

Grammar tells us what kind of object a thing is.
Essence is expressed by grammar.

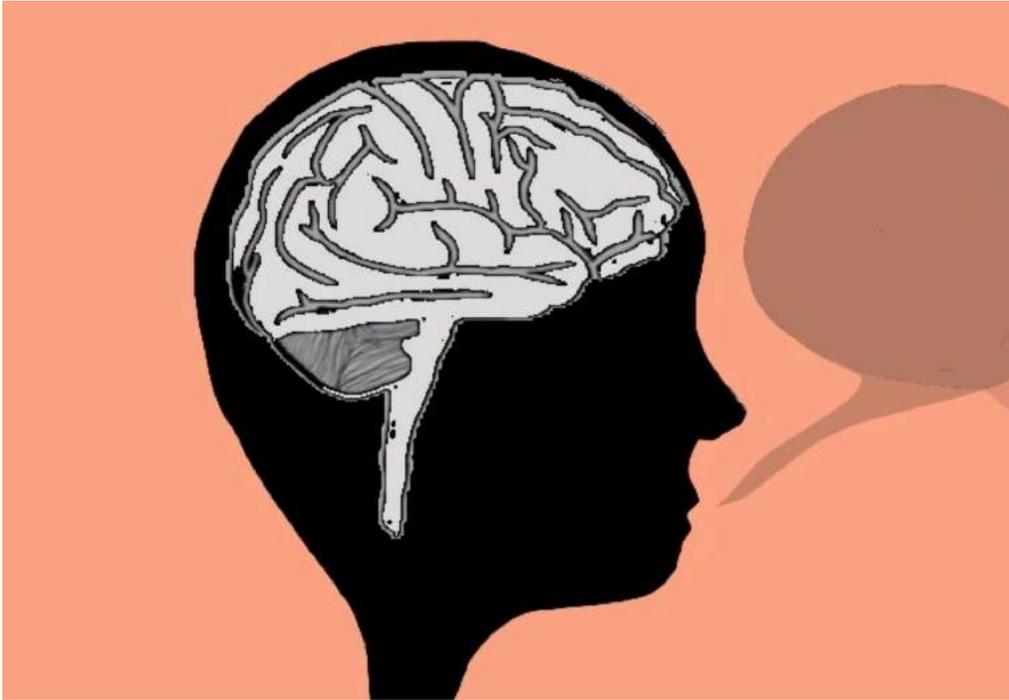
Wittgenstein 1967

The grammar of emotions and the absence thereof

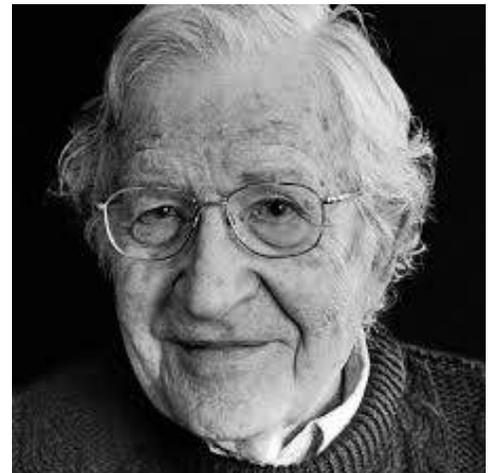
Martina Wiltschko

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Prelude

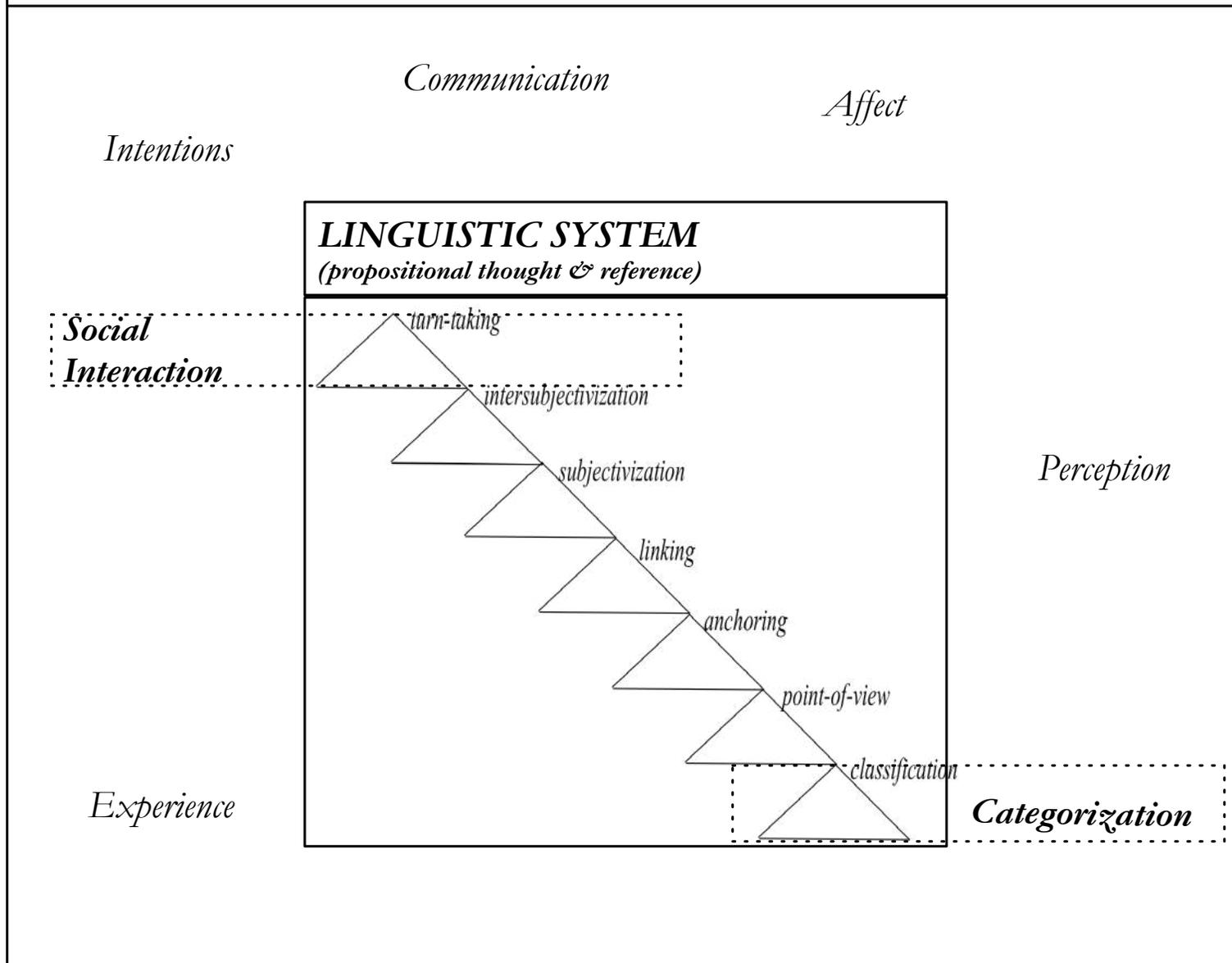


Language as a
window into the
mind



THE HUMAN LINGUISTIC-COGNITIVE PHENOTYPE

Where is emotion?



Hinzen & Wiltschko 2020

Emotion in language



The emotive response paradigm

a. <i>yes</i>	<i>no</i>	basic
b. <i>yeah</i>	<i>nah</i>	vowel weakening (?)
c. <i>yup/yep</i>	<i>nope</i>	final shortening + p-insertion
d. <i>yesssss</i>	<i>noooooooooo</i>	final lengthening
e. <i>yeah yeah(...)</i>	<i>no no (...)</i>	doubling
f. <i>oh yes</i>	<i>oh no</i>	<i>oh</i> -prefixation

Wiltschko 2017, to appear

Emotion in language

- Language allows for the expression of emotion

“we must not fail to recognize that the same sense, the same thought, may be variously expressed; thus the difference does not here concern the sense, but only the apprehension [*Auffassung*], shading [*Beleuchtung*], or colouring [*Färbung*] of the thought, and is irrelevant for logic.”

Frege 1892

The symbolic use of words is *statement*; the recording, the support, the organization and the communication of references. The emotive use of words is a more simple matter, it is the use of words to express or excite feelings and attitudes. It is probably more primitive. If

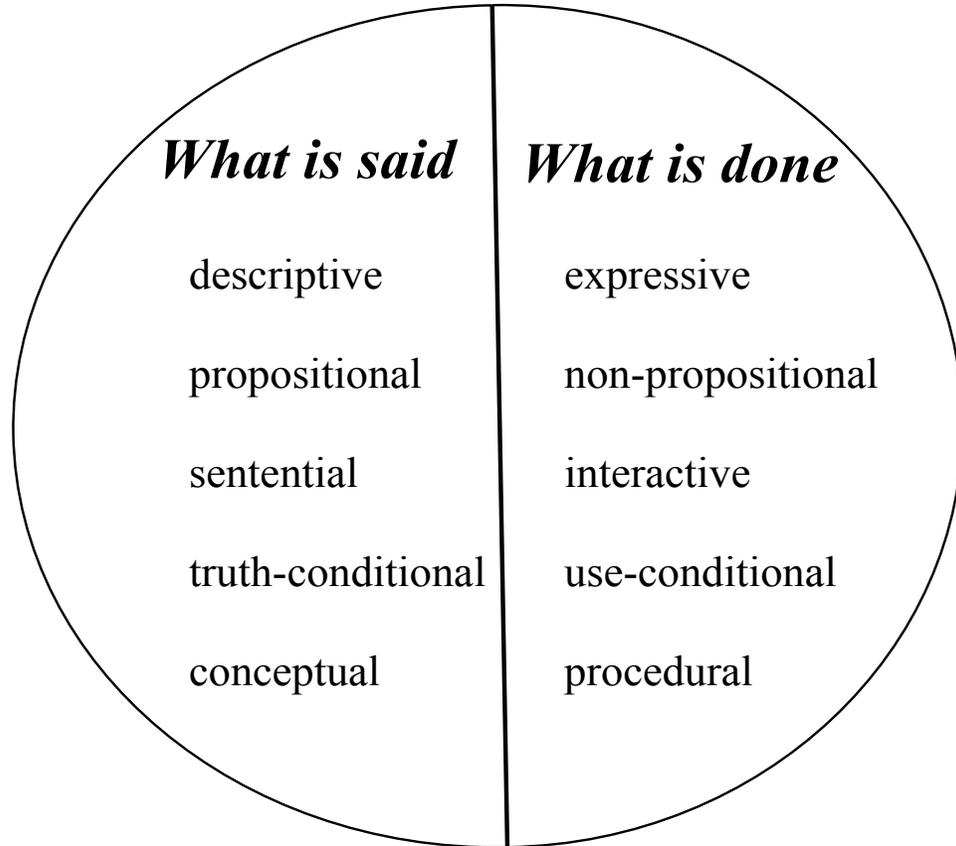
Ogden & Richards 1923: 149

Emotion in language

The distinctions I have tried to make, between descriptives and expressives, and between descriptive content and expressive content, is not that between characterizations of the world and expressions of emotion –an echo of the old distinction between **cognitive meaning and emotive meaning**. The **mode of expression – descriptive vs. expressive** – does not correlate with the nature of the semantic information –objective vs. subjective. This is the important lesson of “oops”. The information is objective, but the word is an expressive. Similarly, the information in “I am in a state of joyful elation” is presented in a descriptive mode, although the semantic information itself is as subjective as can be. I would contend that the very same semantic information is contained in the expressive, “Hooray!”.

Kaplan 2004

Emotion in language: the semantic angle



Recent generative treatments of expressive language:
Potts 2004, Gutzmann 2013, 2019

Empirical goal

- A case study of response markers in English: the emotive response paradigm

Analytical goal

- Is there a particular grammar associated with emotive language and expressive mode?
- In other words: is there an **EmotivePhrase**?

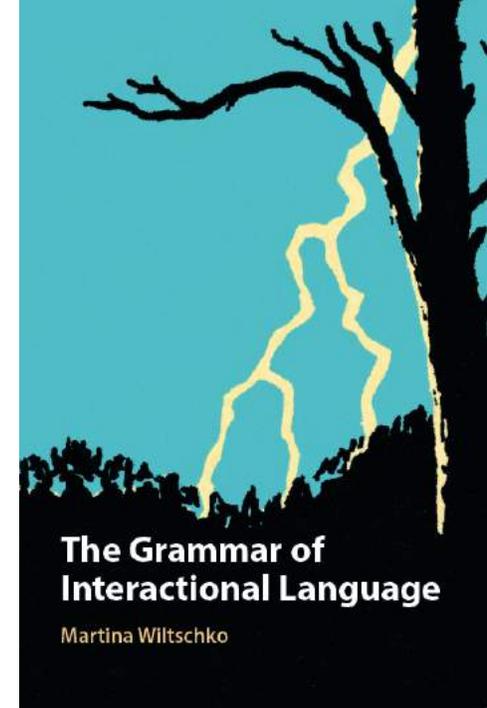
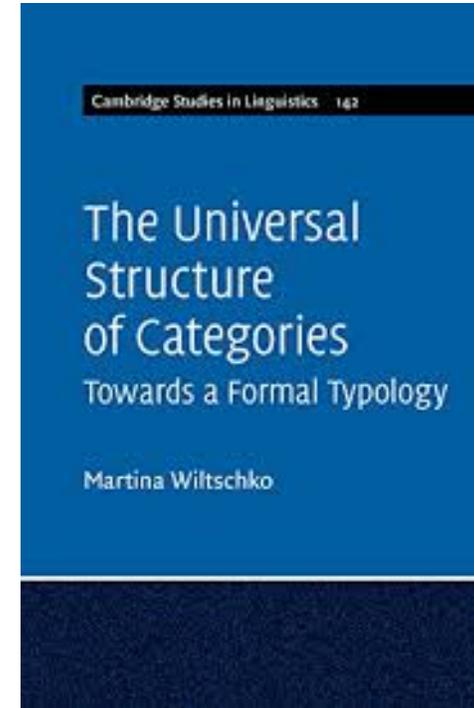
Theoretical goal

- What, if anything, does emotive language teach us about the cognition of emotions?
- And what are emotions anyway?

Superlinguistic goal:

- Introduce the emotional spine hypothesis



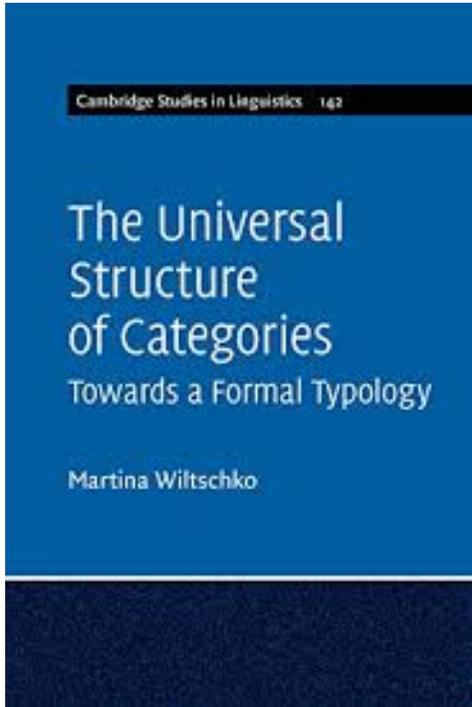
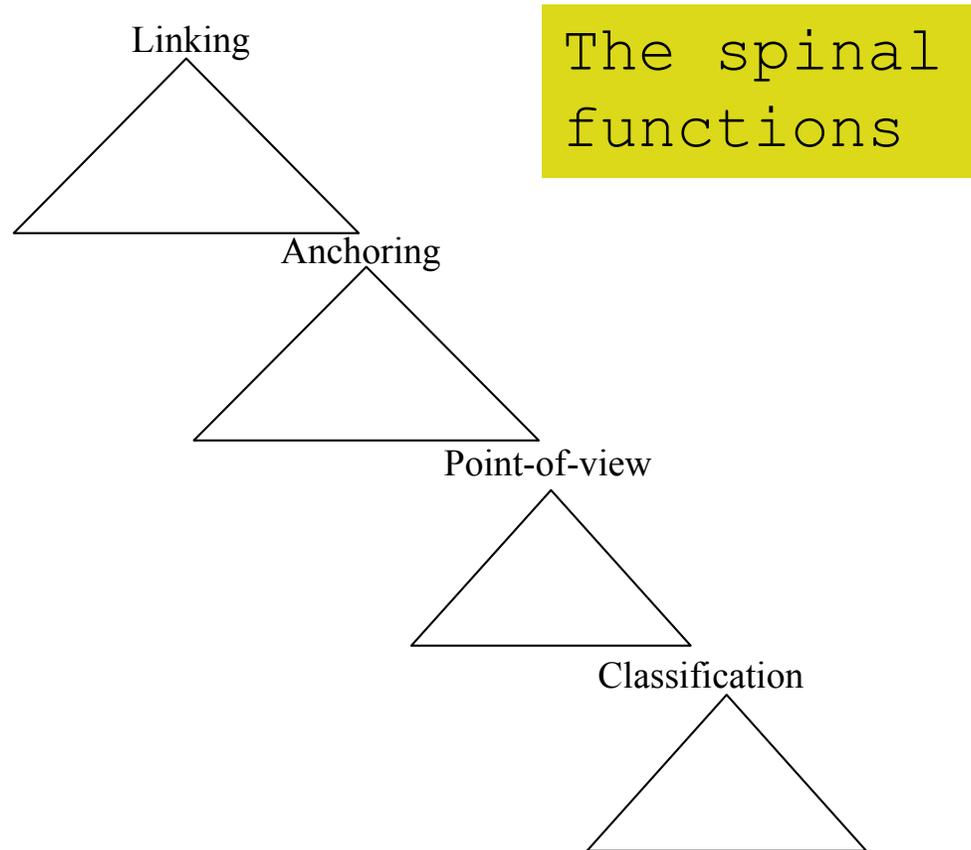


My views on grammar

The universal spine hypothesis

The Interactional spine hypothesis

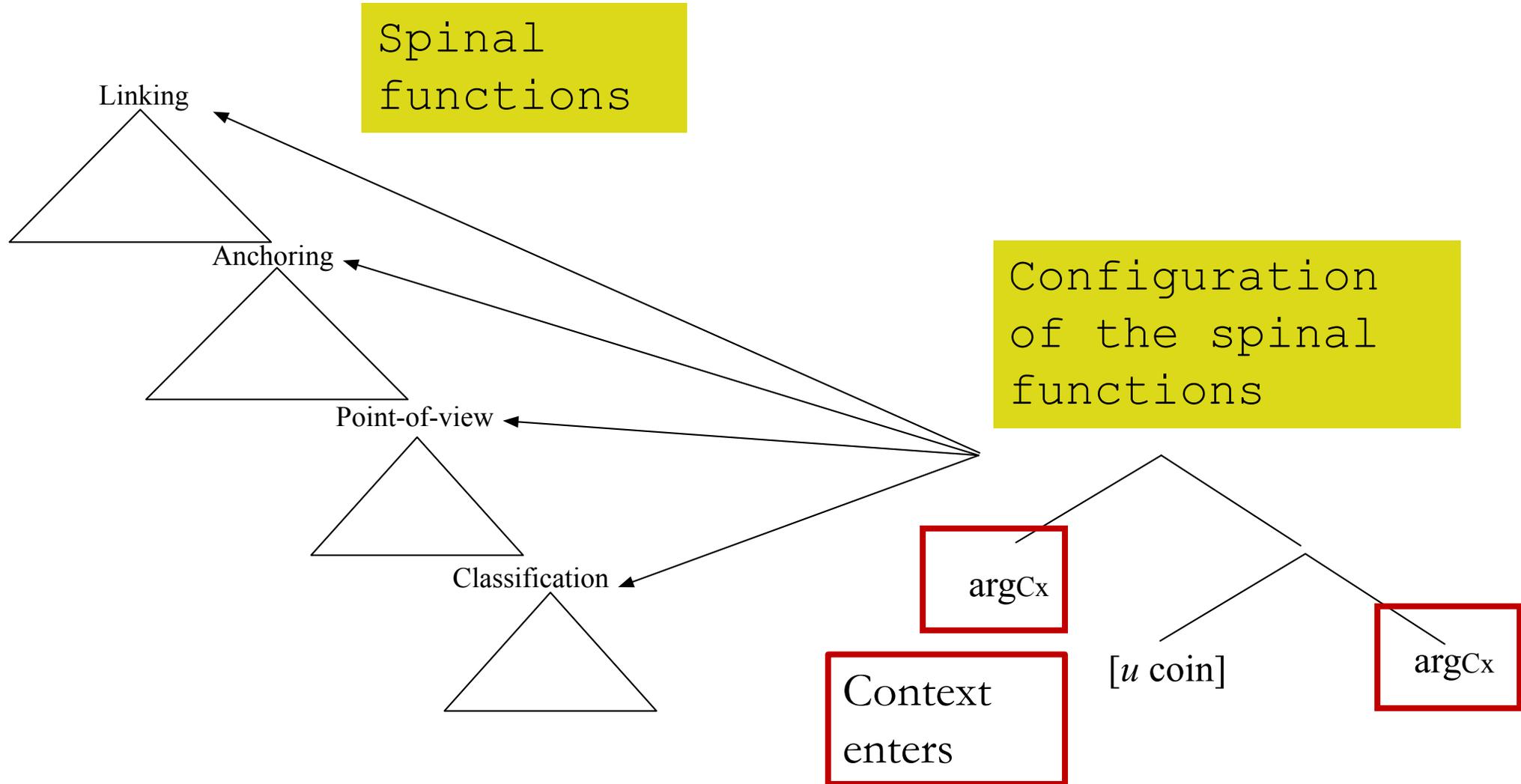
The universal spine hypothesis



Wiltschko 2014

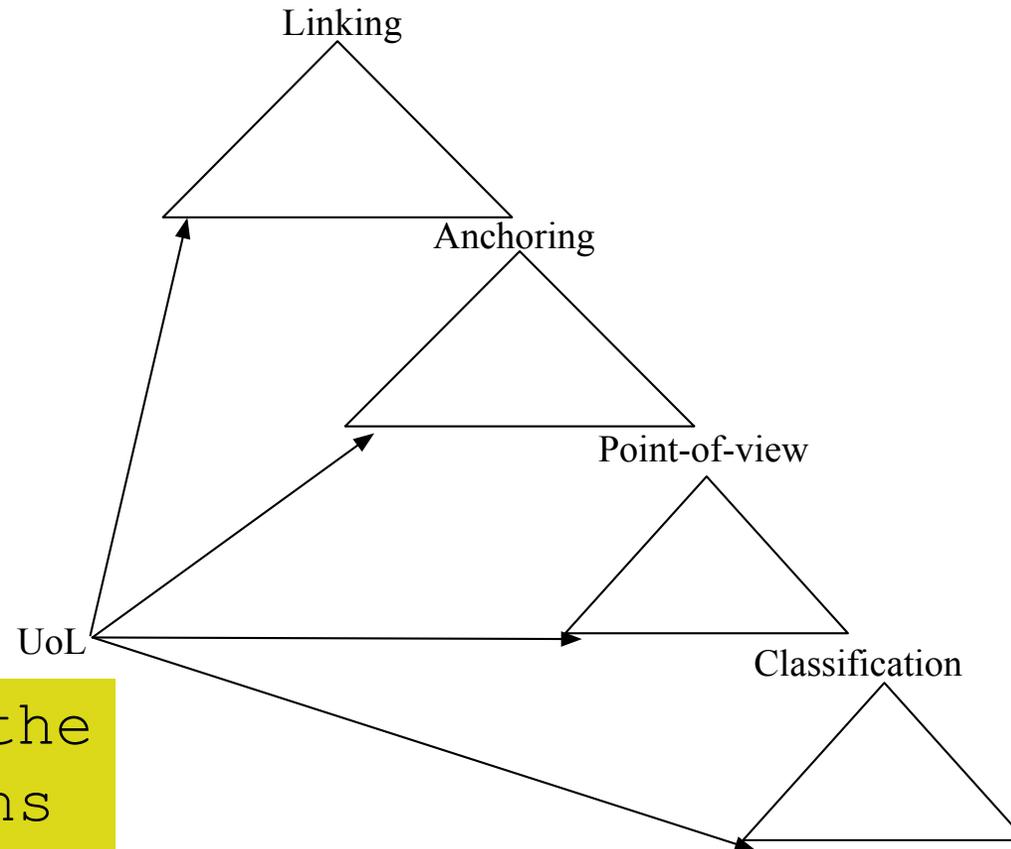
The universal spine hypothesis

(Wiltschko 2014)



The universal spine hypothesis

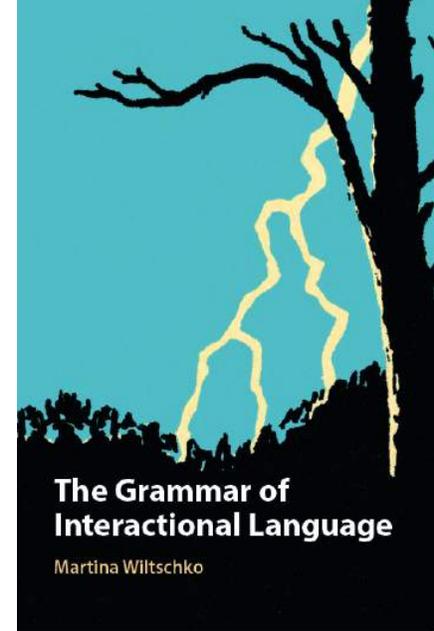
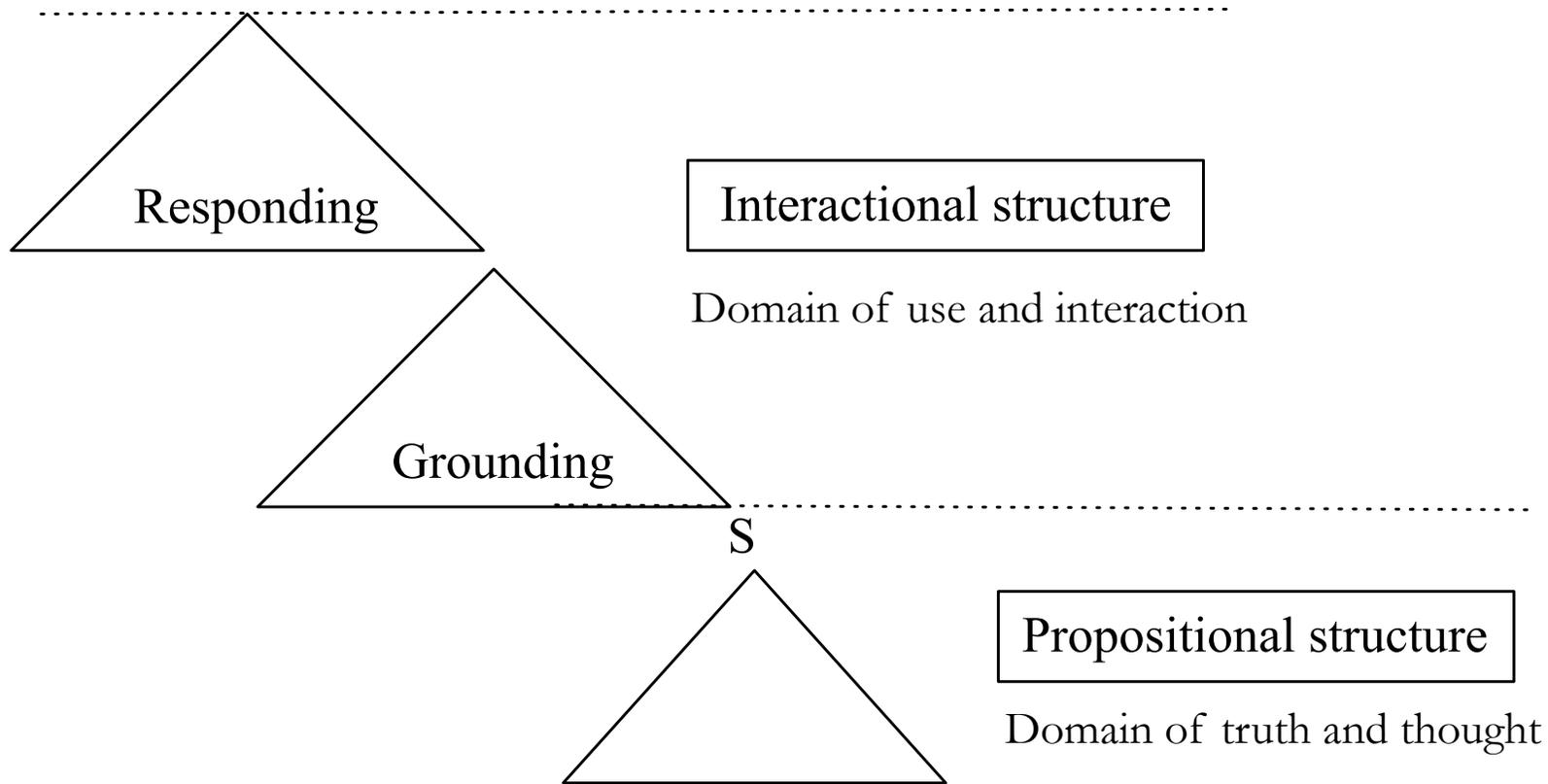
(Wiltschko 2014)



Lexicon
enters

Expression of the
spinal functions

The interactional spine hypothesis (ISH)



i-language

Request
confirmation
of agreement

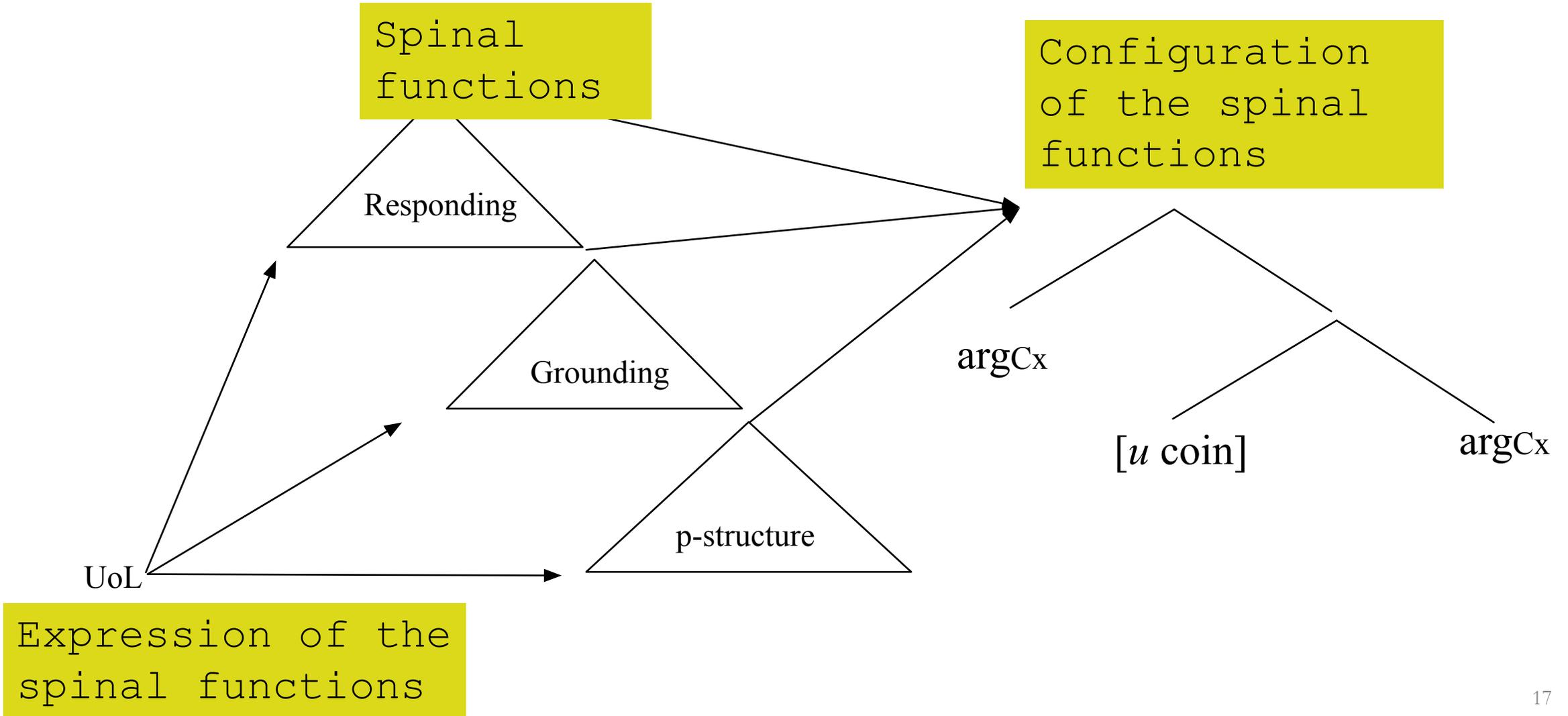
(1) I Gal Gadot was amazing as Wonder Woman, eh?

R Yeah, I know, right?
Confirmation
of agreement

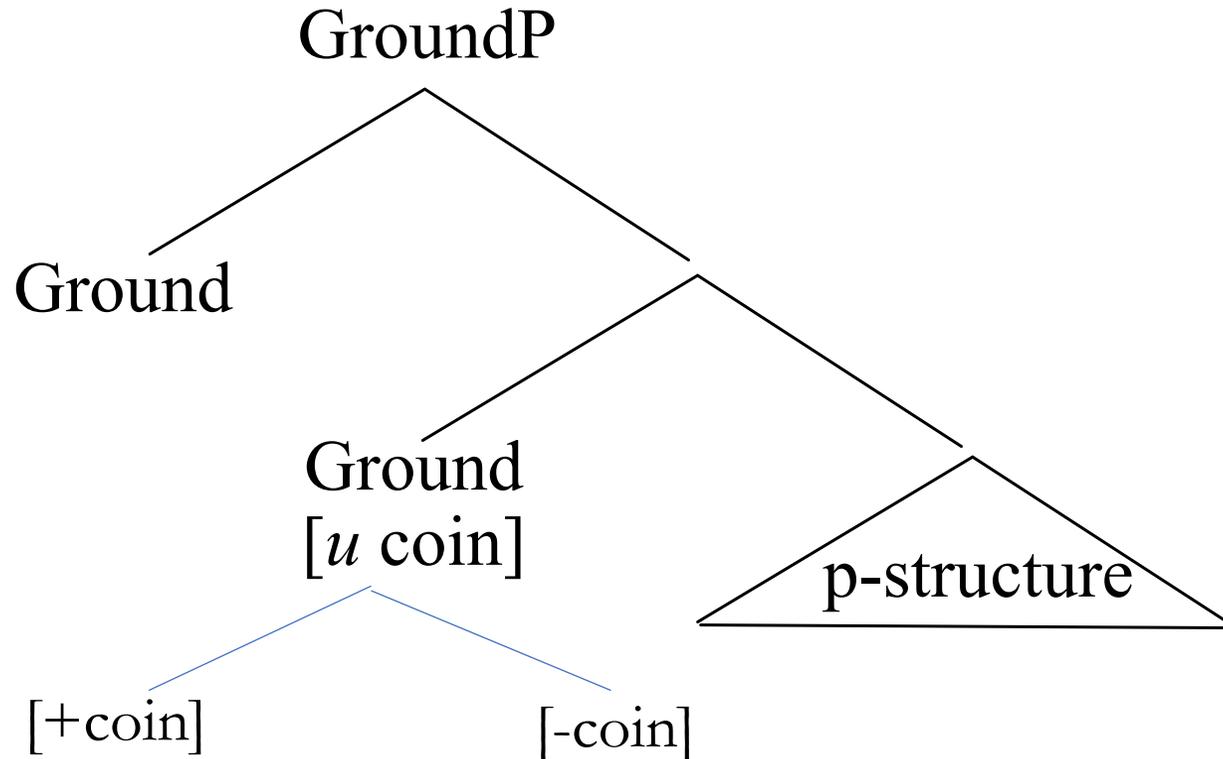
Request
confirmation
of agreement
of agreement

Emphasize
agreement

The interactional spine hypothesis



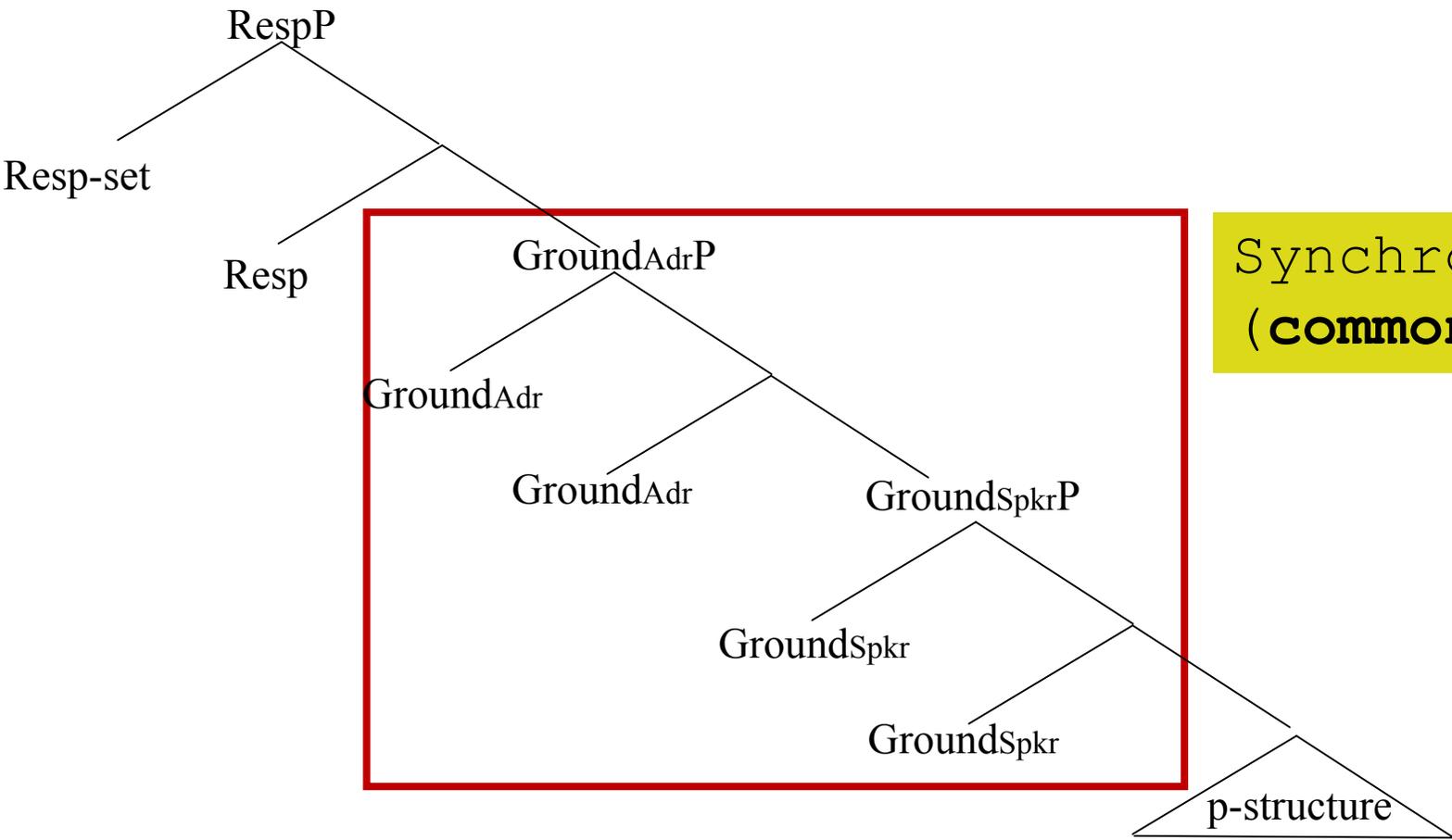
The interactional spine hypothesis



What I'm saying is
in my/your ground

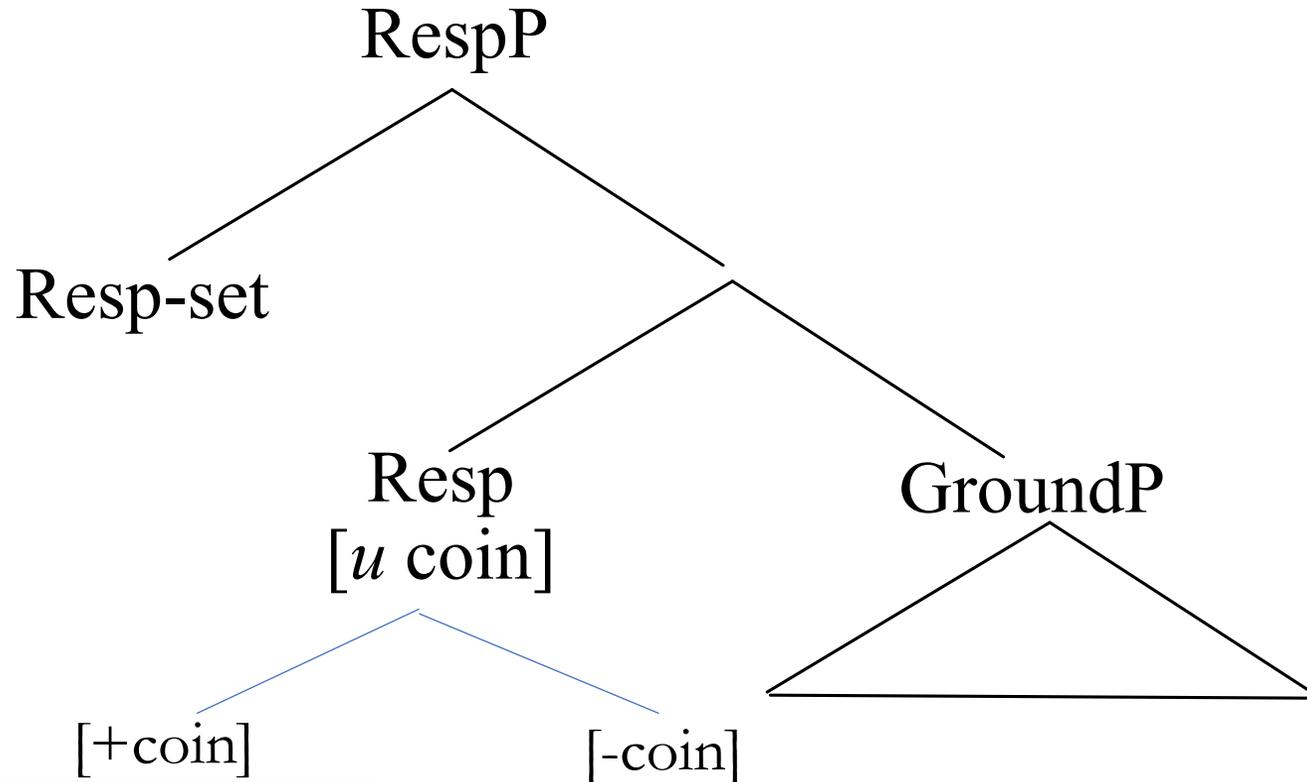
What I'm saying is
not in my/your ground

The interactional spine hypothesis



Synchronize minds
(**common ground**)

The interactional spine hypothesis

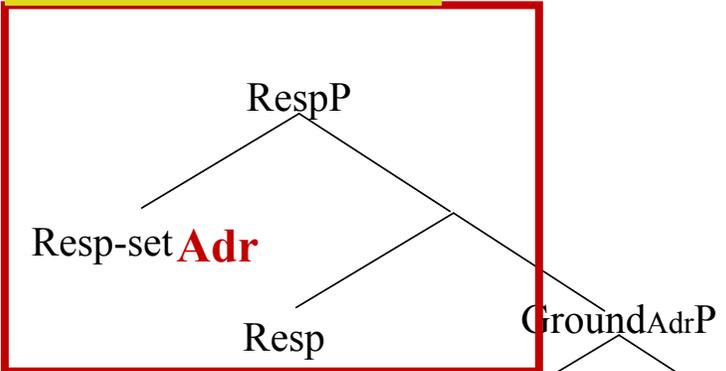


What I'm saying
is in my/your
response-set

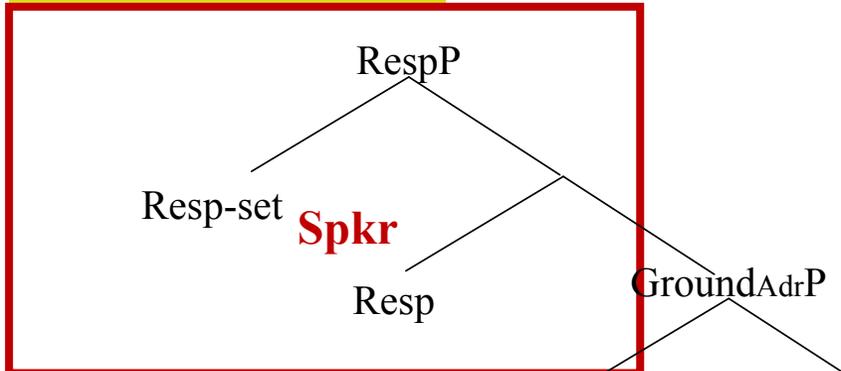
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The interactional spine hypothesis

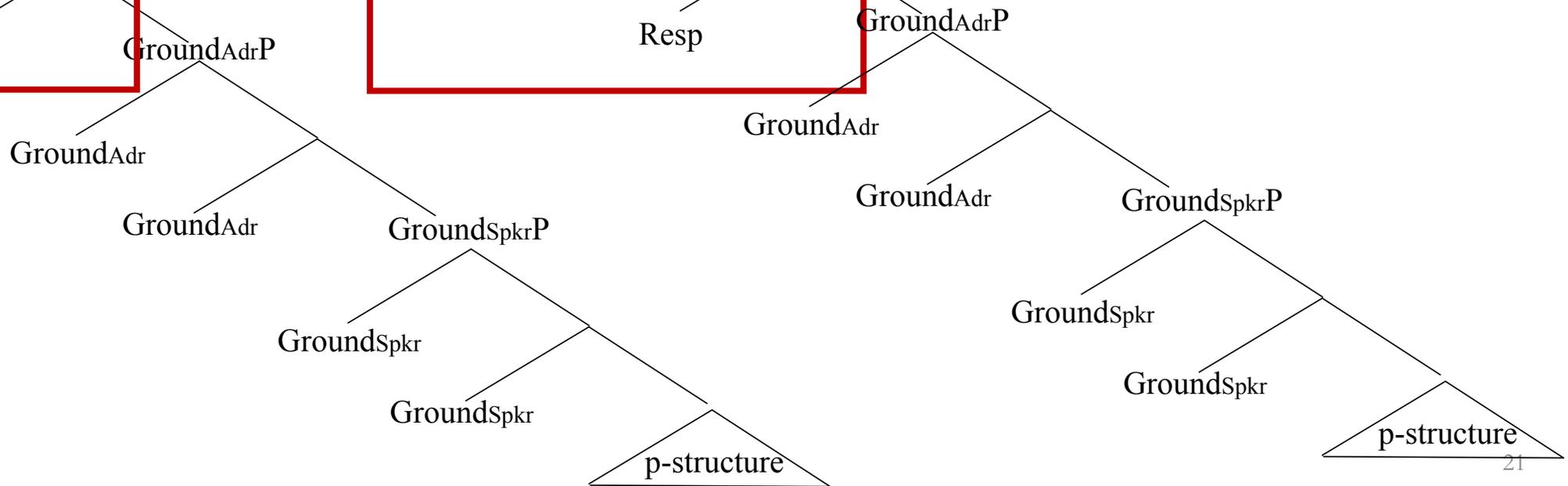
Initiating
move



Reacting
move

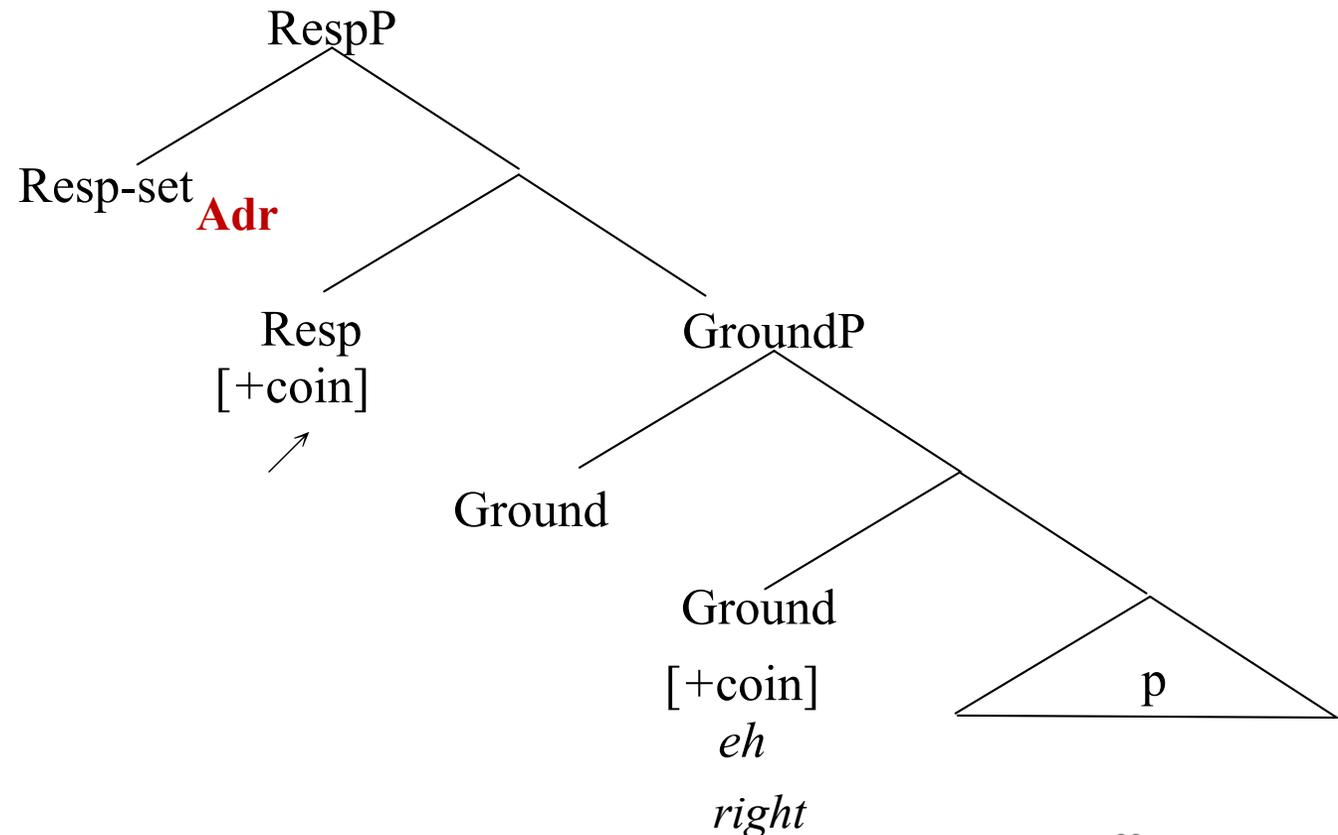


Sequence moves
(**turn taking**)

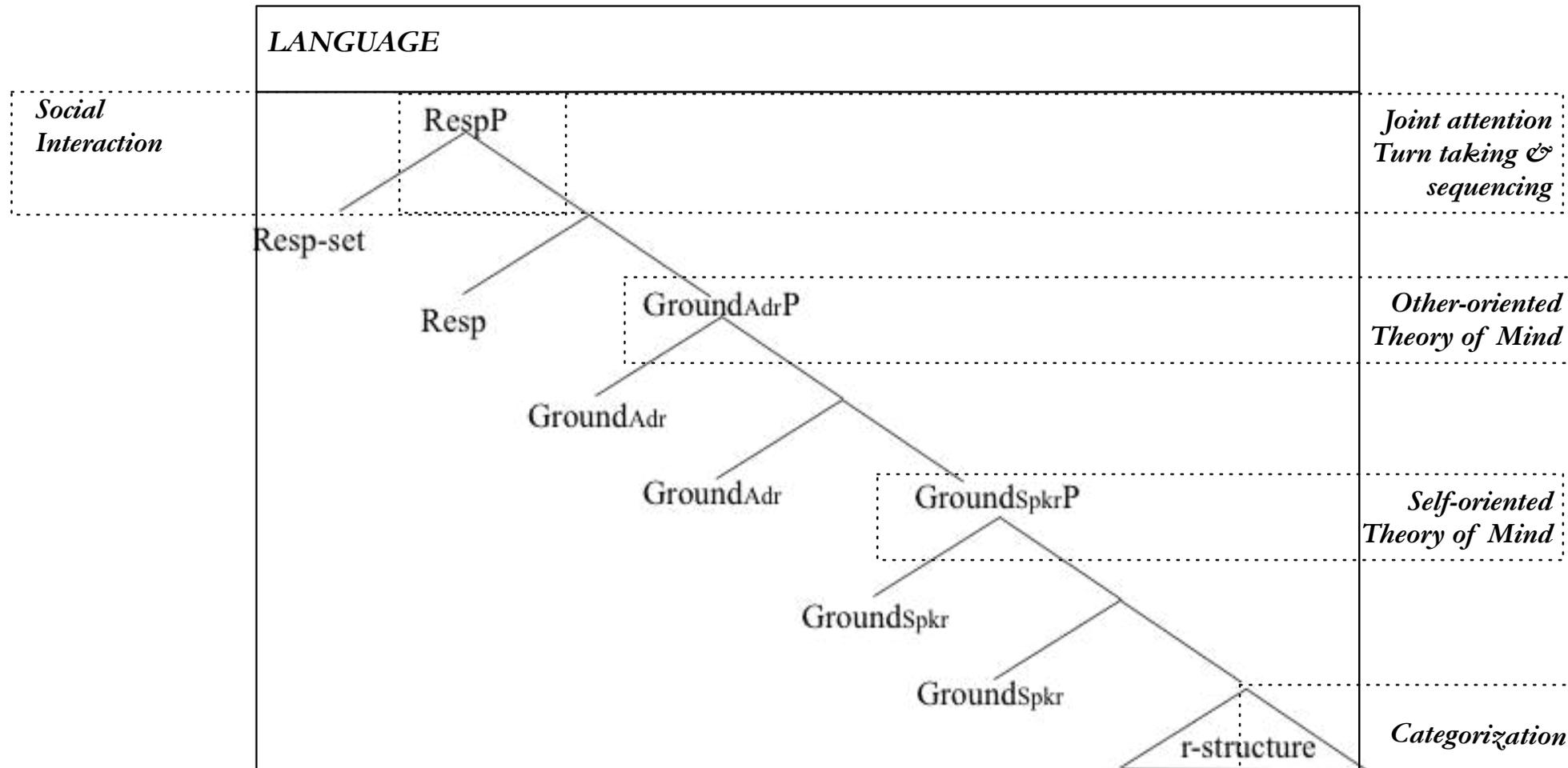


The interactional spine hypothesis

- (1) I Gal Gadot was amazing as Wonder Woman, **eh?**
R **Yeah, I know, right?**



Interactional language and the mind



The emotive response paradigm

Wiltschko 2017 a/b

Wiltschko to appear

The emotive response paradigm

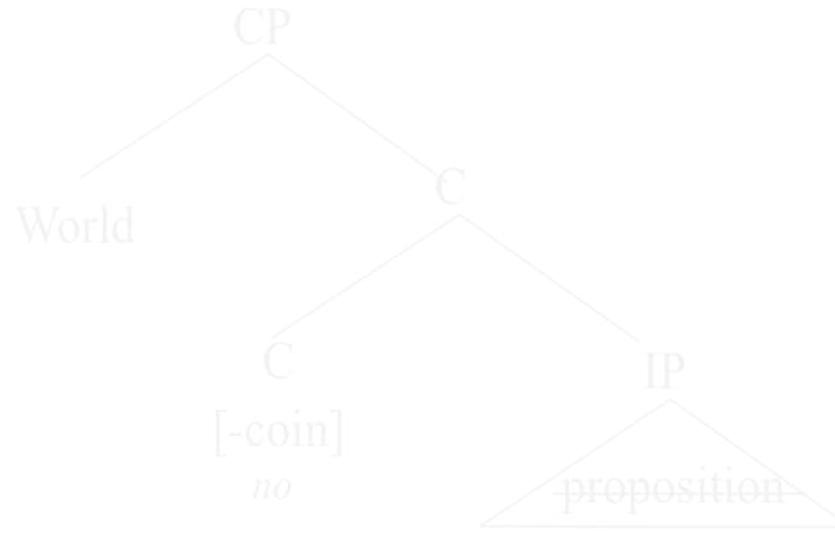
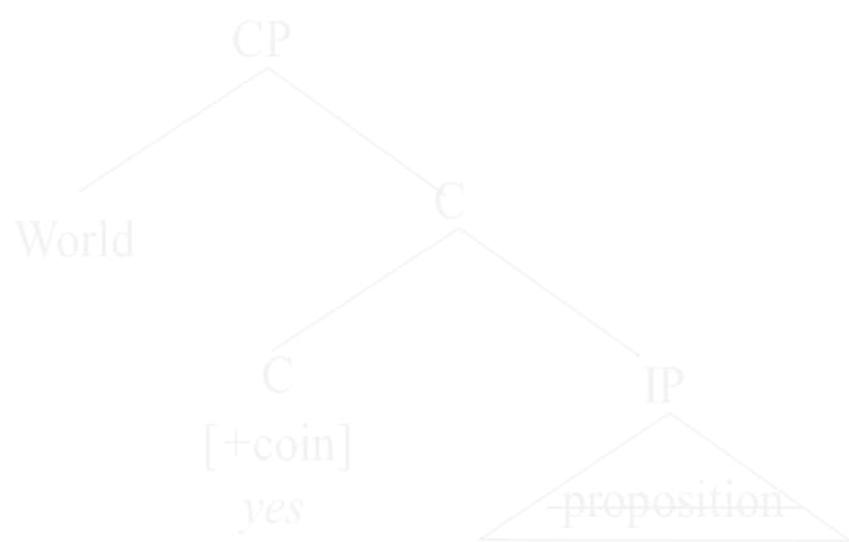
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Wiltschko 2017, to appear

Emotive communication is the conscious
expression of affect with conventional means

(Couper-Kuhlen 1986, 174)

The syntax of polar response markers



Lexical entry for *yes*

‘**positive** attitude towards X

das Leben **bejahen**

‘affirming life’

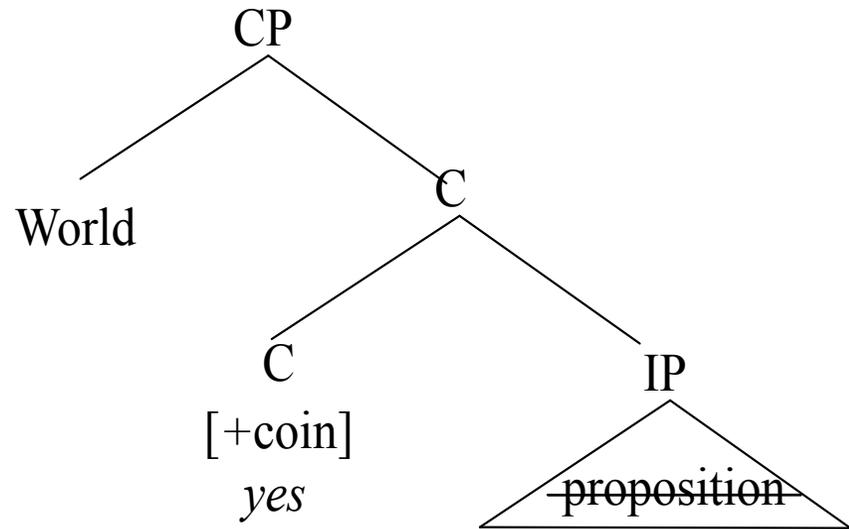
Lexical entry for *no*

‘**negative** attitude towards X

das Leben **verneinen**

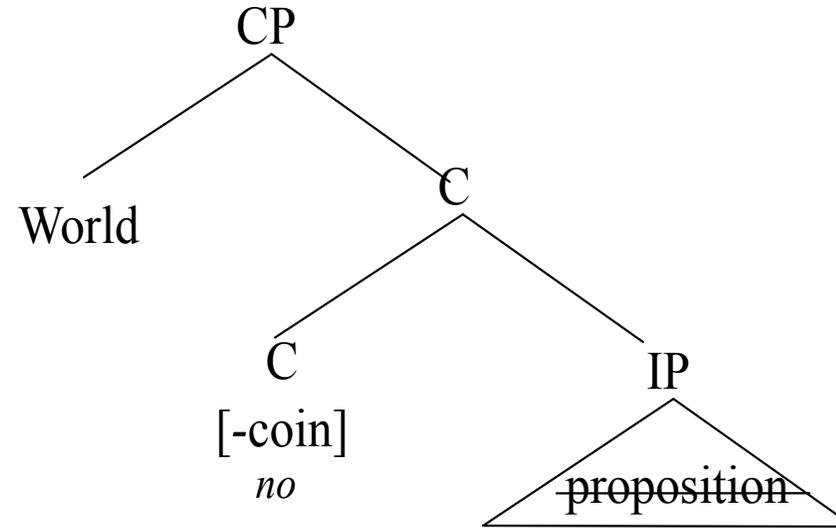
‘negating life’

The syntax of polar response markers



Lexical entry for *yes*

‘**positive** attitude towards X



Lexical entry for *no*

‘**negative** attitude towards X

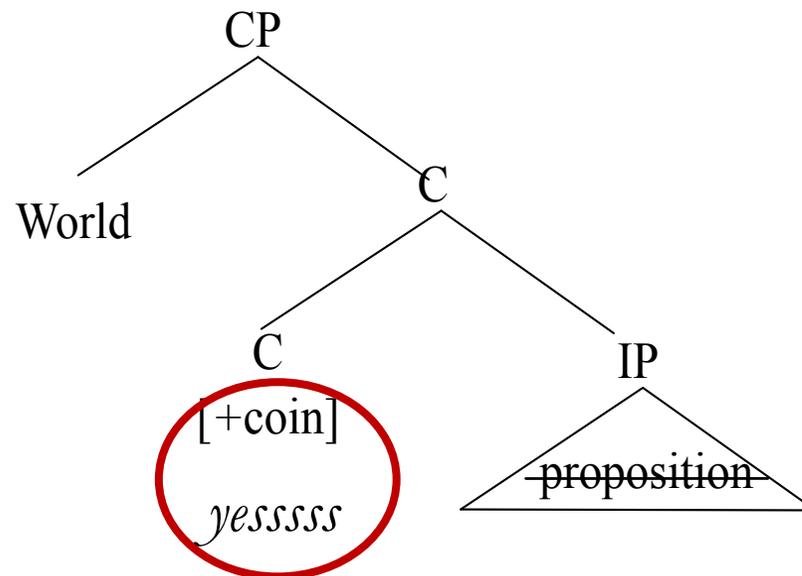


Final lengthening = intensity



Proposal:

- Final lengthening → iconically signals **intensification**
- Intensification is appropriate in heightened emotional state, but doesn't encode emotions
- 2 targets of intensification:
 - i) Truth
 - ii) Positive attitude



yesssss
[positive]

Intensifying the positive attitude

Your favourite team scores a goal and it is clear that because of this goal they will win the world cup

- i) Yesssssss
- ii) *Nooooooo



Your favourite team is losing at the very last minute and it is clear that because of this loss they will lose the world cup.

- i) *Yesssssss
- ii) Noooooooo



Intensifying the truth

I Did your team win?

R i) Yesssss. (*at least I think so/*but I don't care)

ii) Yes. (at least I think so/but I don't care)



Final lengthening signals:

- certainty about the truth of p
- a heightened emotional state

→intensification in form corresponds to an intensification in meaning

→the core meaning of the UoL (positive attitude) is not accessible for modification once the UoL is associated with the spine

Intensifying the truth (not the positive attitude)

Yesssss is possible, even when there is no positive attitude:

I Did your team lose?

- R
- i) Yessssssss (*I think so/*but I don't care)
 - ii) Yes (I think so/but I don't care)



Ambiguity as a response to assertions



New information

Mary is a huge soccer fan and usually she watches all games involving her favourite team. One night she is unable to follow the game because she is caught up at work where she has no way to access the results. As she is leaving work **eager to find out what happened**, her friend runs into her and tells her the good news

I Your team won.

R Yesssssss! (I had a feeling they would)

Ambiguity as a response to assertions



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Ambiguity as a response to assertions



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I Your team won.

R Yesssssss! (I've heard)

Ambiguity as a response to assertions



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I Your team lost.

R Yesssssss! (I've heard)

Ambiguity

Response to:	Polar question (=R-old)	Assertion:		Situation (=R-new)
		R-old	R-new	
<i>Yessssss</i> (truth)	✓	✓	✗	✗
<i>Yessssss</i> (interjection)	✗	✗	✓	✓

An assertion can serve as a situation we are responding to
(Nübling 2004, 17).

German disambiguates

German equivalent of *yessss*

Response to:	Polar question	Assertion		Current Situation
		R-old	R-new	
<i>Joouoooo</i> (truth)	✓	✓	✗	✗
Interjection (<i>hurra,...</i>)	✗	✗	✓	✓

The role of the spine

- UoLs behave differently on or off the spine.
- Interjections are used off the spine:
 - no displacement
 - no truth
 - no other-orientation Nübling (2004)
- Emotive content is possible without the spine

Final shortening = expectedness

The emotive response paradigm



a. <i>yes</i>	<i>no</i>	basic
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Wiltschko 2017, to appear



Proposal:

- *Yep* iconically signals expectedness
- Expectedness does not normally lead to a heightened emotional state, hence *yup* cannot be used as an interjection

insertion of an unreleased /p/ (Bolinger's 1946 unfinished /p/) is ...

“...not phonemic [...] but gestural. It is the lip-closure of the gesture of finality which may be observed at the end of any number of peremptory statement.”

- With gesture of finality R signals that they wish to end their turn
- With shortening R signals that they wish to come to the end of their turn as fast as possible

Expectedness

Situation

*Yup

Polar question

I Did your team win/lose?

R Yup. (at least I think so/but I don't care)

Assertion: R-new

I Your team won.

R *Yup! (I had a feeling they would)



Assertion: R-old

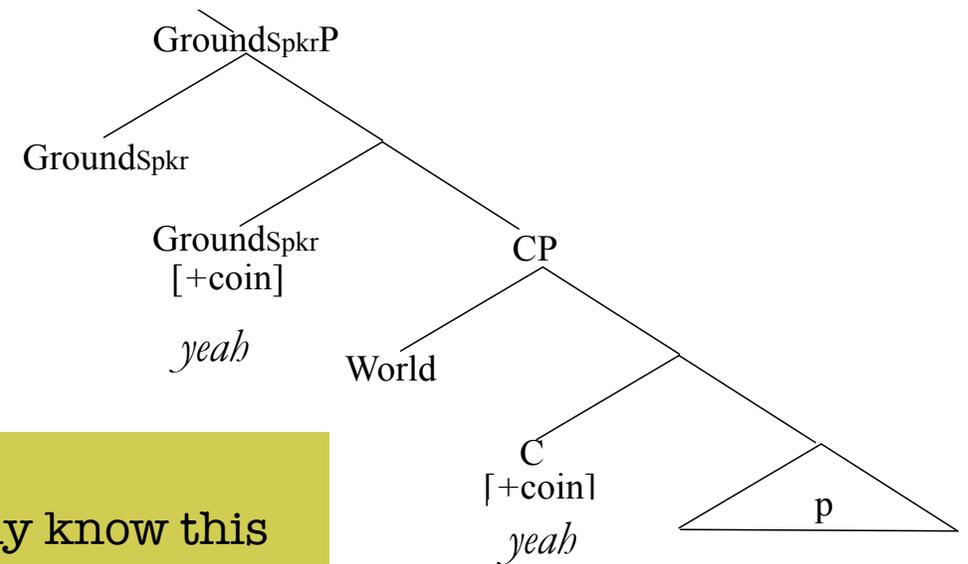
I Your team won.

R Yup! (I heard)

Complex Response markers

Doubling: Yeah yeah

- I Your team won.
R Yeah yeah.
I What? Aren't you excited?



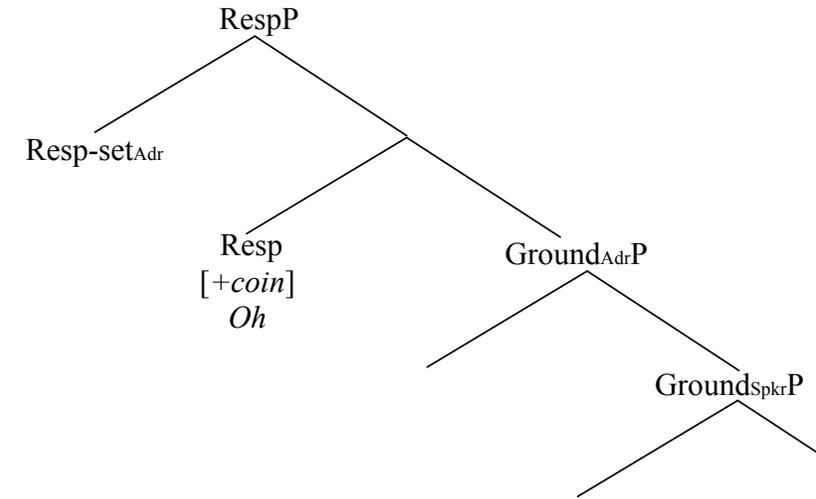
It's true.
And I already know this

Oh yes

Princess Margaret was asked if she liked brass band music and she replied

I: Do you like brass band music?

R: Oh yes! One was brought up with it. (Heritage 2002, 293)



Princess Margaret “offered a kind of fugitive comment on the question - proposing that it was inappropriate or inapposite; that the question questioned something which could (or should) be taken for granted, or which is unquestionable, or should not be questioned, or is ‘beyond question’.”

(Heritage 2002, 293)

- the response is out of the ordinary (and hence needs marking)
- because the question is out of the ordinary.
- Providing a response to an unusual question does not follow the normal course of a conversation.

Lessons from the emotive Response paradigm

Lessons from the emotive response paradigm

- i) complex, response markers: emotive content arises through the interaction between the UoL and the spinal function and through implications based on assumptions about the normal course of a conversation. (**attitudinal**)
 - ii) prosodic modification:
 - iconic: lengthening signals intensification,
 - shortening signals expectedness
 - can be used on or off the spine
- Emotive content interacts with the spine in different ways
- But there doesn't seem to be a dedicated spinal position/function to encode emotion
- There is no emotive phrase

There is no EmotivePhrase

Patterns of markedness:

Absence of emotive marking does not imply absence of emotion

I Did your team win?

R Yes (accompanied with a big smile and a gesture of victory)

R No. (accompanied with a big frown and a thumbs down gesture)

What about other types of
emotive language?

Expressives via UoLs

Diminutives

1. a. d'ed
grandfather.MASC.SG
'grandfather'
- b. d'ed-ul' / us'-a
grandfather-EXPR-MASC.SG
'grandfather (affect.)'

2. a. star'-ik
old-NOM.MASC.SG
'old man'
- b. star'-ik-an
old-NOM-EXPR.MASC.SG
'old man (vulg.)'

Steriopolo 2017

Expressives via UoLs

Epithets

(1) That bastard Kresge is famous. (Potts 2006)

Interjections

Primary interjections are little words or non-words which in terms of their distribution can constitute an utterance by themselves and do not normally enter into construction with other word classes, for example, *Ouch!*, *Wow!*, *Gee!*, *Oho!*, *Oops!*, etc. They could be used as co-utterances with other units. Consider this example:

Gee, you look like you had it! (Williams 1961: 8)

Ameka 1992: 105

Expressives via UoLs

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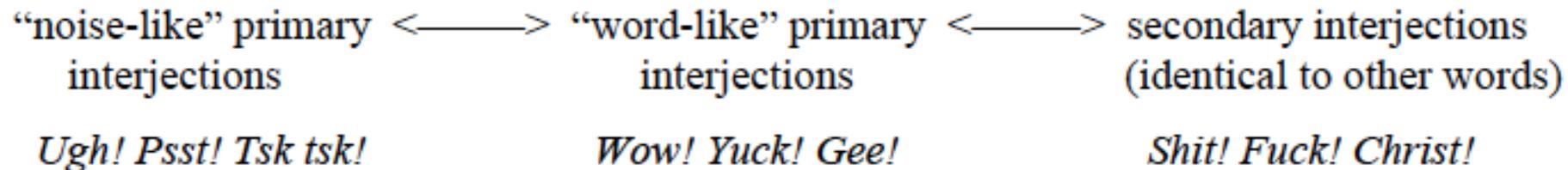


Figure 1: Three formal categories of interjections, with English examples.

Expressives via UoLs

- Expressive Adjectives

- a. I have seen most **bloody** Monty Python sketches! (Potts 2005: 18)
- b. Nowhere did it say that the **damn** thing didn't come with an electric plug!
(Potts 2005: 6)
- c. I have to mow the **fucking** lawn. (Potts 2005: 60)
- d. My **friggin'** bike tire is flat again! (Potts 2005: 6)

- Expressive intensifiers

^yDas Ding ist {sau, voll, total} schnell.²
the thing is EI fast
'That thing is EI (\approx totally) fast.'

Expressive vocatives

- a. **You idiot!**
- b. **You bastard!**
- c. **You linguist!**
- d. **You philosopher!**

Expressives via grammatical construction

Exclamatives

(1) How fast Eliud Kipchoge was!

descriptive content/presupposition: ‘It is a fact that Eliud Kipchoge was very fast.’

expressive content/not-at-issue: ‘Speaker is amazed/surprised about Eliud Kipchoge being so fast.’

Exclamations, presuppose belief of truth about p (veridicality) by the speaker, and assert **the emotion of surprise or unexpectedness** about the degree expressed in p. This produces intensity. Our analysis extends to many **mirative** phenomena

Trotzke & Giannakidou 2019

Expressives via grammatical construction

Exclamatives

¡Qué regalo tan maravilloso me dio por mi cumpleaños!

‘What a wonderful present he gave me for my birthday!’

“the speaker is expressing an **emotive attitude** (e.g., **surprise, amazement, elation**) toward the fact that the gift is wonderful (to a point that exceeded his expectations if he had them regarding the object at issue)”

Gutierrez-Rexach 1996

Grammatical markers: Miratives

- Emotive language that is grammatically encoded is always about intensity and unexpectedness (mirativity, exclamatives ...)

Miratives (Rett 2020)

- the expression of exceeded expectation
 - a. John arrived on time.
 - b. (Wow,) John arrived on time!
- emotive markers are not manifested in any one particular way
- semantically heterogenous class

Emotive language

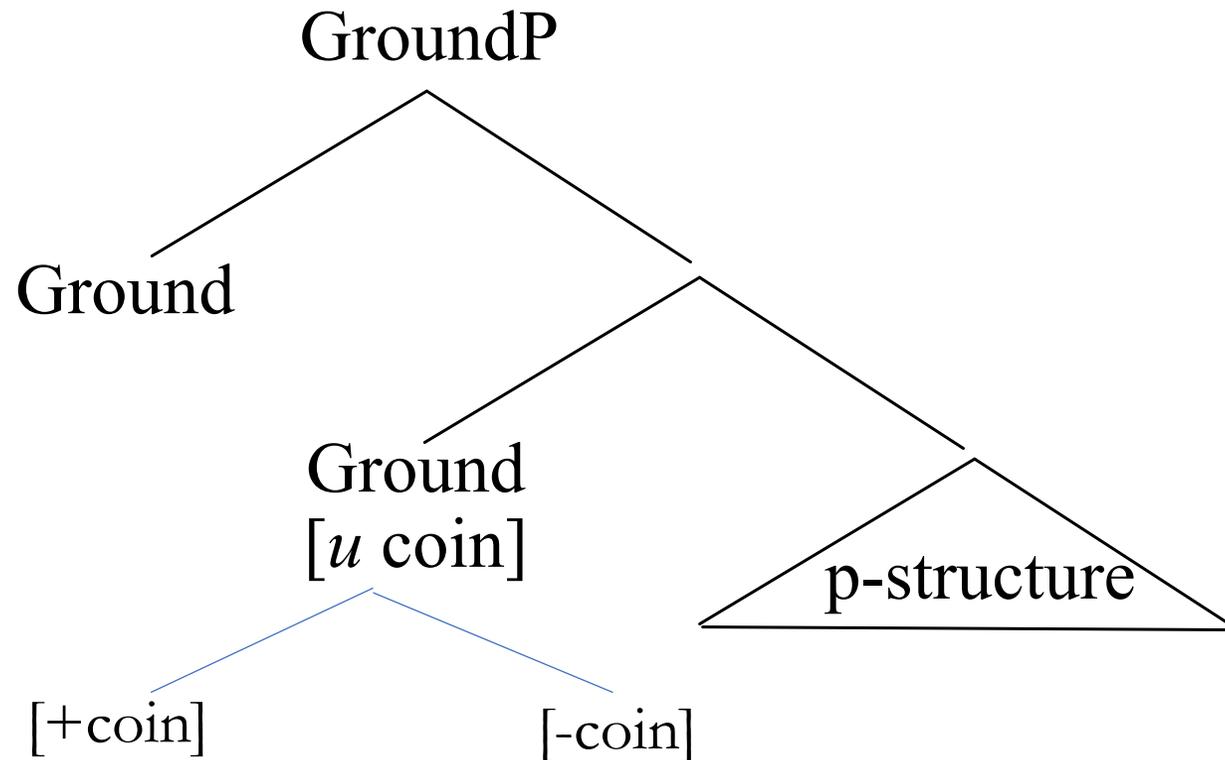
- Emotive language which is grammatically encoded is always about intensity and unexpectedness (mirativity, exclamatives ...)
- Why is the grammaticization of emotive language restricted to "surprise"
- Why not: happiness, sadness, anger, fear, disgust
- Why makes surprise special?

What makes surprise special?

The view from the interactional spine hypothesis.

The view from the study of emotions

Surprise is based on an epistemic state



What I'm saying is
in my/your ground

What I'm saying is
not in my/your ground

Surprise is based on an epistemic state

Mandarin

	Speaker-oriented	Addressee-oriented
old	<i>de</i> : Ground _{Spkr} [+coin]	<i>ma</i> : Ground _{Adr} [+coin]
new	<i>a</i> : Ground _{Spkr} [-coin]	<i>bei</i> : Ground _{Adr} [-coin]

Mandarin: *de* [+coin] Ground_{Spkr}

Context: John was told that Mary drives to work. He wonders whether he can take a ride each morning. But he is not sure whether Mary drives every morning. He runs into Bob, Mary's husband, and wants to know whether it is true. Bob says:

Ta meitian zaoshang kaiche shangban **de.**
She every.day morning drive work
'She (really) drives to work every morning.'

Ta meitian zaoshang kaiche shangban.
She every.day morning drive work
She drive to work every morning.



a [-coin] Ground_{Spkr}

Context: John is talking with his advisor Mary for his graduation. He thinks he has already done what are required for graduation. But Mary thinks he needs to publish another article before his graduation.

John: Dou wancheng le. Wo xianzai deng zhe biye le.
Everything is done. Now I am waiting for my graduation.

Mary: Buguo ni hai xuyao fabiao yi pian lunwen.
But you still need publish one cl paper
But you need to publish one more paper (before you graduate).

John: Shenme? Wo hai dei xie yi pian lunwen ***a***
What? I still must write one CL thesis **PRT**
What? I still have a thesis to write (which is out of my expectation).

ma [+coin] Ground_{Adr}

Context: Mary gave John a puppy. After a month, John asks Mary which kind of dog's food is better for his dog.

Ni shangci gei wo le tiao gou **ma** ...

You last.time give me asp cl dog pit

...wo xiang wen ni nage paizi de gouliang hao.

I want ask you which brand poss. dog.food good.

'Remember you gave me a dog last time.'

'Now I want to ask which food is good for him.'



bei [-coin] Ground_{Adr}

Context: Mary knows that John doesn't like cats. But one day when they are in the supermarket, she finds that John is looking at cat toys.

Mary: Ni zenme kan mao de dongxi?

You why look cat poss. things

Why are you looking at the cat stuff?

John: Wo erzi jian huilai yi zhi mao **bei** yiding yao yang.

My son pick back one cl cat prt, certainly want keep

(You haven't known that) my son picked up a cat somewhere and wants to keep it anyway.

What makes surprise special?

The view from the interactional spine hypothesis.

The view from the study of emotions

But....

Table 1
A Selection of Lists of "Basic" Emotions

Reference	Fundamental emotion	Basis for inclusion
Arnold (1960)	Anger, aversion, courage, dejection, desire, despair, fear, hate, hope, love, sadness	Relation to action tendencies
Ekman, Friesen, & Ellsworth (1982)	Anger, disgust, fear, joy, sadness, surprise	Universal facial expressions
Frijda (personal communication, September 8, 1986)	Desire, happiness, interest, surprise , wonder, sorrow	Forms of action readiness
Gray (1982)	Rage and terror, anxiety, joy	Hardwired
Izard (1971)	Anger, contempt, disgust, distress, fear, guilt, interest, joy, shame, surprise	Hardwired
James (1884)	Fear, grief, love, rage	Bodily involvement
McDougall (1926)	Anger, disgust, elation, fear, subjection, tender-emotion, wonder	Relation to instincts
Mowrer (1960)	Pain, pleasure	Unlearned emotional states
Oatley & Johnson-Laird (1987)	Anger, disgust, anxiety, happiness, sadness	Do not require propositional content
Panksepp (1982)	Expectancy, fear, rage, panic	Hardwired
Plutchik (1980)	Acceptance, anger, anticipation, disgust, joy, fear, sadness, surprise	Relation to adaptive biological processes
Tomkins (1984)	Anger, interest, contempt, disgust, distress, fear, joy, shame, surprise	Density of neural firing
Watson (1930)	Fear, love, rage	Hardwired
Weiner & Graham (1984)	Happiness, sadness	Attribution independent

The nature of surprise

- Surprise = emotion (Campos & Barrett 1984, Ekman, Freisen & Ellsworth 1982, Izard 1971, 1977, Plutchik 1980, Tomkins 1962)
- Surprise may not be an emotion (Mandler 1984, Mees 1985, Oatley & Johnson-Laird 1987, Ortony 1987, Ortony, Clore & Foss 1987)
- Uncontroversial emotions (fear, anger, shame, relief, happiness...) are always **affectively valenced states** (Ortony et al. 1988, Ortony et al. 1987)

→ Affective valence is a necessary condition for a state to be an emotion

→ Surprise is not valenced

→ Surprise = **cognitive state** (Ortony et al. 1987)

→ it's about knowledge and belief, not about affect

→ It plays a role in elicitation and intensification of emotion

What makes surprise special?

- The view from the interactional spine hypothesis.
 - Grammatical encoding of “surprise” reduces to grounding (and intensity)
- The view from the study of emotions
 - “surprise” is a cognitive not an emotive state

What makes surprise special?

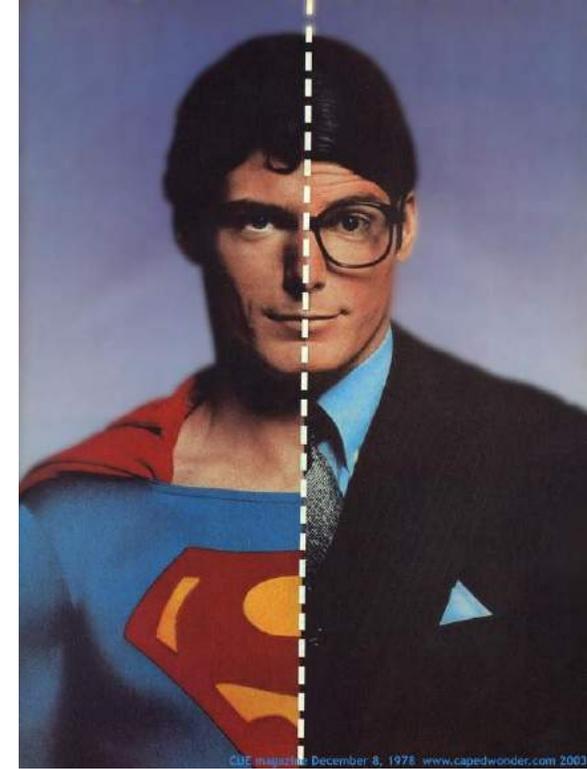
- The view from the interactional spine hypothesis.
 - Grammatical encoding of “surprise” reduces to grounding (and intensity)
- The view from the study of emotions
 - surprise is not an emotion

Why?

Grammar does not encode emotion!

A proposal

- Grammar and emotion are in complementary distribution
- Because language and emotions are configured by the same spine
- The emotional spine hypothesis (very very very very preliminary)



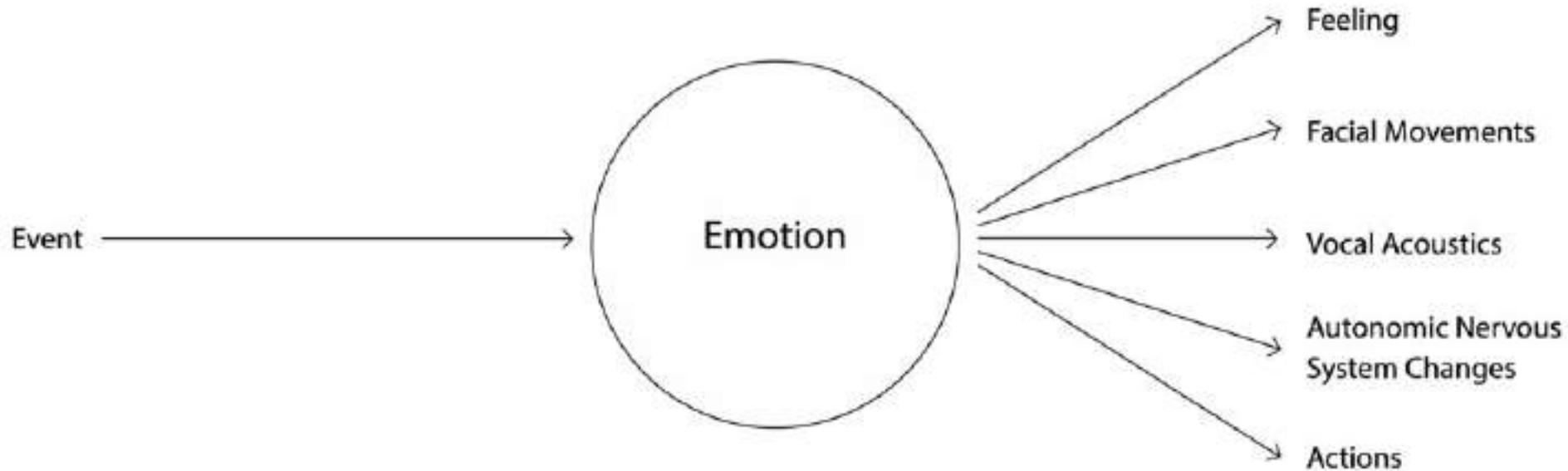
The emotional spine hypothesis

The view from psychology: The constructivist view of emotions

The view from the spine

Classical view of emotions

Basic emotions
as primitives



Some emotions appear

... to exist in all cultures

... to be universally associated with characteristic facial expression

... to serve identifiable biological functions related to survival needs

But...





Constructivist view

Emotions are
constructed
(not primitives)

- Fear (or any other emotion) is a category populated with highly variable instances
- The summary representation of any emotion category is an abstraction that need not exist in nature
- There are no emotion-specific neurons

Feldman-Barrett 2017

Psychological construction is a family of theories that conceives of emotions as psychological “compounds” resulting from the combination of more basic psychological “elements” that are not themselves specific to emotions

Lindquist et al. 2015

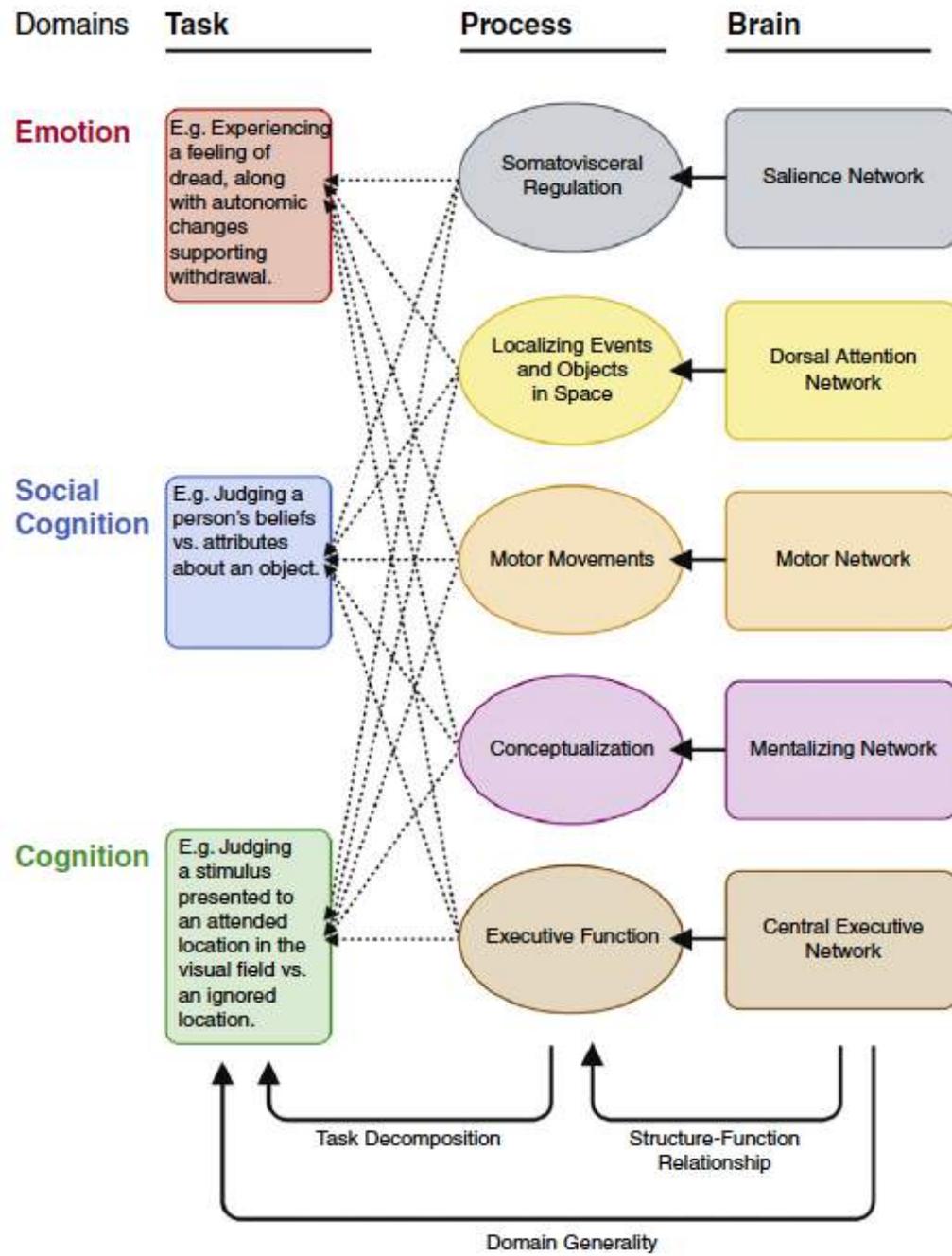
Constructivist view

Interoceptive

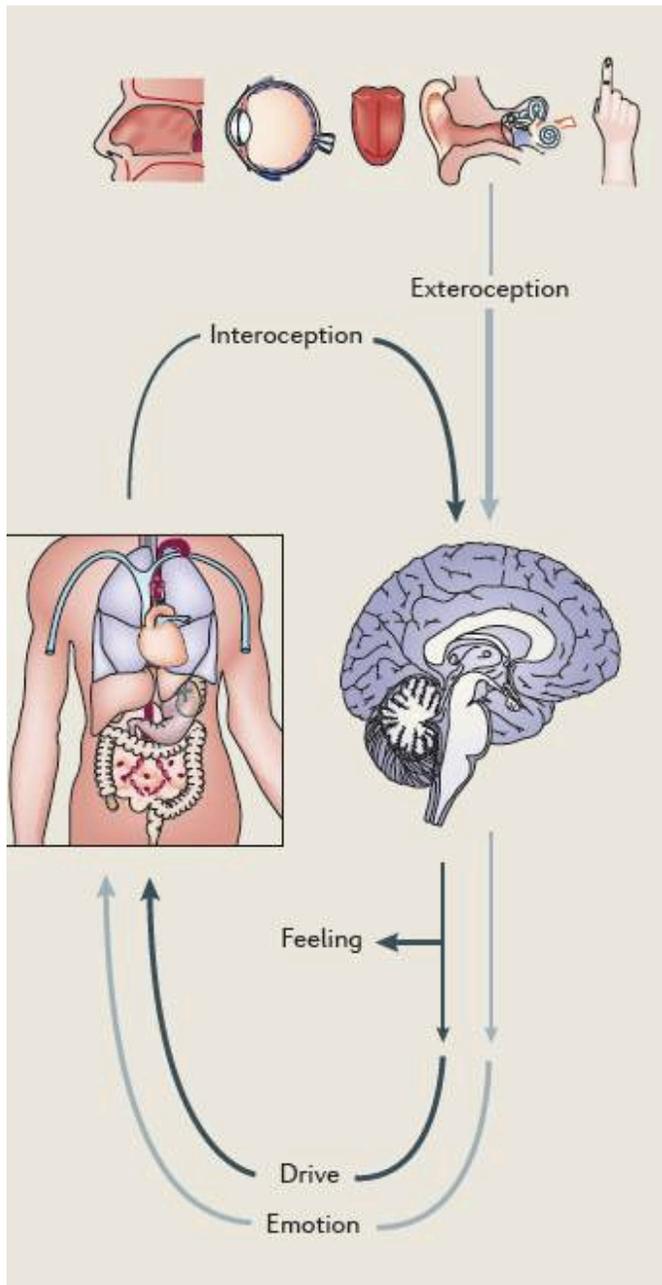
sensations are usually experienced as lower dimensional feelings of affect (Barrett and Bliss-Moreau, 2009; Barrett, 2017). As such, the properties of affect—valence and arousal (Barrett and Russell, 1999; Kuppens et al., 2013)—are basic features of consciousness (Damasio, 1999; Dreyfus and Thompson, 2007; Edelman and Tononi, 2000; James, 1890/2007; Searle, 1992, 2004; Wundt, 1897) that, importantly, are not unique to instances of emotion.

it is very un-

likely that perception, cognition, and emotion are localized in dedicated brain systems, with perception triggering emotions that battle with cognition to control behavior (Barrett, 2009). This means classical accounts of emotion, which rely on this S→R narrative, are highly doubtful.



<http://emotionresearcher.com/lisa-feldman-barrett-why-emotions-are-situated-conceptualizations/>



Feelings are constructed

- body states are necessarily valenced:
good or bad from the point of view of homeostasis
- feelings are powerful proxies of ongoing biological
- Feelings along a range that includes pain and pleasure at its extremes force the organism to attend to its current conditions.

Homeostasis

The process of maintaining the internal milieu physiological parameters (such as temperature, pH and nutrient levels) of a biological system within the range that facilitates survival and optimal function.

Damasio & Carvalho 2013: 144

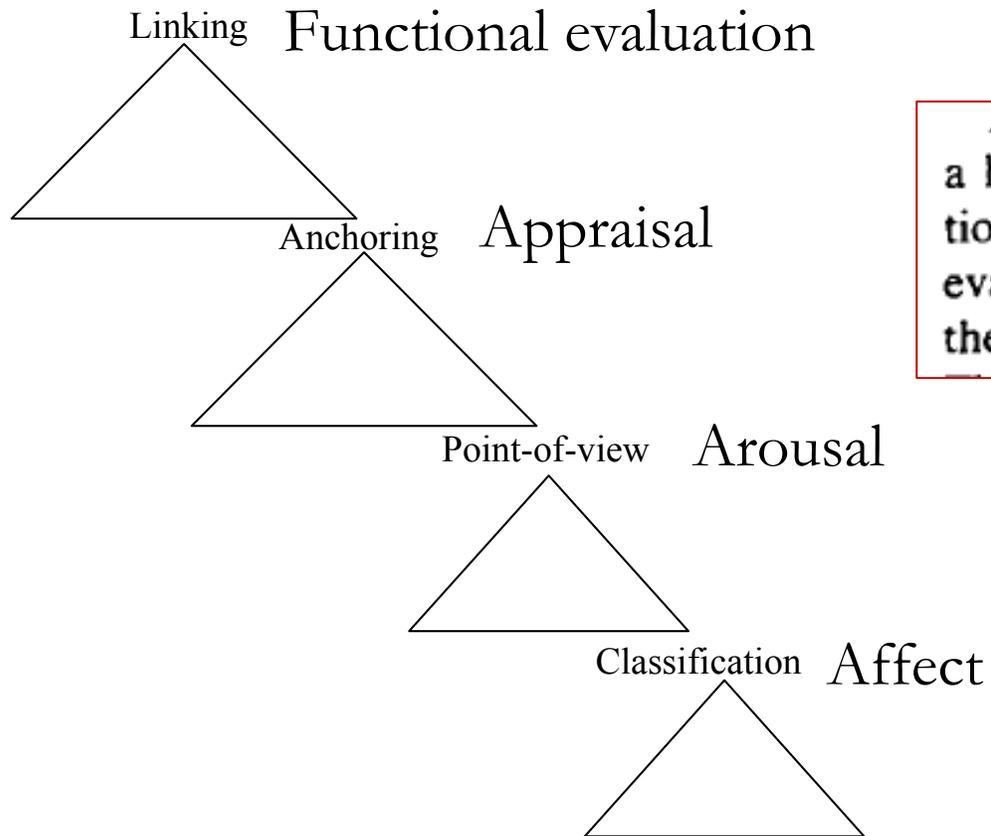
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Some implications

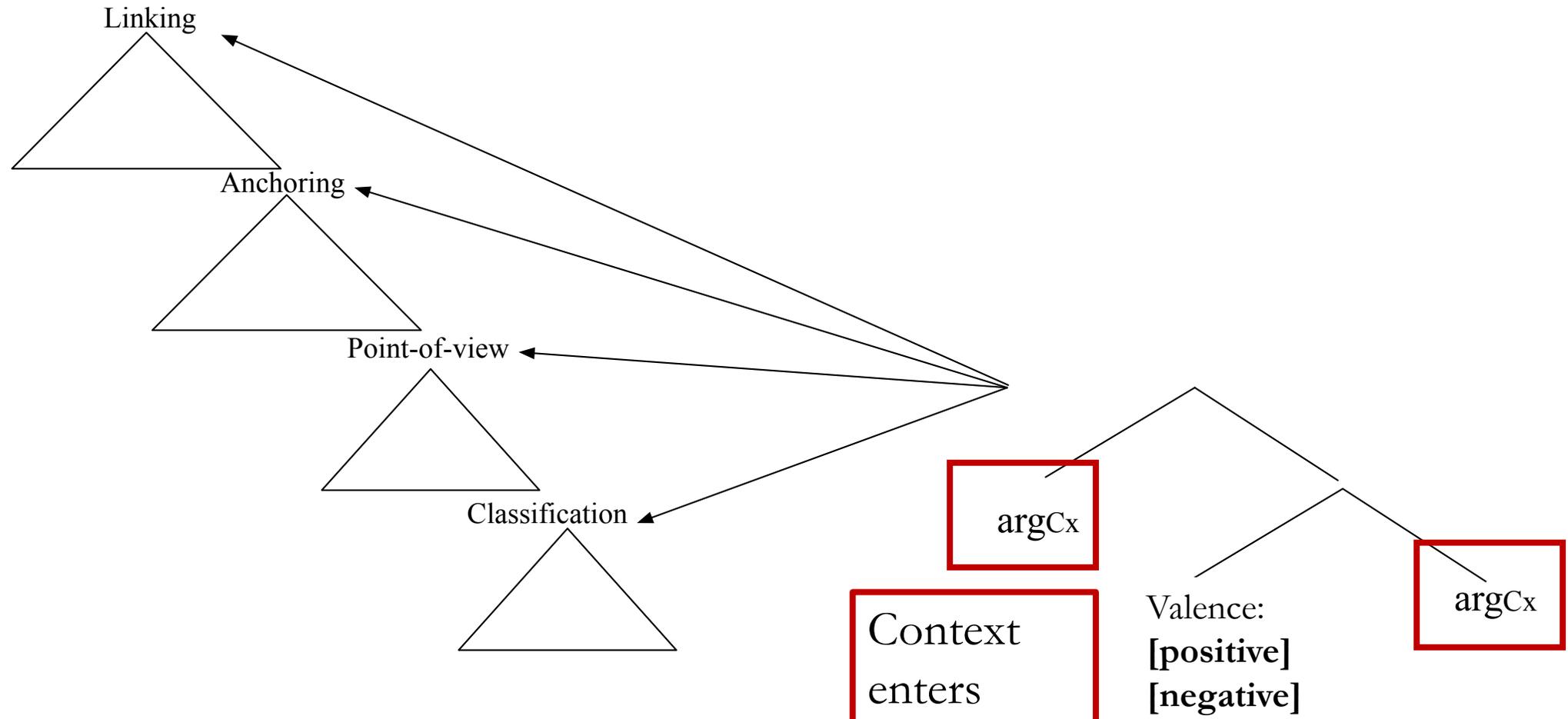
The emotional spine



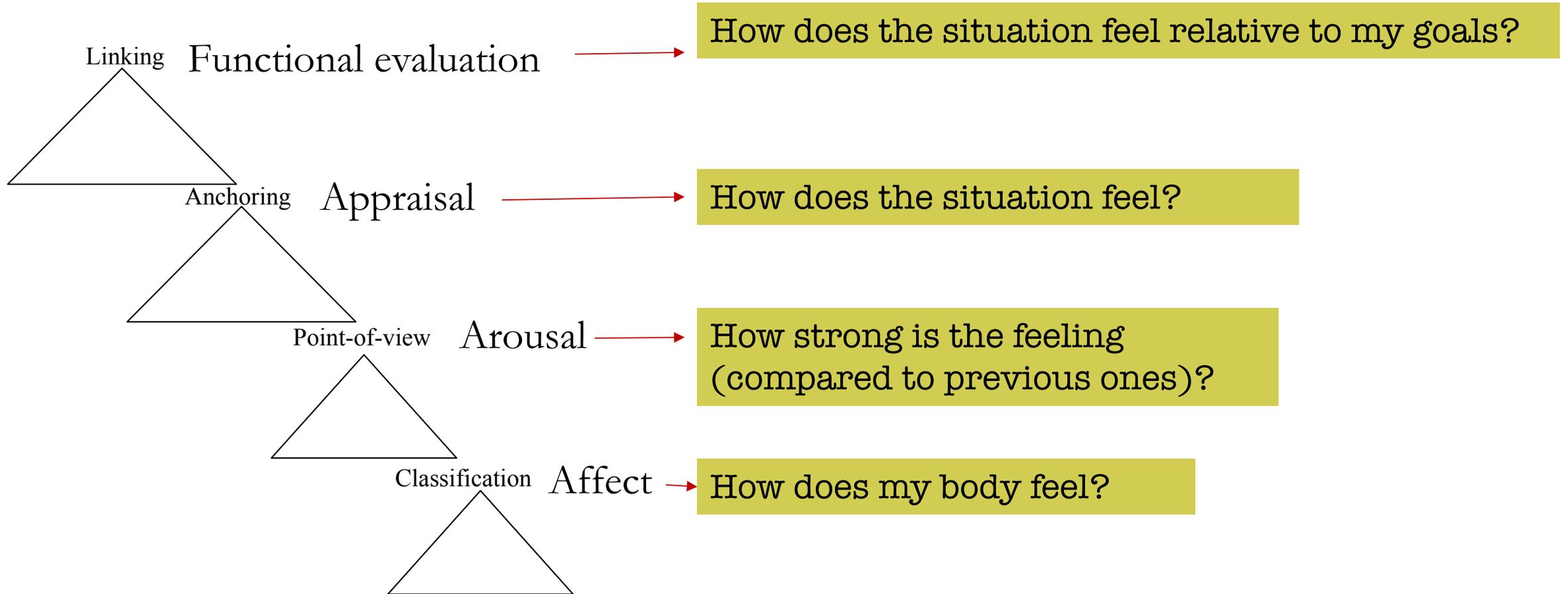
A major assumption of the theory is that mental architecture consists in a hierarchy of separate processors, or modules, that carry out computations in parallel, and that an emotion can be set up by a cognitive evaluation occurring at any level in this hierarchy. The evaluation can set the processing modules into one of only a small number of emotion modes.

Johnson Laird & Oatley 2011

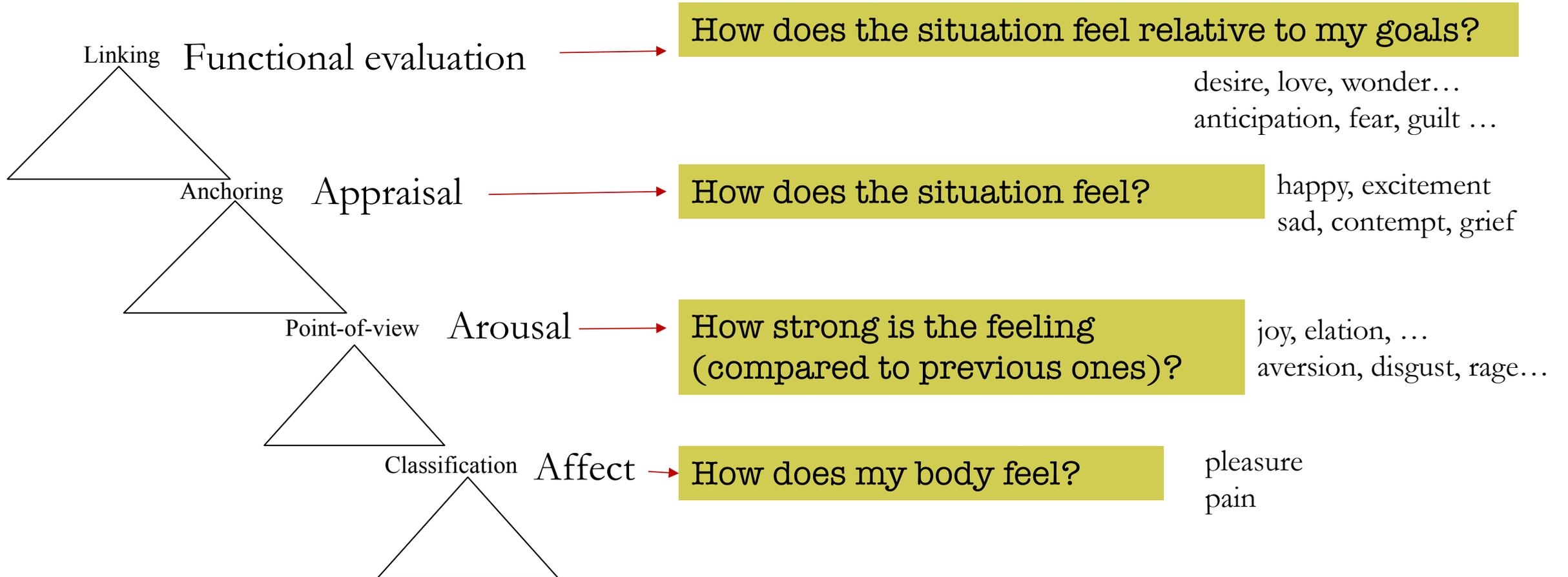
The emotional spine hypothesis



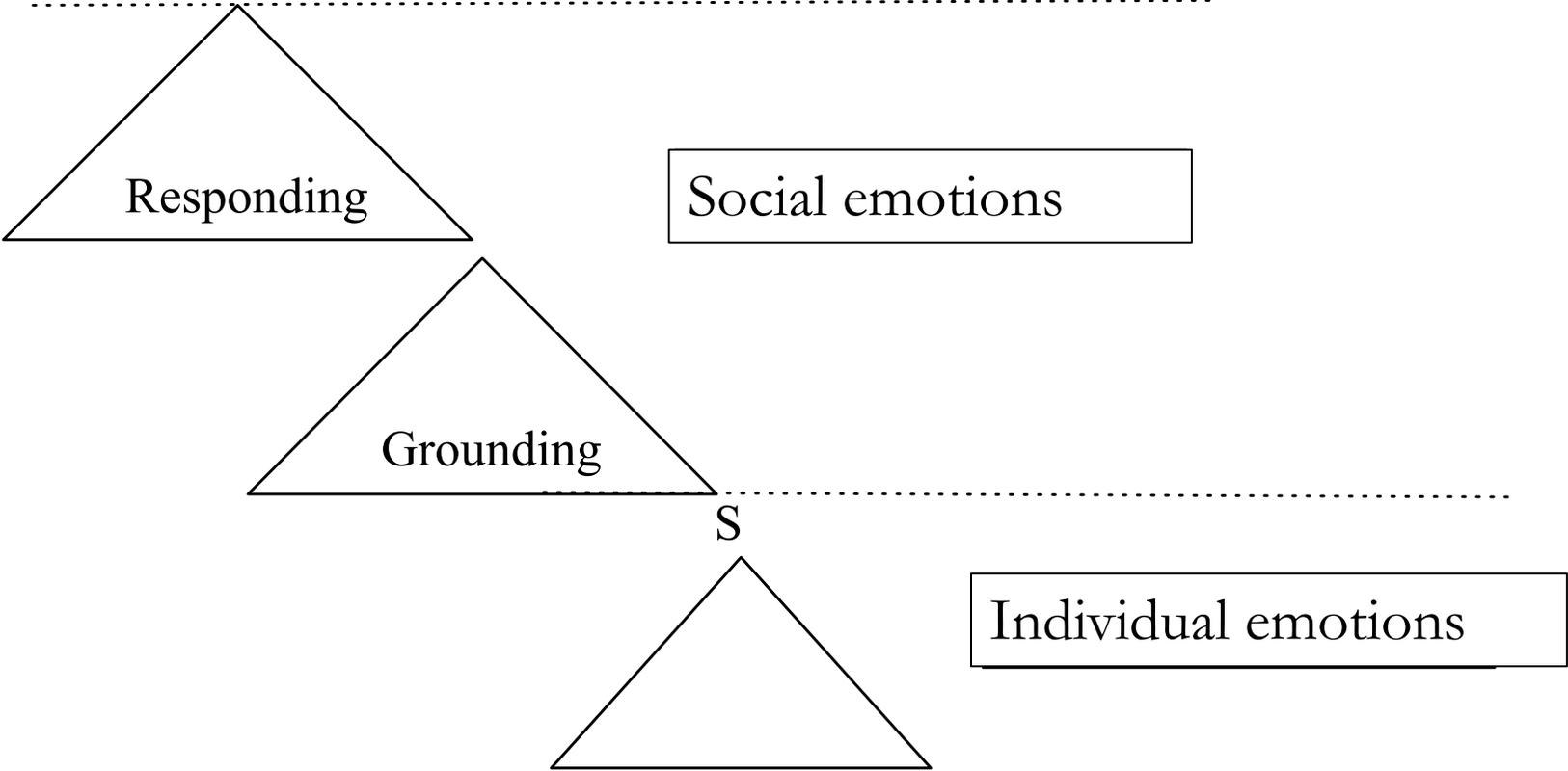
The emotional spine



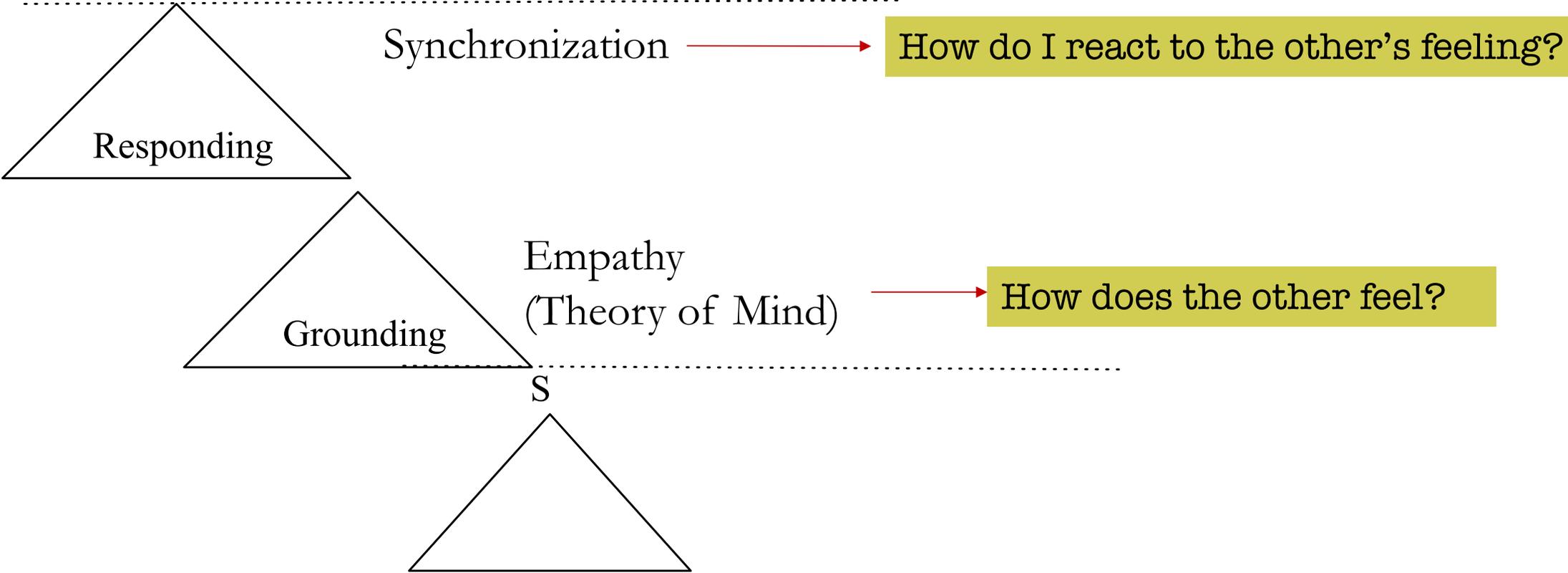
The emotional spine



The emotional spine in interaction



The emotional spine in interaction



A note on synchronization

- Contagious yawning
- Synchronization of heartbeat
- Synchronization of pupil diameter
- Facial mimicry
- Laughter
- ...

Contagious yawning

- Different from spontaneous yawning (present in fetus)
- prompted by seeing/hearing other person's yawn
- starts at age 2 (Piaget)
- Starts at 5 (Anderson & Meno 2003, cited in Helt et al.)
- 4 years (Helt et al.)
- Not found in ASD (Eigsti 2013)



Contagious yawning

More research is needed to establish whether contagious yawning is unique or whether all forms of mimicry increase over the course of typical development (potentially with a substantial shift in competence occurring around the age of 4). However, one potential implication of the late onset of contagious yawning in typical development and its near absence among individuals with ASD is that mimicry, and hence emotional contagion, may increase with social experience. It is fairly easy to

Facial mimicry

- Automatic (reflex-like) mimic
- influenced by motivation to understand emotion

Murata et al. 2016

- Present in TD humans (including neonates)
- Not normal in ASD (MacIntosh 1996)
- take longer to mimic (Eigsti 2013)
- Also found in apes, monkeys, dogs , & neo-natal chimpanzees

(Murata et al. 2016)

Pupil diameter

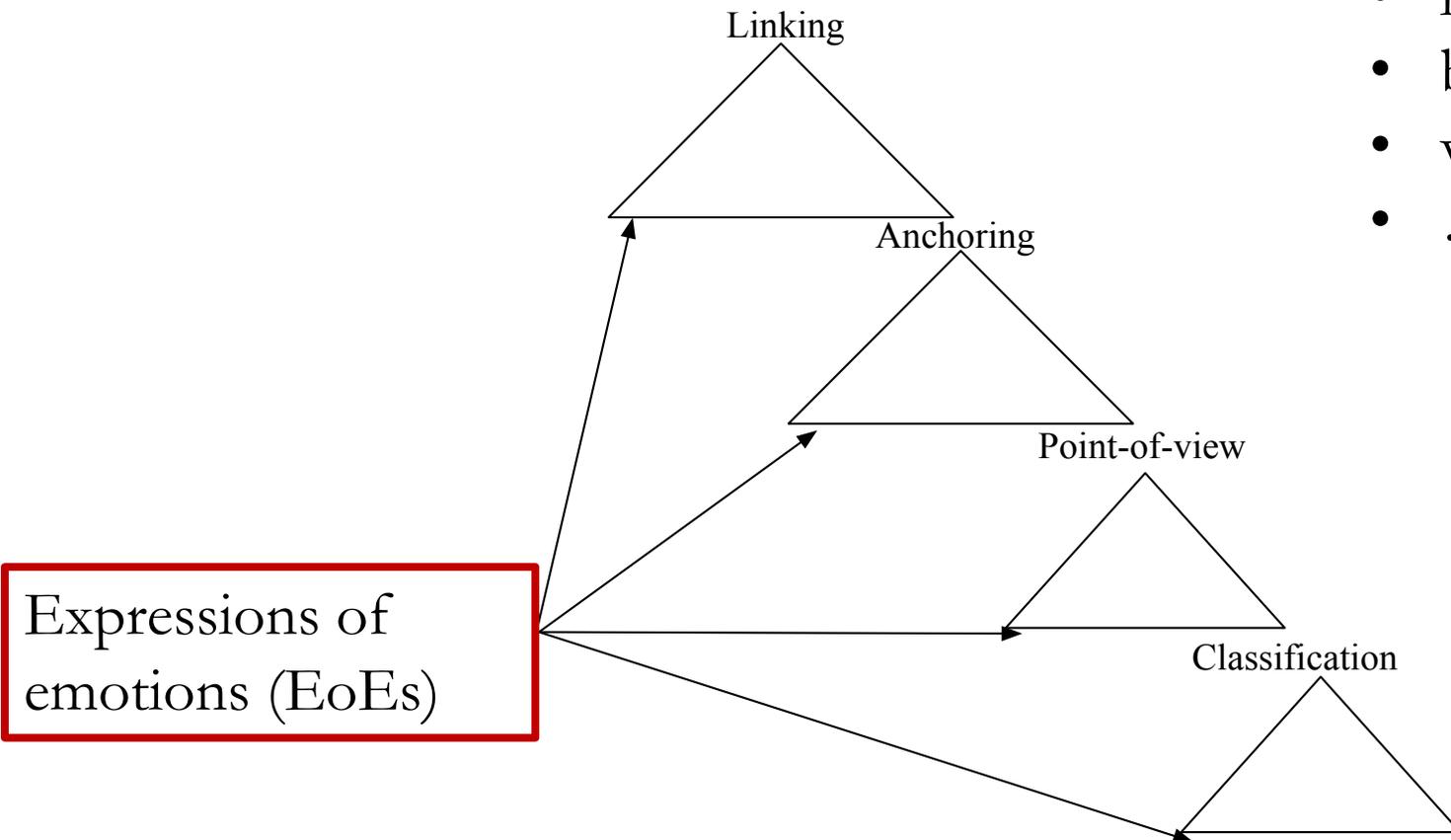
Group-living typically provides benefits to individual group members but also confers costs. To avoid incredulity and betrayal and allow trust and cooperation, individuals must understand the intentions and emotions of their group members. Humans attend to other's eyes and from gaze and pupil-size cues, infer information about the state of mind of the observed. In humans, pupil-size tends to mimic that of the observed. Here we tested whether pupil-mimicry exists in our closest relative, the chimpanzee (*P. troglodytes*). We conjectured that if pupil-mimicry has adaptive value, e.g. to promote swift communication of inner states and facilitate shared understanding and coordination, pupil-mimicry should emerge within but not across species. Pupillometry data was collected from human and chimpanzee subjects while they observed images of the eyes of both species with dilating/constricting pupils. Both species showed enhanced pupil-mimicry with members of their own species, with effects being strongest in humans and chimpanzee mothers. Pupil-mimicry may be deeply-rooted, but probably gained importance from the point in human evolution where the morphology of our eyes became more prominent. Humans' white sclera surrounding the iris, and the fine muscles around their eyes facilitate non-verbal communication via eye signals.

Kret et al. 2014

The emotional spine

EoE's include:

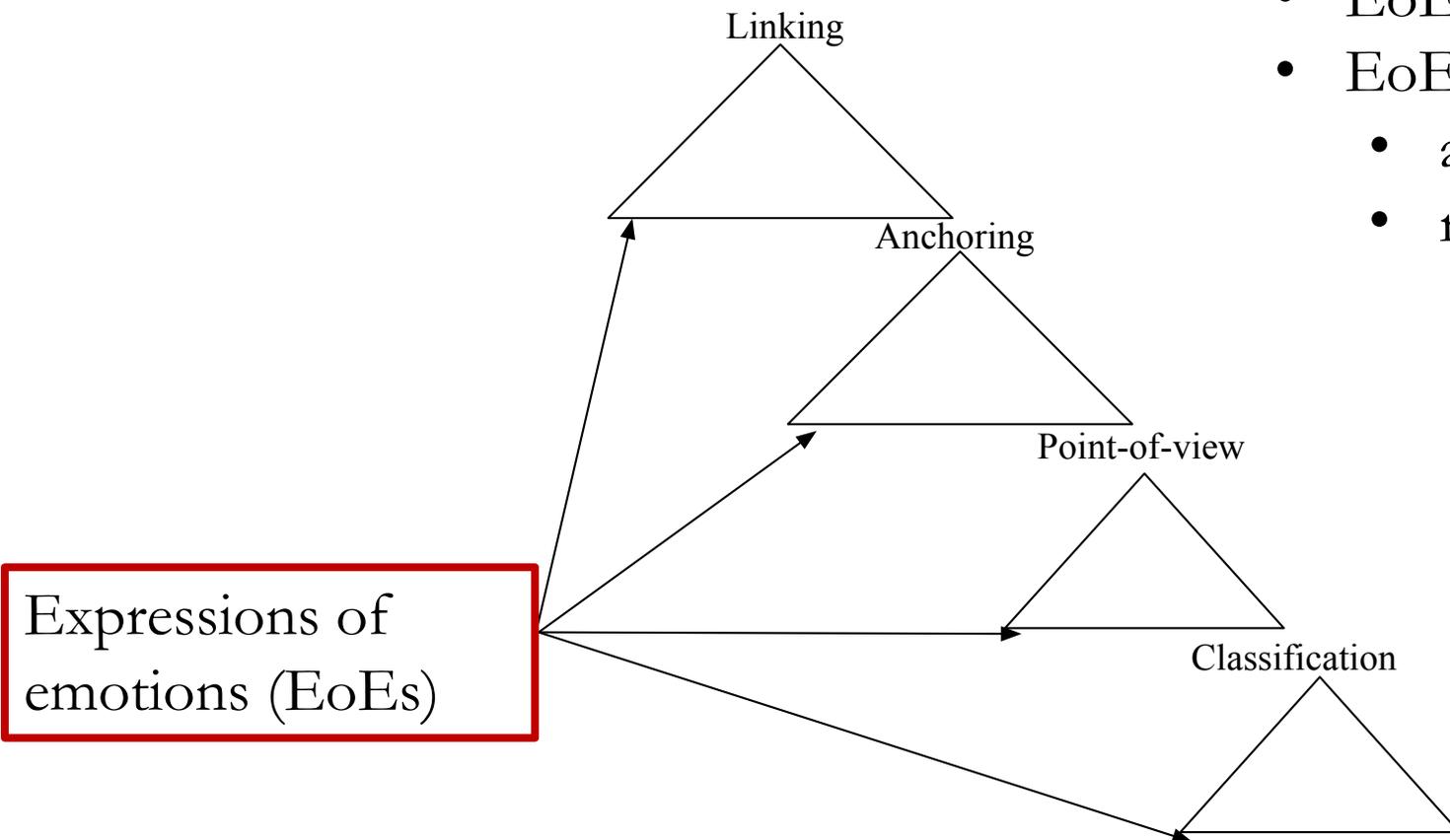
- facial expressions
- laughs
- body-language
- voice quality
-



The emotional spine

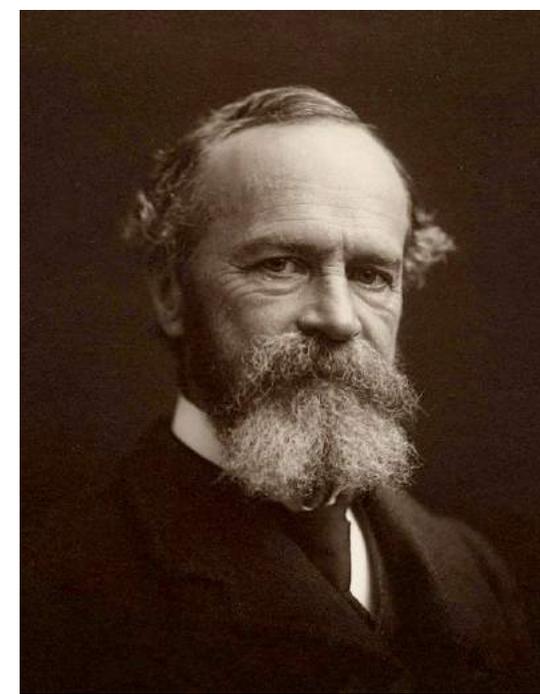
Differences to UoLs of grammar:

- EoEs serve to value (can be true or fake)
- EoEs don't have intrinsic meaning
 - are not Saussurian signs
 - receive "meaning" from the spine



Common sense says, we lose our fortune, are sorry and weep; we meet a bear, are frightened and run; we are insulted by a rival, are angry and strike. The hypothesis here to be defended says that this order of sequence is incorrect, that the one mental state is not immediately induced by the other, that the bodily manifestations must first be interposed between, and that the more rational statement is that **we feel sorry because we cry, angry because we strike, afraid because we tremble, and not that we cry, strike, or tremble, because we are sorry, angry, or fearful, as the case may be.** Without the bodily states following on the perception, the latter would be purely cognitive in form, pale, colourless, destitute of emotional warmth. We might then see the bear, and judge it best to run, receive the insult and deem it right to strike, but we could not actually *feel* afraid or angry.

James 1984



Non arbitrary UoLs in grammar

Intonational tunes (are not sound-meaning bundles)

- intonational tunes only have meaning when they associate with the spine.
- Striking cross-linguistic consistency
- Sound associates with spine directly (Wiltschko, to appear)
- since the spine is universally associated with the same functions, this results in (near) universal (non-arbitrary) sound-meaning relations.

→ This is at the root of so-called iconicity.

Non arbitrary UoLs in Grammar

Telicity marking by vowels in Japanese:

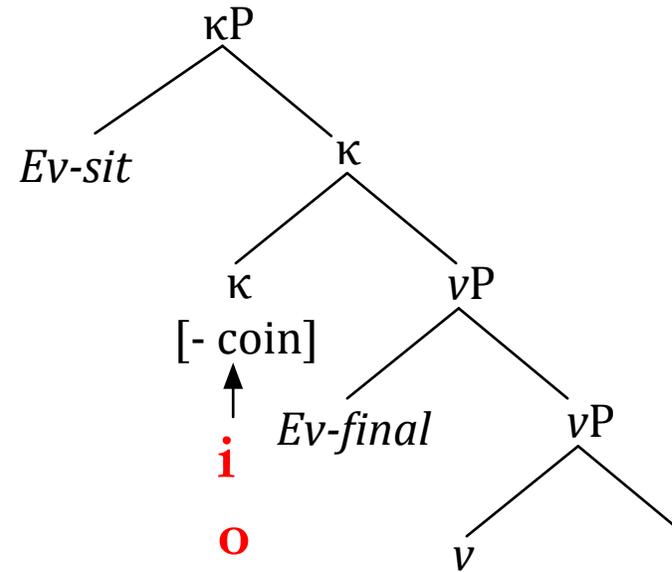
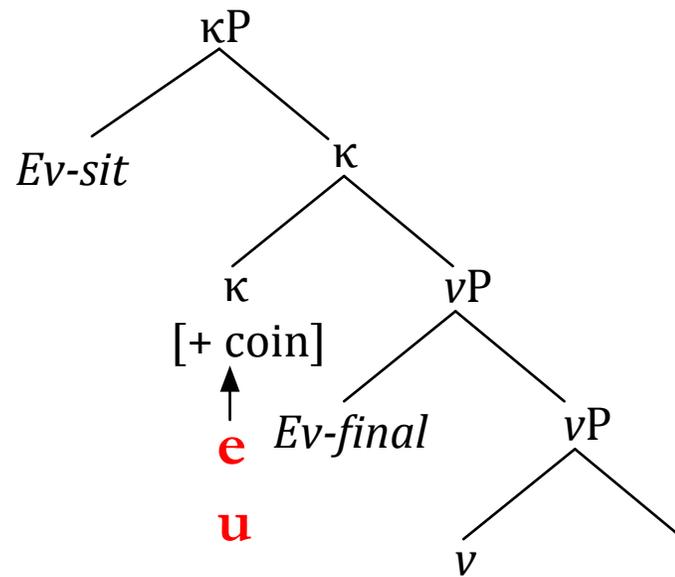
Monosyllabic verbs

Vowel quality	Verbal telicity
/e, u/	telic
/i, o/	atelic
/a/	telic or atelic

Bisyllabic verbs

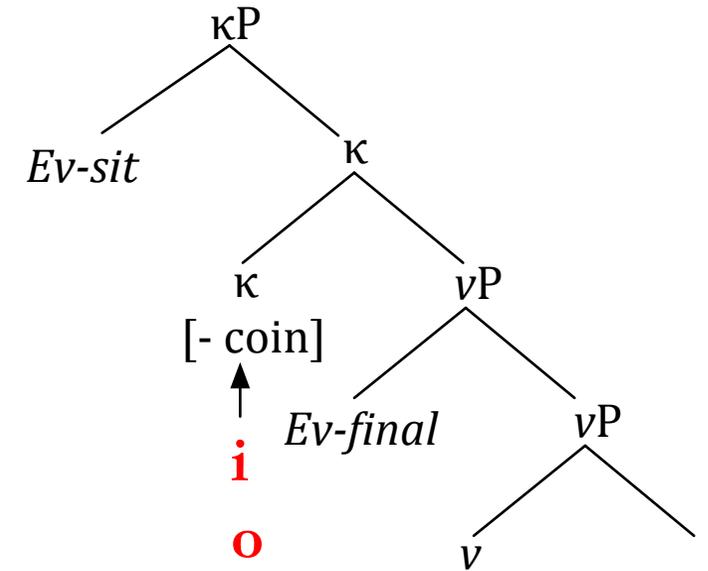
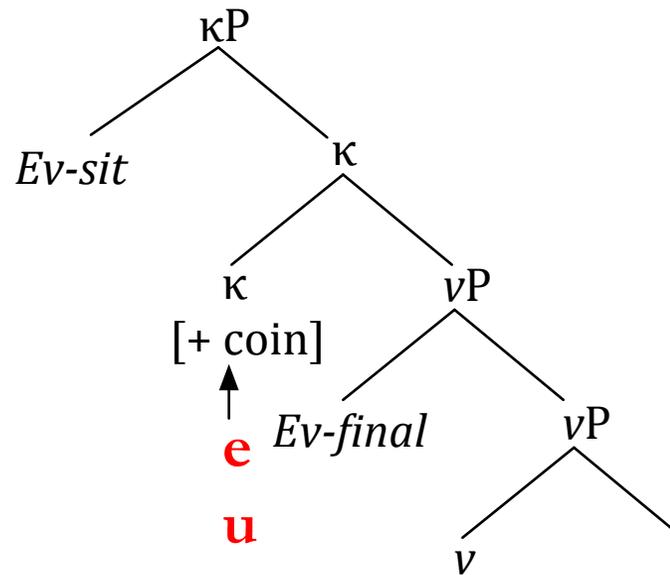
First vowel	Verbal telicity	Second vowel	Verbal telicity
/e, u/	telic or atelic	/e, u/	telic
/i, o/	telic or atelic	/i, o/	atelic
/a/	telic or atelic	/a/	telic or atelic

[±coin]: Valuation via sound



Vowel quality	Verbal telicity
/e, u/	telic
/i, o/	atelic
/a/	telic or atelic

[±coin]: Valuation via sound



Telicity	vowel	low	central/peripheral
[+telic]	/e/	[-]	[central]
	/u/	[-]	
[-telic]	/i/	[-]	[peripheral]
	/o/	[-]	

The emotional spine hypothesis

The view from psychology: The constructivist view of emotions

The view from the spine

Some implications

The view from acquisition

children's language skills may play both a direct and an indirect role in their empathic responses and behaviors

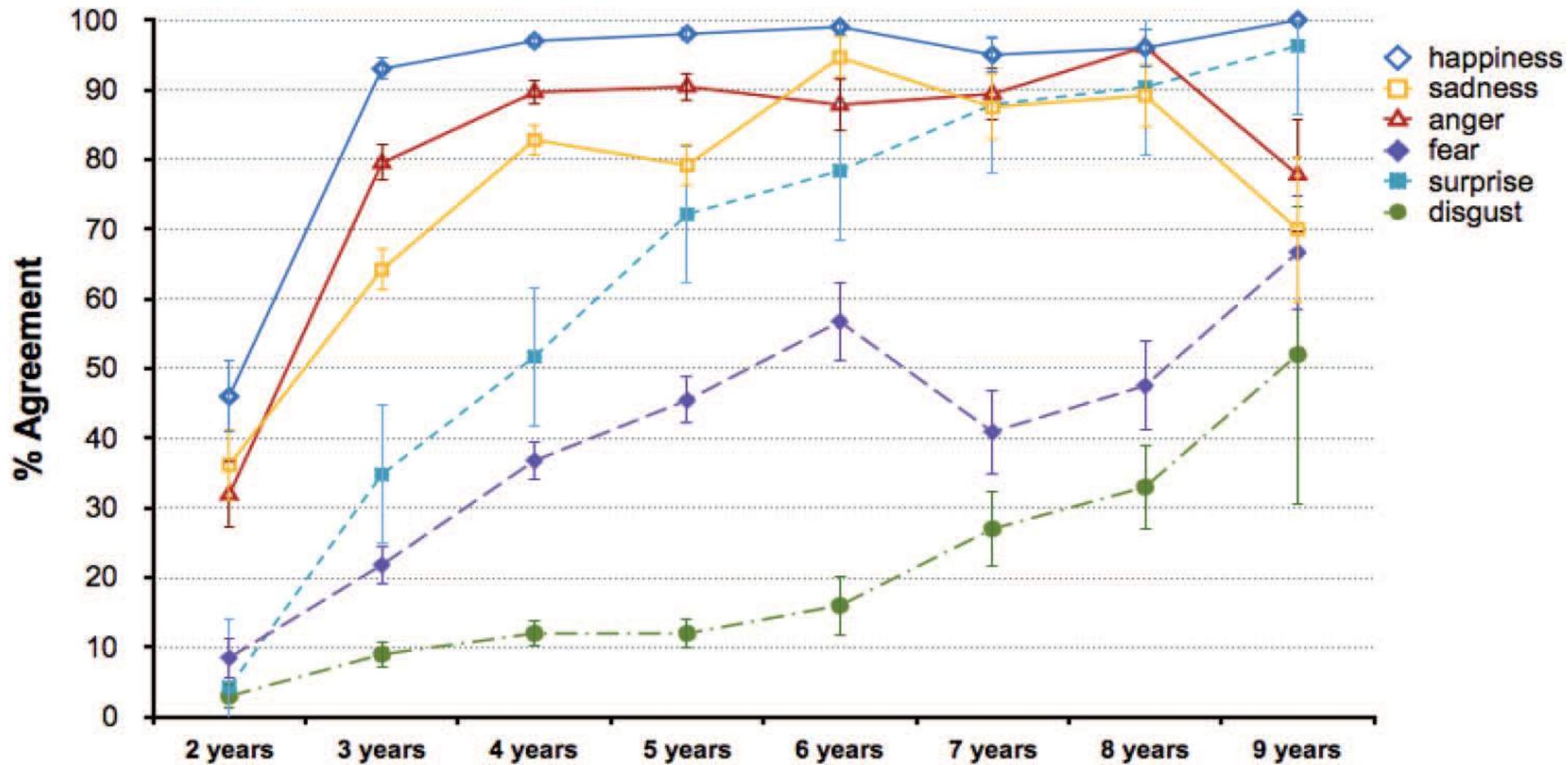
Ornaghi et al. 2020

more advanced language ability predicts greater concern for others and less disregard for others, even after controlling for cognitive abilities.

Rhee et al. (2013)

verbal ability and prosocial orientation – a composite measure of empathic concern and prosocial action – are strongly and significantly associated with one another

Ensor et al. (2011)



The view from evolution

- “the evolution of human emotions coevolved with that of language.”

“We suggest that complex tool manufacture and alloparenting played an important role in the evolution of emotions, by leading to increased executive control and intersubjective sensitivity. This process, which can be interpreted as a special case of self-domestication, culminated in the construction of human-specific social emotions, which facilitated information sharing. Once in place, language enhanced the inhibitory control of emotions, enabled the development of novel emotions and emotional capacities, and **led to a human mentality that departs in fundamental ways from that of other apes.**”

Jablonka et al. 2012

The view from language pathologies

Autism spectrum disorder (ASD) is associated with amplified emotional responses and poor emotional control, but little is known about the underlying mechanisms.

Mazefsky et al. 2013

Compared with nonpatients, **schizophrenia** patients exhibit very few outward displays of emotion, yet they exhibit subtle, microexpressive displays.

King 1999

All three variants of **primary progressive aphasia (PPA)** demonstrate emotion recognition impairment.

Multani et al. 2017

Recognizing facial emotions is impaired in **Alzheimer's** disease.

Hargrave et al. 2002

Empirical goal

- A case study of response markers in English: the emotive response paradigm

Analytical goal

- Is there a particular grammar associated with emotive language and expressive mode?
- In other words: is there an **EmotivePhrase**?

Theoretical goal

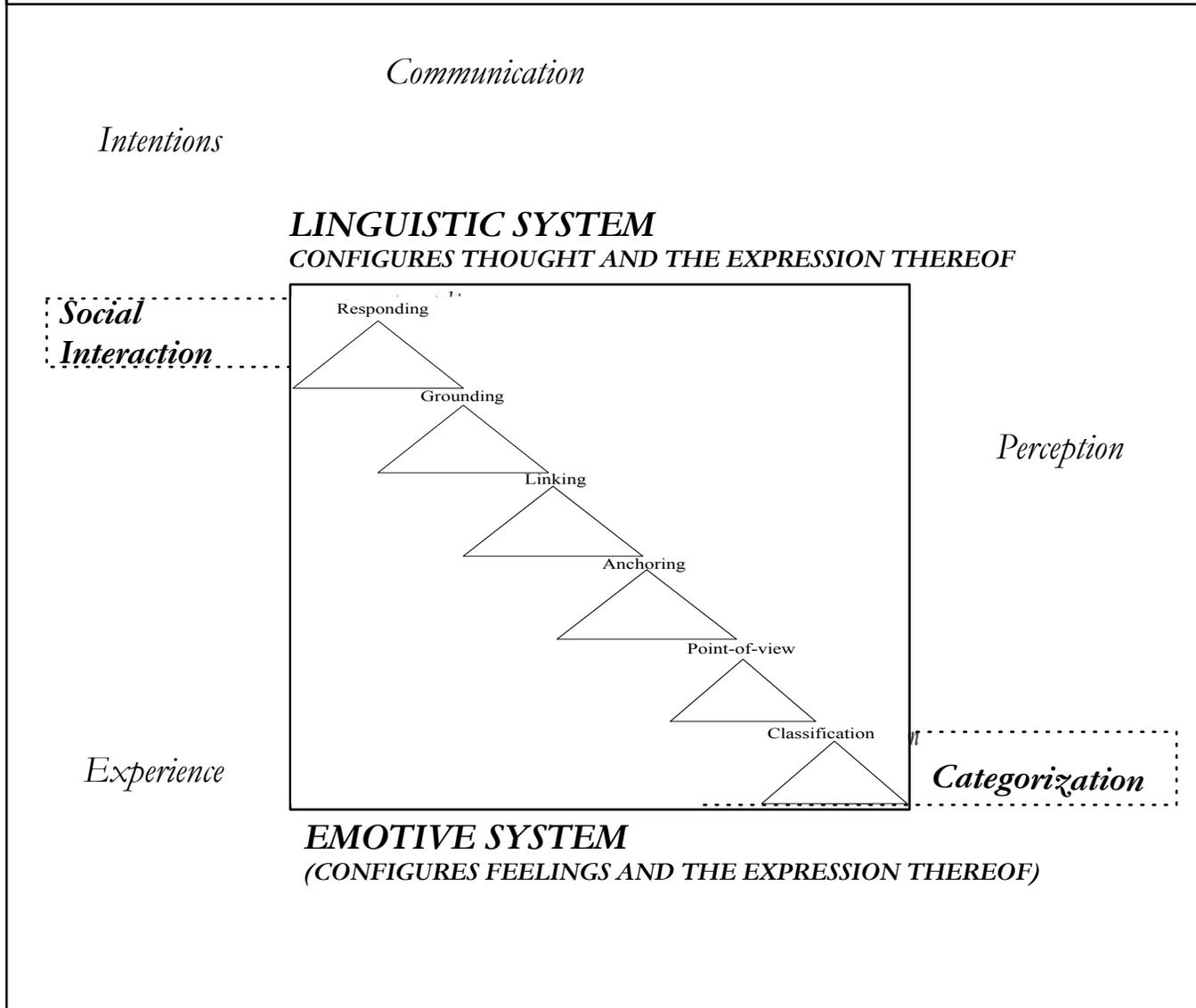
- What, if anything, does emotive language teach us about the cognition of emotions?
- And what are emotions anyway?

Superlinguistic goal:

- Introduce the emotional spine hypothesis



THE HUMAN LINGUISTIC-COGNITIVE-EMOTIVE PHENOTYPE



It's in the spine!