Principles and Parameters in language acquisition and language change

Linguistic Theory
MA course
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1 Principles and Parameters

- In spite of surface differences, languages share a great number of properties.
- In spite of the difficulties (the complexity of language, the problems related to the input), children pick up their first language relatively fast and surprisingly easily with only few wrong turns.
- Language faculty: a universal grammar (UG) which contains the core shared properties of language together with parameters that make differences possible.

1 Principles and Parameters

- Principles: the universal properties of language
- Parameters: binary choices defined by the principles, the source of differences between languages and language change

1.1 Principles and parameters: examples

The Word order parameter

A Verb Phrase (VP) may be made up of a transitive verb (Vtranz) and its object (O).

This in itself does not define the order of the two constituents. Within a language the order has to be specified, what we pronounce is either an OV or a VO order.

1.1 Principles and parameters: examples

- **The structure dependency principle** and language acquisition: Yes/No-questions

a. Daddy is sleeping.
b. Is Daddy sleeping?

c. The cats are sleeping.
d. Are the cats sleeping?
e. *Cats the are sleeping: not attested during language acquisition

1.1 Principles and parameters: examples

a. The cats that are sleeping should be chasing mice.

b. Should the cats that are sleeping be chasing mice?

c. *Are the cats that sleeping should be chansing mice?

1.2 Word order in the languages of the world

- VO/OV parameter
- Free/Fixed word order

- English: SOV
- Hungarian: a free word-order language?

1.2.1 Hungarian word order

Péter meghívta Marit.	Peter invited Mary.
Marit meghívta Péter.	Peter invited Mary.
Péter Marit meghívta.	Peter invited Mary.
Marit Péter meghívta.	Peter invited Mary.
Meghívta Marit Péter.	Peter invited Mary.
Meghívta Péter Marit.	Peter invited Mary.

→ conclusion on free word order seems to be justified

1.2.1.1 Question-answer pairs and inversion

a. Kit hívott meg Péter? (Who did Peter invite?)
Péter Marit hívta meg.
Marit (hívta meg Péter).

b. Ki hívta meg Marit? (Who invited Mary?)
Marit Péter hívta meg.
Péter (hívta meg Marit).

→ new information: fixed focus position

Structure configurational (English) vs.
discourse configurational languages (Hungarian).

1.2.1.2 The position of quantified expressions

a. Péter (csak) Marit hívta meg minden nap.
Peter only Mary invited PV every day
'It is (only) Mary Peter invited every day.'

b. Péter minden nap (csak) Marit hívta meg.
'It is (only) Mary Peter invited every day.'

c. Péter Marit minden nap meghívta.
As for Peter, Mary was invited by him every day.

1.2.1.3 Hungarian word order

(Topic(s))> (Quantified Expression(s))> (Focus) > Verb > (Other)

a. Topic > Verb > Other	Péter meghívta Marit.
	Marit meghívta Péter.
b. Topics > Verb	Péter Marit meghívta.
	Marit Péter meghívta.
c. Verb(al focus) > Other	Meghívta Marit Péter.
	Meghívta Péter Marit.

1.2.1.4 Word order and scope

a. [Többször is] [mindenkit] meghívtam.
'I invited everyone several times.' several times >> everyone

b. [Mindenkit] [többször is] meghívtam.
'Everyone was invited by me several times.' everyone >> several times

c. Ebben a teremben [mindenki] [két nyelvet] beszél.
in this room everybody two languages speaks
'Everyone speaks two languages in this room.' evry1 >> two lgs

d. Ebben a teremben [két nyelvet] [mindenki] beszél.
'Two languages are spoken by everyone in this room.' two lgs >> evry1

- Passivization for scope disambiguation in English: a costly operation

2 Old English and Old Hungarian

2.1 Old English

Evidence for OV order in Old English:

...Þæt he his stefne up ahof
...that he POSS.3SG voice up raise.Past
'...that he raised his voice.' (Bede 154.28; Roberts (2006))

Right dislocated patterns: deviation from base OV order:

...Þæt ænig mon atellan mæge [ealne Þone demm]
... that any man relate can all the misery
'that anyone can imagine all that misery.'
(*Orosius* 52.6-7; Roberts (2006))

2.2 Old Hungarian

The first written records of the Hungarian show a language with a split of information structure and grammatical functions resulting in today's orders:

Topic + Focus: preverbal position

S + O + Other: postverbal position

Old Hungarian was already discourse configurational

2.2.1 Data

- The written record showing that Hungarian was already discourse configurational as early as the 12th century is the so-called *Halotti beszéd és könyörgés* (Funeral sermon and prayer from the end of the 12th century, the first written record of considerable length).

- The data indicate that both preverbal subjects and objects need information structure properties (they have to be topic, focus or quantified) in order to appear in the preverbal domain of the sentence.

2.2.1 Data

a. Miv vogmuc/Mik vagyunk/What (we) are

b. Hog es tiv latiatuv szumtuchel
Hogy ti is látjátok a szemetekkel
That you.PL also see the eye.POSS.PL.with
That you can also see it with your eyes

c. Es oz gimils-nek wl keseruv uola víz-e…
and that fruit-DAT so bitter was water-POSS
És **a gyümölcsnek oly** keserű volt **a vize (=leve)**…
And **the fruit's water(=juice)** was so bitter…

Possessor: preverbal topic position

2.3 Proto-Hungarian

- É. Kiss (2011, 2013) argues that in Proto-Hungarian preverbal constituents had a dual function: on the one hand based on syntactic functions leading to an SOV order, on the other a discourse-based order, leading to the Topic > Focus > Verb pattern. This means Proto-Hungarian was both structure and discourse configurational.

- Evidence for head-final (like OV, see slide 25 as well) order:

a ház mögött
the house behind
behind the house

sietett volna
hurried would.have
would have hurried

2.4 Why do languages change?

Focus on syntactic change here

Roberts (2006): the role of language acquisition

3 Language acquisition

3.1 Parameter setting

- Language acquisition in the Principles and Parameters framework: setting the right parameter for the language.
- How?
- The role of the input: provides evidence for the value of parameters. Language acquisition is not simply imitation but an active, creative (but at the same time unconscious) mental process.

3.2 An example for a wrong turn

Child: Want other one spoon, Daddy.
Father: You mean, you want the other spoon.
Child: Yes, I want other one spoon, please Daddy.
Father: Can you say "the other spoon"?
Child: Other . . . one . . . spoon.
Father: Say "other".
Child: Other.
Father:"spoon".
Child: Spoon.
Father:"Other spoon".
Child: Other . . . spoon. Now give me other one spoon?

(Braine, 1971)

3.3 The indirect nature of the language acquisition process

- Roberts (2006): Though we are born with the language faculty making language acquisition possible, there is no direct relationship between the grammar of the generation providing the input and the grammar of the generation receiving it. The second generation (and, essentially, every generation mastering language) has to reconstruct the grammar based on indirect evidence. Grammar itself is a mental entity resulting in the corpora that serve as the input for language acquirers, and based on this their own grammar can be constructed:

- Generation 1: G1→ Corpus1
-
- Generation 2: G2→ Corpus 2

3.3.1 The result: imperfect language acquisition

- While we seem to be sharing the same language, there are always tiny little differences that are undetected most of the time. However, they accumulate with time and this is one of the factors that has led to the word order changes we have just discussed.

- Imperfection refers to the fact that the grammar acquired in not exactly the same as the grammar of the first generation. The language acquired is a complete, perfect system, but contains parameters set differently from the parameters of the generation providing the input.

3.4 The head-directionality parameter

Head-initial properties:

VO	*buy a book*
Preposition > Noun Phrase	*with a student*
Auxiliary > Verb	*can swim*
Article > Noun	*the cat*
Noun > Relative clause	*books that we read*
Complementizer > Sentence	*…that we read the book*

Head-final properties:

OV

Noun Phrase > Postposition

Verb > Auxiliary, etc.

Consistent patterns make acquisition easier. A lot of languages with mixed patterns (e.g. Hungarian).

3.4.1 VO and OV

- Systematically VO orders in input: VO parameter set
- Systematically OV orders: OV parameter set

- Traditionally it was assumed that the acquisition of grammar could not begin before 2 years of age, as a minimal lexicon was thought to be required for forming a system of grammar.

- Of course it makes a lot of sense not to expect small children to be able to identify the headedness parameter before they have any notion of word category, a distinction between verbs and nouns being a minimum requirement. However, as argued in Gervain (2010) babies can do better: there is evidence that babies can set the headedness parameter when they are as young as 8 months old.

3.5 Gervain (2010)

3.5.1 OV/VO in the languages of the world

Consistently OV

(head-final) languages:
Japanese, Turkish, Basque…

(1) *ringo-wo* *taberu*
apple.acc eats
'eats an apple'

(2) *Tokyo* *kara*
Tokió from
'from Tokyo'

Consistently VO

(head-initial) languages:
Italian, English, French…

(1) *mangia una mela*
eats an apple
'eats an apple'

(2) *sul* *tavolo*
on.the table
'on the table'

3.5.1 OV/VO in the languages of the world

Tokyo *kara*

Tokió from

‘from Tokyo’

[rare frequent]

sul *tavolo*

on.the table

‘on the table’

[frequent rare]

3.5.2 Method

- Teaching babies a simple artificial grammar

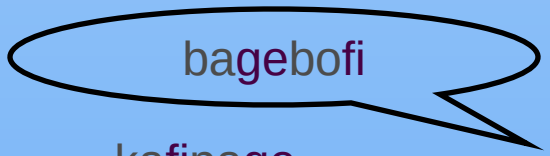
…frequent rare frequent rare frequent rare…

…[frequent rare] [frequent rare] [frequent rare]…

…frequent] [rare frequent] [rare frequent] [rare…

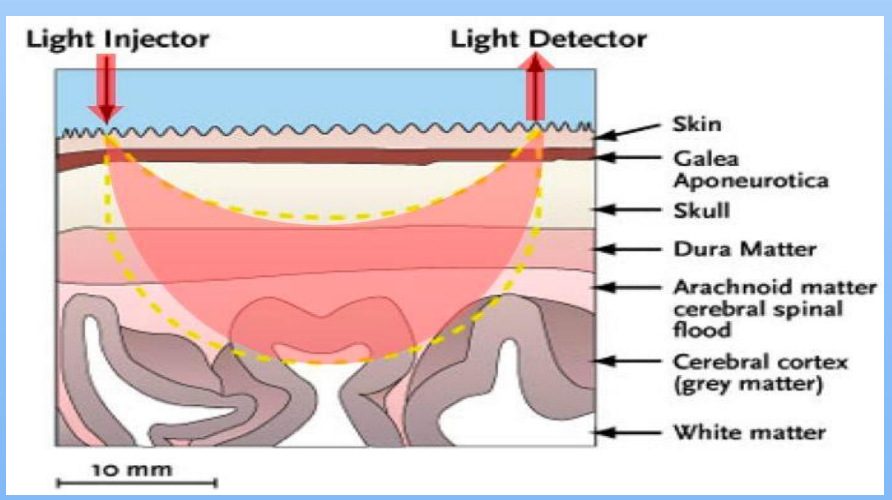
3.5.2 Method

firugemu
gedofide
gerifipe



kafipage
kufiduge
ragenafi

3.5.2.1 Near Infrared Spectroscopy

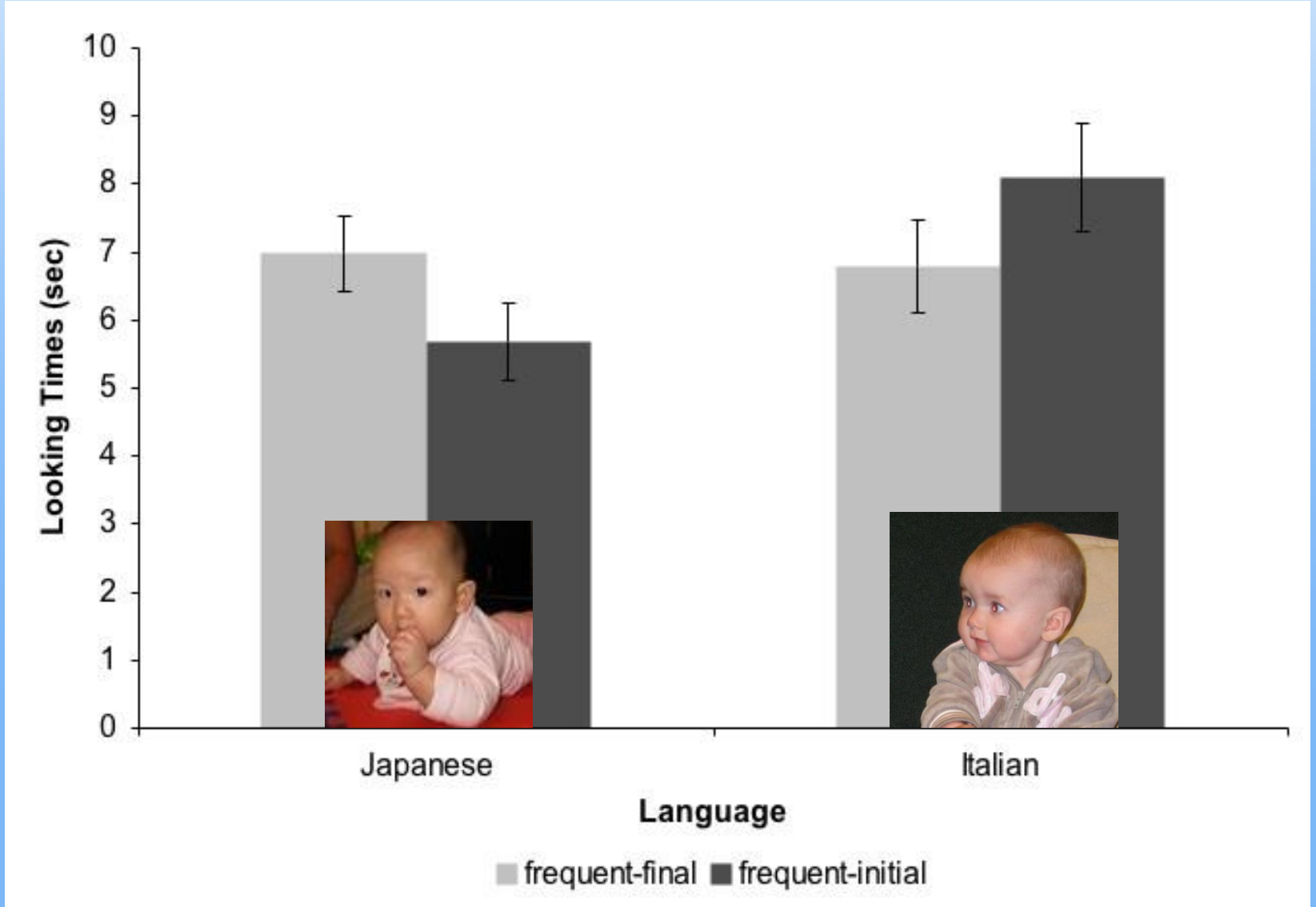


3.5.2 Method

They measured:

- Oxigen flow in the brain
- Heart rate
- Looking times

3.5.3 Results


Looking Times (sec)
10
9
8
7
6
5
4
3
2
1
0
Japanese
Italian
Language
frequent-final
frequent-initial

3.5.3 Results

The results of the experiment lead to the conclusion that the OV/VO choice is made very early, 8 months old babies could detect the difference. In order to be able to fix this parameter value you do not need a lexicon (the knowledge of - even a minimum number of - words).

Very Early Parameter Setting (VEPS)

4 Language acquisition and language change

4.1 Parameter resetting

What happens when the input is not fully consistent (which it very rarely is)?

Roberts (2006): When the input is compatible with both values of the parameter, the system is less stable, more prone to change, the result is not necessarily the same language as the language of the parents. The change can be described as a change in the value of the relevant parameter, which is often the result of reanalysis.

4.1.1 Reanalysis

- A change in the structure of language without a change in surface order.
- Directly connected to language acquisition, one of the triggers for language change.
- Abductive change (Andersen 1973)

4.1.2 Abduction

Faulty reasoning

Deduction: from a law and a case to result

Man is mortal → Socrates is mortal

Induction: observations lead to a law that is intrinsically connected to the cases

X observations → People are mortal

Abduction: also based on observations but the conclusion is faulty, accidental connection between observation and consequence.

X is mortal & people are mortal ↛ X is a human being

4.1.2.1 Language acquisition and abduction

Generation 1: G1→ Corpus1

Generation 2: G2→ Corpus 2

- It is easy to see how the process of language acquisition illustrated in (16) is open to abductive change: since there is only indirect evidence for the grammar of Generation 1, Generation 2 can identify parameters that are different from the generation providing the corpus due to the fact that the corpus is often compatible with more than one grammar.

4.1.2.2 The Inertia-principle

Problem with abduction: too much room for chance, does not explain the systematic patterns we find in language change.

Longobardi's (2001:278) Inertia-principle: 'syntactic change should not arise, unless it can be shown to be *caused* (emphasis by Longobardi).

What it means is this: if there is evidence for the value of a parameter, the matching value will be set. Abductive change can happen when the value of a parameter is ambiguous.

4.1.2.3 P-ambiguity

P-ambiguity:

A substring of the input text S is strongly P-ambiguous with respect to a parameter p_i just in case a grammar can have p_i set to either value and assign a well-formed representation to S.

A strongly P-ambiguous string may express either value of p_i and therefore trigger either value of p_i.

A weakly P-ambiguous string expresses neither value of p_i and therefore triggers neither value of p_i.

(Roberts 2006)

4.1.2.4 Markedness

- What happens when the input is ambiguous with regard to the value of a parameter?

→ the language acquirer chooses the simpler value, e.g. the option without movement.

- Which is the simpler value of a parameter?

The Theory of Markedness: marked and unmarked values, the marked value is set only if there is evidence for it in the input, otherwise the unmarked value is fixed.

The unmarked value is more frequent cross-linguistically, and emerges earlier during the process of language acquisition (but may be reset later due to more evidence becaming available in the input).

4.1.3 Right Dislocation in Old English

Old English had OV order, but certain arguments could appear on the right of the verb:

...Þæt ænig mon atellan mæge [ealne Þone demm]

... hogy bármelyik ember viszonyulni tud összes az nyomor

'...hogy bárki el tudja képzelni mindazt a nyomort.'

With time more and more constituents appeared in this position leading to less and less evidence for OV order.

4.1.3.1 The role of Right Dislocation

- Both in English and Hungarian: first Right Dislocation was used for very few constituents, but got more and more widespread with time. After a while postverbal arguments were reanalyzed as base-generated.

VO order:

$[_{VP}\ t_i\ V\ NP_i\ ]$ → $[_{VP}\ V\ NP]$

OV base + movement VO base

4.2 Main clauses vs. embedded clauses

The structure of simple sentences does not necessarily offer enough evidence for the word order parameter and the base position of the verb.

German, Dutch: OV languages, but in main clauses: V2 (the finite verb is always the second constituent of the main clause), frequent VO szórend in main clauses, OV only in embedding.

Lightfoot (1991): children recreate grammar based on simple sentences.

The absence of the OV order in itself does not make parameter setting impossible, but in these cases there should be other indicators of OV order.

4.2.1 Modern Dutch and Old English

Modern Dutch

Jan **belt** de hoogleraar **op.**

Jan calls the professor up

'Jan calls up the professor.'

Jan moet de hoogleraar **opbellen.**

'Jan has to call up the professor. '

Old English

Stephanus **up-astah**.

'Stephanus rose.'

No structure similar to Modern Dutch, even fewer data supporting the OV base (15th century: only negative and quantified NPs).

4.3 Early Modern English: a change in the position of the verb

In EME the lexical verb could appear before the negative particle or and adverb showing evidence for a high position of the lexical verb:

if I gave not this accompt to you
'if I didn't give this account to you'
(c1557: J. Cheke, Letter to Hoby; Roberts (2006))

The Turkes … made anon redy a grete ordonnaunce
'The Turks … soon prepared a great ordnance.'
(c1482: Kaye, *The Delectable Newsse of the Glorious Victorye of the Rhodyans agaynest the Turkes*; Roberts (2006))

4.3.1 Strong P-ambiguity

- Simple sentences in simple tenses are strongly P-ambiguous in Early Modern English, the data support both the high position and the low position analysis. The loss of a morphological marker (rich inflection) lead to the loss of the high position in Modern English.

John walketh.

4.3.2 Weak P-ambiguity

English modal auxiliaries were used as main verbs in Middle English:

Wultu kastles and kinedomes?

Wilt thou castles and kingdoms?

(c1225, Anon; Roberts (2006))

I shall not konne answere.

I shall not can answer.

(1386, Chaucer; Roberts (2006))

4.3.2 Weak P-ambiguity

Slightly earlier than the loss of movement for lexical verbs, modals became high-position elements appearing before negation and adverbs. When modals were present, lexical verbs remained in the lower position. Once modals became high position elements, sentences containing modals were weakly P-ambiguous regarding the position of the verb: since the modal is in the high position, the sentence gives no information for or against the high position for the lexical verb.

I may not speak.

→ a lot of P-ambiguity, no evidence for the movement of the lexical verb to the higher position, simpler option chosen leading to the loss of verb movement.

4.4 The logical problem of language change

What happens when the value of a parameter changes is the following: a given parameter is set to a certain value by the generation providing the input, but based on the input provided by them the next generation ends up with a different parameter setting. Two major questions:

- How is it possible? If there is not enough evidence for the marked value of the parameter, the unmarked value is set.
- How can a certain change take centuries to be completed? Roberts (2006): parameters form clusters, the change of one parameter can trigger the change of another.

4.5 Nicaraguan Sign Language

- Probably the most extreme case of language change/creation.
- While language change is usually a very slow process, Nicaraguan Sign Language emerged in about a decade in a community of around 500 deaf children in the 1980s brought together by the Nicaraguan government as a result of an education-for-all initiative.
- The missing values have been claimed to be filled in by default parameter values resulting in a complete system, a full-fledged language.
- The Evolution of language
- https://www.youtube.com/watch?v=pjtioIFuNf8

5 Conclusion: the role of parameters

Parameters: fixed choices even in those cases when the input does not provide enough information concerning the value of the parameter. If information on the value of a parameter is not available the unmarked value is set.

→ This has important consequences for both language acquisition and language change: if the input does not contain enough information for the value of a parameter, the language acquirer sets the unmarked value which may result in a grammar different from the generation providing the input.

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To unwind

Eminem Lose yourself ASL (American Sign Language)

Note: if you speak Nicaraguan Sign Language but are not a native speaker of American Sign language you have to learn it in order to be able to communicate in ASL. Different sign languages are potentially as different from each other as any natural language.

https://www.youtube.com/watch?v=KoVDZJqTmRo

Downloaded version