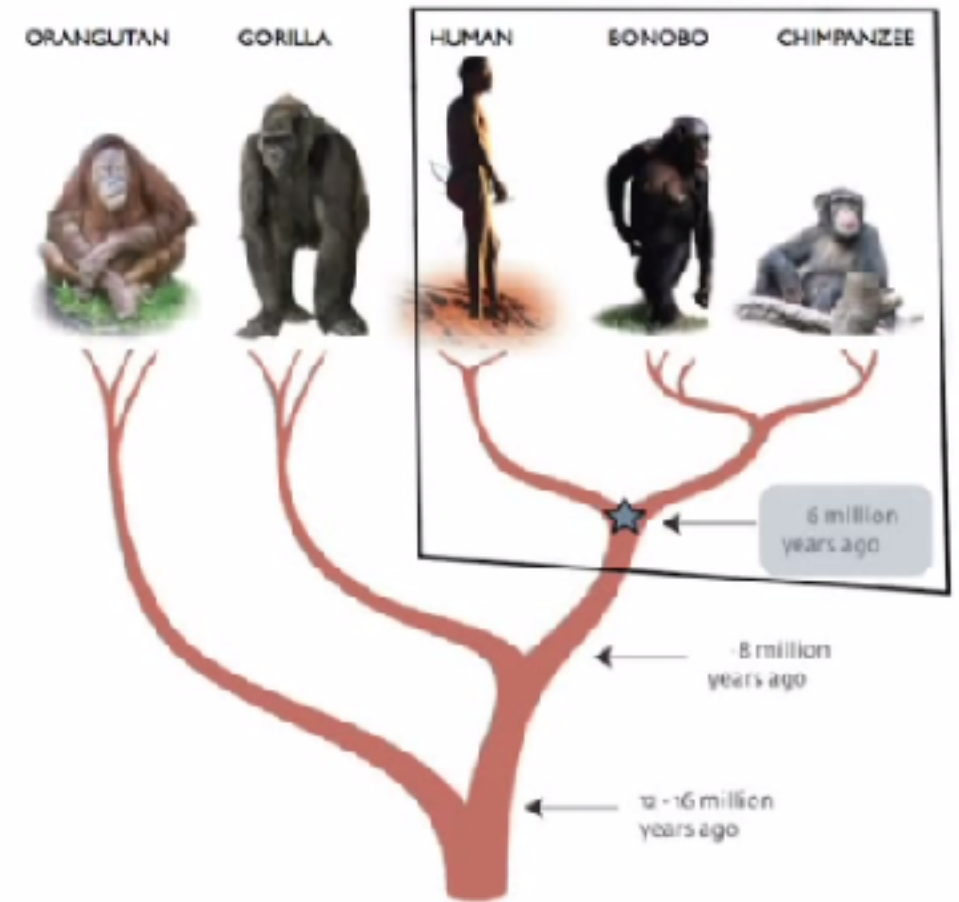
Tomasello's Cooperative Eye Hypothesis (2007)

Traditional views of language have suggested that the biological change that gave rise to mankind must lie within the nervous system, enabling *syntax*

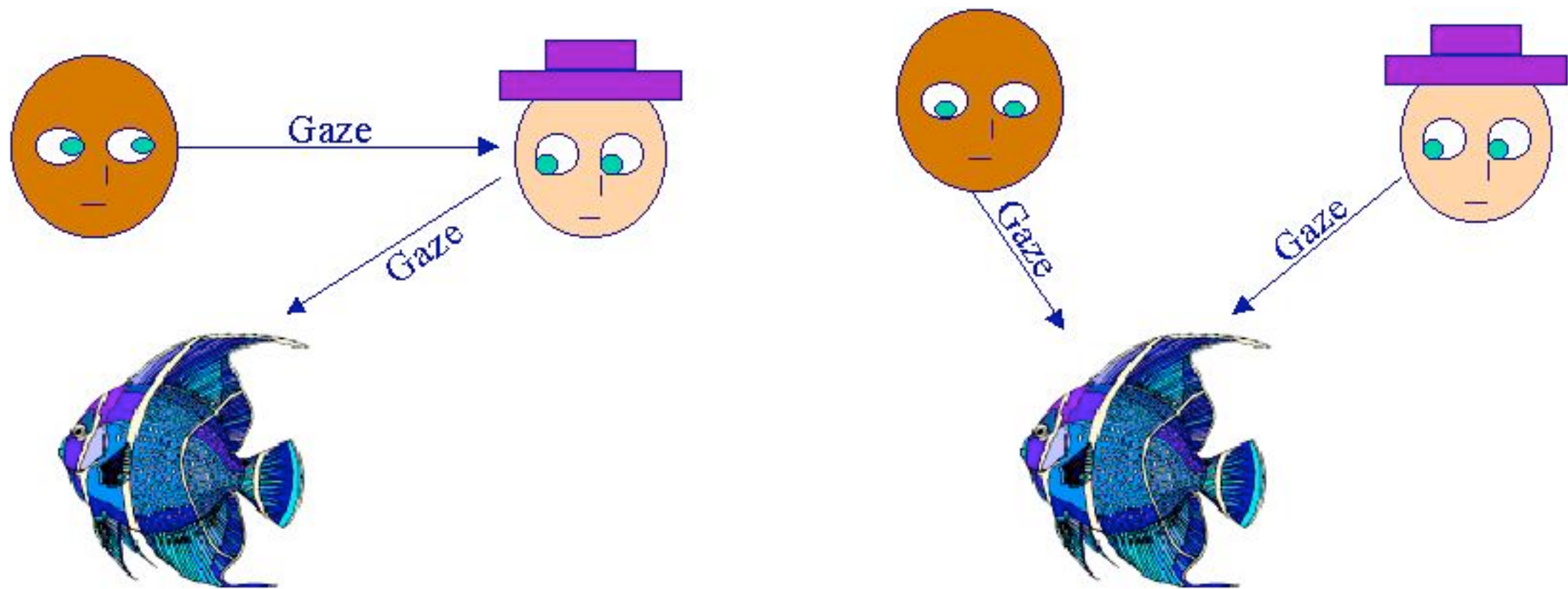
But if we view vocal behaviour as part of a larger set of processes by which we become increasingly interlinked, another possibility arises:

One small biological change stands out:
the white of the eye

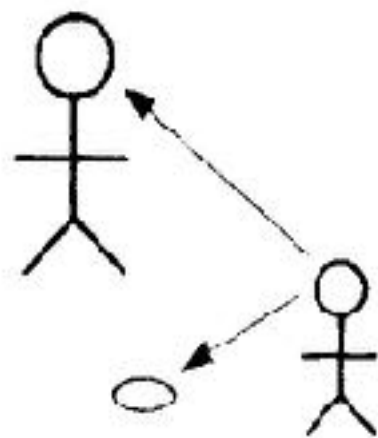
Tomasello et al: The Cooperative Eye Hypothesis (2007)



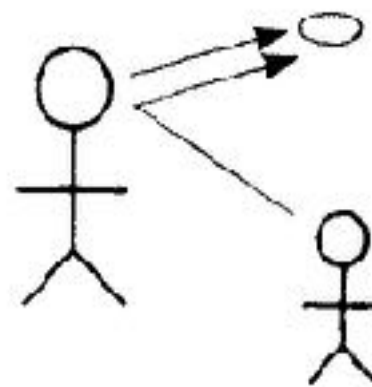
One small biological change facilitating **joint attention** leads to massively increased dynamic entanglement



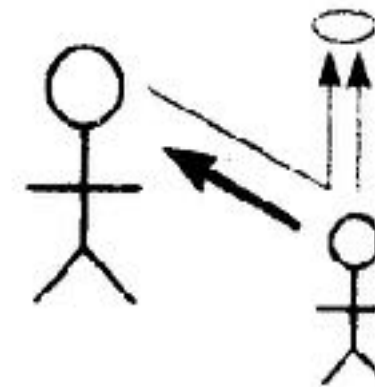
Check attention
(9-12 months)



Follow attention
(11-14 months)



Direct attention
(13-15 months)





Language: Beyond Linguistics

What distinguishes Language from other forms of communication?



Very many features of human language are found, in some form, in animal communication. But never all together.

Arbitrary relationship: symbol and referent

horse

cheval

Pferd



Displacement



Deception, Propositional Attitudes



X believed/thought/hoped/understood.... *that* Y

Language provides ways to express how the speaker feels about the statement being made.

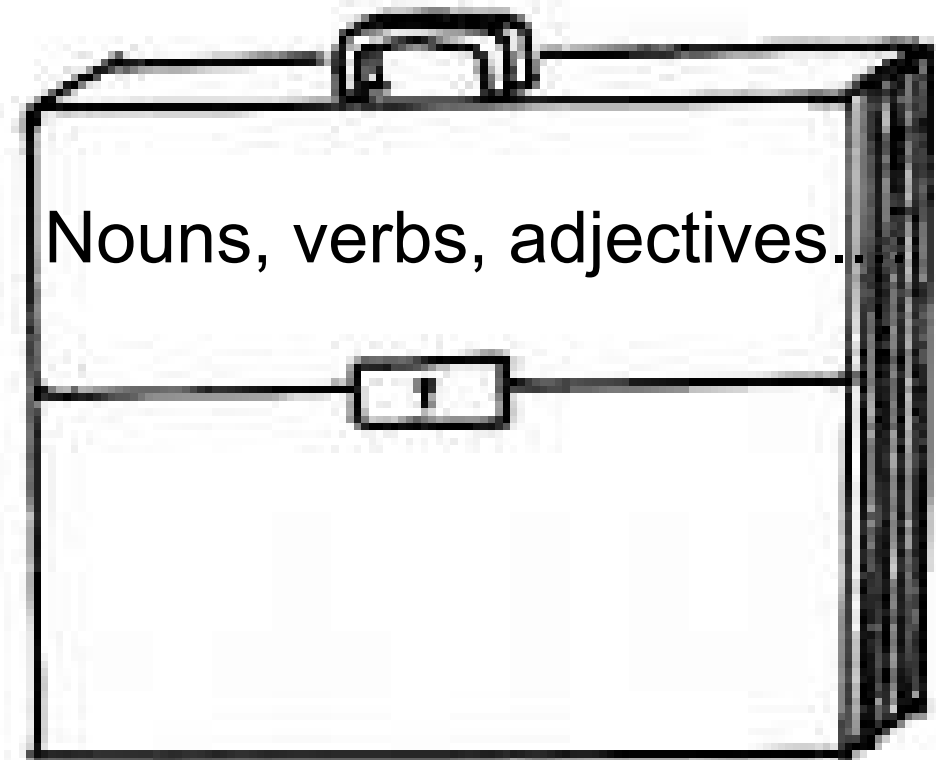
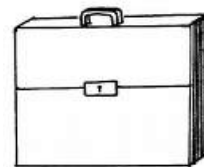
Generativity, Creativeness

Finite Recursive
Rules:

If S is a
sentence,
so is “I believe
that S”, or “It is not
true that S” etc.....

Finite means,
Infinite productivity

Function words



Transcript of Koko the Gorilla, in the first live inter-species internet chat!!!

HaloMyBaby: SBM87 asks, What are the names of your kittens? (and dogs?)

LiveKOKO: foot

DrPPatrsn: Foot isn't the name of your kitty

HaloMyBaby: Koko, what's the name of your cat?

LiveKOKO: no

DrPPatrsn: She just gave some vocalizations there... some soft puffing

HaloMyBaby: I heard that soft puffing!

DrPPatrsn: Now shaking her head no.

Question: Do you like to chat with other people?

HaloMyBaby: That was from Rulucky!

LiveKOKO: fine nipple

DrPPatrsn: Nipple rhymes with people, she doesn't sign people per se, she was trying to do a "sounds like..."

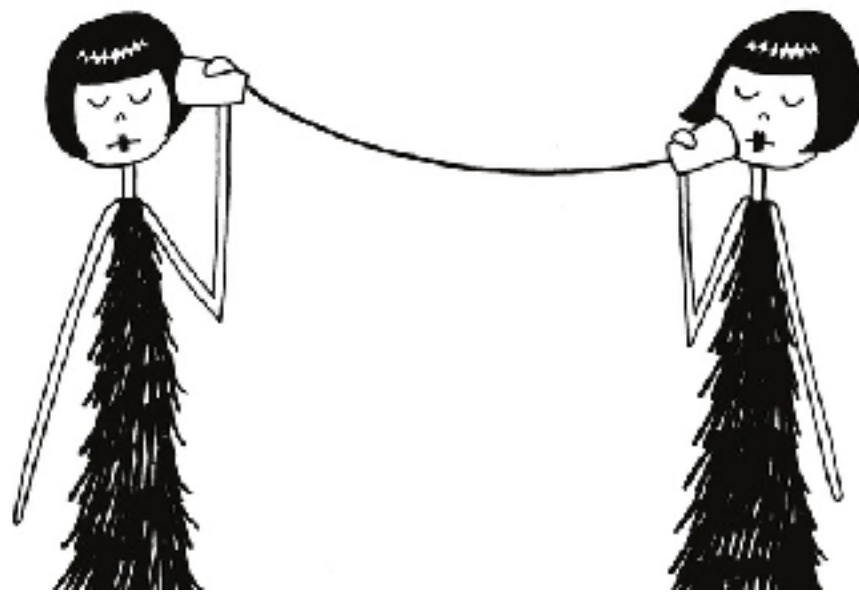
Compare that with this recording, reported in 2012 in Current Biology, of a Beluga Whale imitating human speech:



While we're at it, here is Hoover, the famous “talking seal” from Boston, who was reputed to speak with a Boston accent:



Hoover, 1971 - 1985



Speech and Language are currently treated as message-passing exercises.

This is undoubtedly useful for some purposes, but it misses much.

Linguistics has lost the voice!



Saussure: *Langue* and not *Parole*

Chomsky: *Competence* and not *Performance*

Both schools treat of language irrespective of medium, treating speech and writing as broadly equivalent

But the voice is far older than writing

The Post-Saussurian/Post-Chomskian Orthodoxy

Pragmatics

Semantics

Syntax

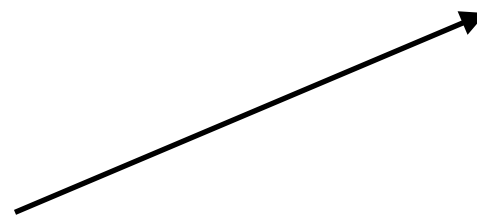
Morphology

Phonology

Phonetics

The “core” sub disciplines
in the study of something
called “language”

We can interrogate
this boundary



What has been omitted?

- The body: gesture, posture, pointing, etc
- Gaze (and blinks)
- Backchannels and other signatures of mutual involvement
- Situatedness, context dependency
- and prosody, as a domain, is simply the “miscellaneous” “did not fit my theory” category
- and Joint Speech







There is more scientific literature on the topic of glossolalia than there is on joint speech





Joint Intentionality

Shared Subjectivity

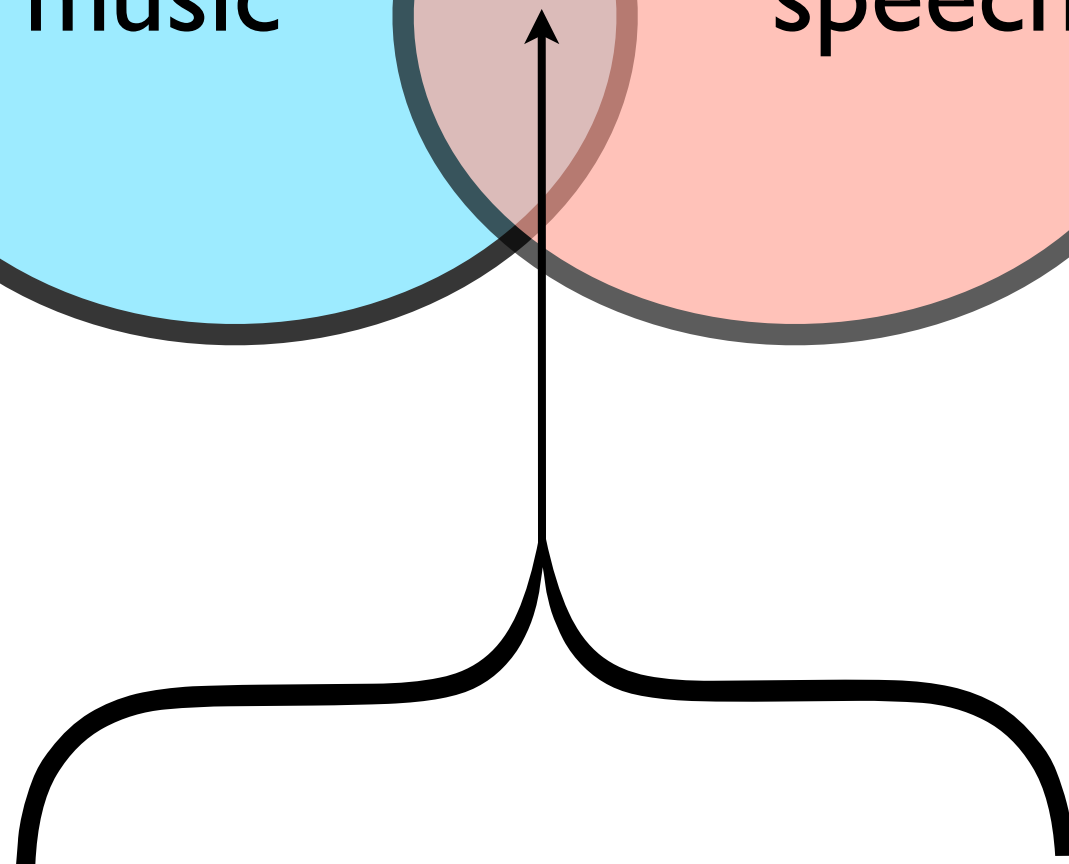
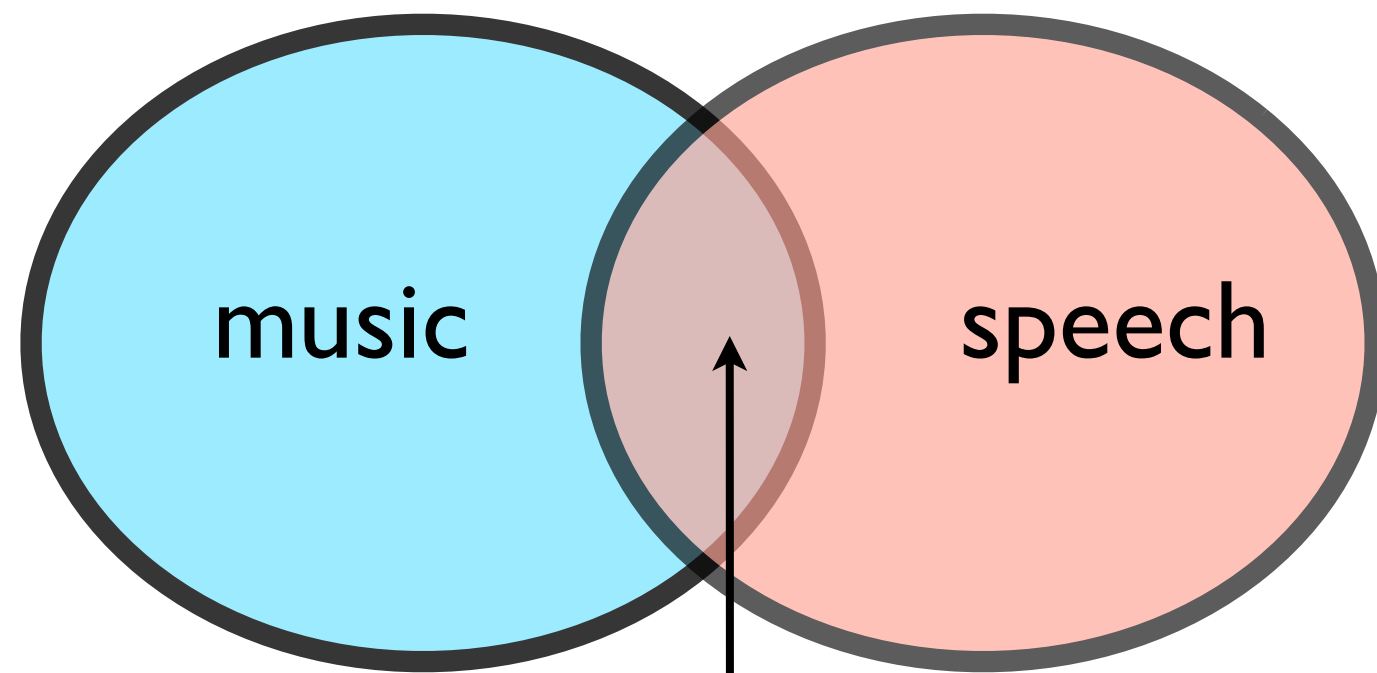
Created and maintained
in real-time

[V]oice is a kind of sound of an ensouled thing.

Aristotle, De Anima



For I produce my voice in a way that I do not produce these other attributes [eyes, hair, gait, fingerprints, etc]. . . . giving voice is the process which simultaneously produces articulate sound, and produces myself, as a self-producing being. (Connor, 2000, p. 3)





LANGUAGE is a reification

Languaging is vastly more diverse . . .

- . . . include the whole body
- . . . include the context
- . . . include the listener
- . . . include gaze in studies of voice