LINGUISTIC COMMUNICATION & SOCIAL COGNITION

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https://danielwharris.com/teaching/NASSLLI/

Linguistic Communication and Social Cognition

NASSLLI 2025 | Dan Harris + Peter van Elswyk

Monday, June 23rd | Introduction

Slides

Monday Slides

Tuesday, June 24th | Reference, Audience Design, and Attention

Slides

Tuesday Slides (coming soon)

Further Reading Suggestions

Demonstratives as attention tools: Evidence of mentalistic representations within language

Wednesday, June 25th | Event Cognition

Thursday, June 26th | Common Ground

Friday, June 27th | Factive Mindreading

DAY 2:
REFERENCE, AUDIENCE DESIGN, & ATTENTION

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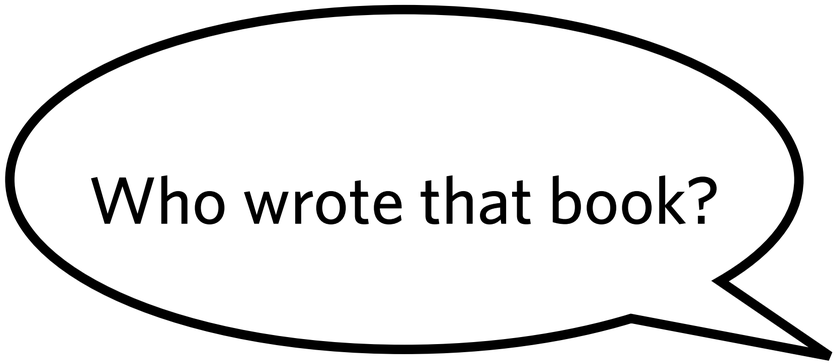
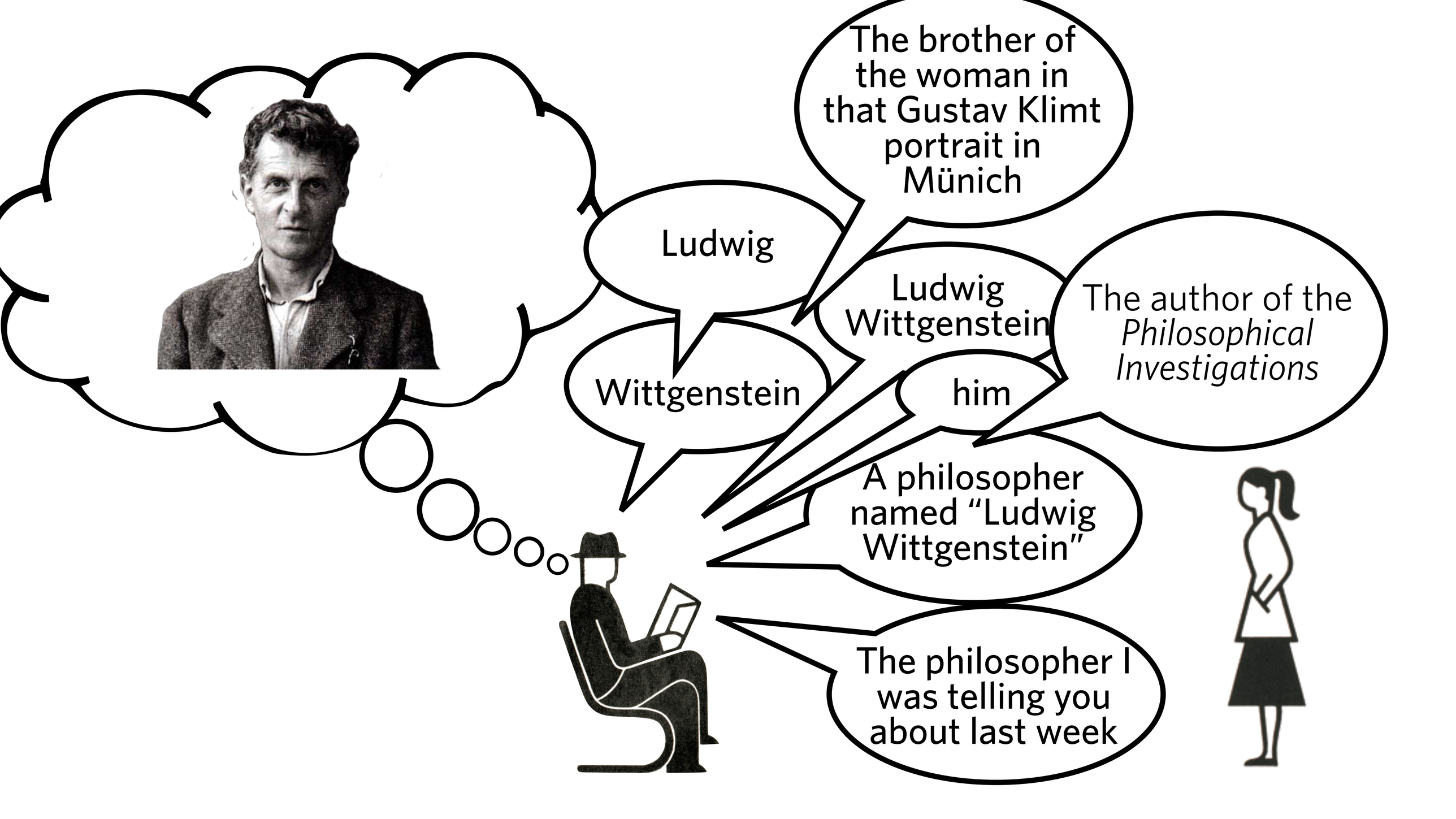

Who wrote that book?

Who wrote that book?


The brother of the woman in that Gustav Klimt portrait in Münich
Ludwig
Ludwig Wittgenstein
The author of the *Philosophical Investigations*
Wittgenstein
him
A philosopher named “Ludwig Wittgenstein”
The philosopher I was telling you about last week

My addressee has never heard of Wittgenstein but knows what philosophers are.

A philosopher named “Ludwig Wittgenstein”

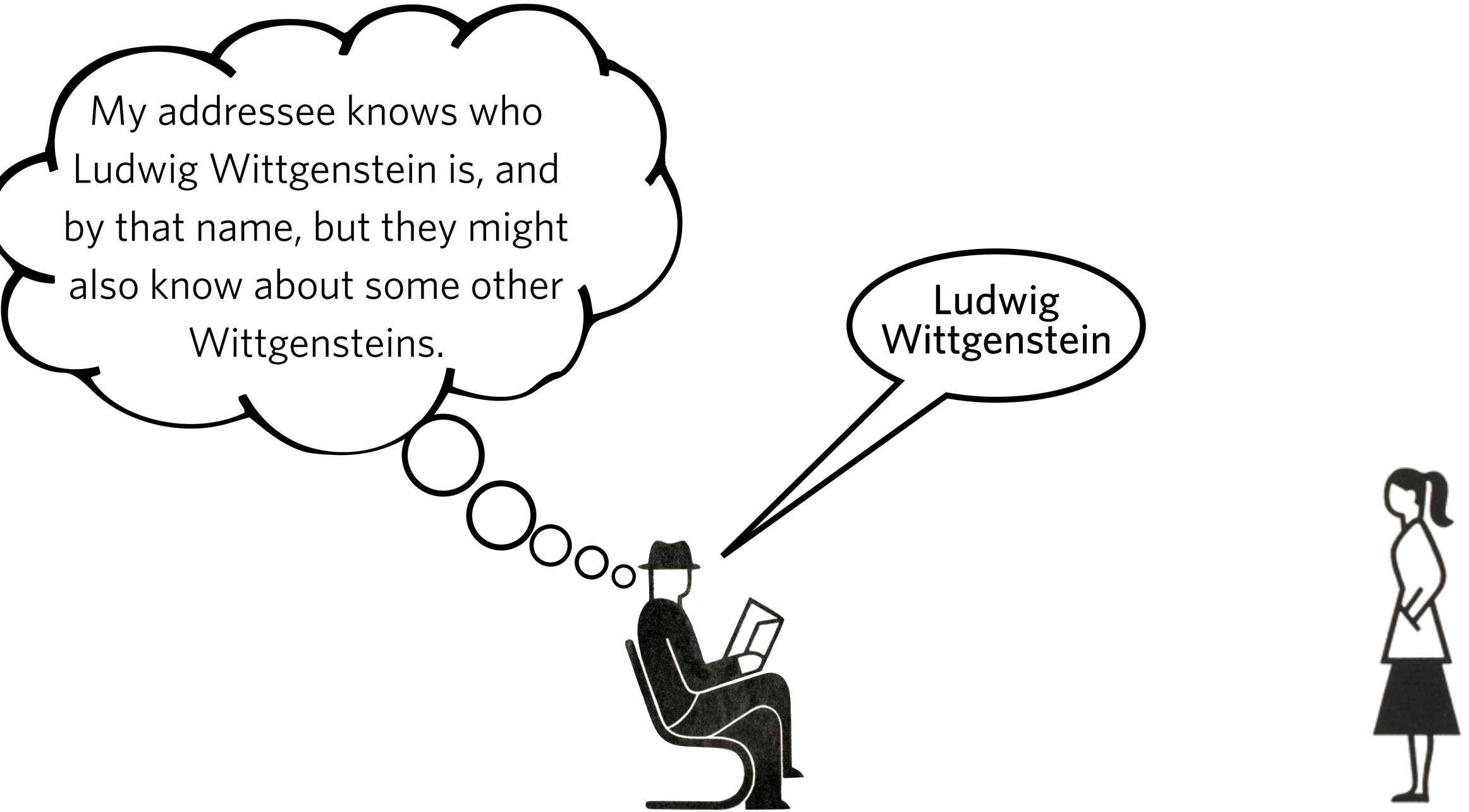

My addressee has heard of *The Philosophical Investigations* but doesn't know (or doesn't remember) who wrote it.
The author of the *Philosophical Investigations*

My addressee remembers talking to me about a philosopher last week but doesn't remember his name.

The philosopher I was telling you about last week

My addressee doesn't know anything about LW, but is a huge Gustav Klimt fan, and was recently in Münich.

The brother of the woman in that Gustav Klimt portrait in Münich

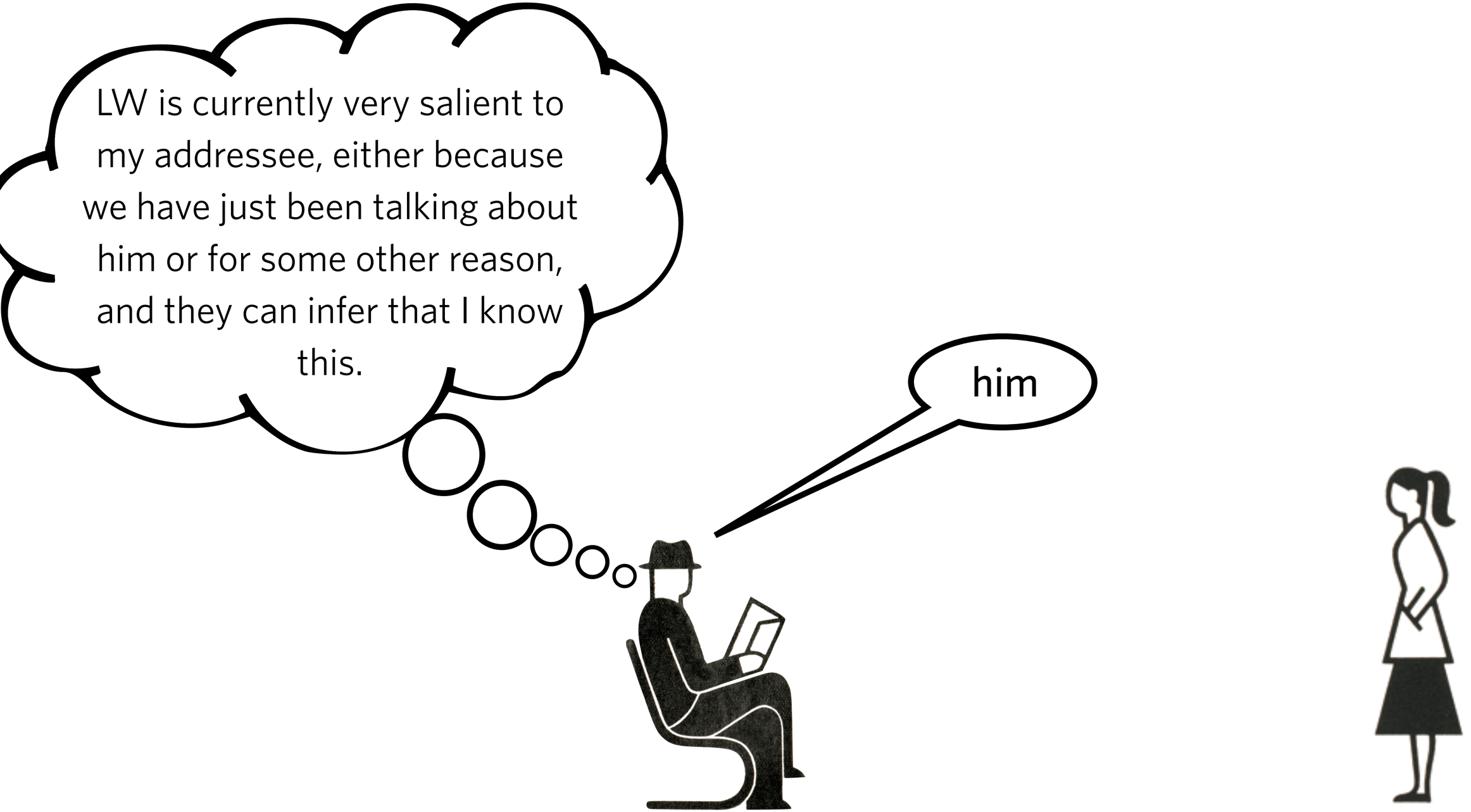

My addressee knows who Ludwig Wittgenstein is, and by that name, but they might also know about some other Wittgensteins.
Ludwig Wittgenstein

My addressee knows who Ludwig Wittgenstein is, and he is the most salient Wittgenstein for them.

Wittgenstein

Weirdly, my addressee is on a first-name basis with LW, and thinks I am too (and he is the most salient Ludwig for her.)

Ludwig


LW is currently very salient to my addressee, either because we have just been talking about him or for some other reason, and they can infer that I know this.
him

What is the design process like?

What is the design process like?

Plan:

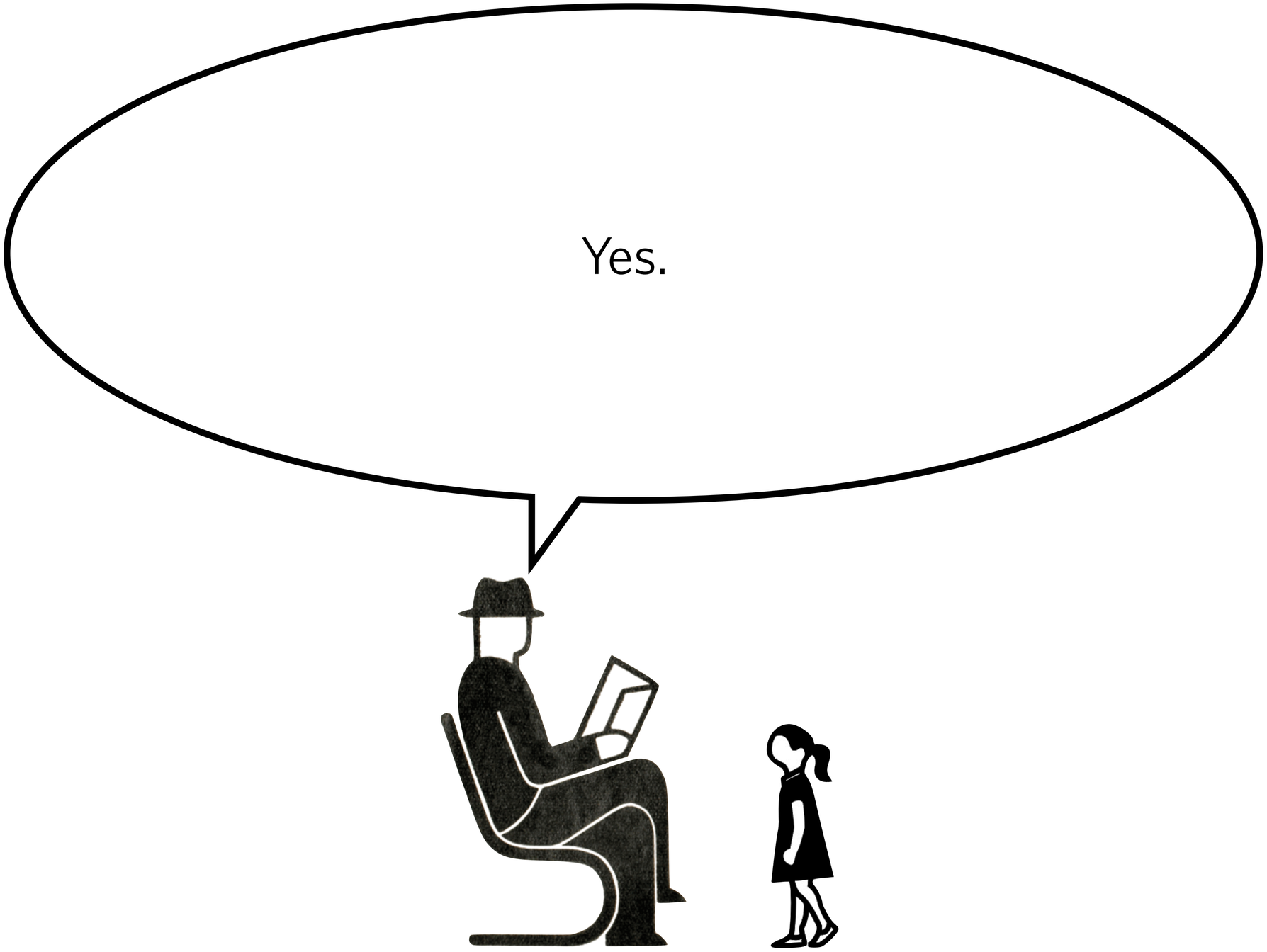
- Communication design as practical reasoning.
- Aside: Why do we form Gricean communicative intentions?
- Detailed case study: choosing to say “this” vs. “that”

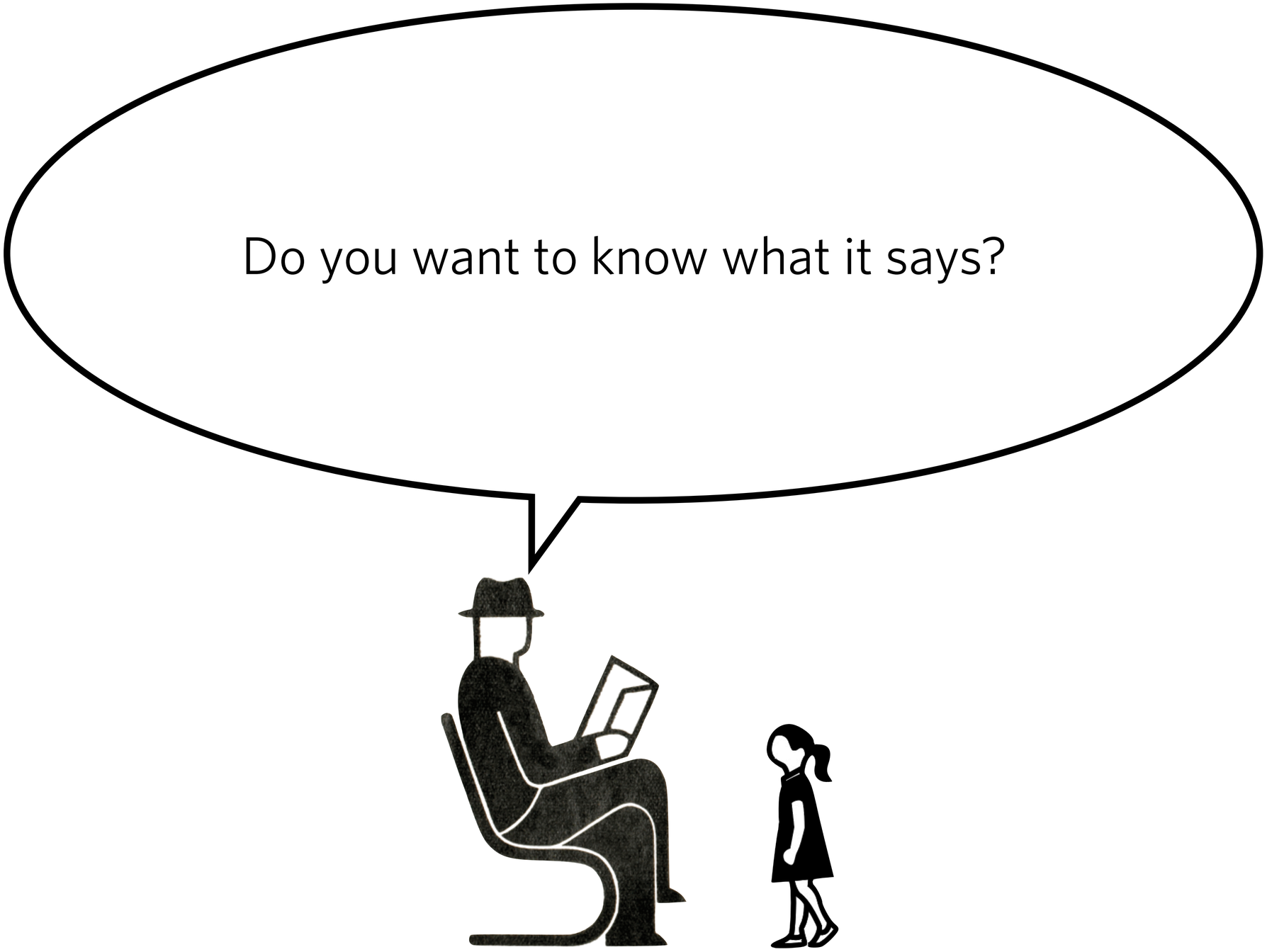
Communication Design
(a.k.a. Audience Design)

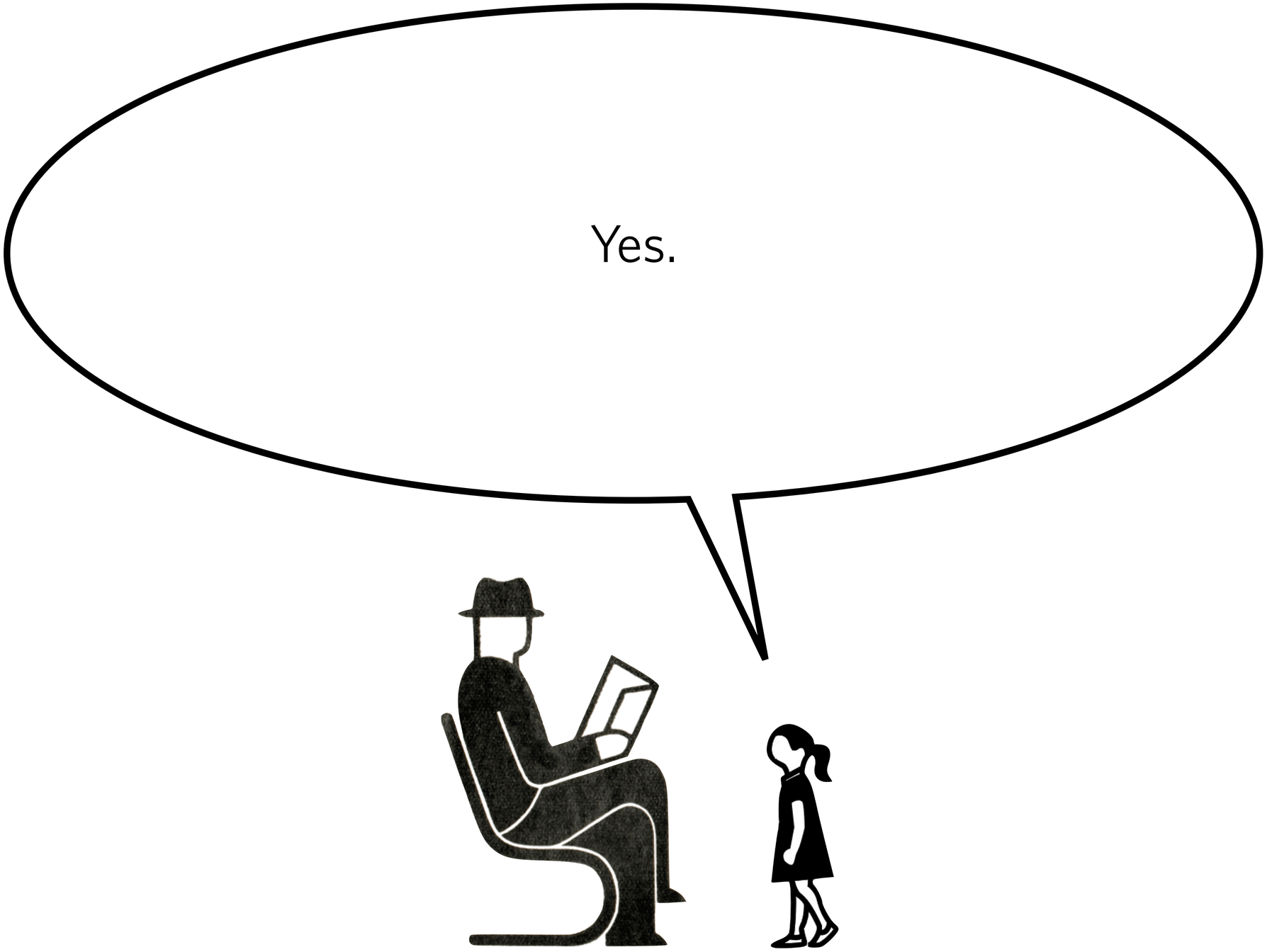
Dad, what's that book?

This is one of my philosophy books.
It's by a philosopher named Ludwig Wittgenstein.
It's called *The Philosophical Investigations*.


Wittgen…stein?


Yes.

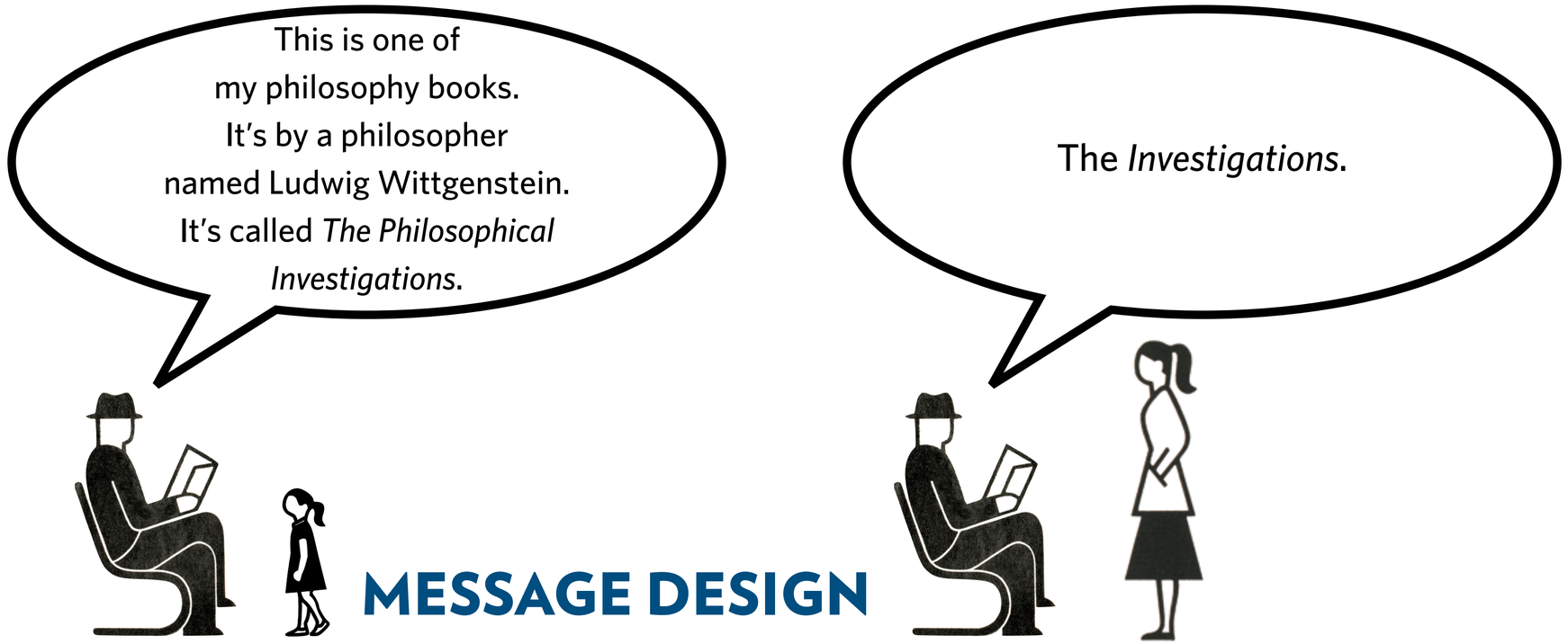

Do you want to know what it says?


Yes.

Well, here's one thing that it says:
In order to know what a rule tells us to do, we need help from other people.

Other people? Like our teachers?

Yes, or our friends, or our family. If they don't help us, we won't know what the rule means.



MESSAGE DESIGN

Oona doesn't know much about philosophy, and hasn't heard of Wittgenstein. So I will start with some very general information about the book to introduce her to a new topic.

This is one of my philosophy books. It's by a philosopher named Ludwig Wittgenstein. It's called *The Philosophical Investigations*.

The *Investigations*.

MESSAGE DESIGN

My colleague has read this book before, and so all I need to do is to increment some information she already has.

This is one of my philosophy books. It's by a philosopher named Ludwig Wittgenstein. It's called *The Philosophical Investigations*.

The *Investigations*.

MESSAGE DESIGN

SIGNAL DESIGN

Oona doesn't know what a "social practice" is, or what the word "essentially" means. So I will describe those ideas in simple terms.

Well, here's one thing that it says:
In order to know what a rule tells us to do, we need help from other people.

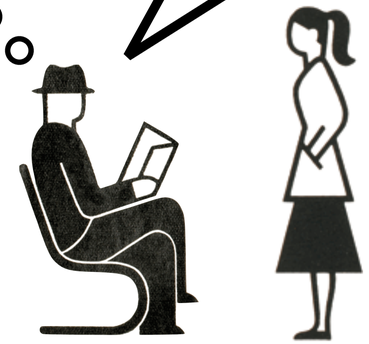
I think the view is that following a rule is an essentially social practice.

SIGNAL DESIGN

My colleague knows lots of philosophical terminology, and will be offended if I talk to her like she's a kid, so I will say "essentially social practice."

Well, here's one thing that it says: In order to know what a rule tells us to do, we need help from other people.

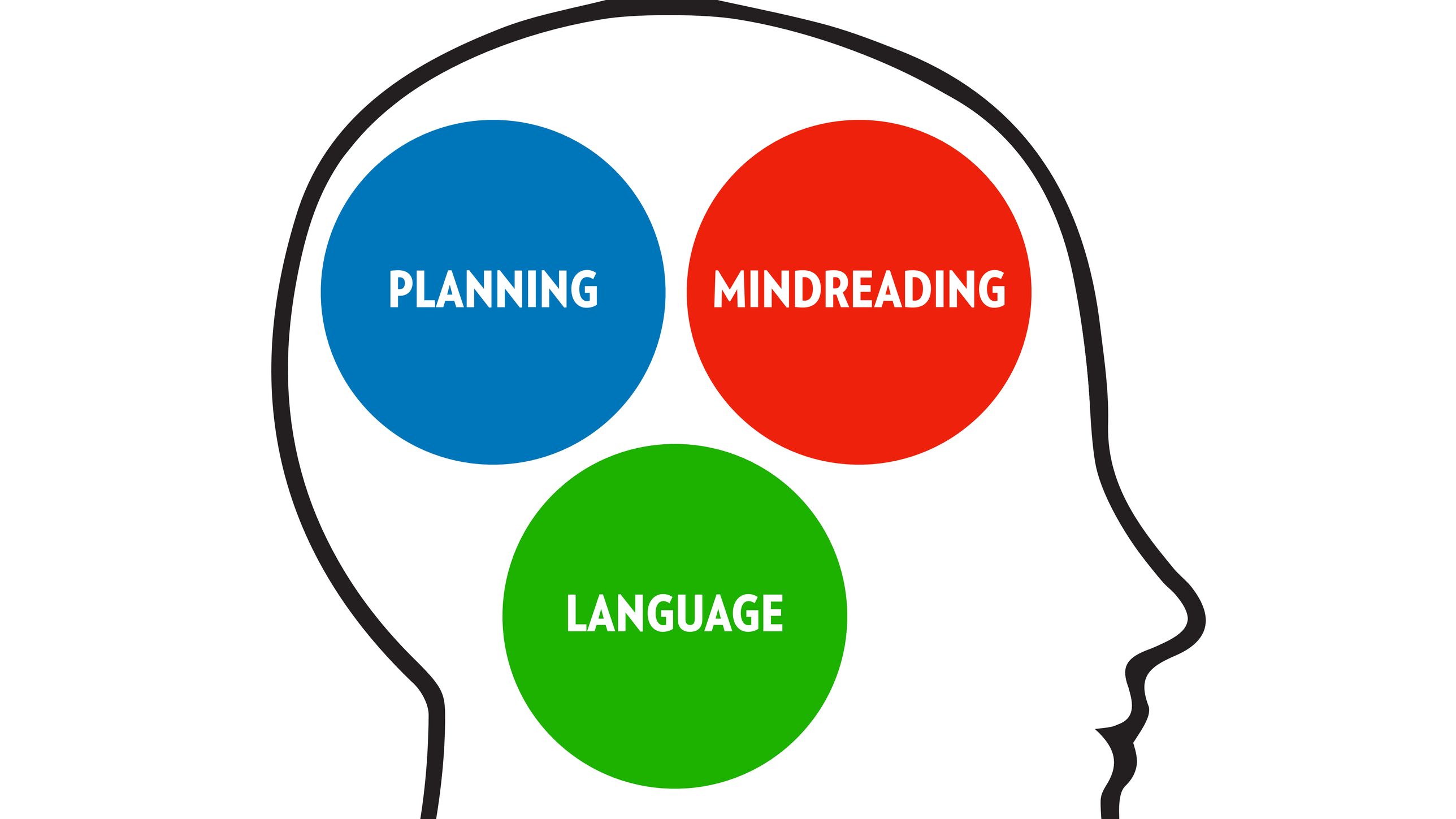
I think the view is that following a rule is an essentially social practice.

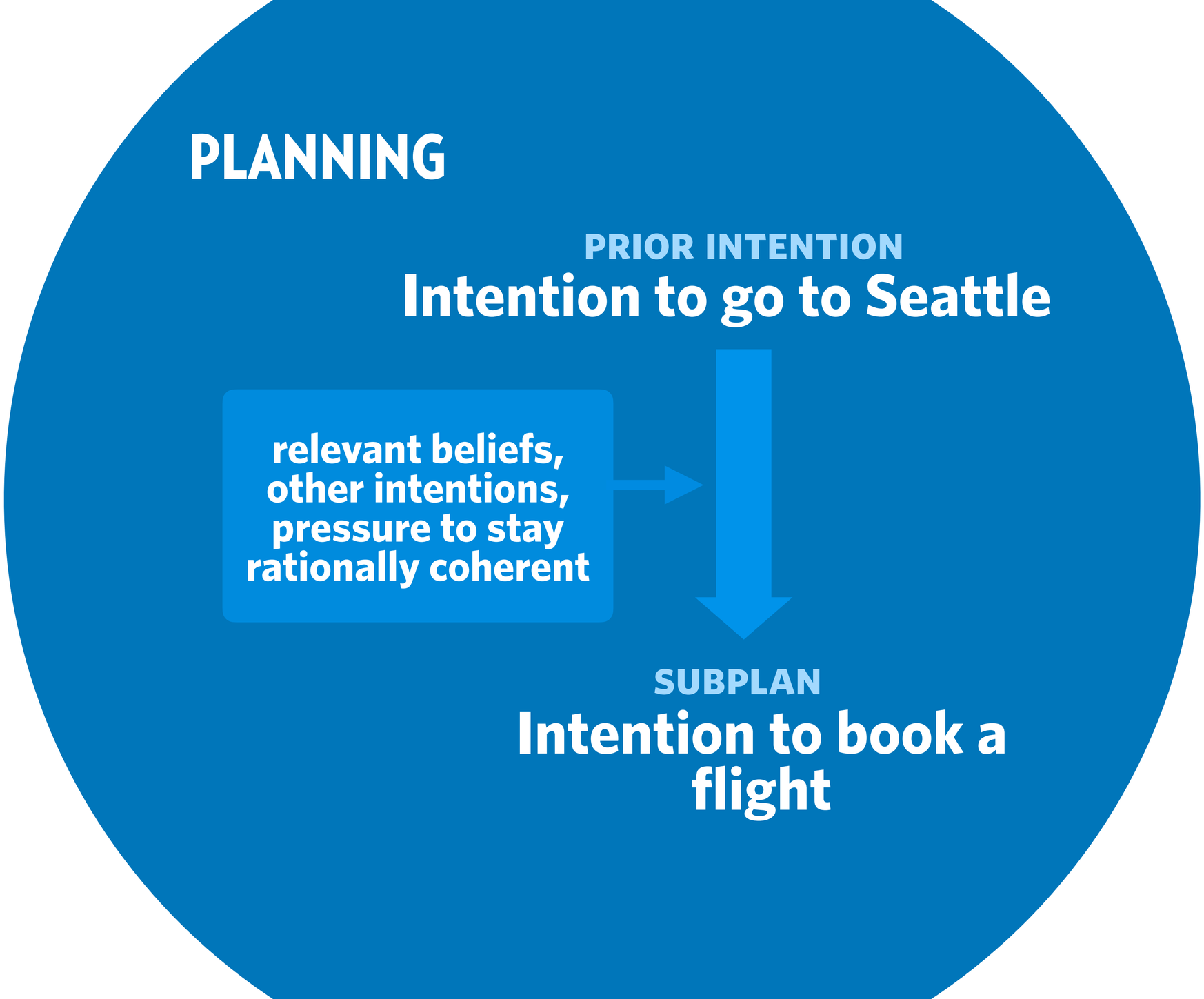


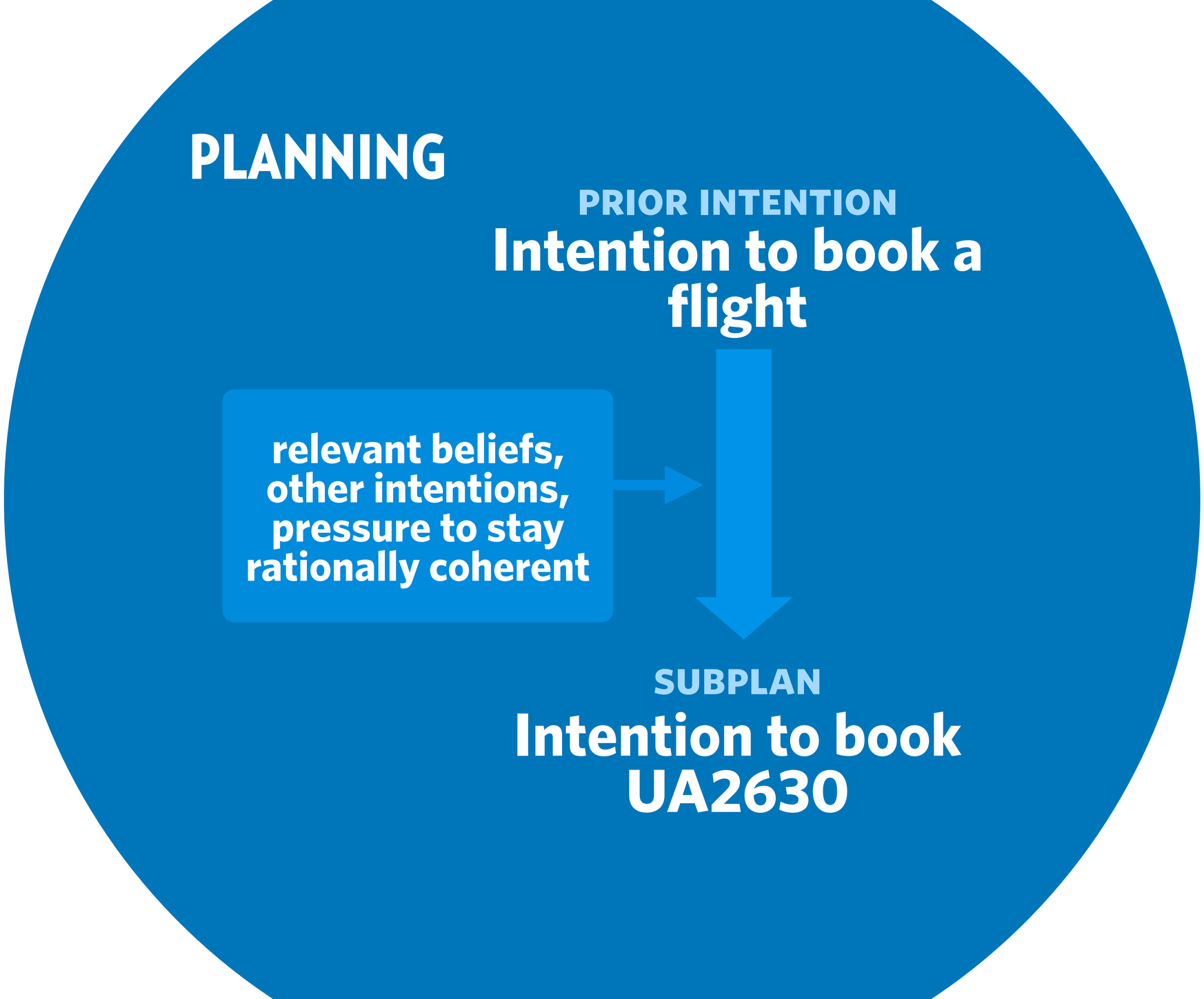
SIGNAL DESIGN

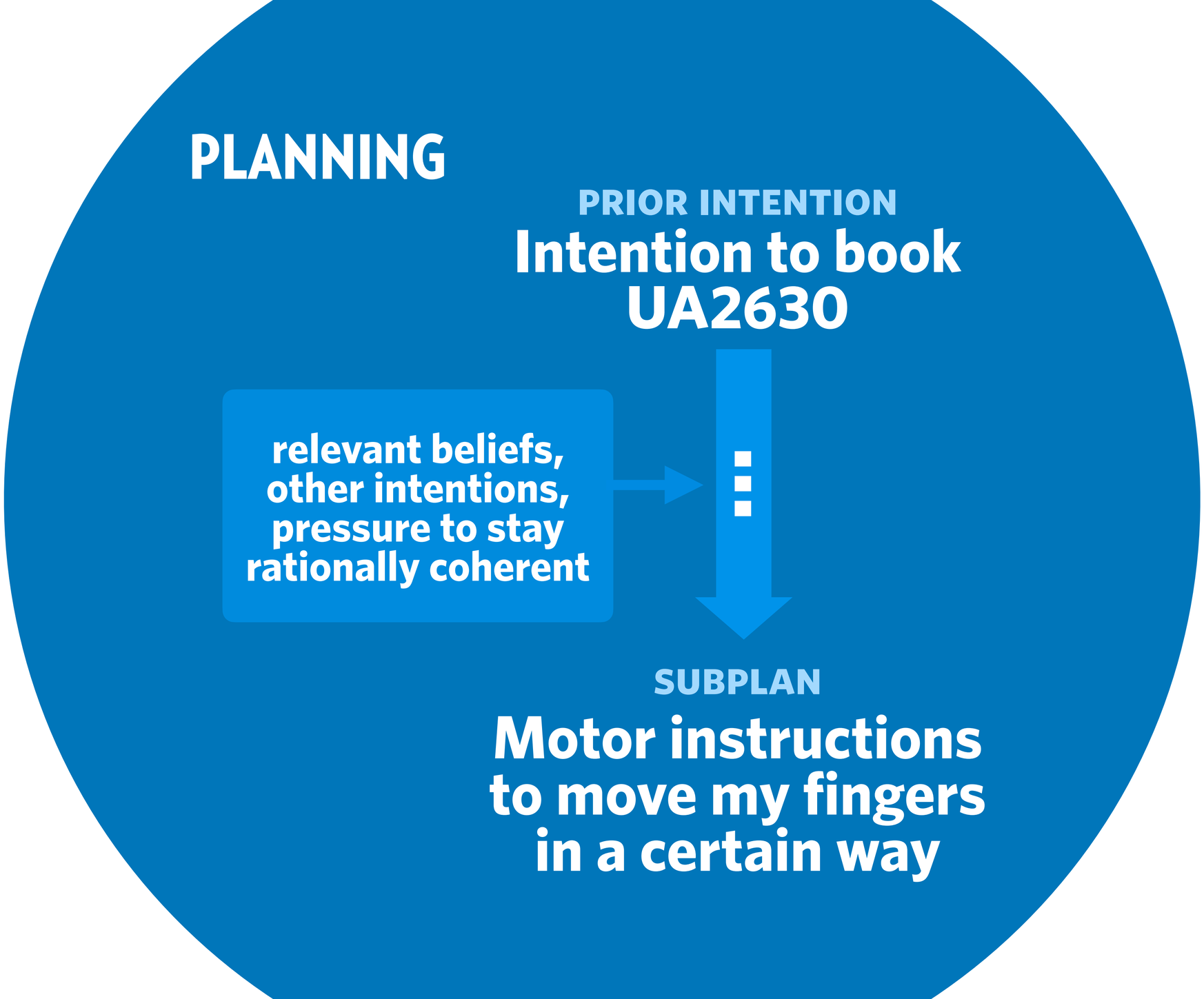
Hierarchical Planning

(Bratman 1987, etc.)


PLANNING
MINDREADING
LANGUAGE


PLANNING
PRIOR INTENTION
Intention to go to Seattle
relevant beliefs, other intentions, pressure to stay rationally coherent
SUBPLAN
Intention to book a flight


PLANNING
PRIOR INTENTION
Intention to book a flight
relevant beliefs, other intentions, pressure to stay rationally coherent
SUBPLAN
Intention to book UA2630


PLANNING
PRIOR INTENTION
Intention to book UA2630
relevant beliefs, other intentions, pressure to stay rationally coherent
SUBPLAN
Motor instructions to move my fingers in a certain way

WHY HIERARCHICAL PLANNING?

Breaks a complex, multivariate decision into tractable chunks.

Initial decisions constrain later ones, making them easier.

Allows us to build more complex plans than we could otherwise manage.

RATIONAL REQUIREMENTS

MEANS-END RATIONALITY

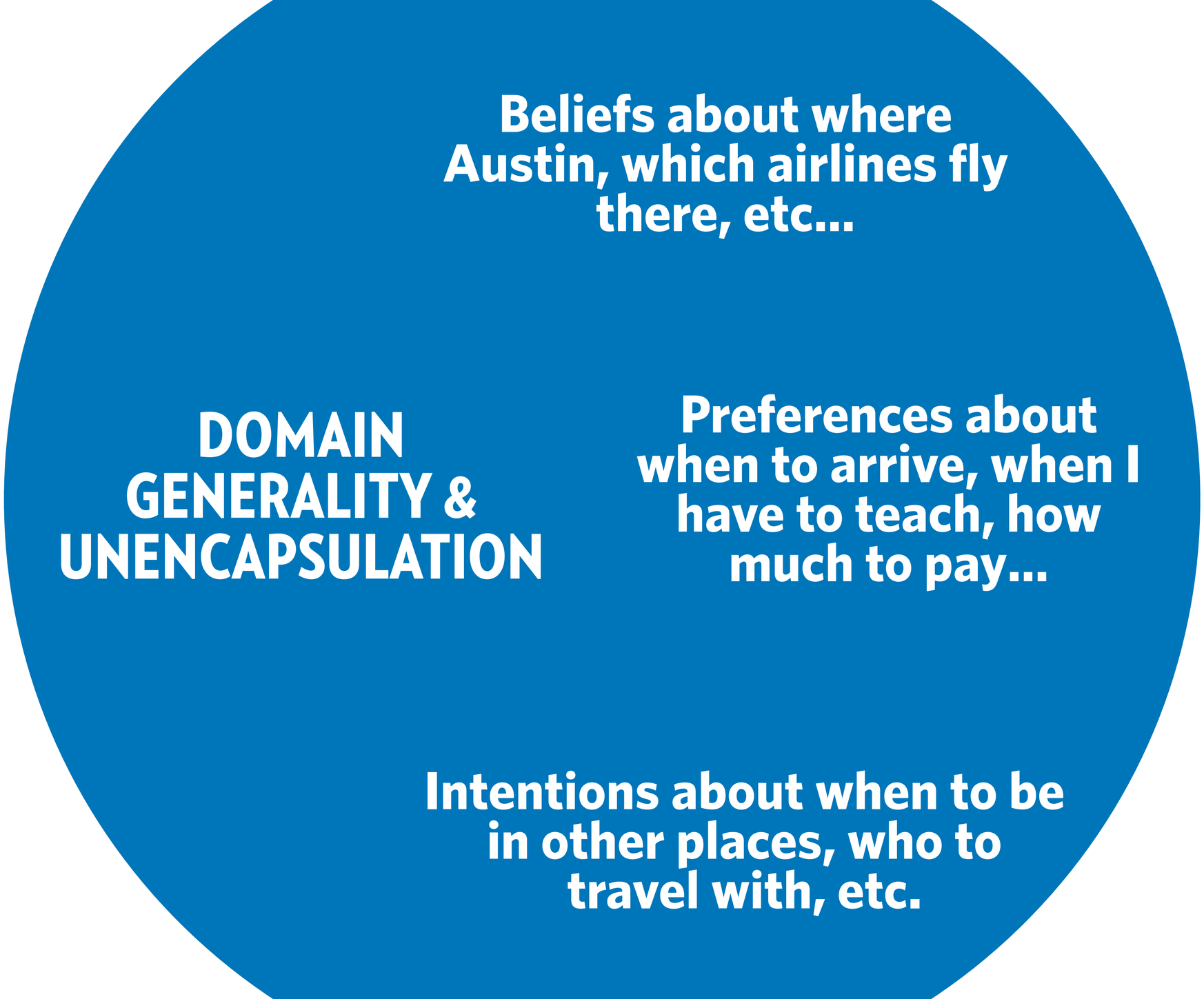
To be rational, you have to intend what you take to be the necessary means to your intended ends.

CONSISTENCY OF INTENTIONS

To be rational, you have to avoid intending inconsistent things

DOXASTIC CONSTRAINT

To be rational, you should avoid intending things that you believe you can't do.


Beliefs about where Austin, which airlines fly there, etc...
DOMAIN GENERALITY & UNENCAPSULATION
Preferences about when to arrive, when I have to teach, how much to pay...
Intentions about when to be in other places, who to travel with, etc.

ABSTRACT GOALS

Abstract goals must be pursued with very different specific actions in different circumstances.

Example:
Hosting a dinner party

In order to turn these goals into actions, we need complex, hierarchical plans.

SOCIAL GOALS

Social goals depend on how others think and act for their fulfillment.

Example:
...Hosting a dinner party!

Pursuing these goals requires complex plans that are responsive to others' states of mind.

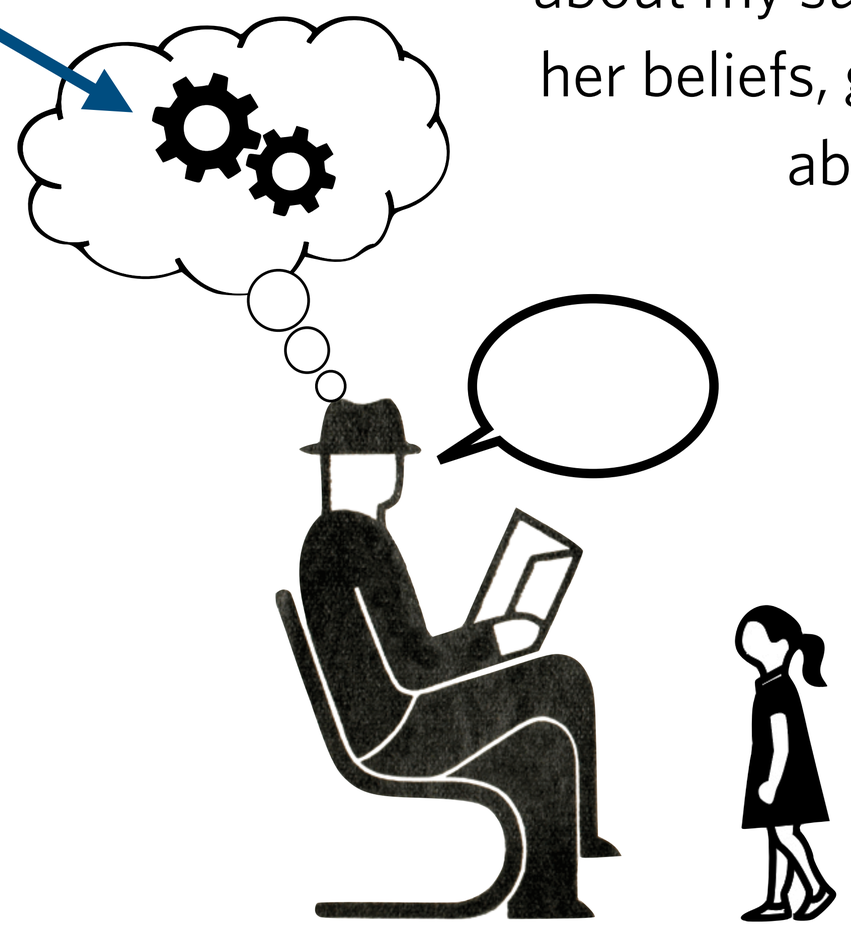
Communication Design as Hierarchical Planning

Communication Design as Practical Reasoning

What is the design process like?

Communication Design as Practical Reasoning

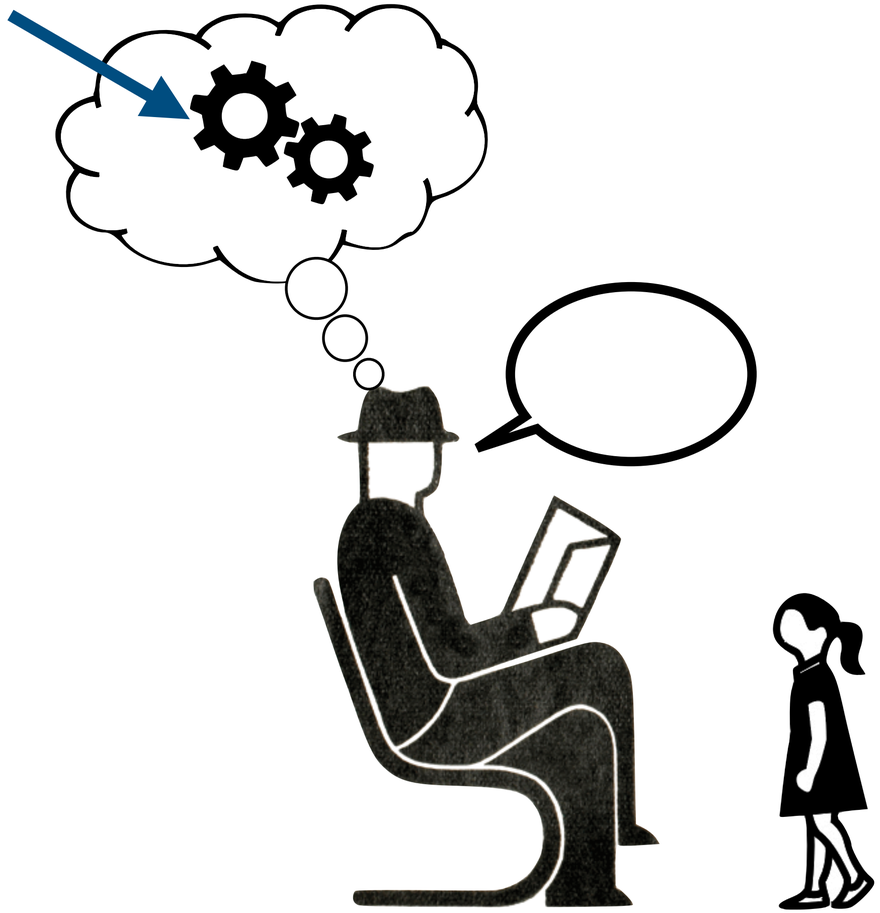
Domain General & Unencapsulated



Recruits and integrates info about my subject matter, Oona, her beliefs, goals, and linguistic abilities, etc.

Communication Design as Practical Reasoning

Hierarchical



prior intentions

↓

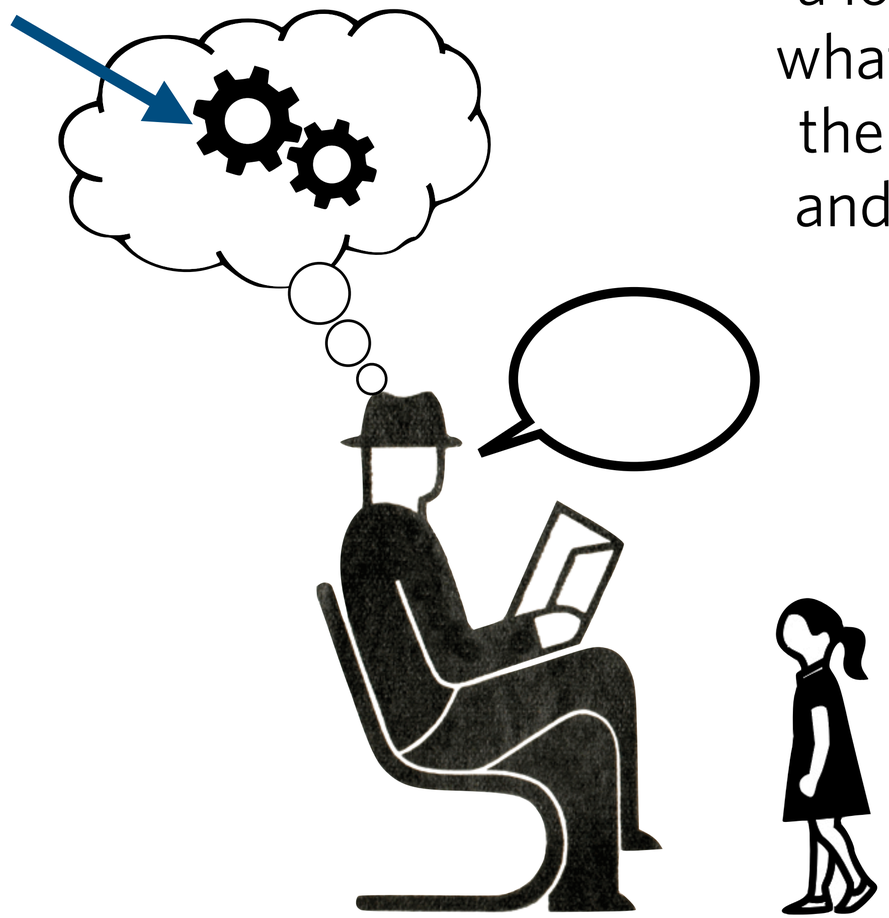
what to say

↓

how to say it

Communication Design as Practical Reasoning

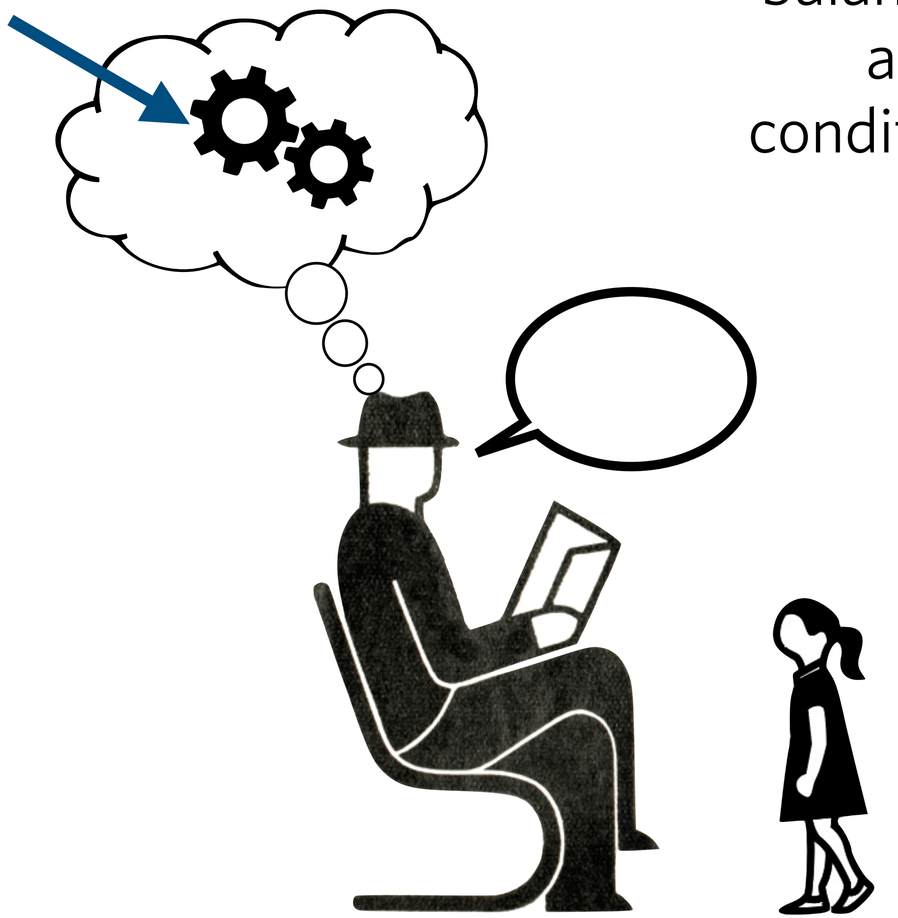
Abstract and Social



How I answer a *wh*-question can vary a lot depending on what I believe about the subject matter and my addressee.

Communication Design as Practical Reasoning

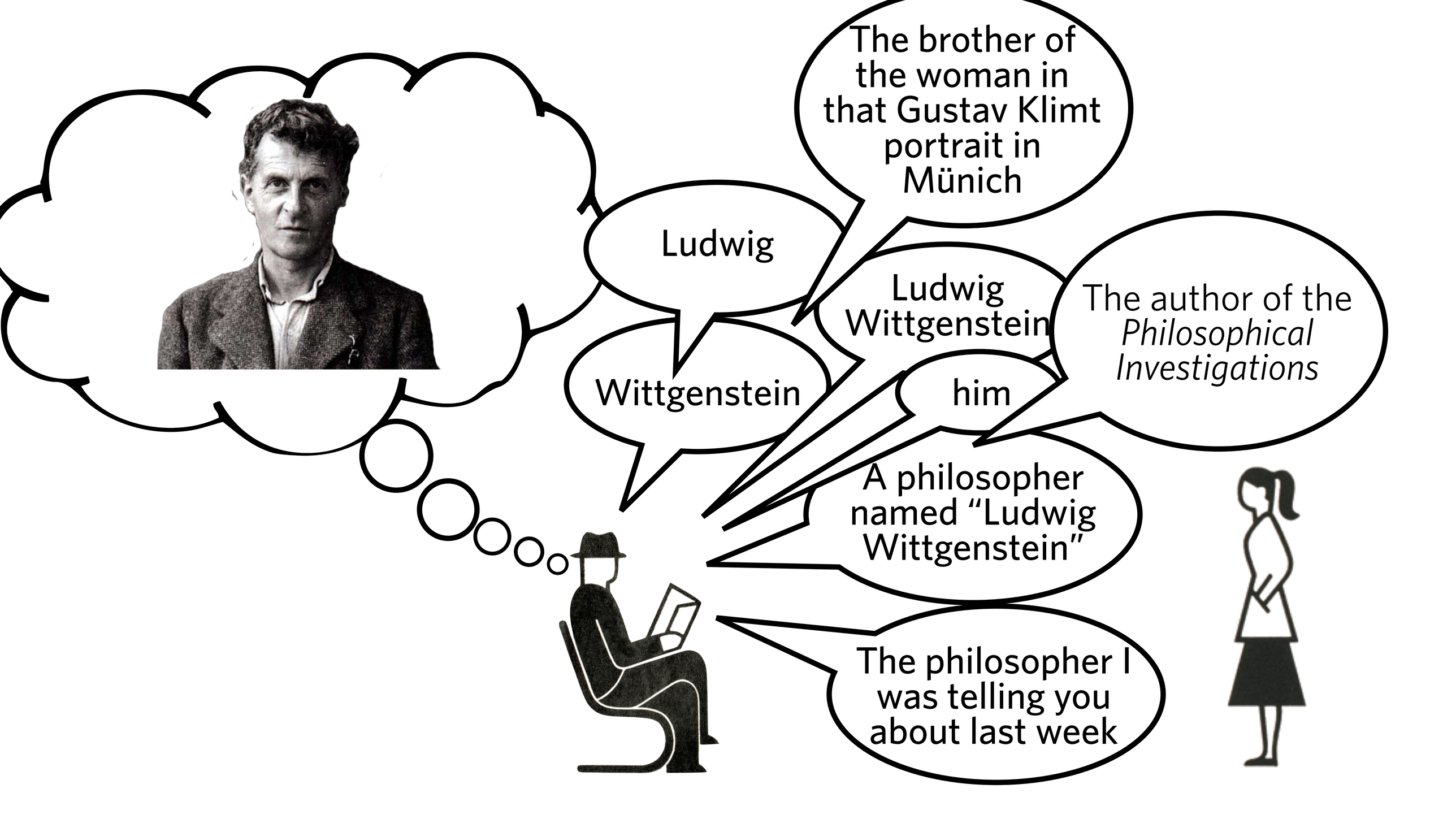
Leads to complex, coordinated action



Lots of words in a specific order, prosody, and balance of presupposed/ asserted info, all conditioned on my beliefs about Oona.

And that's just one utterance!

Back to Noun Phrase Design


The brother of the woman in that Gustav Klimt portrait in Münich
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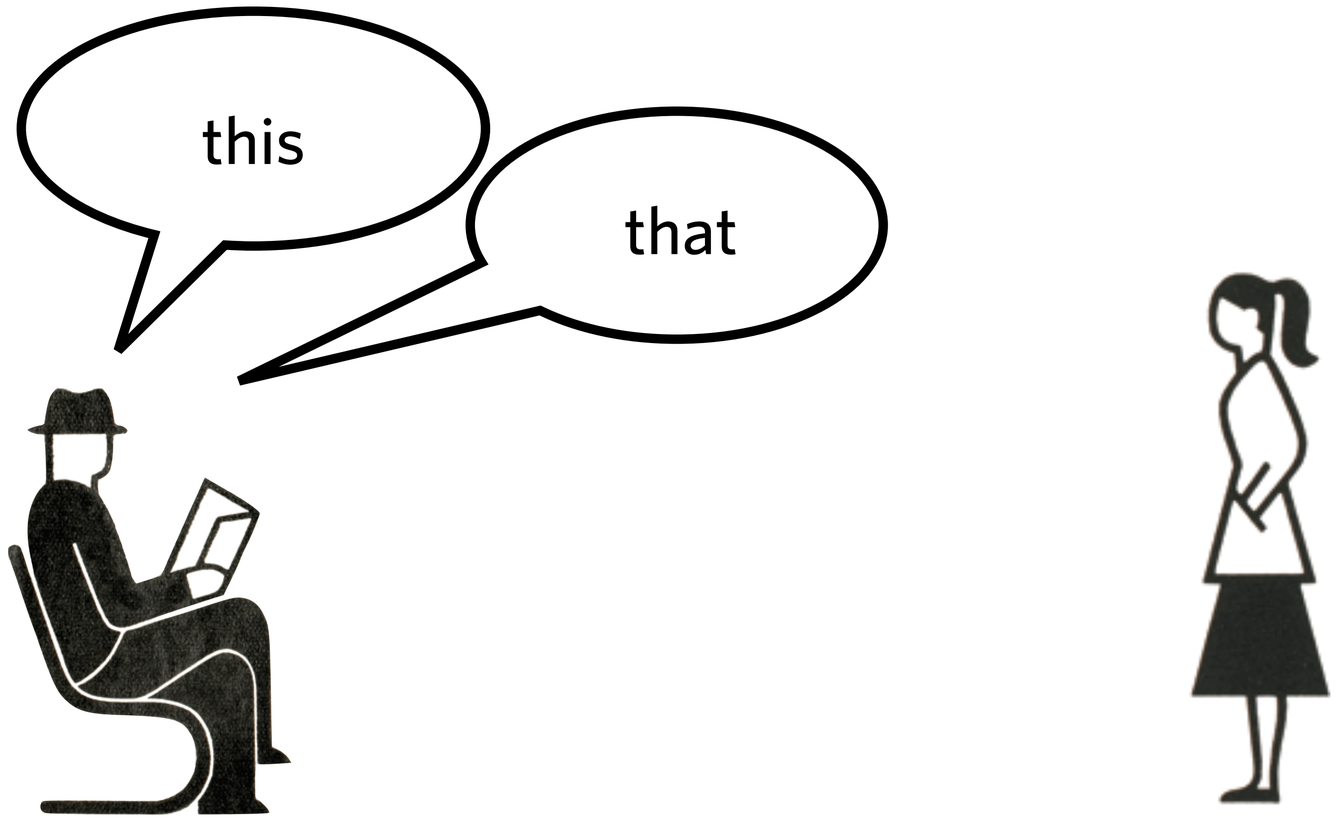

this
that

$$[\![\text{this}]\!] = ?$$

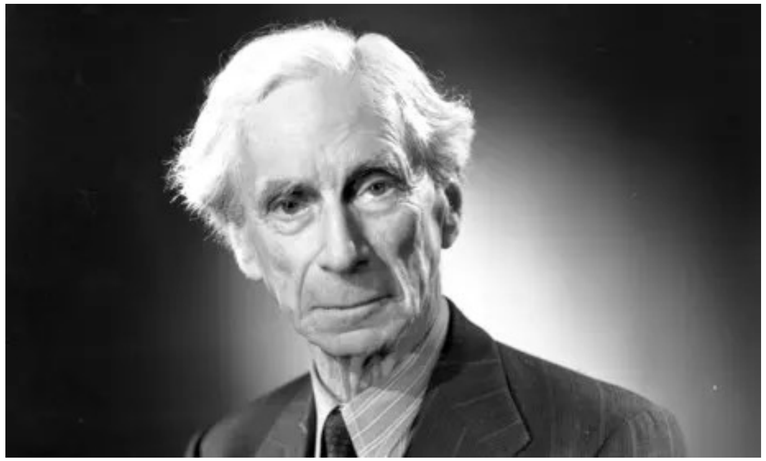
$$[\![\text{that}]\!] = ?$$

Demonstratives in Semantics: A Two-Slide History

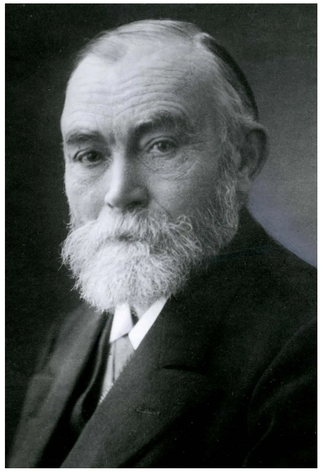
Phase 1: Direct Reference and Context Sensitivity

What is it for our words or thoughts to (directly) refer to things?

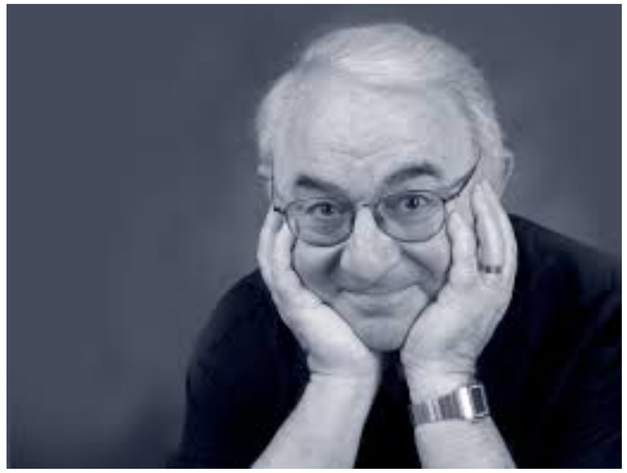
When we say that an expression is context sensitive, what does that mean?



Russell



Frege



Kaplan

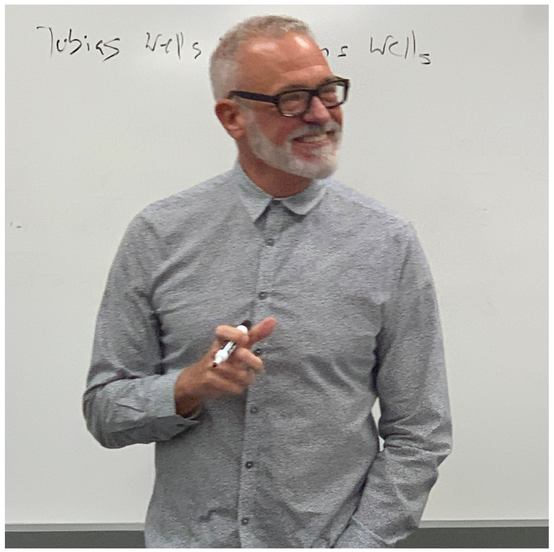
Michaelson

Demonstratives in Semantics: A Two-Slide History

Phase 2: Unifying Exophoric and non-Exophoric Uses

What could demonstratives mean, given their diverse range of uses?

Roberts



Jeffrey C. King

Nowak

Ahn

PRONOMINAL

That is a very cute dog.

ADNOMINAL

That dog you own is very cute.

EXOPHORIC

That [pointing to a dog] is very cute.

ANAPHORIC

There is one dog who gets to the park before 6am.
That dog is very cute.

BOUND-VARIABLE

Every dog in my neighborhood, even the meanest, has an owner who thinks that dog is a sweetie.

GENERIC

That which wears the leash tends to be cute.

AFFECTIVE

How's that cute little dog of yours?

SPECIFIC INDEFINITE

I met this cute little doggo in the park this afternoon!

Linguistics and Philosophy (2022) 45:1345–1393
https://doi.org/10.1007/s10988-022-09350-5

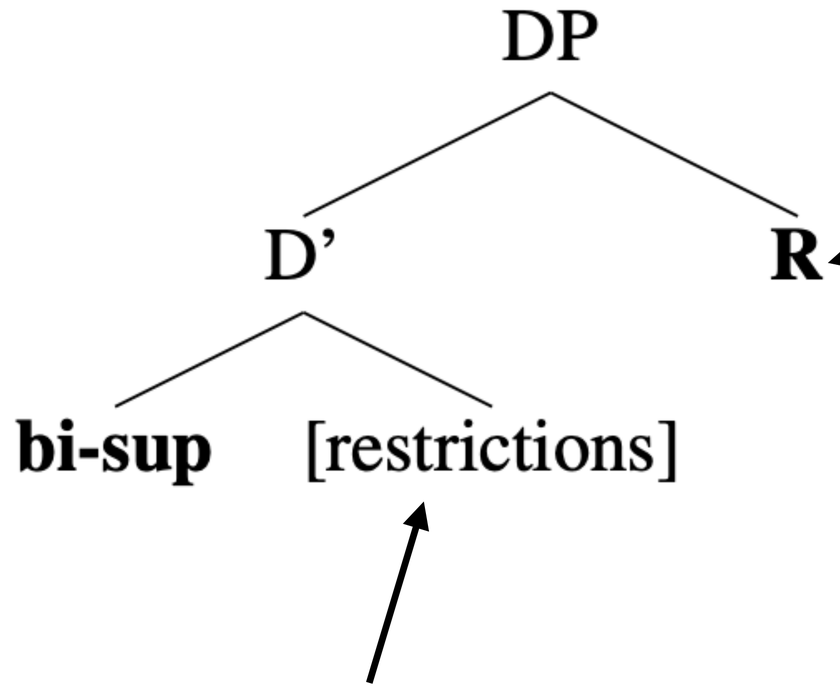
ORIGINAL RESEARCH

Indirectly direct: An account of demonstratives and pointing

Dorothy Ahn[1]

Accepted: 11 February 2022 / Published online: 13 May 2022

Takes two restrictions and returns the most contextually prominent thing that satisfies both.

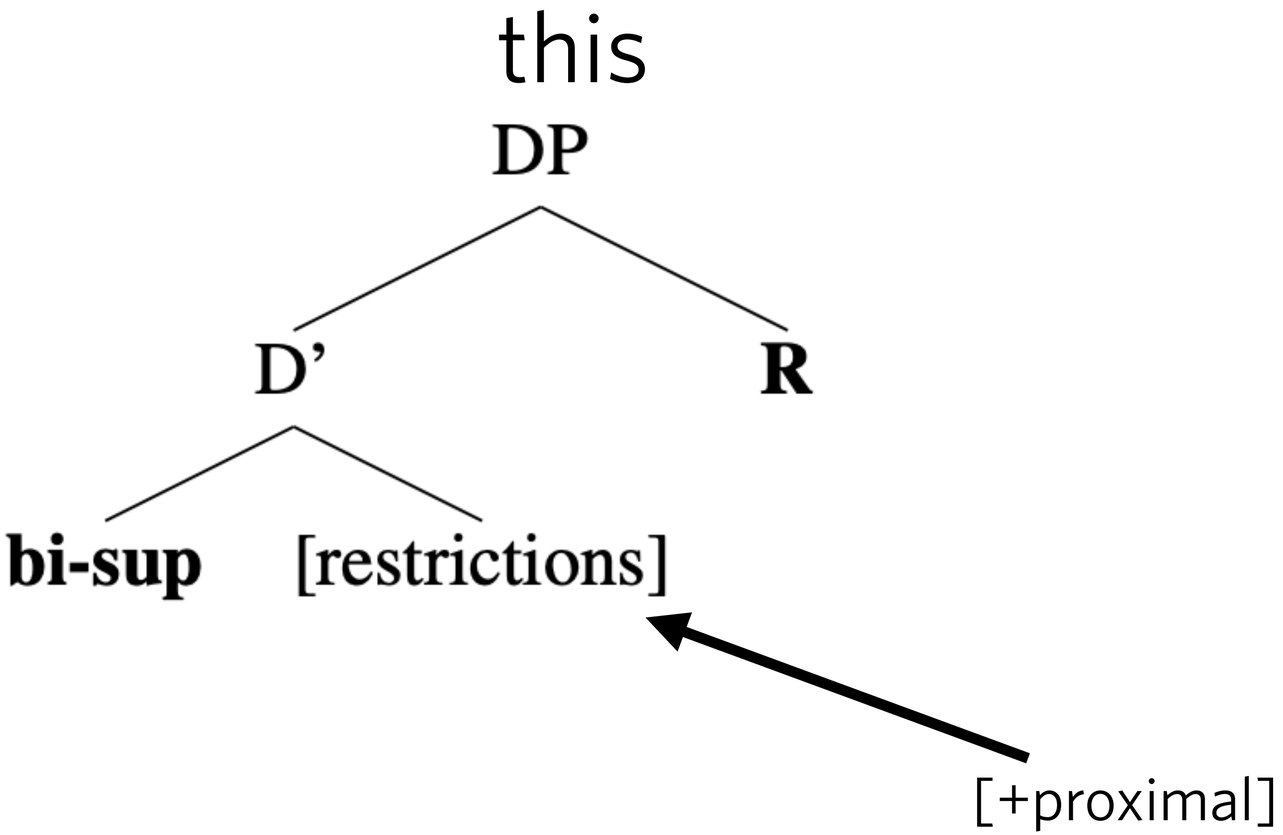


By default, this is a slot for gestural locational information.

But can optionally host an anaphoric index instead.

The restriction encoded by the nominal, together with the restriction encoded by the gender, number, etc. features.

Dorothy Ahn


this
DP
D’
R
bi-sup
[restrictions]
[+proximal]

$$[\![\text{that}]\!]^{\mathbf{c}} = \text{demonstratum}_{\mathbf{c}}$$

$$\mathbf{c} = \langle \text{speaker}_C, \text{addressee}_C, \text{time}_C, \text{place}_C, \text{demonstratum}_C \ldots \rangle$$

Kaplan (1989), *Demonstratives*

$$[\![\text{that}]\!]^{\mathbf{c}} = \text{demonstratum}_{\mathbf{c}}$$

$$\mathbf{c} = \langle \text{speaker}_C, \text{addressee}_C, \text{time}_C, \text{place}_C, \text{demonstratum}_C \ldots \rangle$$

Okay, but then what about $[\![\text{this}]\!]^{\mathbf{c}}$?

Kaplan (1989), *Demonstratives*

Presuppositions of Demonstrative NPs

…**use of a (non-)proximal demonstrative** NP_i presupposes that there is an accompanying demonstration δ whose unique demonstratum, correlated with a weakly familiar discourse referent by virtue of being demonstrated, lies in the direction indicated by the speaker **at a (non-)proximal distance to the speaker**…

—Roberts, "Demonstratives as Definites" (2002)

I have said little…about the particulars of what it is…to ‘count as distal in a context’. […] Rather, …I relied on an intuitive feel for … these notions, not a worked-out definition. What this means is that, as it stands, constraint theory is really more of a theory schema than it is a fully precise, predictive theory. It is poised to become such a theory only once we start inputting these parameters in sufficient detail.

—Michaelson, “This and That: A Theory of Reference for Names, Demonstratives, and Things in Between” (2013)

The main difference between distal and proximal demonstratives would be that the locational information for the latter is often already saturated: the intended entity is to be found near the speaker. Unless the speaker is making a contrast within entities that are all proximally located to them, the proximality alone can often help in identifying the entity. Thus, we predict this locational information to be always available for R even in the absence of pointing, thus making deictic uses possible without pointing. The main consequence of this argument is that we do not predict proximal demonstratives occurring without pointing or relative clause to necessarily be anaphoric, as we do for distal demonstratives.

—Ahn, “Indirectly Direct: An account of demonstratives and pointing” (2002)

Discourse Processes, 00:1–25, 2015

ISSN: 0163-853X print/1532-6950 online
DOI: 10.1080/0163853X.2015.1094280

Routledge
Taylor & Francis Group

The Co-Organization of Demonstratives and Pointing Gestures

Kensy Cooperrider
Department of Psychology
University of Chicago

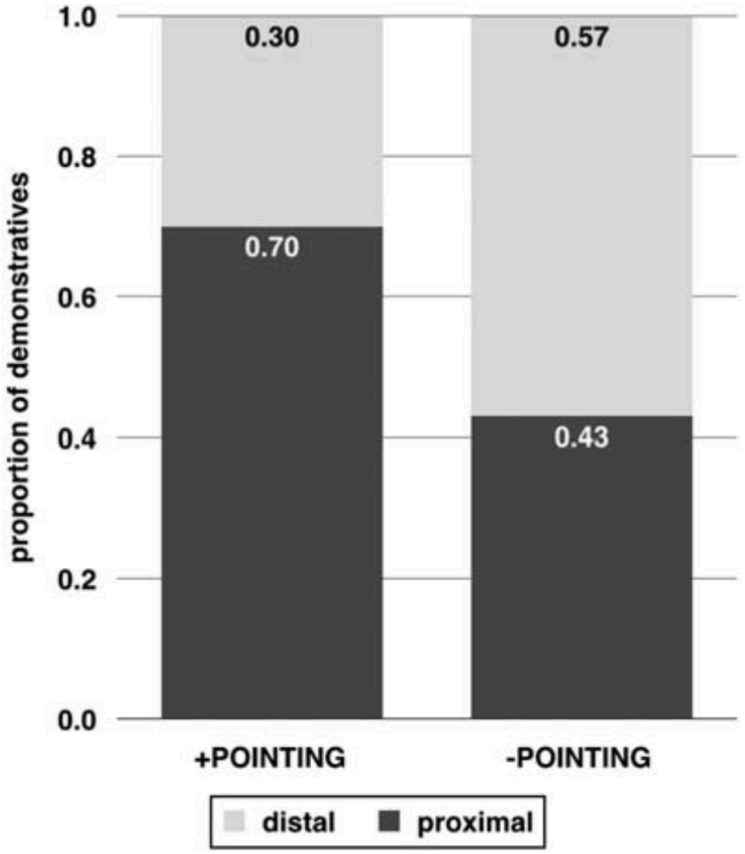


FIGURE 4 Overall proportion of proximal (*this, here*) and distal (*that, there*) demonstratives, broken down according to whether the speaker was concurrently pointing.

See also:
Bangerter (2004) (Engilsh)
Piwek et al. (2008) (Dutch)
Rubio-Fernandez et al. (under review) (Turkish)

Semantics without semantic content

Daniel W. Harris

What about the demonstratives, "this" and "that"? If "this" and "that," in their bare uses, are unstructured referring expressions, then their constraint properties can be given roughly as follows:[35]

(38) $\mu(\text{this}) = \lambda x_e \,.\, x$ is "proximal" from the perspective of the speaker of the utterance being interpreted

(39) $\mu(\text{that}) = \lambda x_e \,.\, x$ is "distal" from the perspective of the speaker of the utterance being interpreted

I place "proximal" and "distal" in scare quotes to signal that they are unexplicated technical terms—mere placeholders until someone comes up with a substantive account of the difference in these words' meanings.

Cognitive Psychology 139 (2022) 101519

Contents lists available at ScienceDirect

Cognitive Psychology

journal homepage: www.elsevier.com/locate/cogpsych

Demonstrative systems: From linguistic typology to social cognition

Paula Rubio-Fernandez

Department of Philosophy, University of Oslo, Norway

ARTICLE INFO

Keywords:
Demonstratives
Joint attention
Visual perspective taking
Peripersonal space
Social cognition

ABSTRACT

This study explores the connection between language and social cognition by empirically testing different typological analyses of various demonstrative systems. Linguistic typology classifies demonstrative systems as *distance-oriented* or *person-oriented*, depending on whether they indicate the location of a referent relative only to the speaker, or to both the speaker and the listener. From the perspective of social cognition, speakers of languages with person-oriented systems must monitor their listener's spatial location in order to accurately use their demonstratives, while speakers of languages with distance-oriented systems can use demonstratives from their own, egocentric perspective. Resolving an ongoing controversy around the nature of the Spanish demonstrative system, the results of Experiment 1 confirmed that this demonstrative system is person oriented, while the English system is distance oriented. Experiment 2 revealed that not all three-way demonstrative systems are person oriented, with Japanese speakers showing sensitivity to the listener's spatial location, while Turkish speakers did not show such an effect in their demonstrative choice. In Experiment 3, Catalan-Spanish bilinguals showed sensitivity to listener position in their choice of the Spanish distal form, but not in their choice of the medial form. These results were interpreted as a transfer effect from Catalan, which revealed analogous results to English. Experiment 4 investigated the use of demonstratives to redirect a listener's attention to the intended referent, which is a universal function of demonstratives that also hinges on social cognition. Japanese and Spanish speakers chose between their proximal and distal demonstratives flexibly, depending on whether the listener was looking closer or further from the referent, whereas Turkish speakers chose their medial form for attention correction. In conclusion, the results of this study support the view that investigating how speakers of different languages jointly use language and social cognition in communication has the potential to unravel the deep connection between these two fundamentally human capacities.

1. Demonstratives and the positive feedback loop hypothesis

Demonstratives – words like 'this' and 'that' in English, are also known as *directives* because they are used to orient the listener's attention towards an element in the speech situation, either physical (e.g., 'I prefer this one') or discoursive ('That was a good year'). Diessel (1999a, 2003, 2012a, 2012b) has shown that exophoric demonstratives serve two closely related functions: they indicate the spatial location of a referent relative to the *deictic center* (e.g., the speaker's position in English), and they coordinate the interlocutors' joint focus of attention. Diessel argues that coordinating speaker-listener joint attention is one of the most basic functions of language,

E-mail address: paula.rubio-fernandez@ifikk.uio.no.

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Available online 24 November 2022

PNAS RESEARCH ARTICLE | PSYCHOLOGICAL AND COGNITIVE SCIENCES OPEN ACCES

Demonstratives as attention tools: Evidence of mentalistic representations within language

Julian Jara-Ettinger[a,b,c,1] and Paula Rubio-Fernandez[d,e,1]

Edited by Michael Tomasello, Duke University, Durham, NC; received January 30, 2024; accepted May 24, 2024

Linguistic communication is an intrinsically social activity that enables us to share thoughts across minds. Many complex social uses of language can be captured by domain-general representations of other minds (i.e., mentalistic representations) that externally modulate linguistic meaning through Gricean reasoning. However, here we show that representations of others' attention are embedded within language itself. Across ten languages, we show that demonstratives—basic grammatical words (e.g., "this"/"that") which are evolutionarily ancient, learned early in life, and documented in all known languages—are intrinsic attention tools. Beyond their spatial meanings, demonstratives encode both joint attention and the direction in which the listener must turn to establish it. Crucially, the frequency of the spatial and attentional uses of demonstratives varies across languages, suggesting that both spatial and mentalistic representations are part of their conventional meaning. Using computational modeling, we show that mentalistic representations of others' attention are internally encoded in demonstratives, with their effect further boosted by Gricean reasoning. Yet, speakers are largely unaware of this, incorrectly reporting that they primarily capture spatial representations. Our findings show that representations of other people's cognitive states (namely, their attention) are embedded in language and suggest that the most basic building blocks of the linguistic system crucially rely on social cognition.

language | social cognition | pragmatics | demonstratives | attention

Successful communication routinely requires us to represent other people's mental states (known as mentalistic representations) (1, 2), but determining the exact way in which mentalistic representations interact with language has remained elusive. On the one hand, many complex social meanings expressed in everyday communication (such as when people speak ironically, use metaphors, or make an indirect request) can be explained

Significance

Our work sheds light o
interface between socia
and language. We show
representations of inte
attention are embedde
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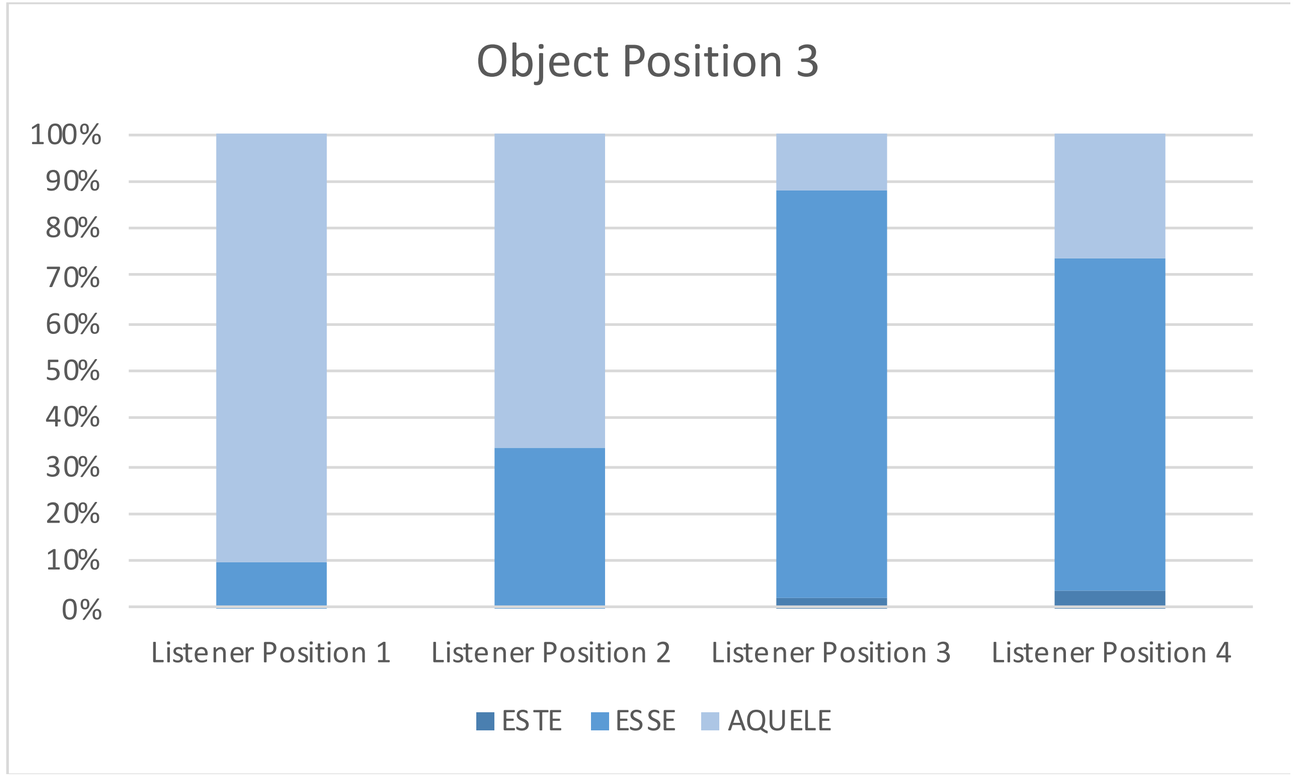
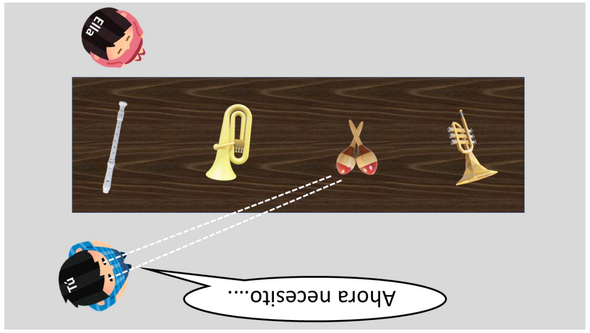
Demonstrative Choice Tasks

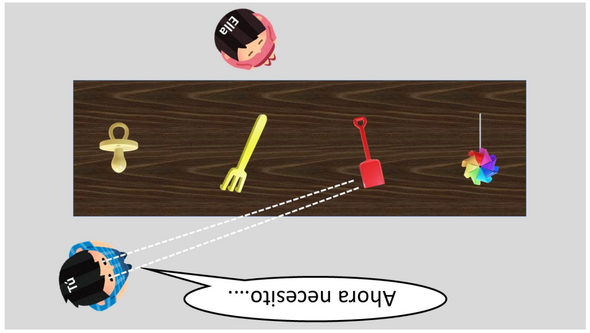
Sensitivity to Listener Position

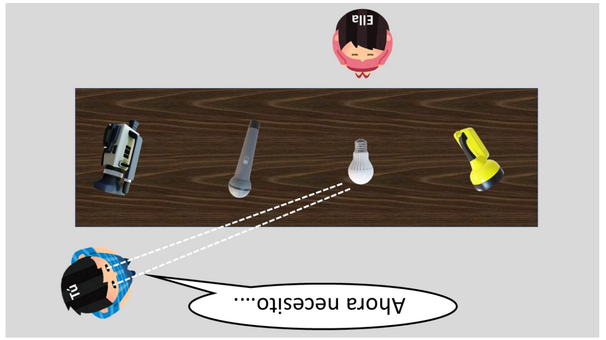
PORTUGUESE

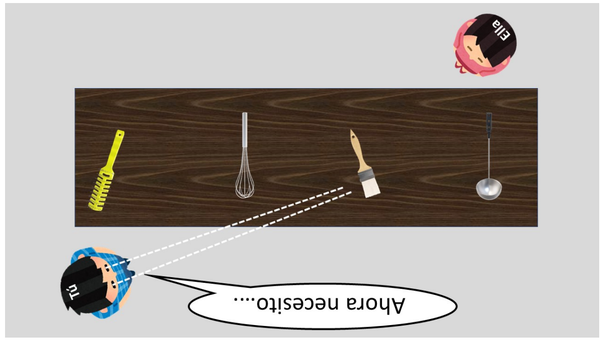


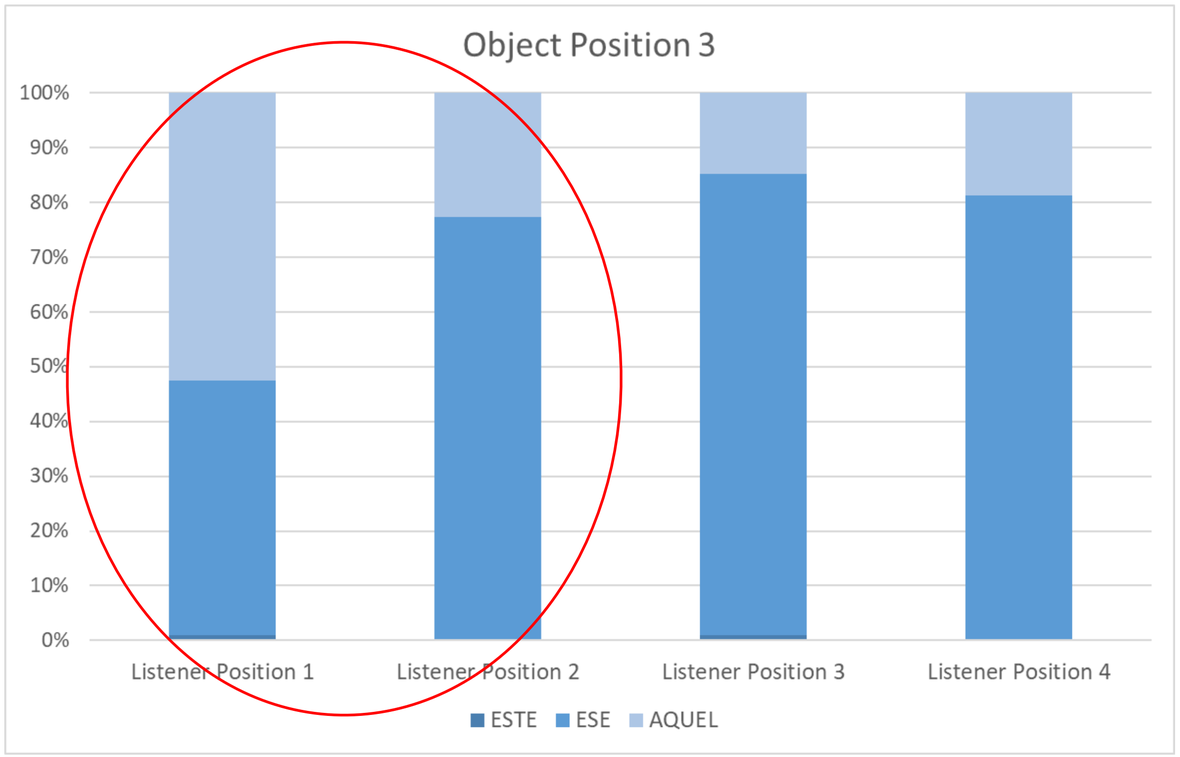
Cross-Linguistic Variation in Sensitivity to Listener Position



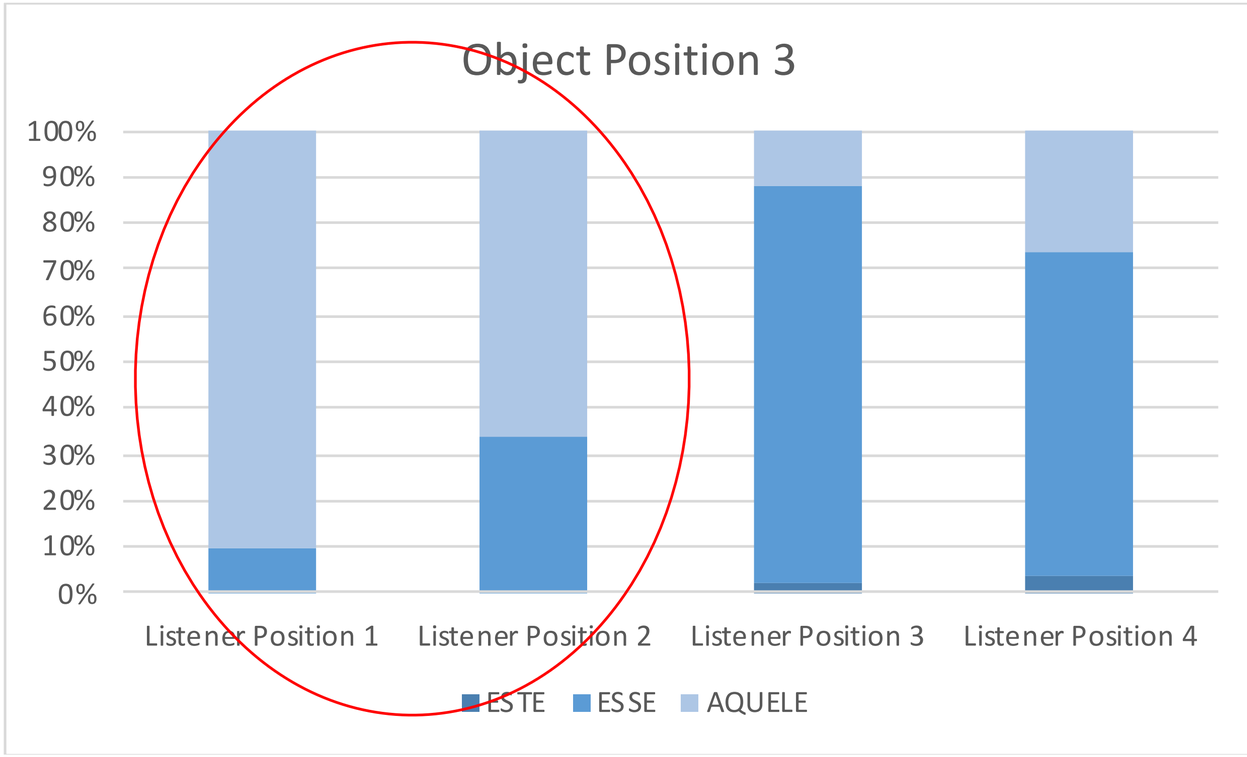








SPANISH



PORTUGUESE

Sensitivity to Listener Attention

Japanese: **SORE**
Spanish: **ESE**
(medial)

Turkish: **O**
(distal)

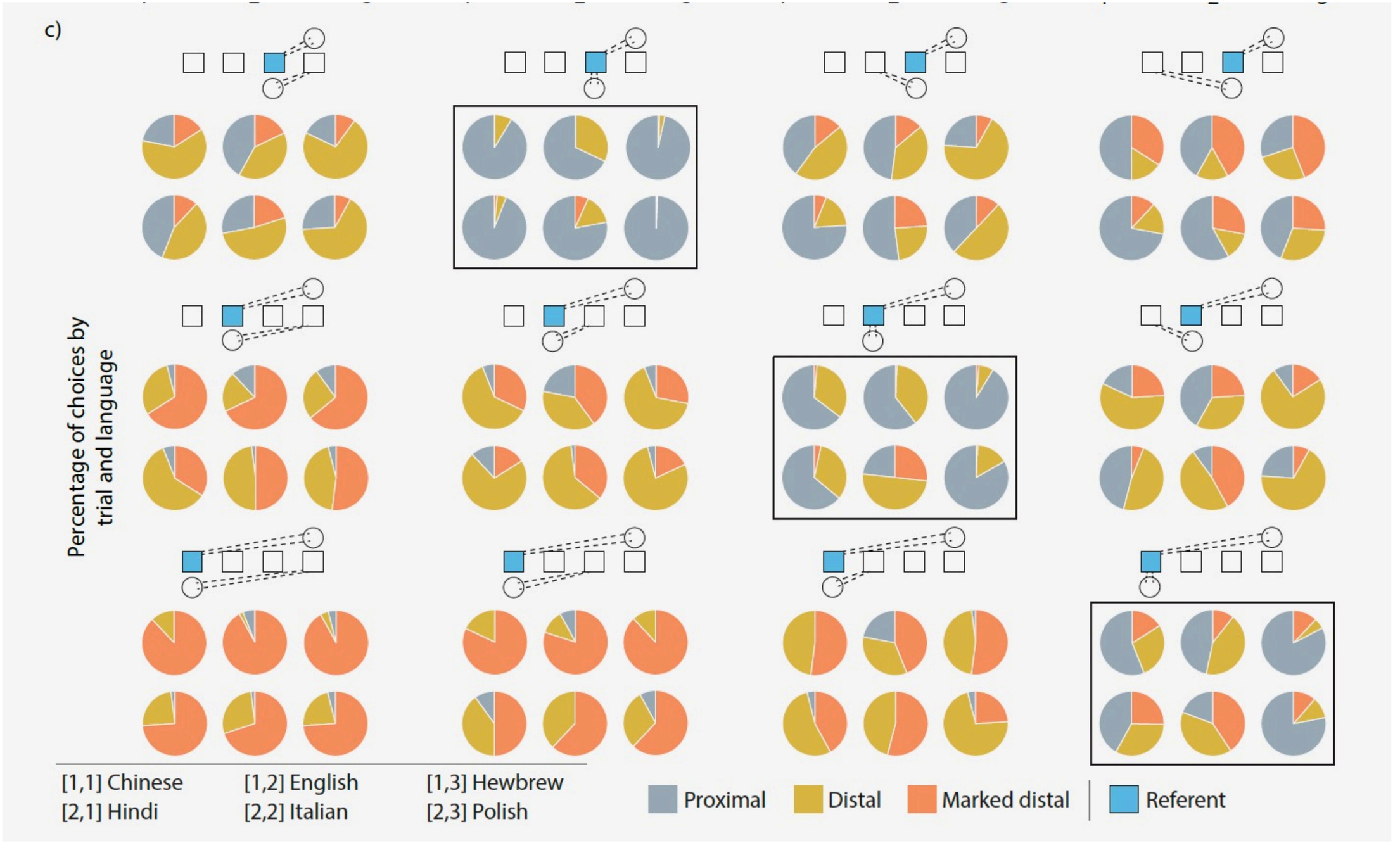
Japanese: **ARE**
Spanish: **AQUEL**
(distal – “pushing”)

Turkish: **ŞU**
(medial – attention correction)

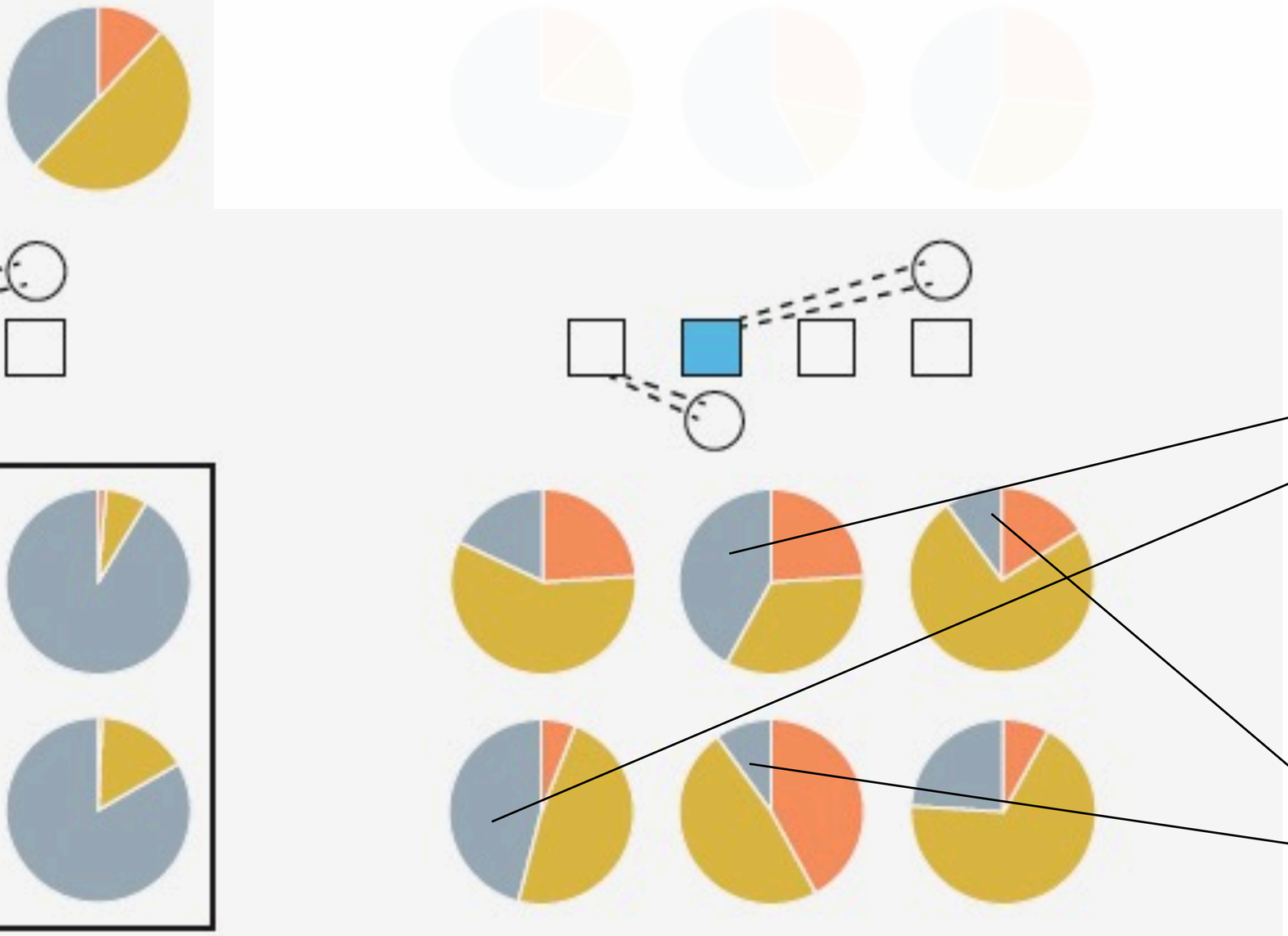
Japanese: **KORE**
Spanish: **ESTE**
(proximal – “pulling”)

Turkish: **ŞU**
(medial – attention correction)

Rubio-Fernandez (2022, *Cognitive Psychology*)



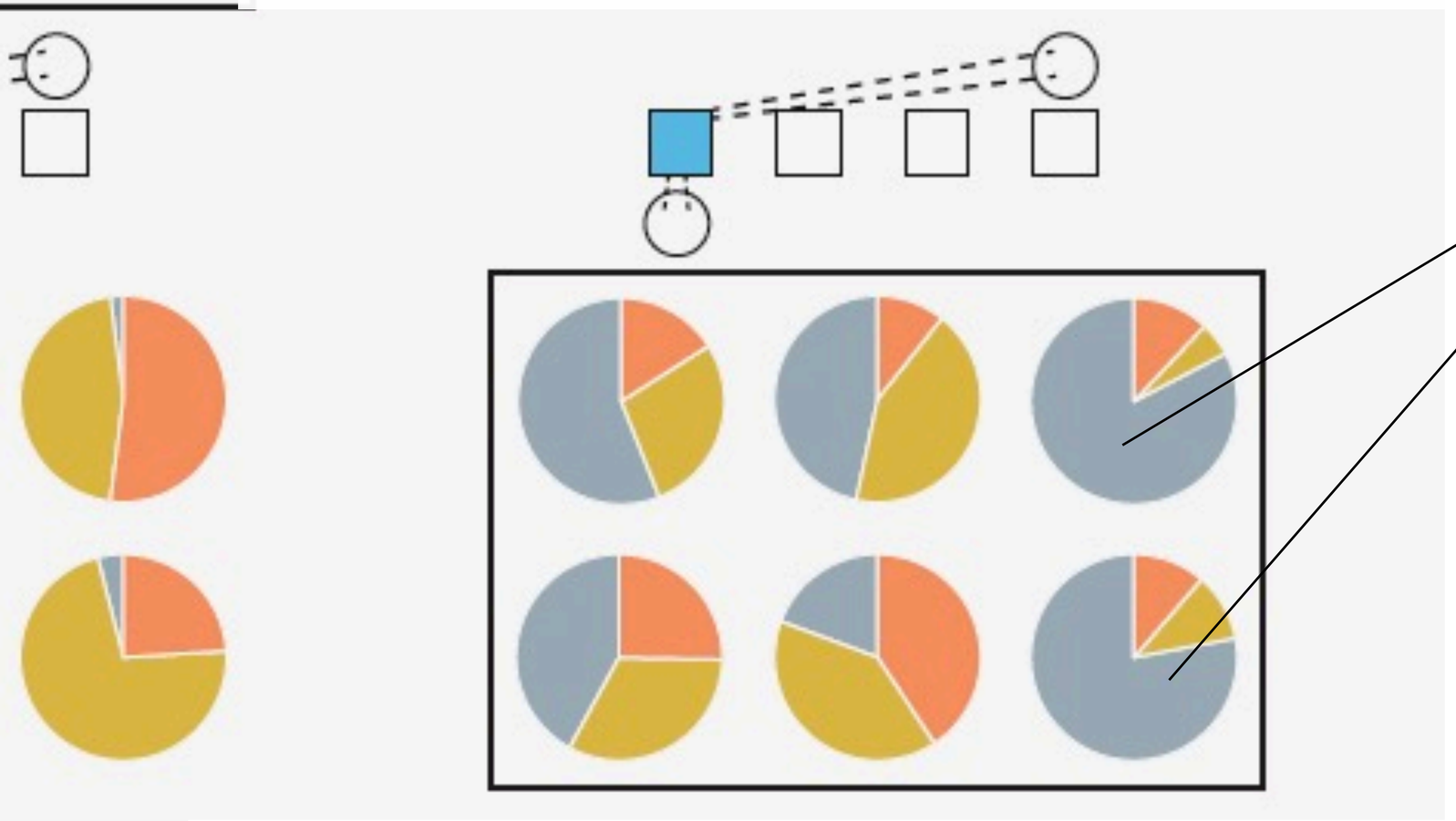
(courtesy of Julian Jara Ettinger and Paula Rubio-Fernandez)



English and Hindi: highly sensitive to attention misalignment

Hebrew and Italian: not so much.

Proximal Distal Marked distal Referent

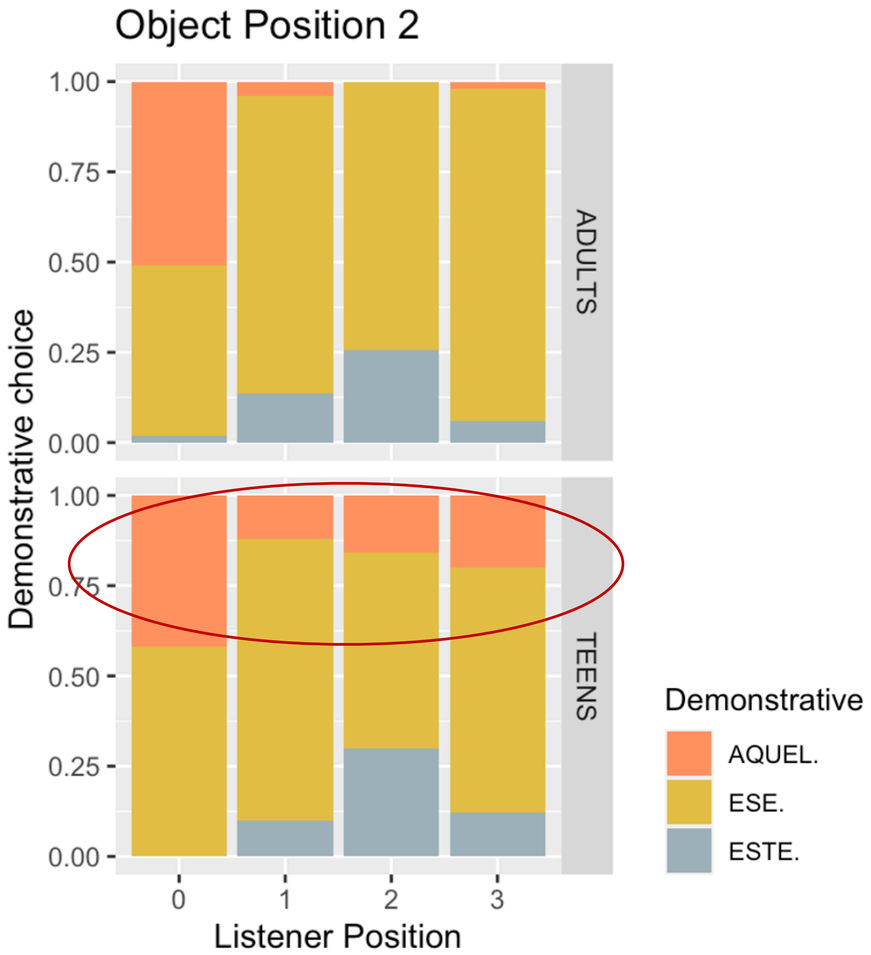


Hebrew and Polish are highly sensitive to listener positions:

They like to license proximal forms when the listener, but not the speaker, is close to the referent

Proximal Distal Marked distal Referent

Across ages
Adults vs Teens (12-17)



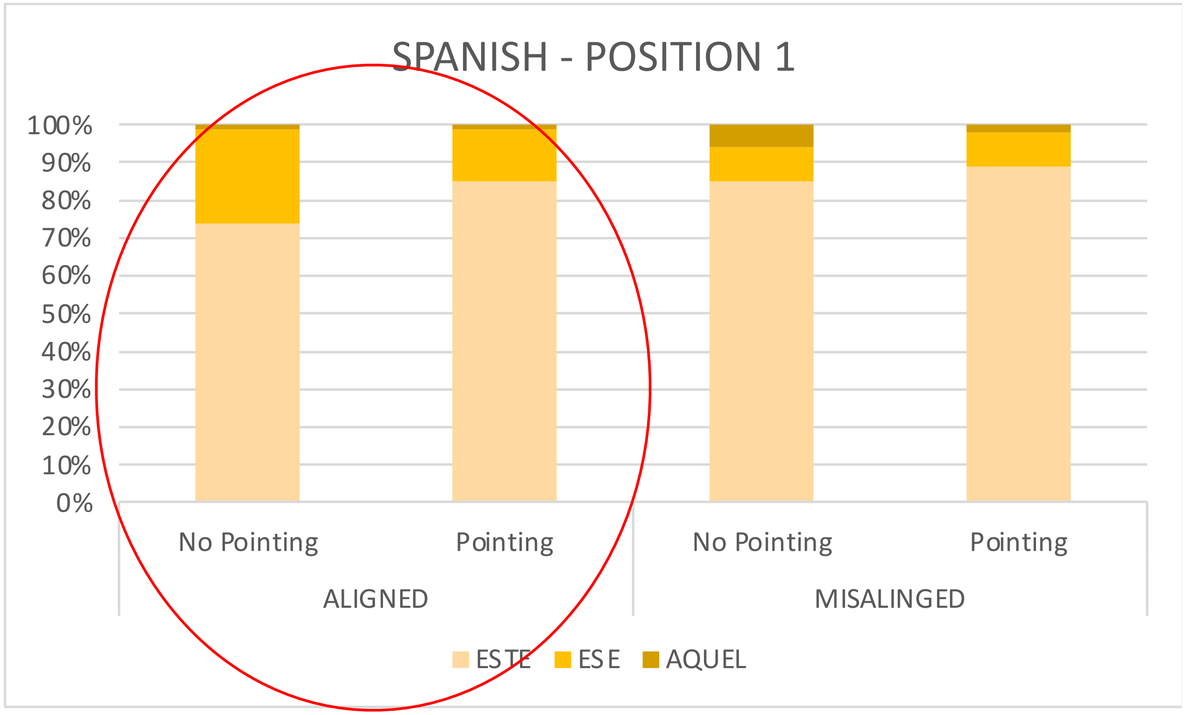
Listener Position 0

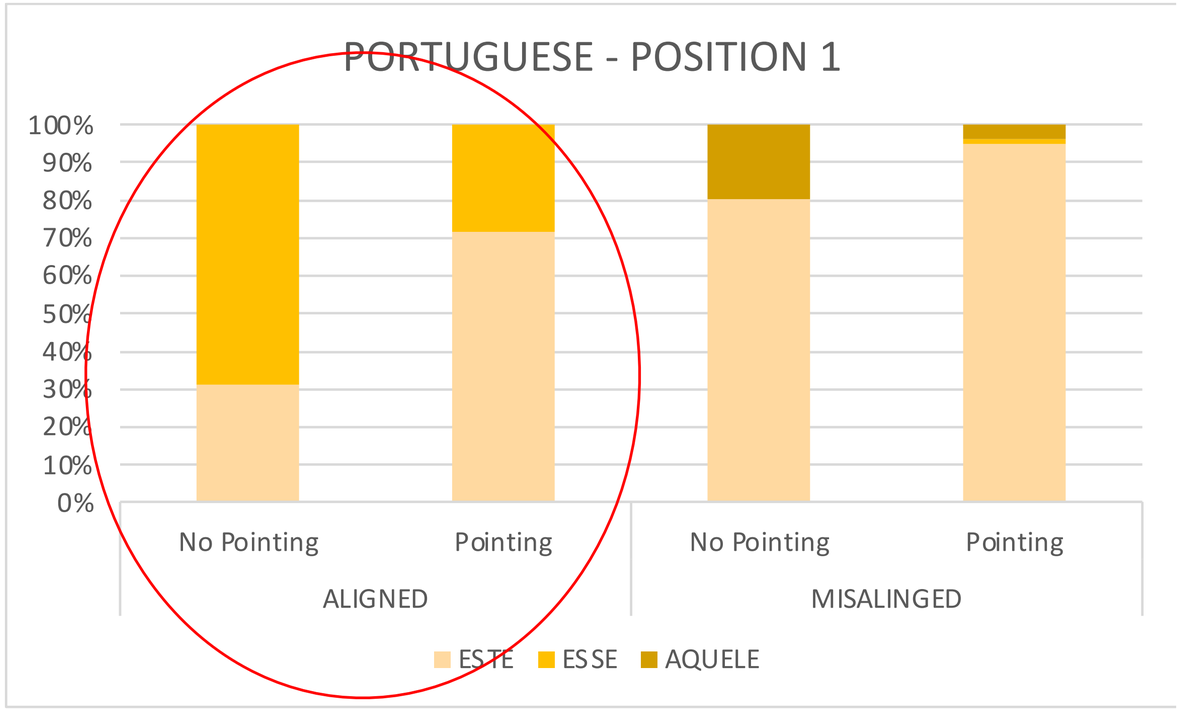
Listener Position 1

Listener Position 2

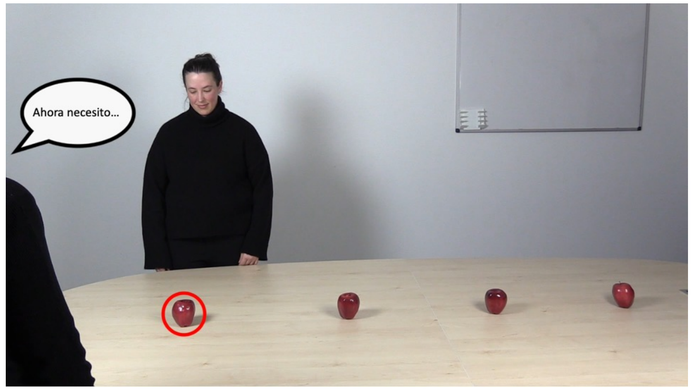
Listener Position 3

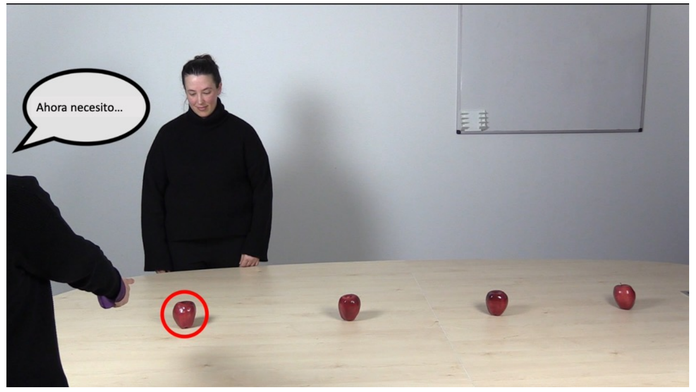
Cross-Linguistic Variation in the Effect of Pointing





Position 1
Aligned – **No Pointing**





Position 1
Aligned – **Pointing**

Why Semantics?

A word's meaning is what allows us to use the word to give (partial, defeasible) evidence of our intentions.

It turns out that we do this with demonstratives in much more nuanced ways than are obvious.

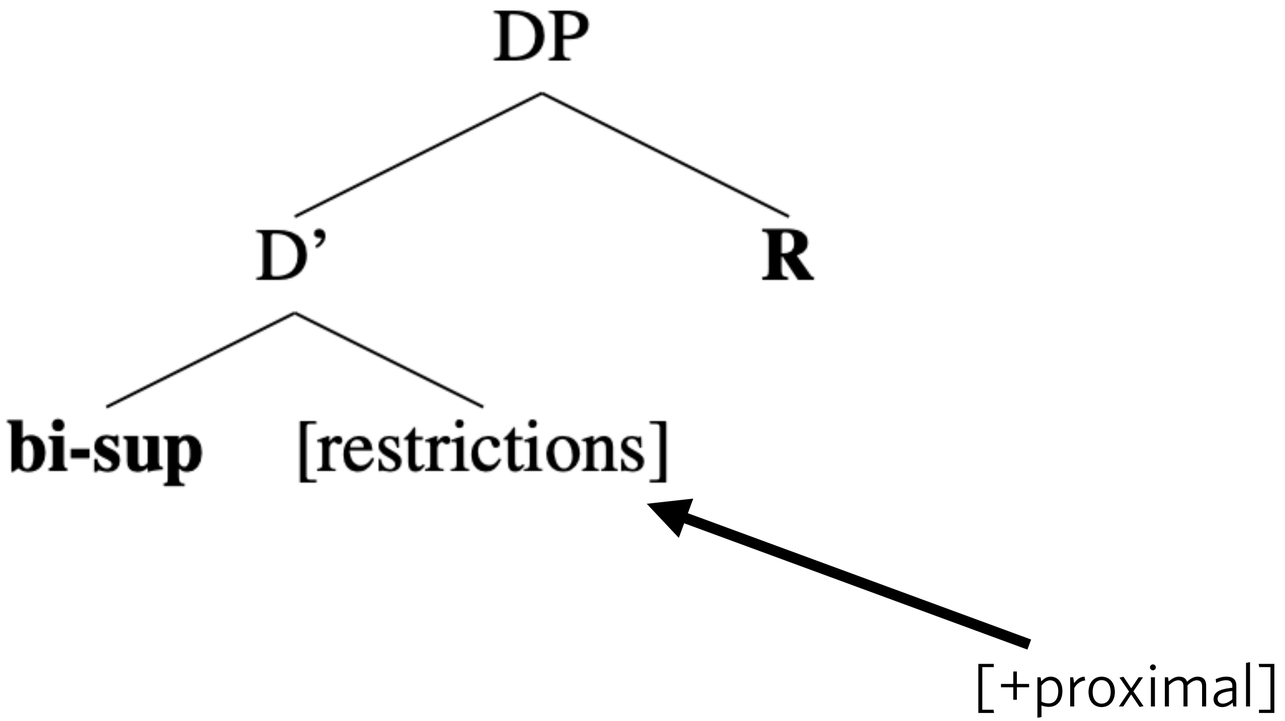
We can do this because a demonstrative encodes weighted evidence about distance from speaker, distance from addressee, and distance from where the addressee is attending.

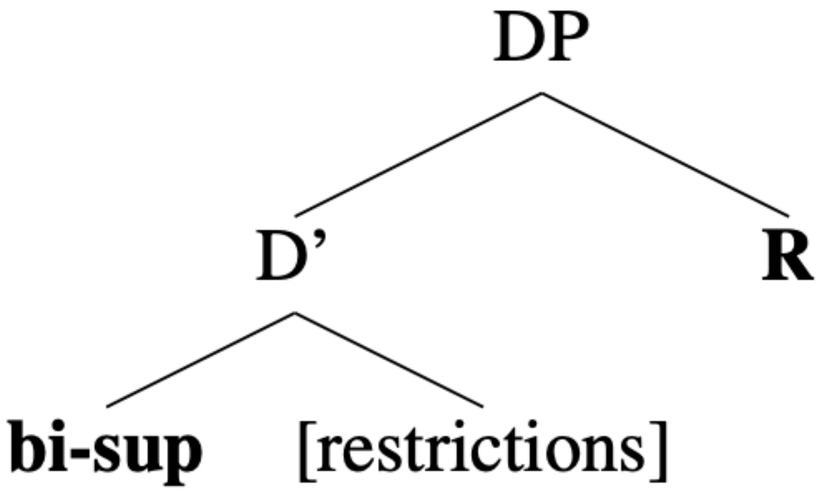
Why Semantics?

The weights on these parameters exhibit arbitrary cross-linguistic variation, which suggests conventionality.

To become linguistically competent, native speakers have to learn these weights.

(Notably, this takes a long time!)

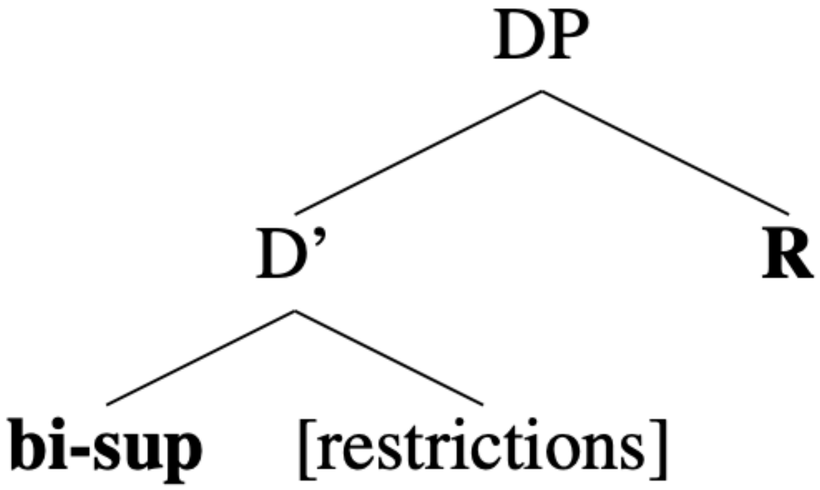

DP
D’
R
bi-sup
[restrictions]
[+proximal]



[+proximal]

x < d

d is a context sensitive threshold for what counts as proximal/distal



[+proximal]

$x < d$

x is calculated from a combination of weighted parameters:

W_1 * distance from speaker

W_2 * distance from addressee

W_3 * distance from where addressee is attending

d is a context sensitive threshold for what counts as proximal/distal

Semantics for proximal demonstrative

$$[\![\text{this}_i]\!]^g = \lambda d.\ \lambda S.\ \lambda L.\ \lambda A : F(W_1 S, W_2 L, W_3 A) < d\ .\ g(i)$$

The content of “this” is the referent that is intended by the speaker. But it refers felicitously only if the following presupposition is met:

Given the following four contextual parameters:

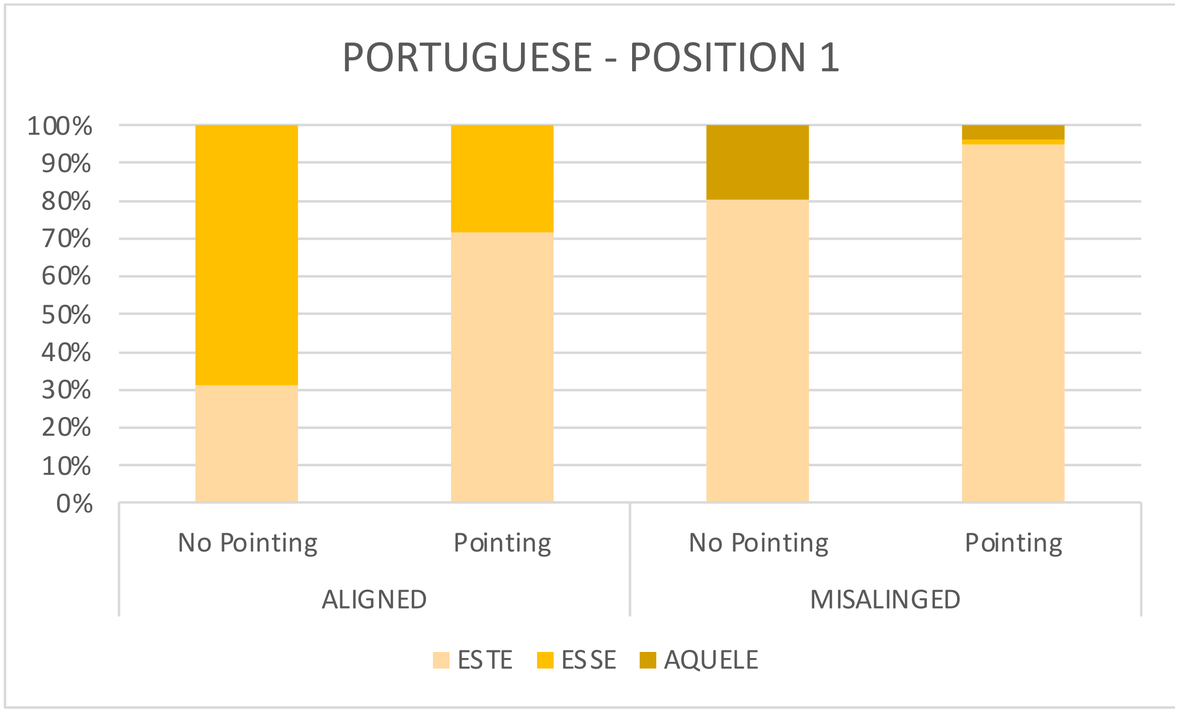
S = speaker distance

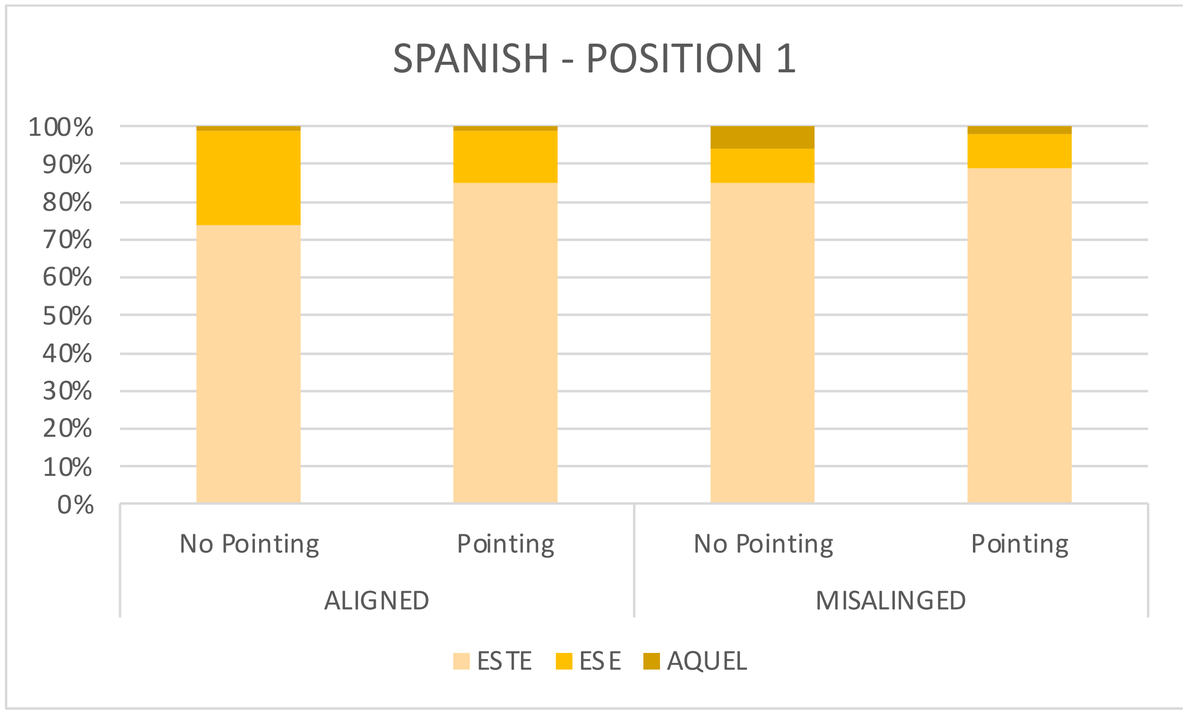
L = listener distance

A = attention difference

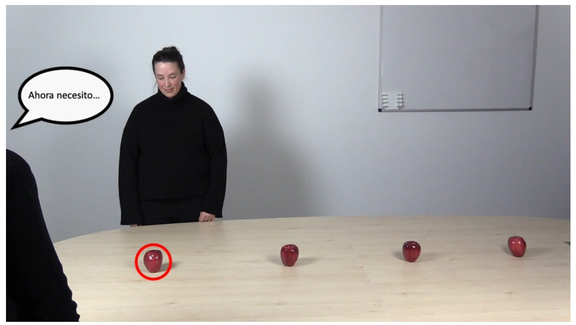
d = contextually specified degree that counts as distal

d has to be less than a quantity that is calculated by a weighted combination of S, L, and A.

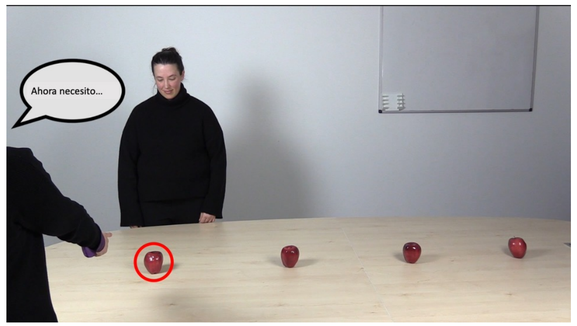




Position 1
Aligned – No Pointing



Position 1
Aligned – Pointing



Semantics for proximal demonstrative (“this” with pointing)

$$[\![\text{this}_{i\rightarrow}]\!]^g = \lambda d.\ \lambda S.\ \lambda L.\ \lambda A : F(W_1 \Rightarrow S,\ W_2 L,\ W_3 A) < d \ \ \&\ [\![\rightarrow]\!](g(i)) = 1\ .\ g(i)$$

The content of “this” is the referent that is intended by the speaker. But it refers felicitously only if the following presuppositions are met:

1. The pointing gesture has to be aimed at the referent; and

2. Given the following four contextual parameters:

S = speaker distance

L = listener distance

A = attention difference

d = contextually specified degree that counts as distal

d has to be less than a quantity that is calculated by a weighted combination of S⇒, L, and A.

Questions

How, exactly, should we represent the semantics of the pointing gesture?

As its own lexical item, on which the demonstrative is anaphoric?

As a co-speech gesture that modifies the meaning of the demonstrative?

Questions

Can we plug some numbers in for all those weights?

Can we hook this up to a predictive model of the pragmatics?

Questions

ANAPHORIC

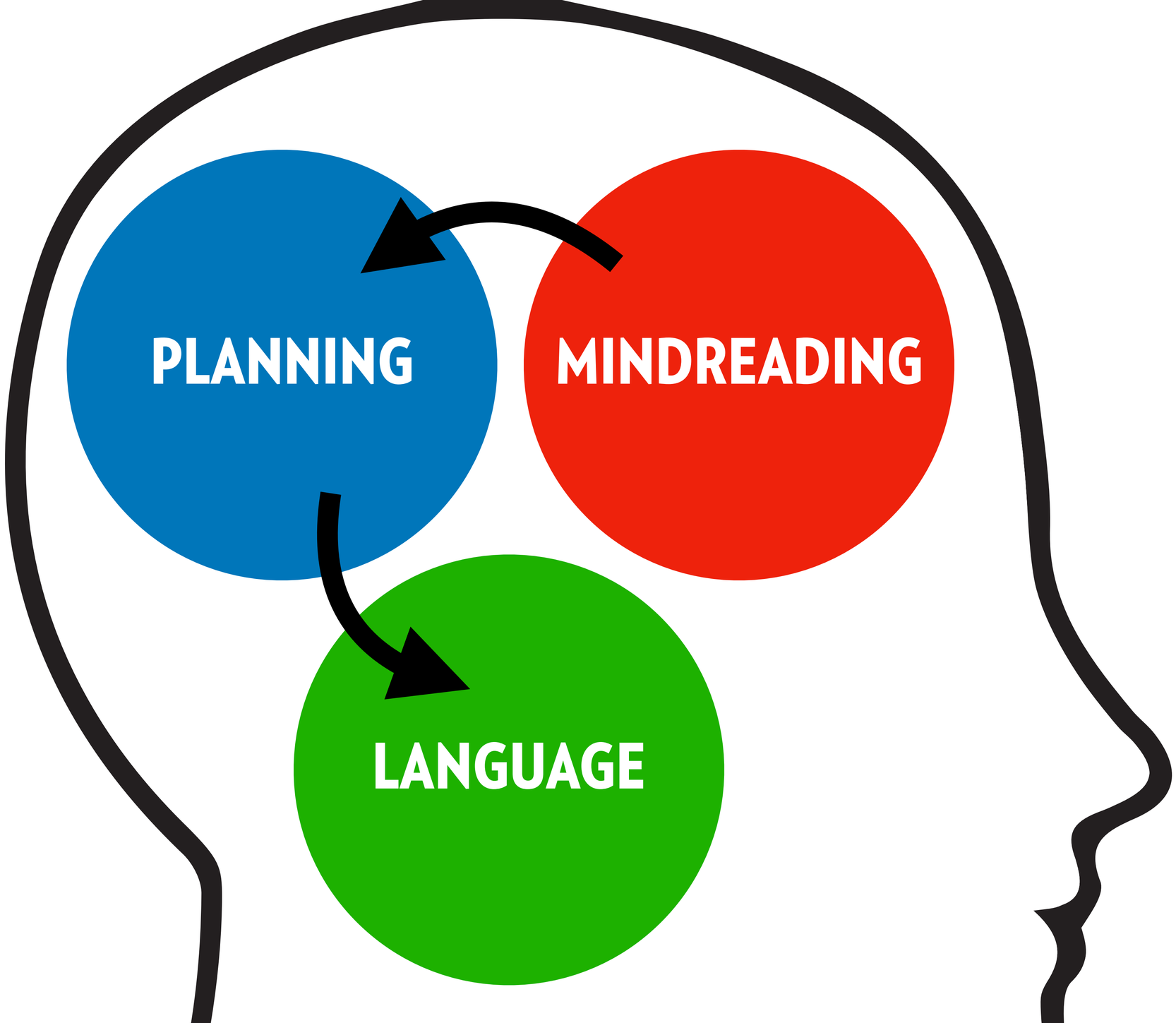
There is one dog who gets to the park before 6am.
That/this dog is very cute.

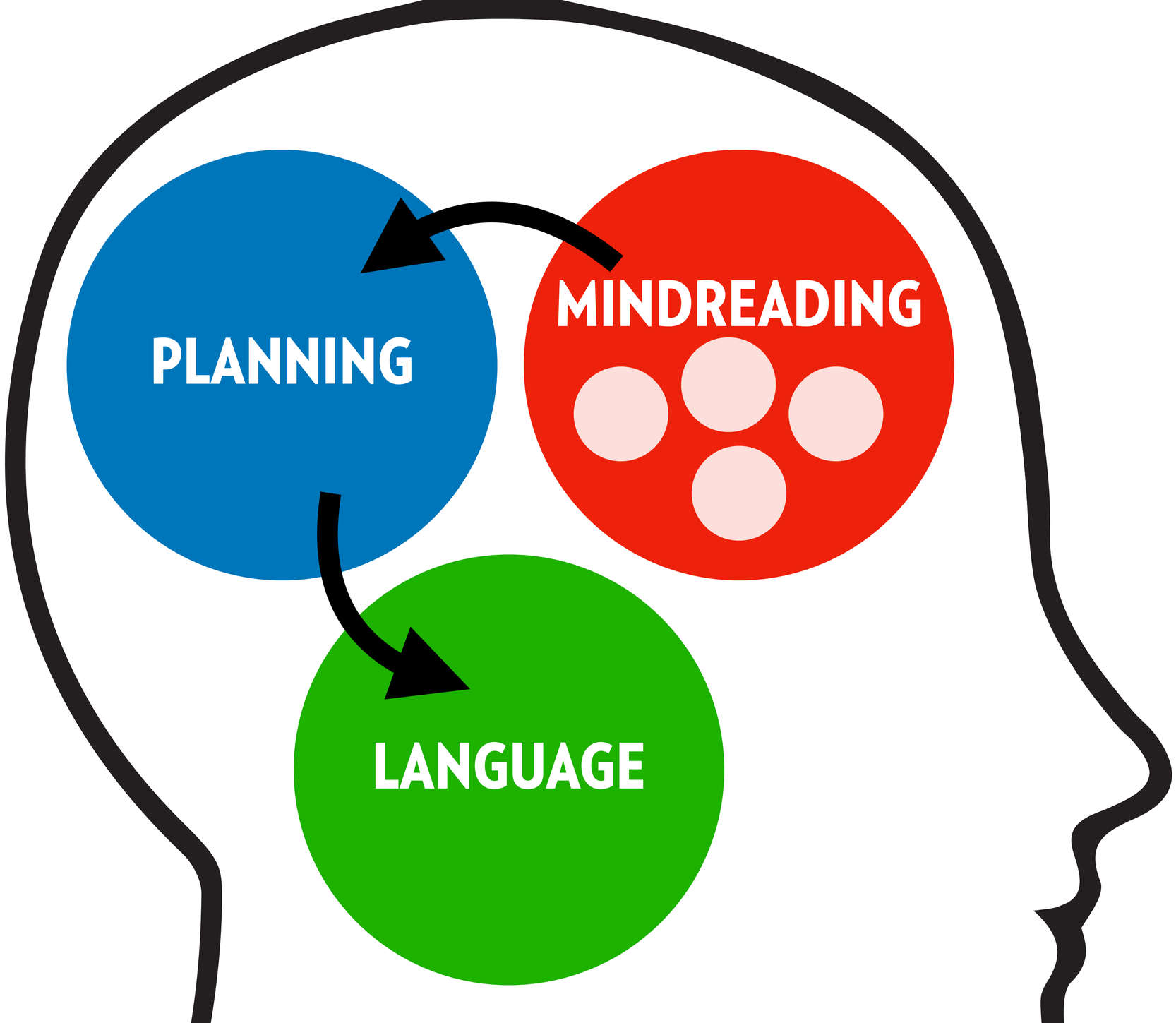
BOUND-VARIABLE

Every dog in my neighborhood, even the meanest,
has an owner who thinks that/?this dog is a sweetie.

NON-SPATIAL PROXIMITY/DISTANCE

Are you still thinking about that/#this?
[About an event from the past]


PLANNING
MINDREADING
LANGUAGE


PLANNING
MINDREADING
LANGUAGE

DAY 3:
EVENT COGNITION

PETER VAN ELSWYK
NORTHWESTERN

DANIEL HARRIS
CUNY GRADUATE CENTER, HUNTER COLLEGE