

What is language change? And how do you explain it?

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Idealised summary

	Nature	Studied in	Explanation type	Example
I-language	Component of the linguistic module of the mind	Formal linguistics	Logical	If X then Y must follow as logical consequence
C-language	System of community conventions	Sociolinguistics	Functional	To achieve X social outcome the speaker used Y variant
H-language	Emergent product of interactions at the lower levels	Historical linguistics	Supervenience; Narrative	X property shared by many entities at the lower-level shows up as Y at the emergent level; X to Y happens in Language because of a,b, and c specific reasons

What we might realistically cover today

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What is Language?

The English word *language* refers to three distinct **objects of study**. That are studied by different (sub-)disciplines, have different **ontologies**, and therefore require different types of explanation.

Language is...

- a) A mental object: “a computational component of the individual human mind (I-language)” (Hale, Monday)
 - b) A social object: system of communicative norms that exists between speakers in a community
 - c) A political-historical object: a system of communication used by people living in a particular country
-
- **Object of study**: the thing studied by a discipline i.e., what we are trying to understand
 - **Ontology**: the nature of a thing i.e., what kind of thing it is

Ontologies: top-down vs bottom-up

- Whatever else *language* is, it is a system
- There are two ways to approach a system:
 - Top-down
 - Patterns in a system arise from deterministic rules
 - Bottom-up
 - Patterns arise from interaction elements in a system
 - Stochastic
 - We may know rules that govern interactions but this doesn't tell us how the pattern arises

These are all definitions of language change

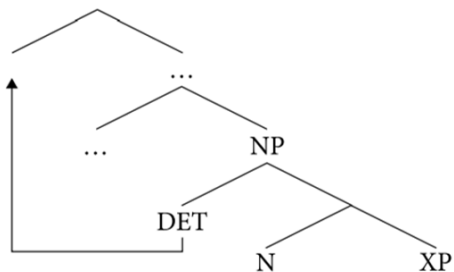
Language change as understood in plain English has three referents in linguistic study

- a) Change is the difference between one I-language and a direct descendant I-language
- b) Change in a system of communicative norms that exists between speakers in a community
- c) Change in a system of communication used by people living in a particular country


(a) Language is a system of cognitive representation and computation that underlies all linguistic production and perception

- The I-linguistic view*
- I-language is individual, internal, and intensional (Chomsky, 1986)
 - Intensional: a set is intensionally defined if its members are determined by a function/rule/constraint (rather than as a list)
 - Every person has a unique I-language within their mind/brain that is defined by a set of rules/constraints
- I-linguistic study is concerned with how mental objects are manipulated

Move and Merge of determiners in Latin (Blümel, 2025)



Aspiration of word-internal /s/ in Chilean Spanish /este/ (Colina, 2025)

	CONTIGUITY	*s]coda	MAX (SL)	MAX (Seg)
a. [éte]	*!			*
b. [éste]		*!		
c.  [éhte]			*	

Lambda calculus in formal semantics (Partee, 2016)

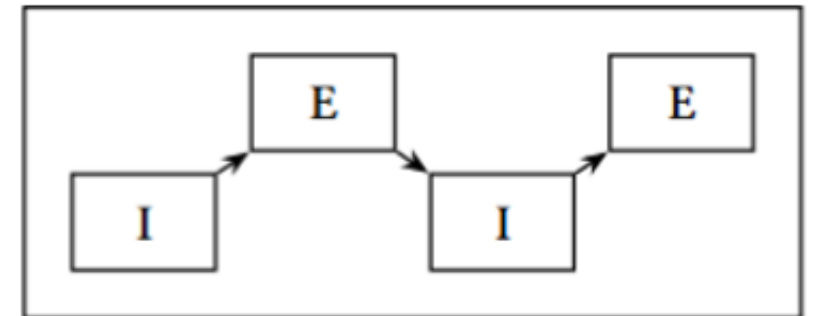
- $\{x : x \text{ is a hat and Pat had lost } x\}$
- $\lambda x.\text{hat}(x) \ \& \ \text{lost}(\text{Pat}, x)$

*there are other ways to characterise language as a cognitive system e.g. Construction Grammar ⁷

*there is also lifespan change where an I-language changes over the course of someone's life but we won't talk about that now – see Patrick's talk from last ETHL

I-language change

- I-language change is the difference between the I-language of a child and their parent
- Change 🤝 Acquisition*
- Child constructs an I-language from their Primary Linguistic data (PLD)
- PLD = E-language data
- **Misanalysis**: a learner miscategorises some E-feature as I-linguistically conditioned
- Misanalysis -> change
 - The child now has a different I-language to their parent
- Change progresses in a chain from I- to E- to I- to E-



Anderson (1973)

Internal and external language

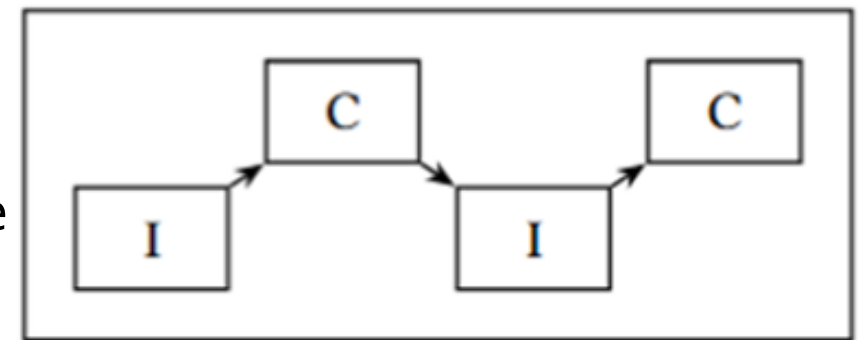
- Chomsky (1986) introduces the terms I-language and E-language
- Definition (a) refers to I-language
 - Strictly defined, abstract, and idealised
 - **Top-down**
 - For studying the human faculty for language
- Definitions (b) and (c) refer to different conceptions of E-language
 - Not what Chomsky wants to study and doesn't tell us much about the language faculty
 - Tell us about people
 - Messy
- Definitions (b) and (c) refer to **bottom-up** systems
 - They have not been as rigidly defined as I-language

(b) Language is a system of communicative norms that exists between speakers in a community

- Informal definition: the thing sociolinguists study
- The interaction between individuals and the social system they exist within
- The social perception of a variant impacts how speakers use it which in turn impacts the social perception of the variant....
- Some linguists are primarily concerned with that community level perception i.e., meaning of variant in a specific context
 - e.g. Snell (2017): *howay* (interjection: come on) is a unique feature of North Eastern English. Speakers use *howay* to convey belonging to a NE working class community
 - Link between community-level knowledge and individual identity
- We'll call this sort of thing "**C-language**"

C-language change

- Investigations of change in a community
 - Why have people started/stopped using X?
 - How has the perception of X changed?
 - Why has it changed?
- Concerned with the diffusion (spread) of an innovation
- i.e., how does an individual misanalysis become a change in English?
- C-language of parent = PLD
- Change in community usage -> different I-language
- Tracking C-lang change can be a proxy for I-lang change



Adapted from Anderson (1973)

(c) Language is a system of communication used by people living in a particular country

- The Historical conception of language (**H-language**)
- The thing that has been spoken on that green bit since the 5th c. is a language
- English is treated as “**historical object**”
 - Old, Middle, Early Modern, Present are treated as states of one entity
 - Concerned with how one stage becomes the next
- Historical linguistics vs linguistic histories



H-language change

- Historical linguistic change: idealisation comparing reconstructed I-languages from two different points in time
- Linguistic history change: comparing two states of this thing **“English”**
- Where a linguistic historian might say “X was lost from Middle English” and mean exactly that a historical linguist saying the same thing would mean something like:
 - “Whereas the I-language of an Old English speaker contained X there is no evidence to suggest that X should be part of the I-language reconstructed for a Middle English speaker.”
- These sound similar but the first refers to **a change within one object** (English) whereas the second refers to a **difference between two objects**
- Is English an object that is capable of change?

What is English?

The problems

- We have one every-day word (language) for three different objects of study in the field of linguistics
- These objects of study are all ontologically distinct so failure to distinguish causes serious issues
- It is not clear whether “English” is a thing (in linguistics)
 - Does it exist in any theoretically meaningful sense?
 - A language is a dialect with an army and a navy – Weinreich
 - We have a constrained theory of what it means to be an I-language can we construct a similar theory of H-language?

Conceptualising H-language

I argue that H-language is the *emergent product* of the interactions of speakers in communities over a long period of time

I argue that we can treat English as the same kind of object as *the economy* or *the government* or *The University of Edinburgh*

Coming up

I'll introduce levels of representation, emergentism, reductionism, and holism

Degrees of Granularity

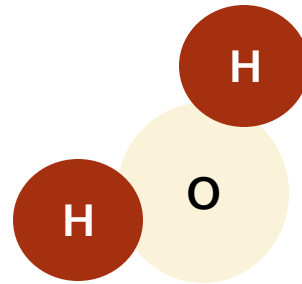
Sub-atomic level

Molecular level

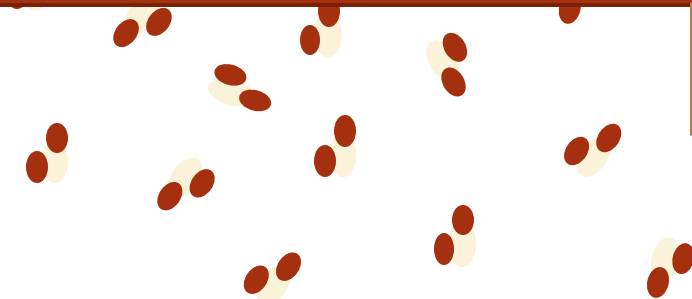
Quantum physics



Proton:
Positive charge
Incompressible
Can't see it
Intangible



Water (H₂O) molecule:
No charge
Incompressible
Can't see it
Intangible



Steam (H₂O gas):
No charge
Compressible
Visible to the human eye
Tangible

Summary:

- Each level of representation has different properties to the higher and lower level.
- Some properties that exist at the higher levels cannot be represented at lower levels.
- Different laws govern different levels of representation.

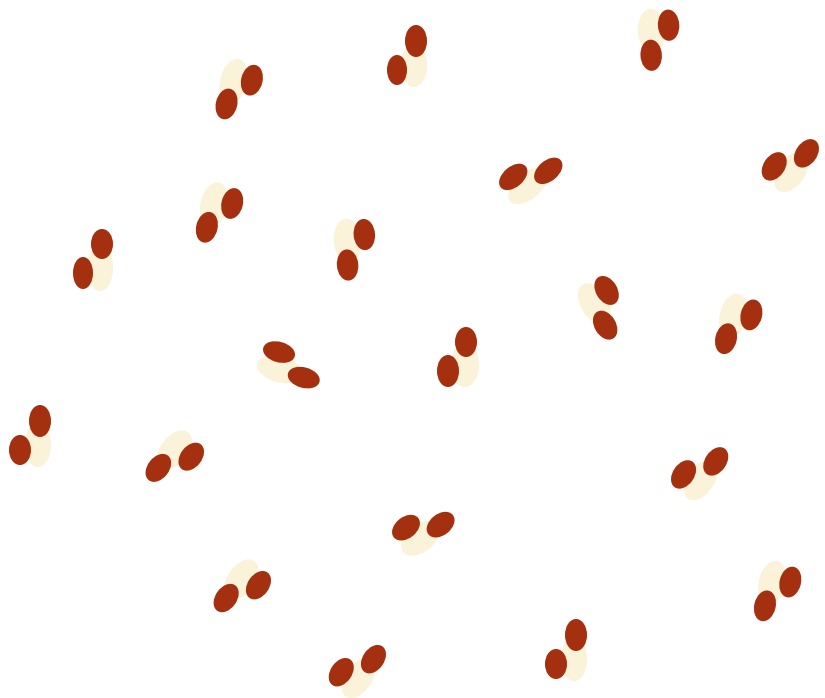
Atmospheric chemistry

Macro-differences

The same molecules at the lower-level produce different macro-level properties.

The difference between steam, water, and ice comes from how the H₂O molecules combine.

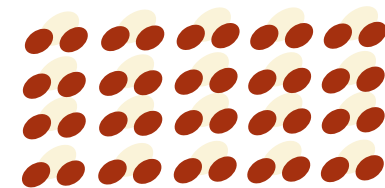
A single H₂O molecule is not solid, liquid, or gas because states of matter are emergent and do not reduce to the substrate level.



Steam



Liquid water



Ice

Consider a chair

Emerges from



- What is this chair made of?
 - Wood
- What's wood made of?
 - Cellulose (and some other stuff)
- What's cellulose made of?
 - Carbon, hydrogen, oxygen
- What's that made of?
 - Protons, neutrons, and electrons
- What are they made of?
 - Quarks



Reduces to

Now imagine you are one of the carbon atoms that makes up this chair. What can you see?

- A bunch of other carbon atoms and some oxygen and hydrogen
- Maybe you can see that these elements are contained within larger structures, cellulose molecules.
- You can't see the chair

The chair is an emergent product of the cellulose but as a carbon atom you don't know that.

The chair is both an emergent product and a normal every-day object. We *could* refer to it as a collection of biological molecules or as a bunch of quarks but that be annoying and not very helpful.

Emergentism and reducibility

The chair exists at a higher level of representation that is irreducible to the level of the carbon atom. The carbon atom is still part of the chair it just doesn't know it.

Emergent products have properties that are derived from their substrates

- E.g., The chair
 - You can sit on it because it is made of a solid material
 - It is flammable because it is carbon based

= supervenience

But these emergent properties don't have to exist at those lower (substrate) levels

- Wood (i.e., lots of cellulose together) is solid a single molecule of cellulose is not
- A single atom of carbon isn't flammable

= irreducibility

Similarly, the substrates can have properties that do not exist at the emergent level

- Quarks, sub-atomic particles, atoms, molecules can be charged but wooden chairs can't be

Levels of Language



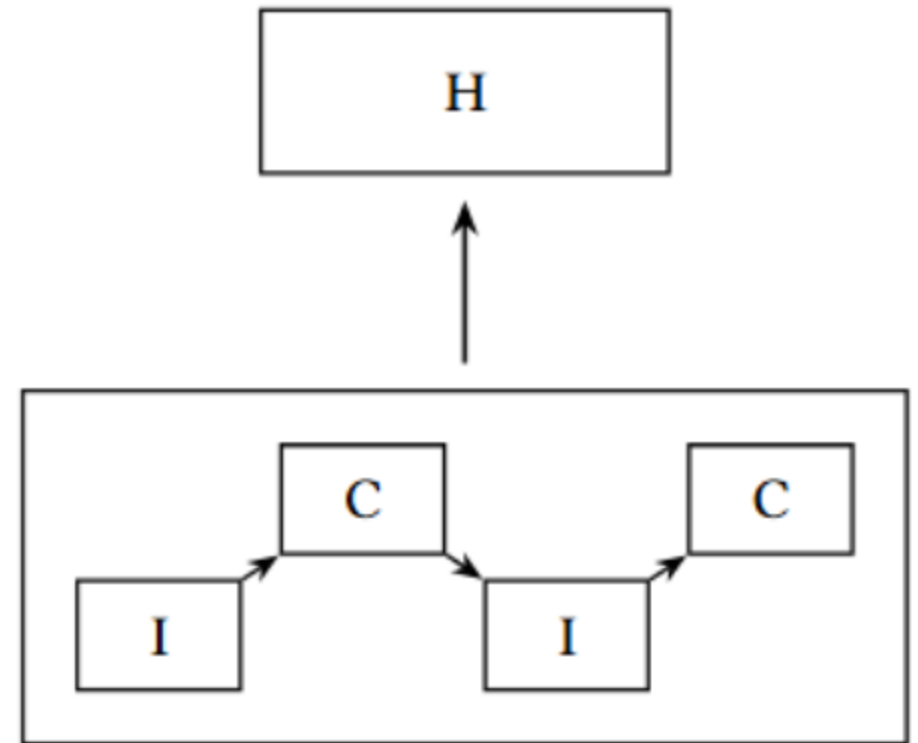
Historical level (English)

- External
- Emerges from community-level changes over time
- Patterns of change visible
- Not reducible to the individual

Three Types of “Language”

- There is a recursive relationship between the C-language and I-language
- Community conventions emerge from the repeated interaction of speakers. This C-language is the input to the next generation of I-languages
- With a very coarse grained lens we can see that H-language emerges from this I/C interaction

There are analogues in social sciences e.g., the economy, or the socio-political system



What are patterns?

Is this a pattern?



Patterns do not exist in the world they are
imposed on regularities by our minds
Dennett (1991)

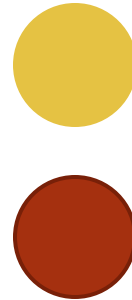
What are patterns?

- So we agree that A is not a pattern but B is
- The pattern *emerges* some where between A and B
- Patterns are **emergent products** they do not exist on the level of representation as the things they're made up of (substrates)

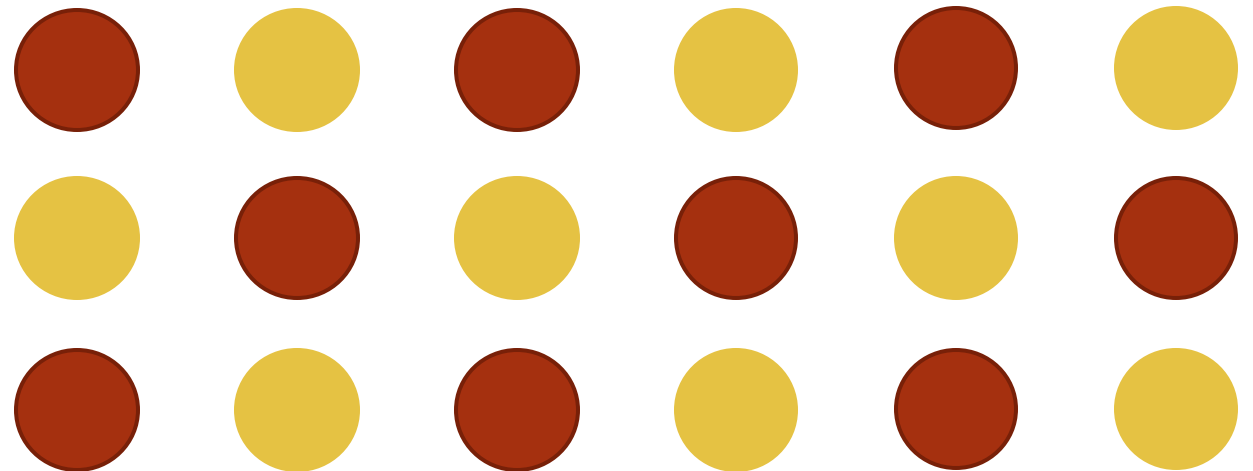
But

- Where does the pattern "live"?
- What is the pattern a property of?

A.

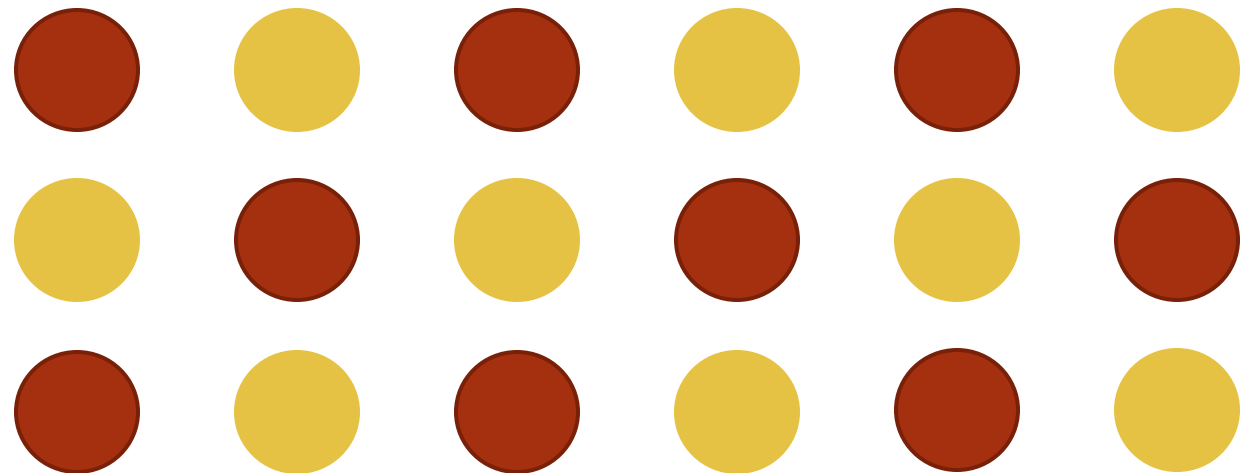


B.



Patterns are mental objects

- Bear with me here
- Patterns imposed on the data by our minds
- Does that mean they're not real?



I ≠ H

- I-language is a top-down system so
 - The rules/constraints of an I-language can be deterministic
 - /t/ -> [d] /V_V
 - Because they are a property of the mind

Rules can't exist outside the mind -> there are no H-language rules

- Externally, there is a pattern derived from a rule:
 - [ada], [adi], [idi], [ast], [asd], [ats]
- But not the rule itself
- H-language emerges bottom-up from human interactions therefore it's behaviour is much more stochastic
- H-language is not rule governed
- "Historical rules" are patterns we, as analysts, impose on the data not rules of the system

Methodological Pluralism

- Methodological Pluralism emerged in response to the reduction vs holism debate in the social sciences
- **Reductionism:** higher-level entities like Universities or the economy are **epiphenomenal** of and fully reducible to their parts
 - The University of Edinburgh is exactly the sum of its parts
- **Holism:** higher-level entities exist in their own class of things irreducible to their component parts
 - The University of Edinburgh is more than the sum of its parts
- Pluralism combines aspects of both to encapsulate the observed behaviour of social systems

Little (1991), List and Spiekermann (2013), Reiss (2013)

Epiphenomenon: a by-product of a phenomenon with now power to influence the primary phenomenon

A Holistic View of Universities

- The University of Edinburgh has properties that individuals cannot have e.g.,
 - A Linguistics department
 - The power to issue degrees
- Who disagrees with this statement:
 - “The University of Edinburgh was established in 1583.”
- None of the members, books, buildings are the same as in 1583 but this statement still makes sense because the concept of UoE as an institution outlasts its individual components
- **Problem:** the university does not a brain, it is not a sentient being, how can it make decisions? How can it take agentive action?

The Case for Reductionism

A reductionist definition: The University of Edinburgh is the sum of its buildings, books, and members

- We could extensionally define UoE with a finite list of its components
- This solves the causal problem because:
 - Any action attributed to “The University of Edinburgh” is carried out by an individual acting on behalf of the collective
 - “The University of Edinburgh grants...” is shorthand for “The person in charge of UoE who acts on behalf of the collective grants”
- But raises the ship of Theseus issue
 - The University today is not the same as the University in 1583 (or last week)

Pluralism in University

- The University of Edinburgh is an institution but its causal power is exerted through the action of its members

dl. Deadline News

Edinburgh University plans cuts to at least a dozen medical college programmes

Reductionism: *plan* requires an agent



Holism: individuals can't have colleges or programmes

Edinburgh University plans cuts to at least a dozen medical college programmes ... AS
of a cost-saving drive at the University of Edinburgh,...

- E.g., only the University has the authority to issue degrees but without a VC to sign the certificates no degrees can be awarded
- Higher level entities are ontologically distinct from their substrates but can only exert causal influence through action at the substrate level

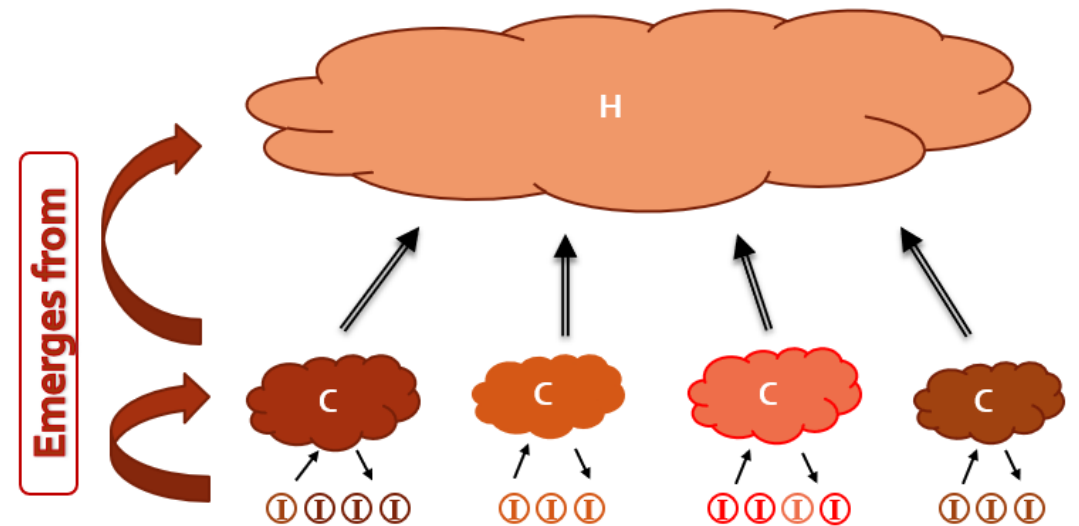
This can be adapted for *language*

H is for Holism

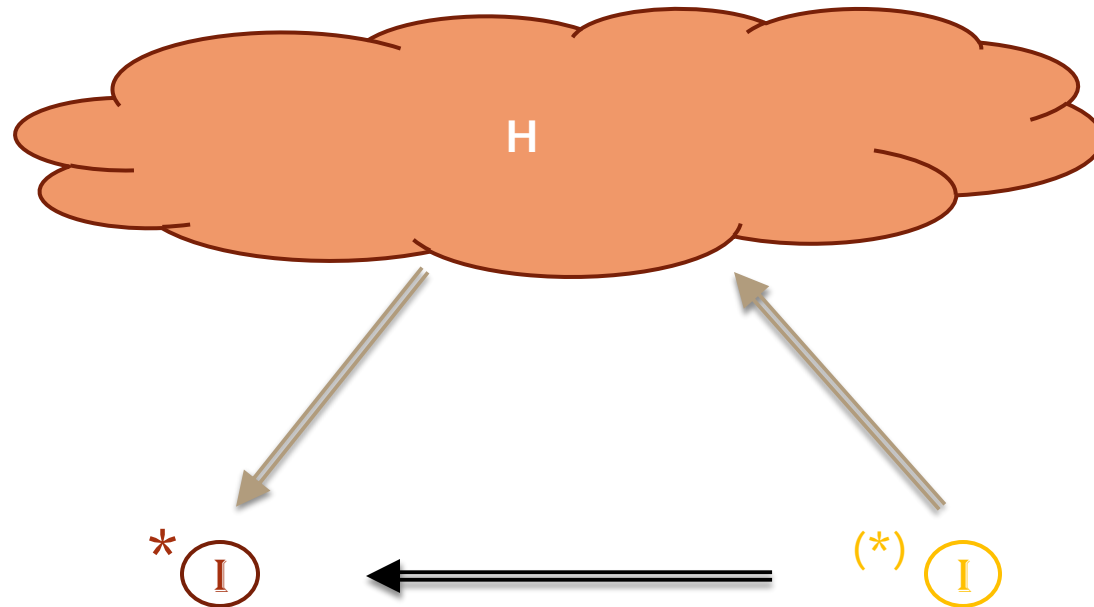
- H-language is a higher-level emergent thing like a University
- English, the H-language, has properties that individual I-languages cannot have e.g.,
 - Periods like Old English, Middle English etc.
 - Dictionaries
 - Dialects
- Who disagrees with this statement:
 - “Shakespeare, Austen, and Orwell wrote in English.”
- Shakespeare, Austen, and Orwell did not have the same I-language and none of them have the same I-language as any of you but the H-language concept of English outlasts any individual I-language.
- **Problem:** If change occurs in acquisition, how can the H-language (which is not within a mind) cause change?
 - **Spoiler:** it can't – this is another talk on its own

A Pluralist View of Language

- H-language is an emergent product with **no causal power**
- Change is enacted at the low individual level
- Change happens at the level of the I-language
- It may then diffuse through the C-language
 - C-language change = Labovian style sociolinguistic change
- And eventually, percolates up to the H-language
 - H-language change looks like OE does X but ME does Y



What do theoretical historical linguists *do*?



We need I- and H-

H-language is a way of conceptualising the descent relationship chain that Mark mentioned

Why bother?

- At the moment we have a negative definition of H-language i.e., “not I-language”
- Conceptualising H-language as an emergent system gives us a formal way of talking about it
- It is then easier to distinguish things that should be attributed to I-language to those that should be attributed to H-language
 - E.g. frequency effects are an H-language property
- Other disciplines have developed frameworks of explanation for complex systems which gives us a model of how explanation can (and can't) work in THL
 - i.e., ontological holism and epistemological reductionism (List & Spiekermann, 2013)

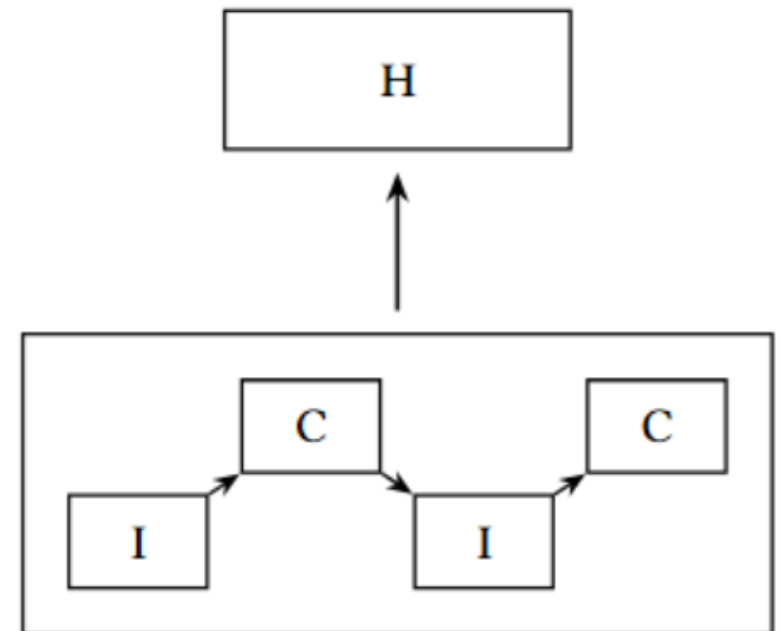
But where is H-language?

- It **is not** in the **linguistic component** of the mind
- It **is** socially and politically conditioned
- It **does not** “live” anywhere in the world
- It **is** a pattern we impose on our data
- It **is** in the mind - it is a component of knowledge:
 - You have a concept of English and French and Japanese
 - You (presumably) change how you speak based on whether someone is speaking the same language as you

Define language change

(d) all of the above

- We can choose to focus on change at different levels
- Change in I- C- H- looks very different
 - I- C- H- require different types of explanation
- We can also look at the relation between levels
 - E.g. How does I-language change show up in the H-language?
 - E.g., How does C become H?
- Language change is not *one* thing



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References

Blümel, A. (2025). Revisiting diachronic change in the nominal domain from Latin to modern Romance. *Linguistic Variation*. <https://doi.org/10.1075/lv.24056.blü>

Chomsky, N. (1986). *Knowledge of Language: Its Nature, Origin, and Use*. Praeger

Colina, S. (2025). Chilean s-deletion and aspiration: against a Stratal OT account. *Anuario Del Seminario de Filología Vasca Julio de Urquijo*, 57, 225–245. <https://doi.org/10.1387/asju.25951>

Dennett, D. (1991). Real Patterns . *The Journal of Philosophy* , 88(1), 27–51.

List, C., & Spiekermann, K. (2013). Methodological Individualism and Holism in Political Science: A Reconciliation. *The American Political Science Review*, 107(4), 629–643. <http://www.jstor.org/stable/43654026>

Little, D. (1991) *Varieties of social explanation : an introduction to the philosophy of social science*. Westview.

Partee, B. H. (2016). Formal semantics. In M. Aloni & P. Dekker (Eds.), *The Cambridge Handbook of Formal Semantics* (pp. 3–32). chapter, Cambridge: Cambridge University Press.

Reiss, J. (2013). *Philosophy of economics : a contemporary introduction*. Routledge.

Tinbergen's four questions (1963)

There are four types of thing you can know about an organism (object)

1. Mechanism: how does it work?
2. Phylogeny: how did evolve/ where did it come from?
3. Function: why is it doing that?
4. Ontology: how has it changed during it's lifetime?

An answer to any of these questions is an *explanation* of some aspect of an object

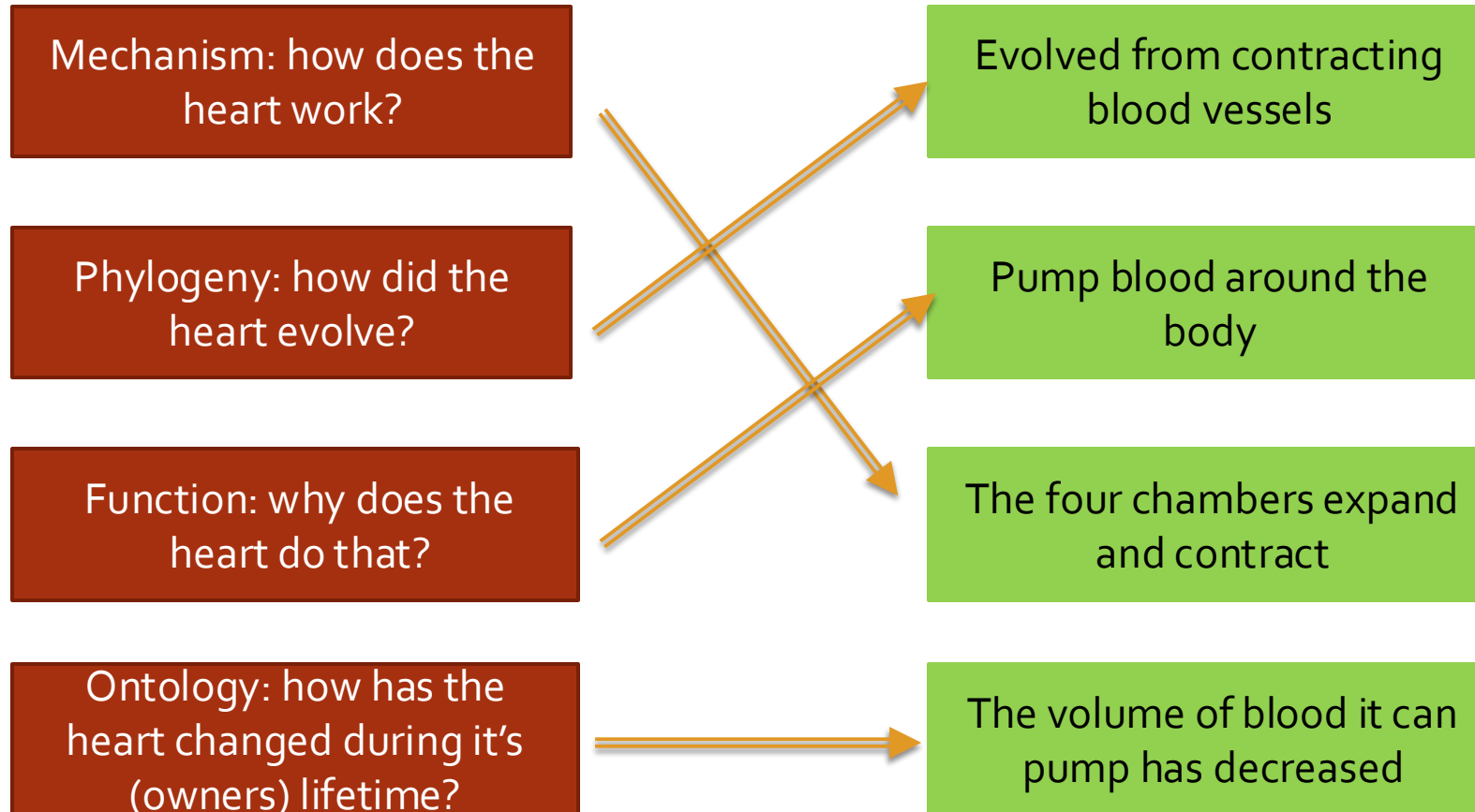
To fully *understand* an object you need to answer all four questions

The answer to one does not explain another

- E.g. the mechanism of action cannot be explained by evolution

Explaining the heart

N.B. it is easy to confuse mechanism and function



Four explanations in language change

1. Mechanism: how does this change work?
2. Phylogeny: how did evolve/ where did this change come from?
3. Function: why did this change happen?



I-language: what is the state of the post-change I-language & what is the state of the pre-change I-language?



H-language: how did some previous state of the language facilitate this change, where did it come from?



C-language: why are people adopting this change and how/ why is it spreading through the community

Ontology is more complicated. It kinda corresponds to I-lang and C-lang in a way that we won't go into

how has it changed lifetime?