DAY 4:
COMMON GROUND

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NORTHWESTERN

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Common Ground: Between Pragmatics and Psycholinguistics

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It’s the night of game 7 of the NBA Championship. Sam and Ethan haven’t been watching. Then:

PHONES: They separately look at their phones. Coincidentally, each has been sent the same image of Steph Curry celebrating victory.

TV: Ethan turns on the TV and, together, they see an image of Steph Curry Celebrating victory.

Assertion

A central purpose of asserting a proposition is to add it to the common ground, and so it's infelicitous if the proposition is already common ground.

I have just seen a photo of Steph Curry holding a trophy.

✔

I have just seen a photo of Steph Curry holding a trophy.

???

Presupposition

If a speaker presupposes something that isn't common ground, this will confuse the addressee unless/until they can accommodate the presupposition.

I didn't know that the Warriors had won another championship.

???

I guess she just saw too?

I didn't know that the Warriors had won another championship.

✔

Definite Noun Phrases

A speaker should use a definite noun phrase to refer only if it is common ground that the referent satisfies the noun phrase's presuppositions.

He looks pumped.

???

He looks pumped.

✔

Indicative Conditionals

An utterance of an indicative conditional presupposes that its antecedent is compatible with, but not entailed by, the common ground.

If the Warriors win again, Steph is the GOAT.

✔

If the Warriors win again, Steph is the GOAT.

???

Counterfactual Conditionals

An utterance of an counterfactual conditional presupposes that its antecedent is false in the common ground.

If the Celtics had won, the people in Boston would have been so happy.

???

If the Celtics had won, the people in Boston would have been so happy.

✔

Context Sensitive Expressions

You should use a context-sensitive expression to communicate something specific only if the common ground entails a way of resolving it.

Everyone is going to be excited.

???

Everyone is going to be excited.

✔

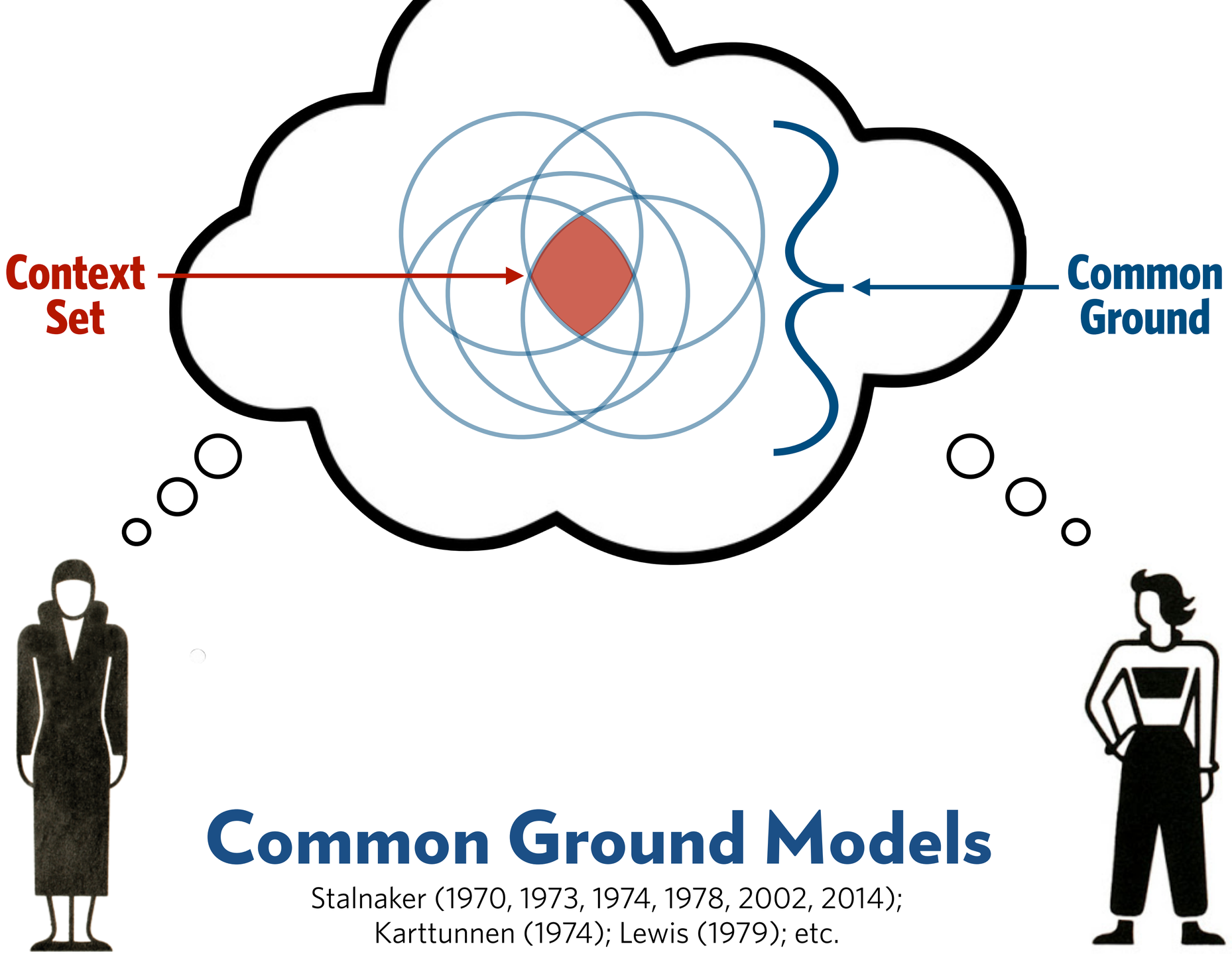
Anaphoric Links

Use an anaphoric expression only if its antecedent has modified the common ground in the appropriate way.

She must be proud.

???

She must be proud.



Common Ground Models

Stalnaker (1970, 1973, 1974, 1978, 2002, 2014);
Karttunnen (1974); Lewis (1979); etc.

Common Knowledge (Iterated)

A and B commonly know that p if and only if:

1a. A knows that p;

1b. B knows that p;

2a. A knows that B knows that p;

2b. B knows that A knows that p;

3a. A knows that B knows that A knows that p;

3b. B knows that A knows that B knows that p;

⋮

CG as Commonly Believed Joint Acceptance (Stalnaker 2002)

A proposition is CG for A and B (relative to some conversational purpose) iff:

1a. A accepts that p (for the purpose of the conversation);

1b. B accepts that p (for the purpose of the conversation);

2a. A believes (1a–b);

2b. B believes (1a–b);

3a. A believes that B believes (1a–b);

3b. B accepts that A believes (1a–b);

⋮

CG as Common Acceptance (Stalnaker 2014)

A proposition is CG for A and B (relative to some conversational purpose G) iff:

1a. A accepts$_G$ that p;

1b. B accepts$_G$ that p ;

2a. A accepts$_G$ that B accepts$_G$ that p;

2b. B accepts$_G$ that A accepts$_G$ that p;

3a. A accepts$_G$ that B accepts$_G$ that A accepts$_G$ that p;

3b. B accepts$_G$ that A accepts$_G$ that B accepts$_G$ that p;

⋮

IDEALIZATIONS

EMPIRICAL SCOPE

- What about conversations other than joint inquiry?
- Non-assertoric speech acts?
- How about more detail about the mechanics of context-sensitivity and anaphora?
- How does accommodation work, exactly?

⋮

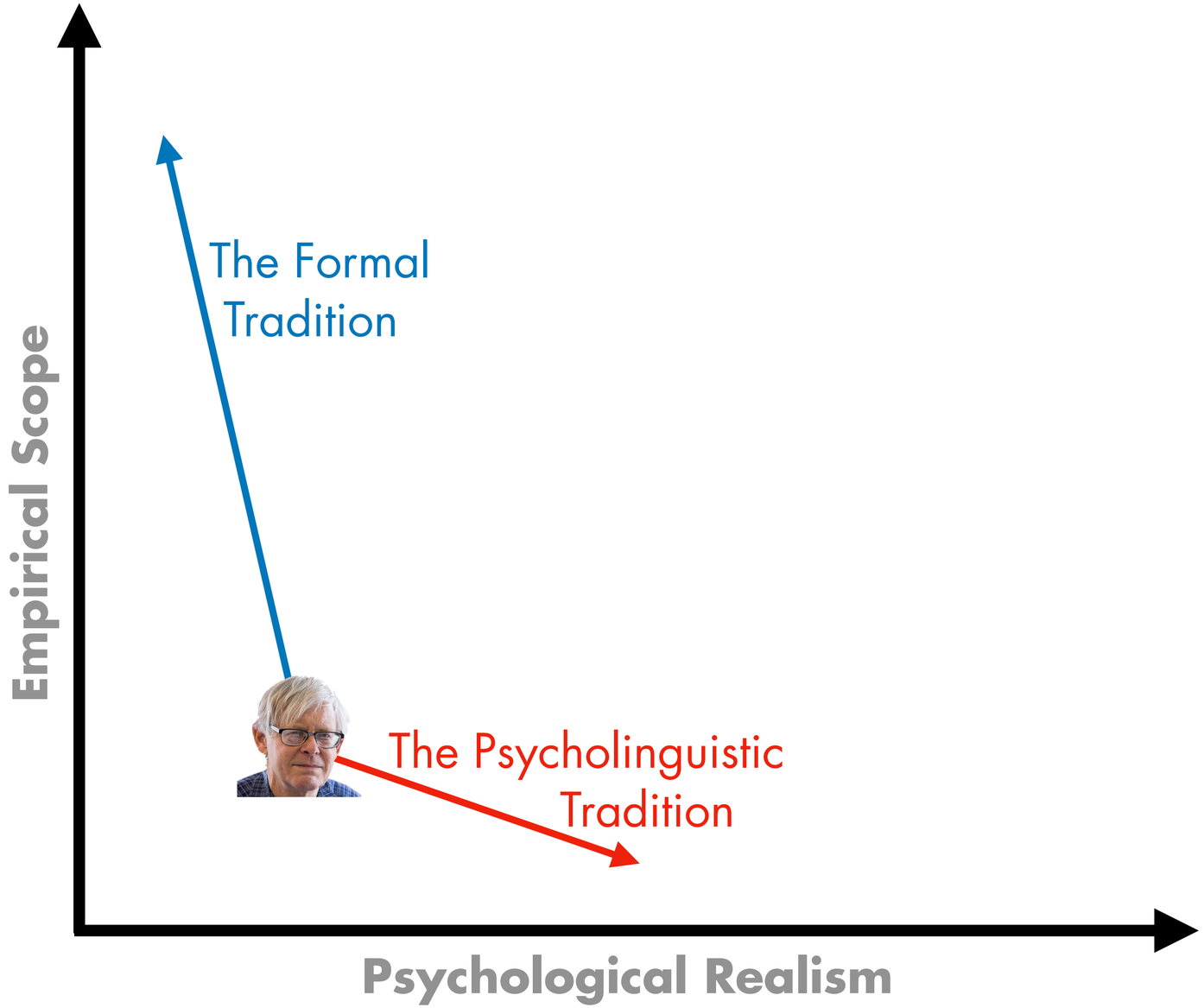
PSYCHOLOGICAL

- Does it really make sense to say that we have infinite, intersubjectively iterated propositional attitudes?
- What cognitive mechanisms do we use to get and maintain those attitudes?
- Always the same mechanisms?
- What kind of cognitive resources does this take?
- What about kids and animals?

⋮

TWO TRADITIONS


Empirical Scope
Psychological Realism


Empirical Scope
The Formal Tradition
The Psycholinguistic Tradition
Psychological Realism

THE FORMAL TRADITION

CONVERSATIONAL SCORE

(Lewis 1979)

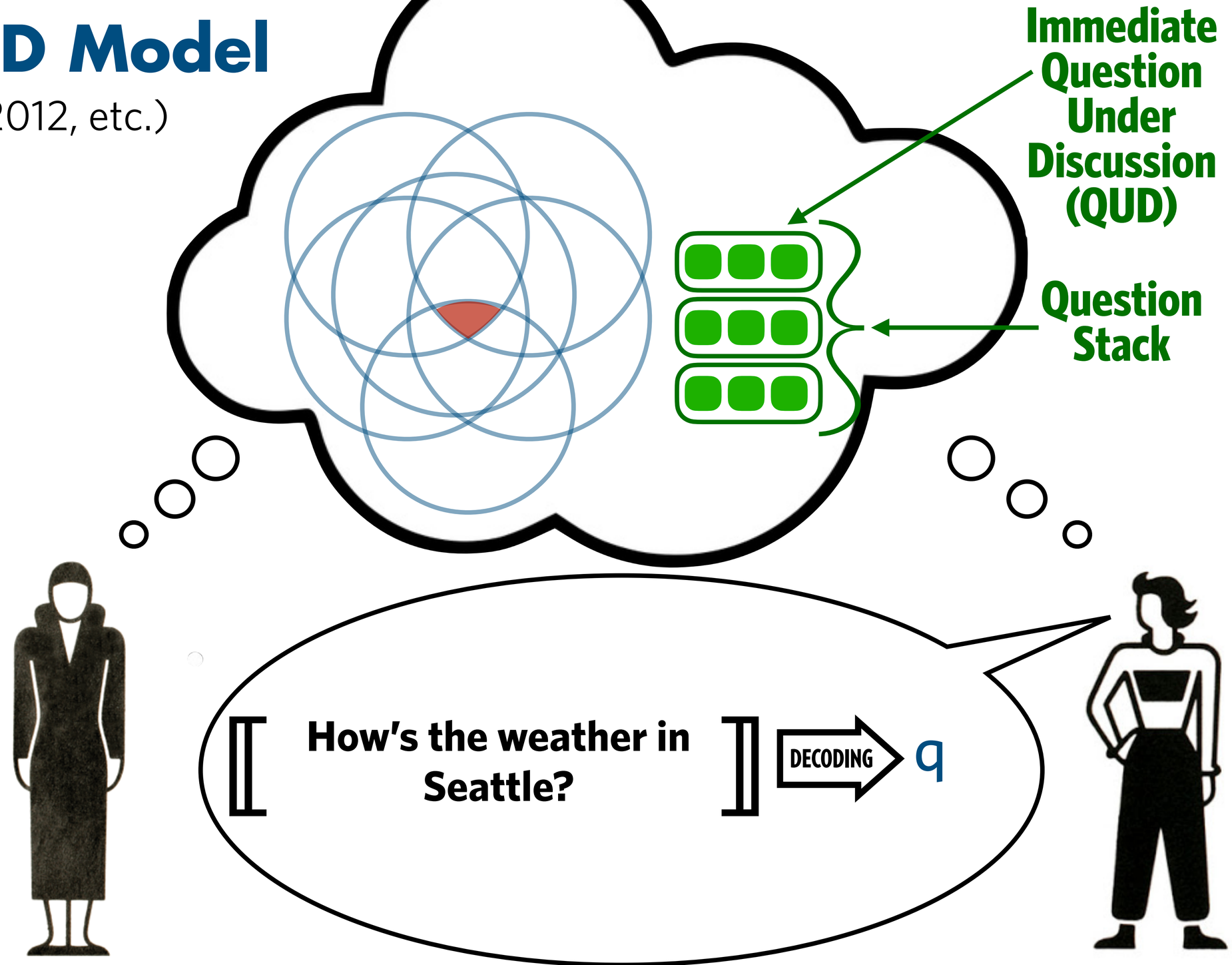
1. A body of presupposed information
2. A "permissibility sphere" for interpreting commands and deontic modals
3. A salience ranking of the people and things under discussion
4. A point of reference for locatives
5. "Standards of precision" for vague expressions.
6. A body of relevant possibilities for interpreting epistemic modals
7. A representation of whatever shared plan we are constructing.

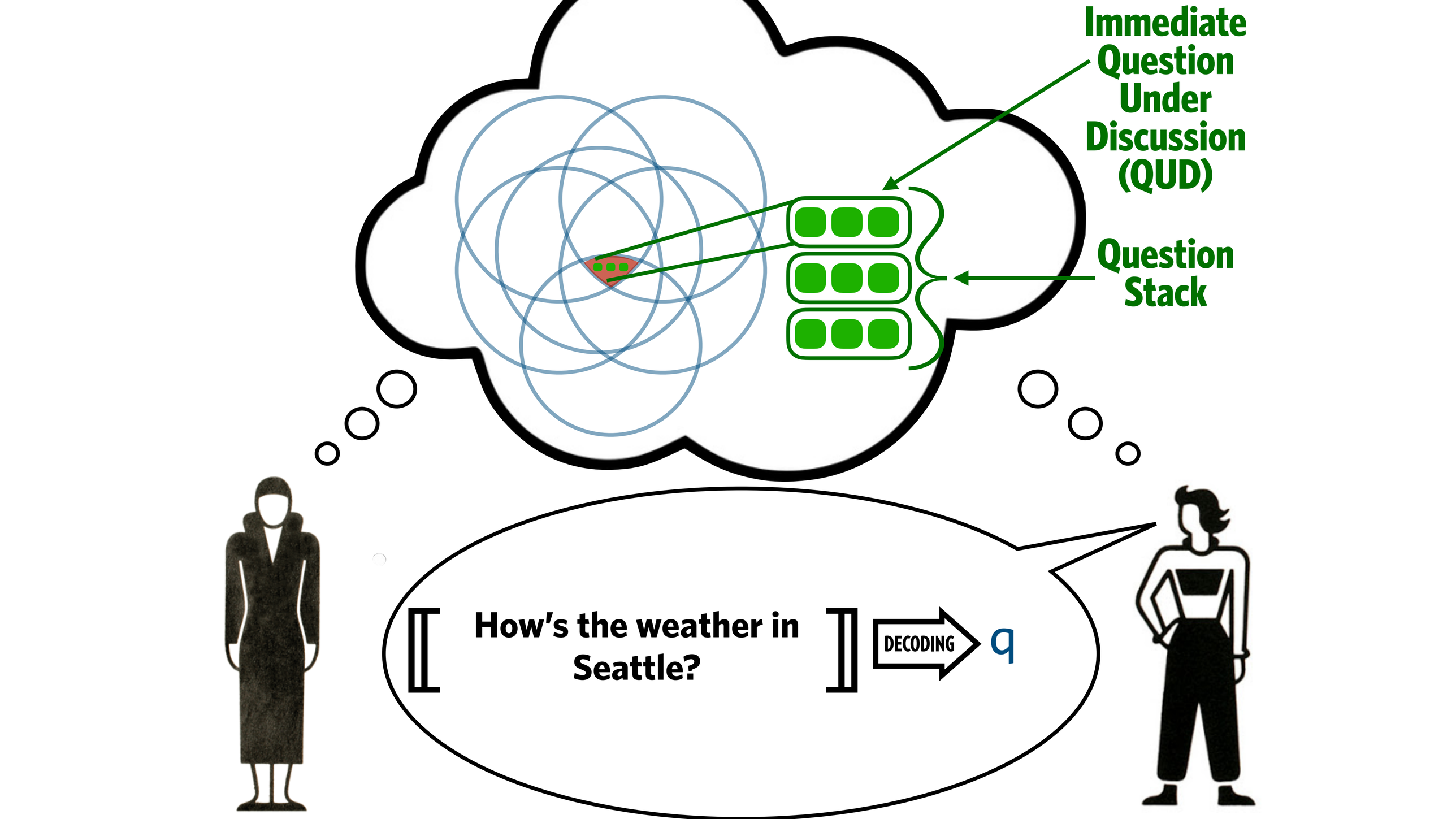
QUESTION:

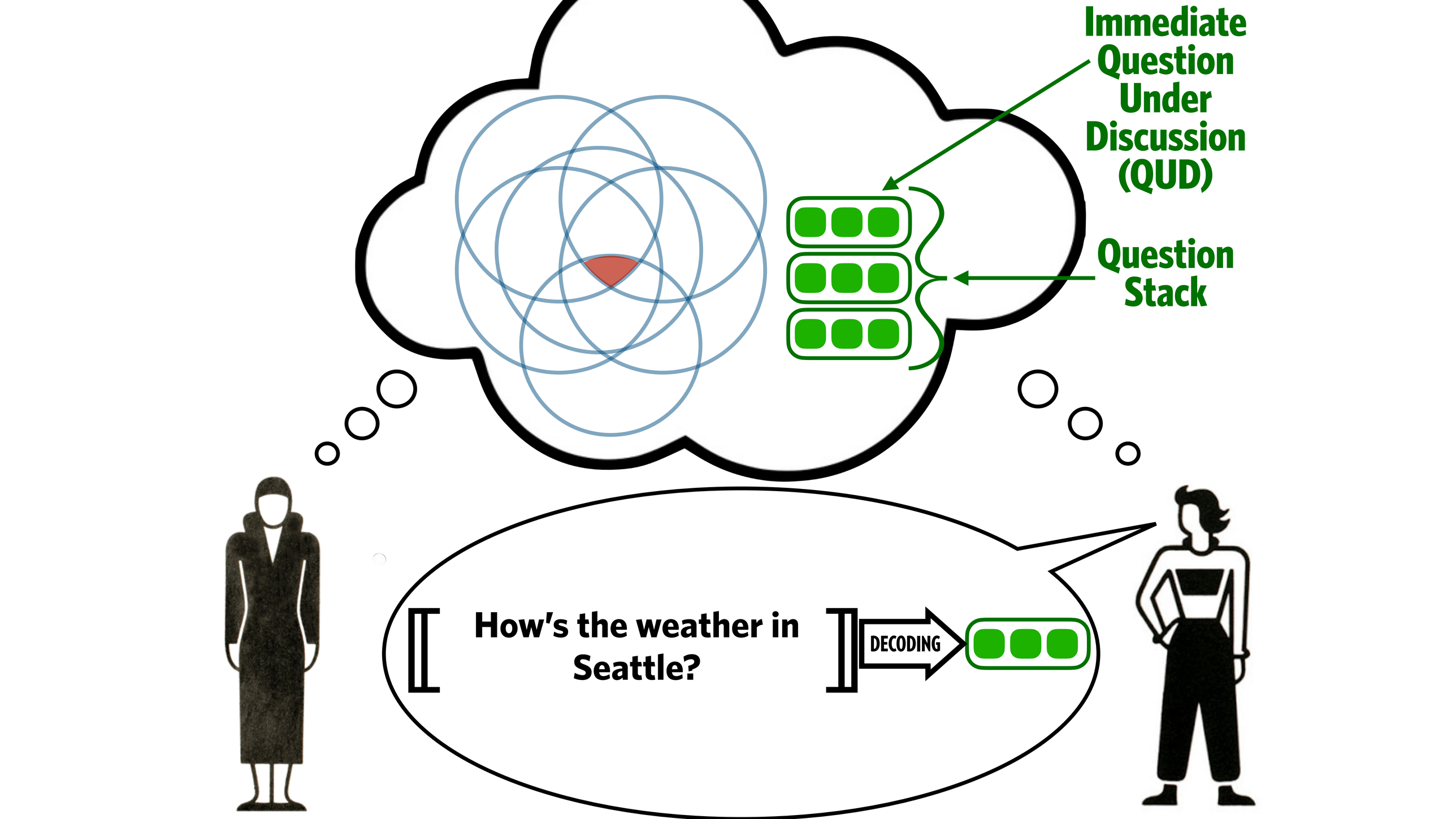
What cognitive mechanisms constitute (or at least keep track of) conversational score?

The QUD Model

(Roberts 2012, etc.)




Immediate Question Under Discussion (QUD)
Question Stack
[[How's the weather in Seattle?]]
DECODING
q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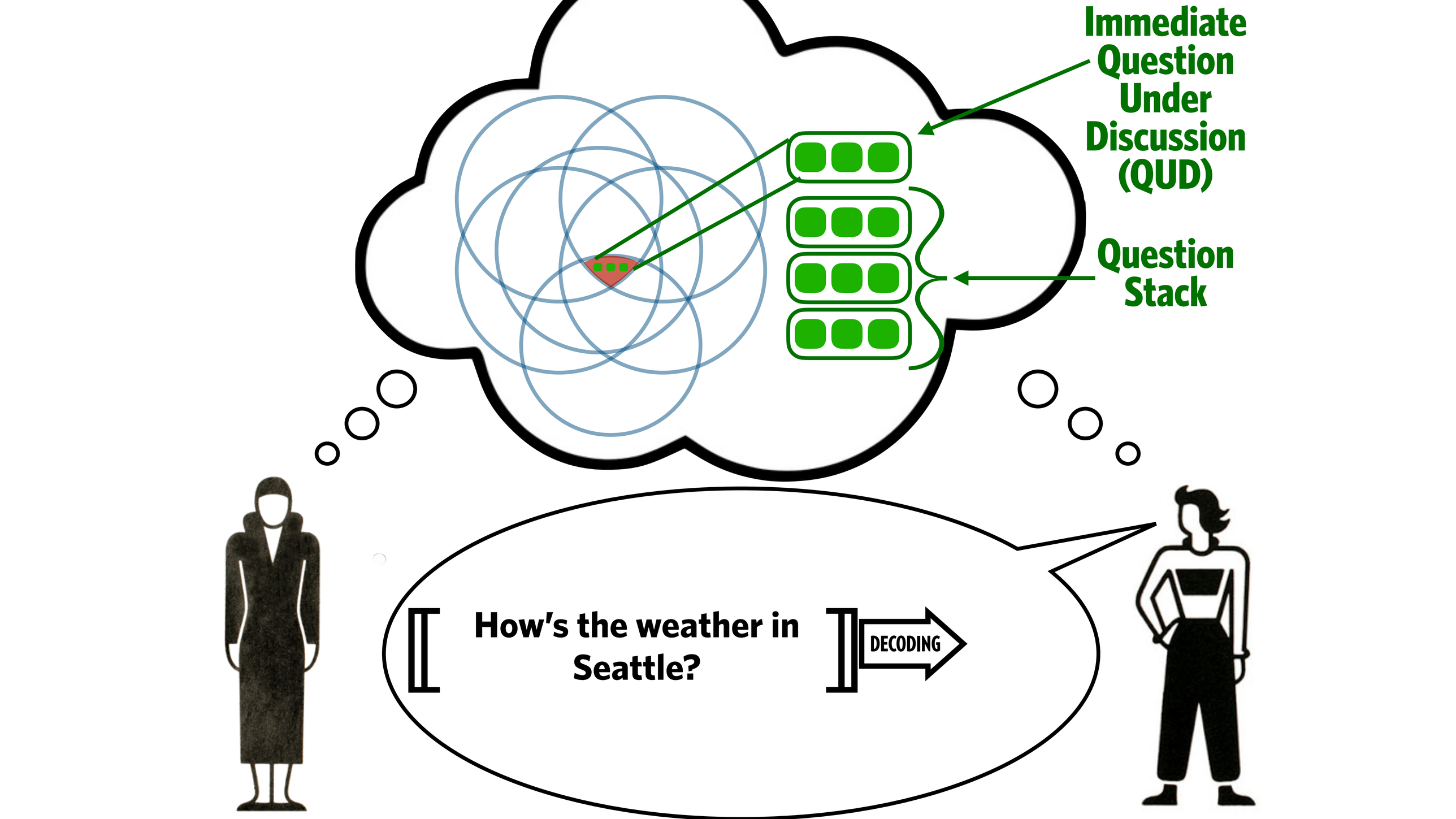
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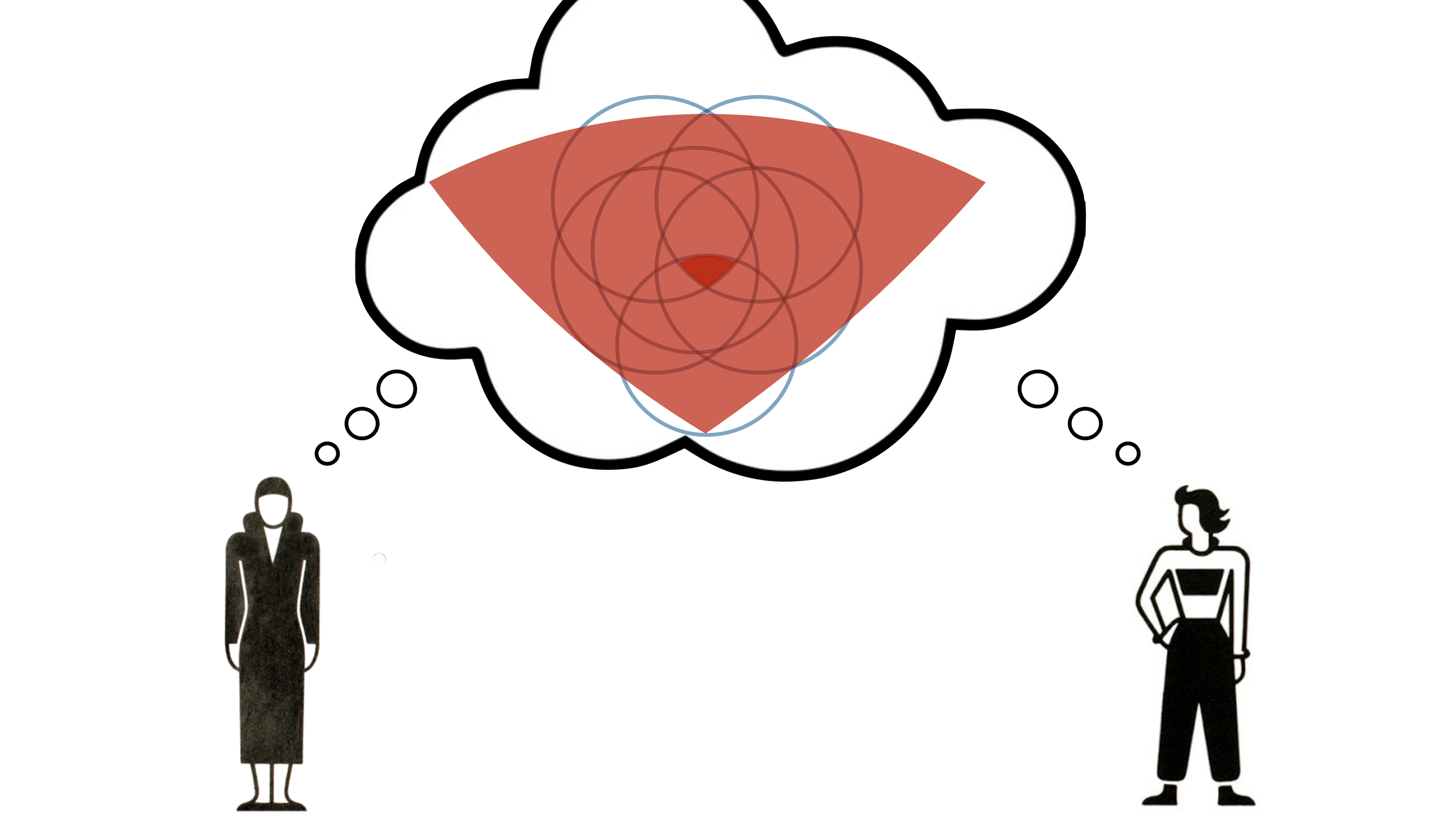


w1
w2
w3
w4
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w1
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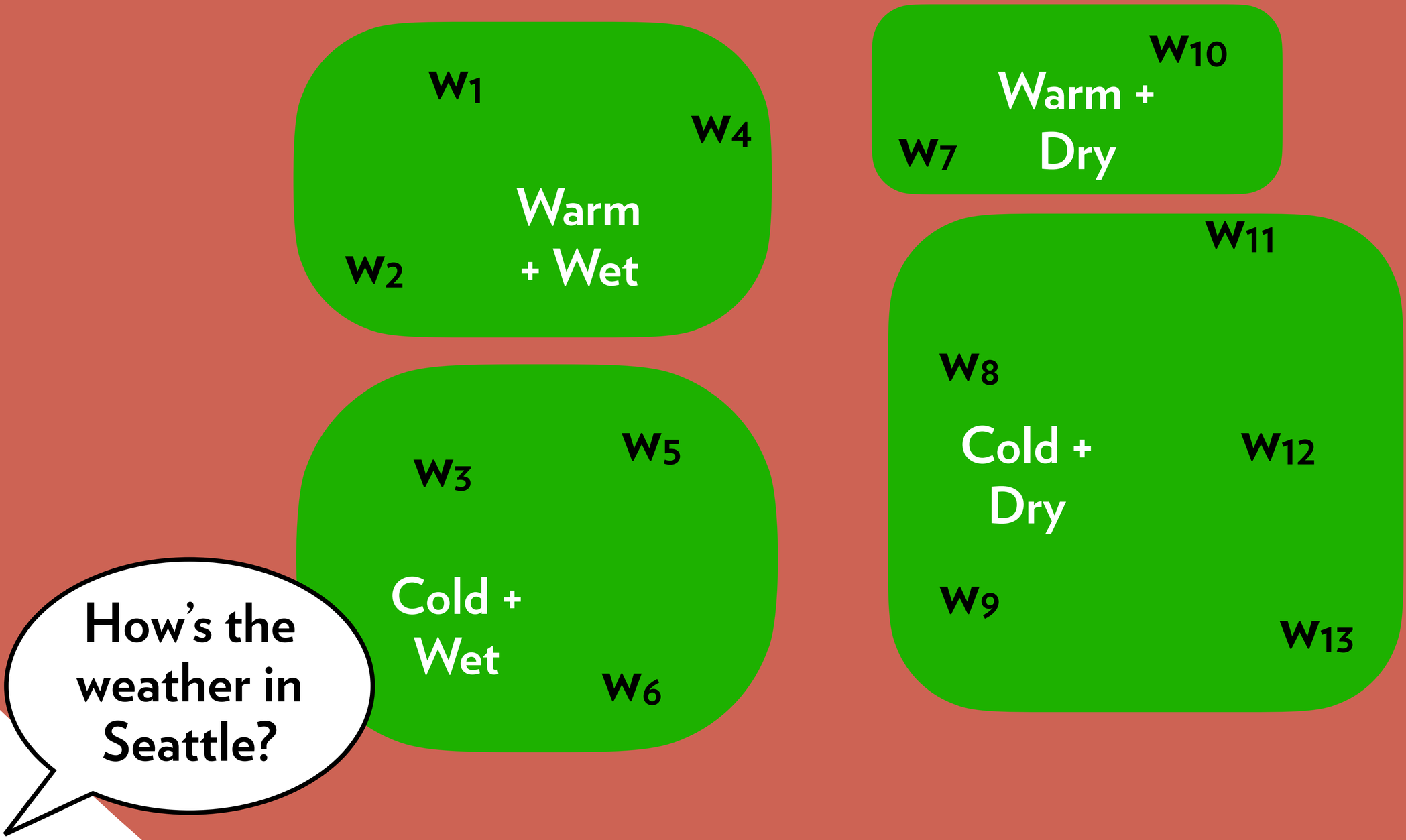
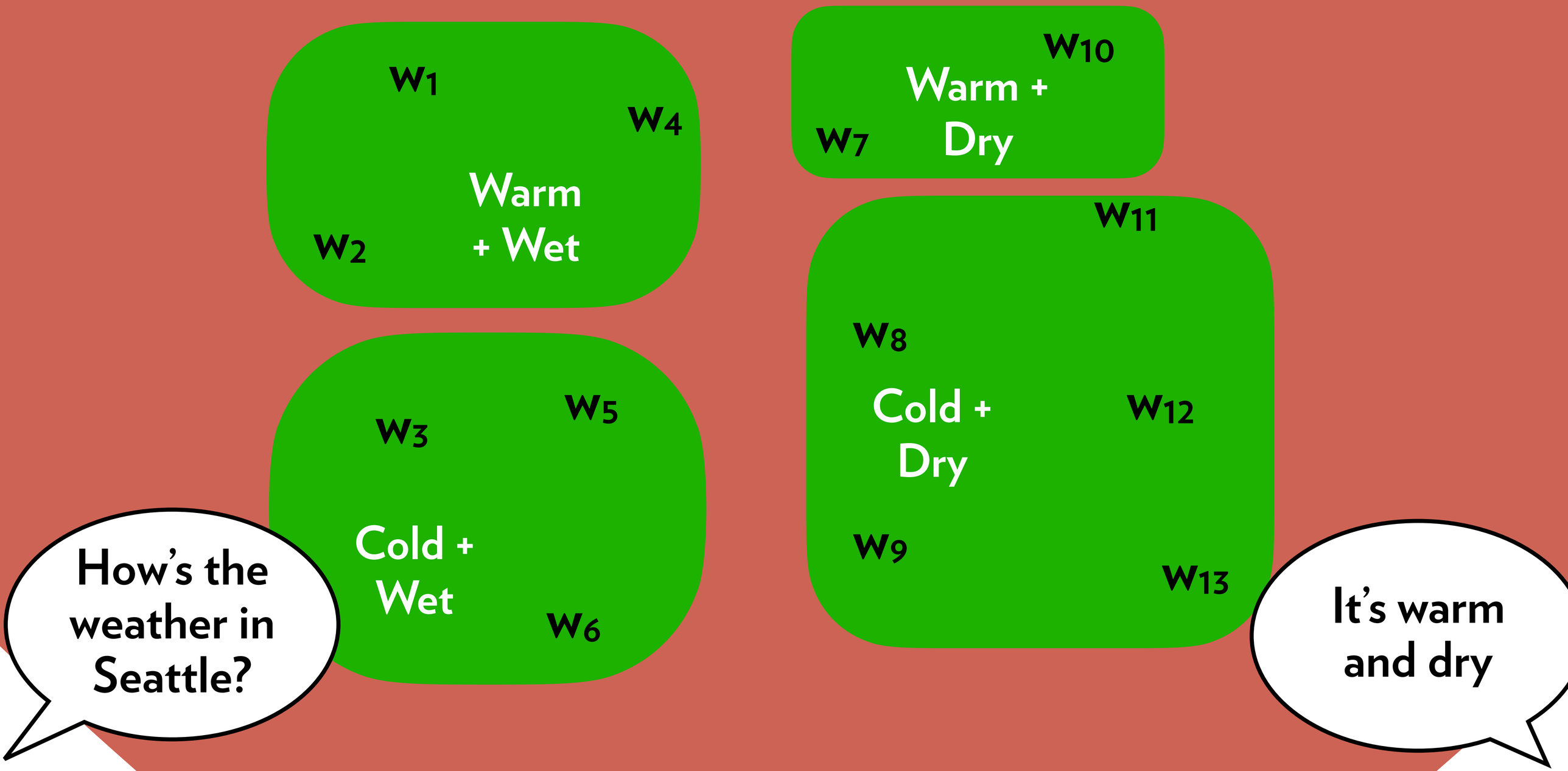
w13
How's the weather in Seattle?

QUD: How's the weather in Seattle?



QUD: How's the weather in Seattle?



QUD: How's the weather in Seattle?

Warm + Dry

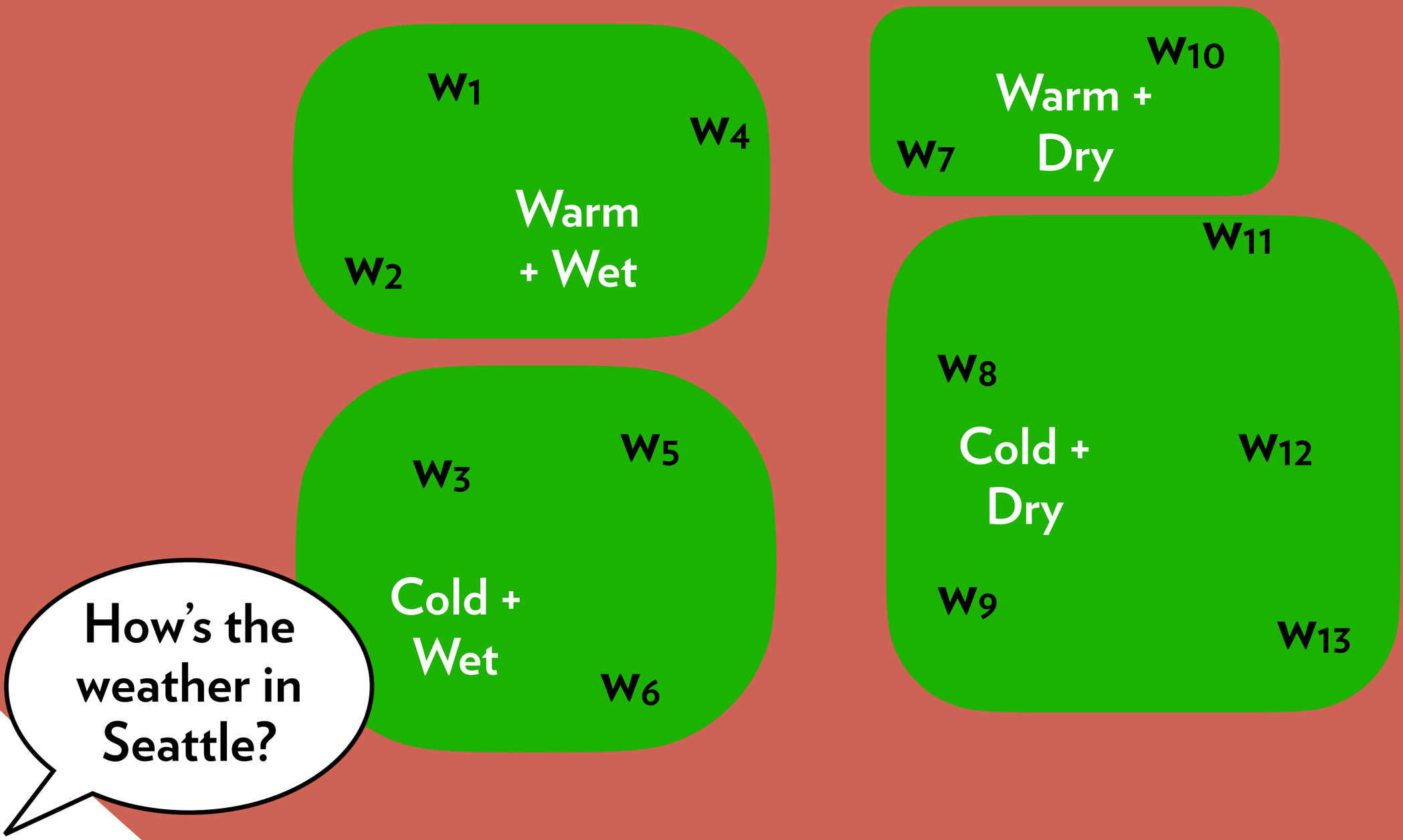
w_{10}

w_7

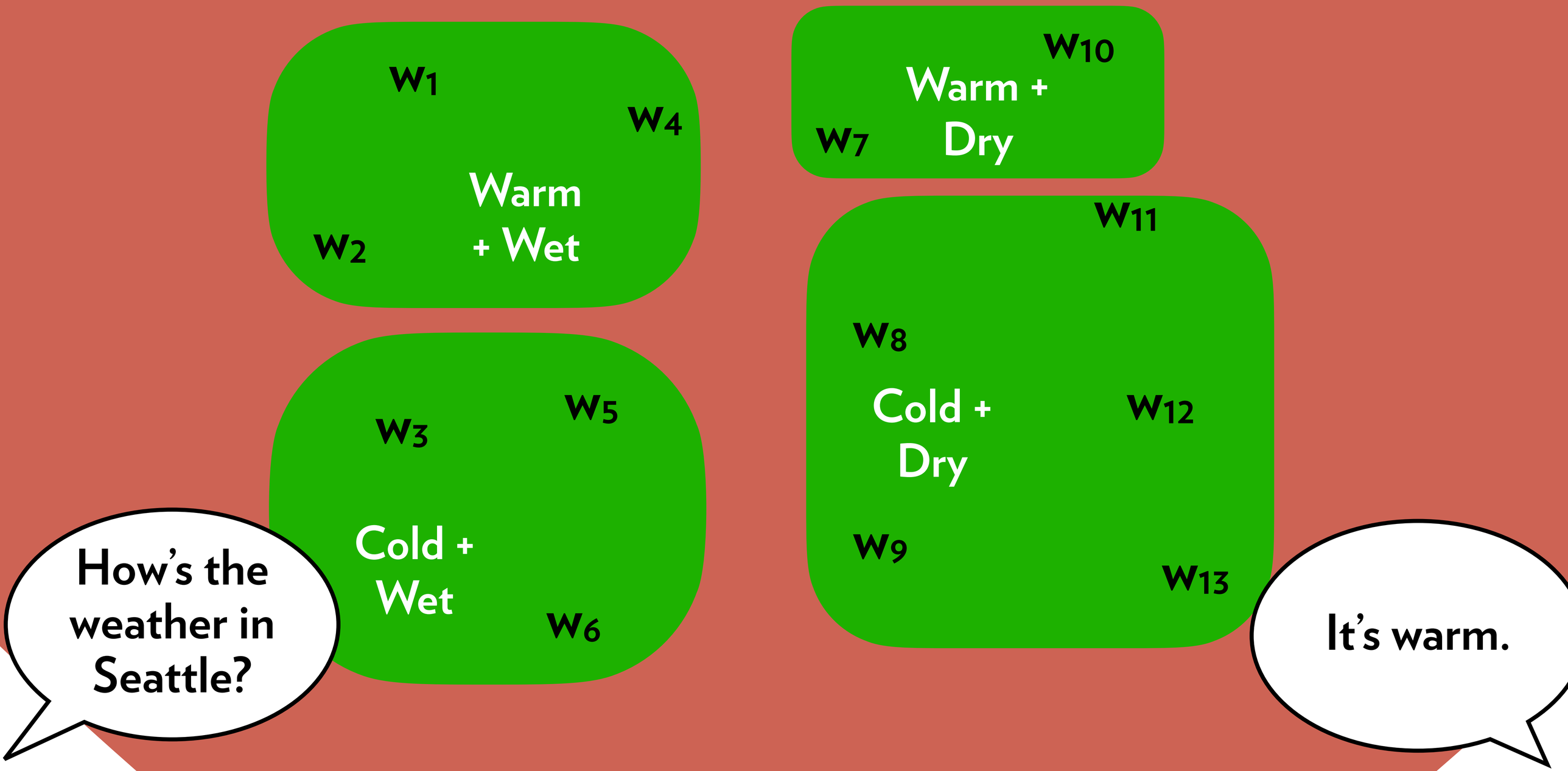
How's the weather in Seattle?

It's warm and dry

QUD: How's the weather in Seattle?



QUD: How's the weather in Seattle?



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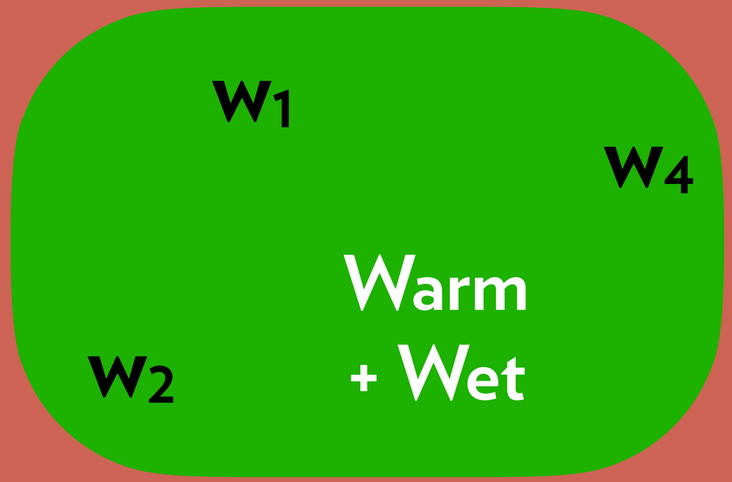
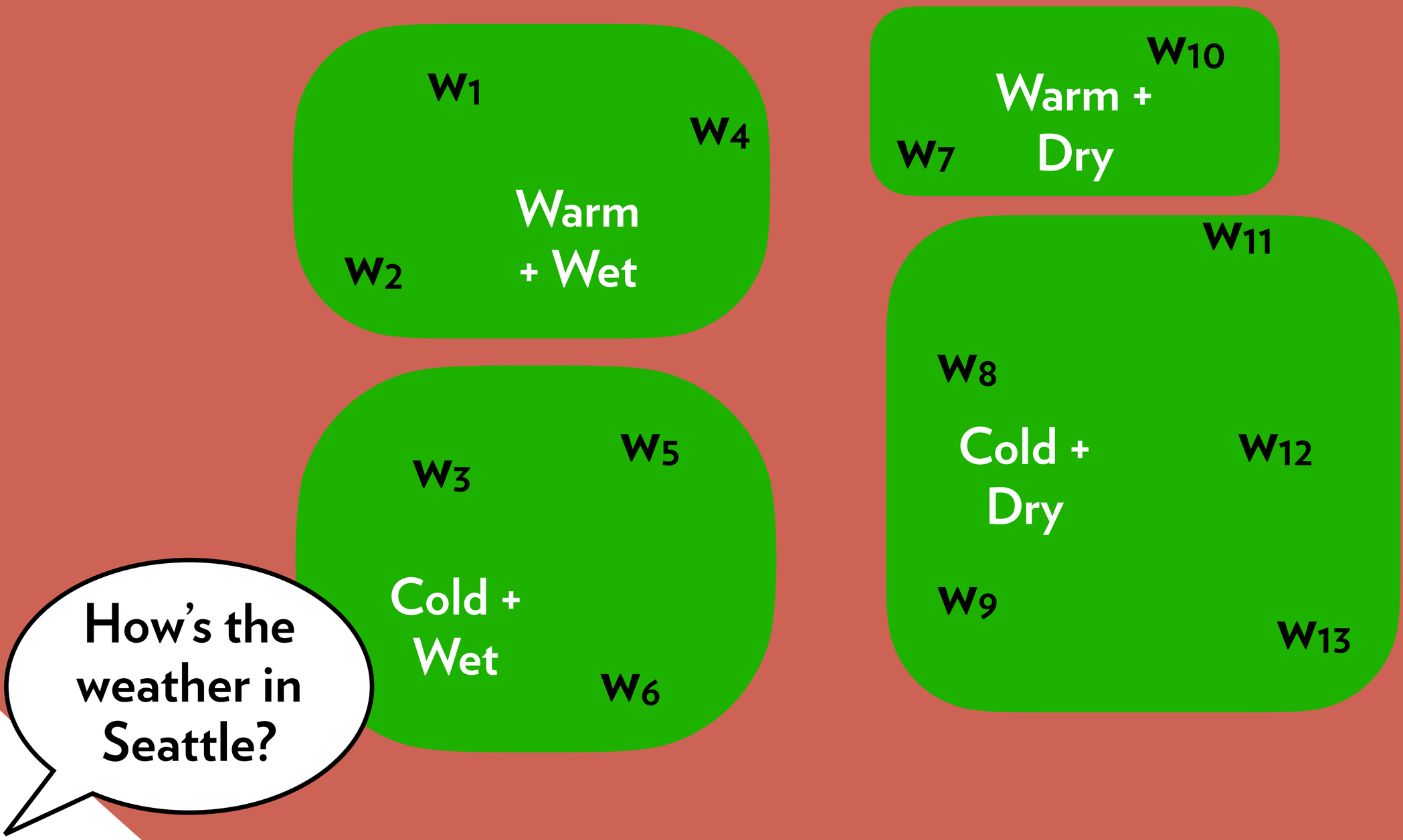


How's the weather in Seattle?

It's warm.

QUD: How's the weather in Seattle?



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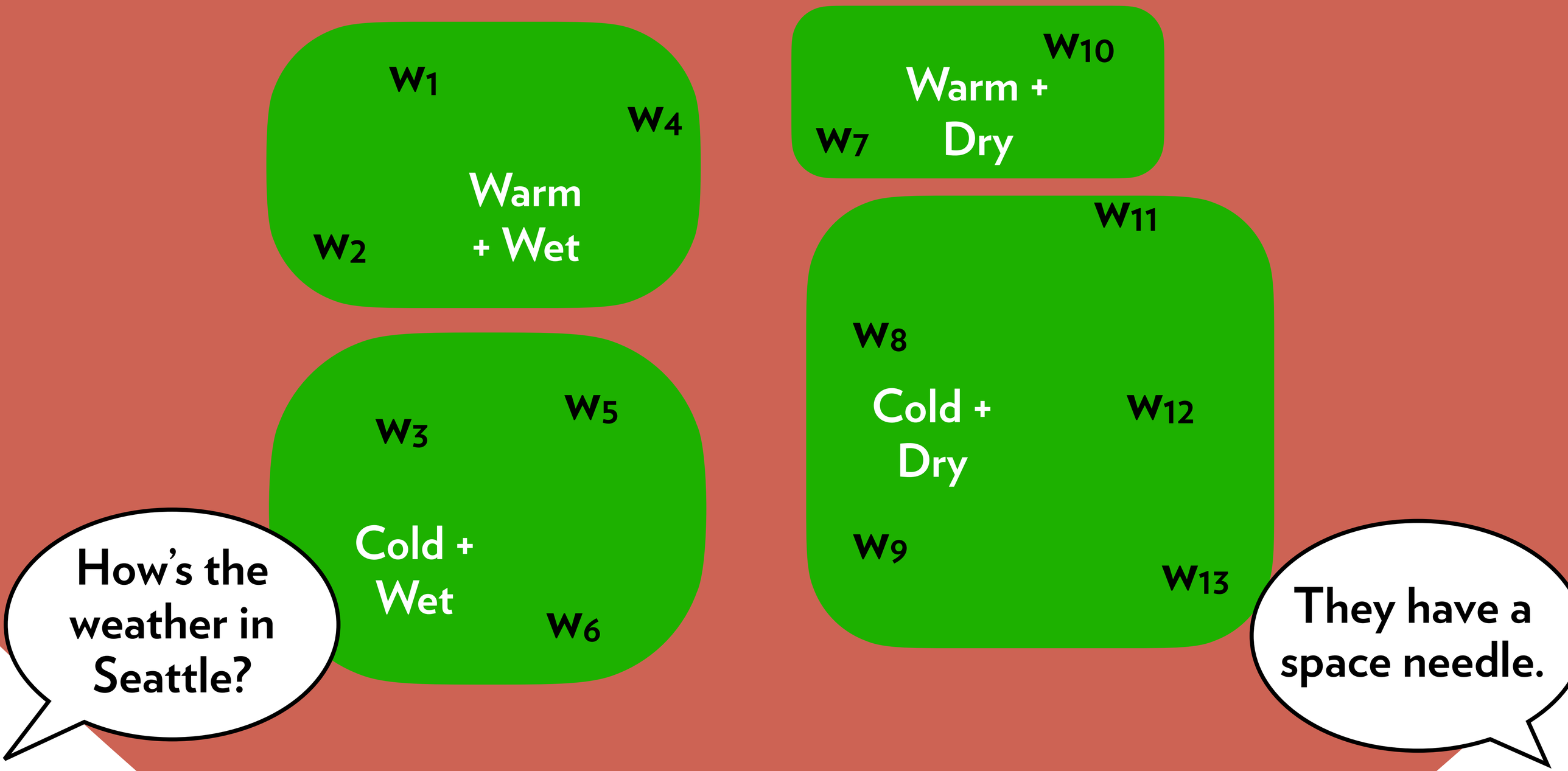

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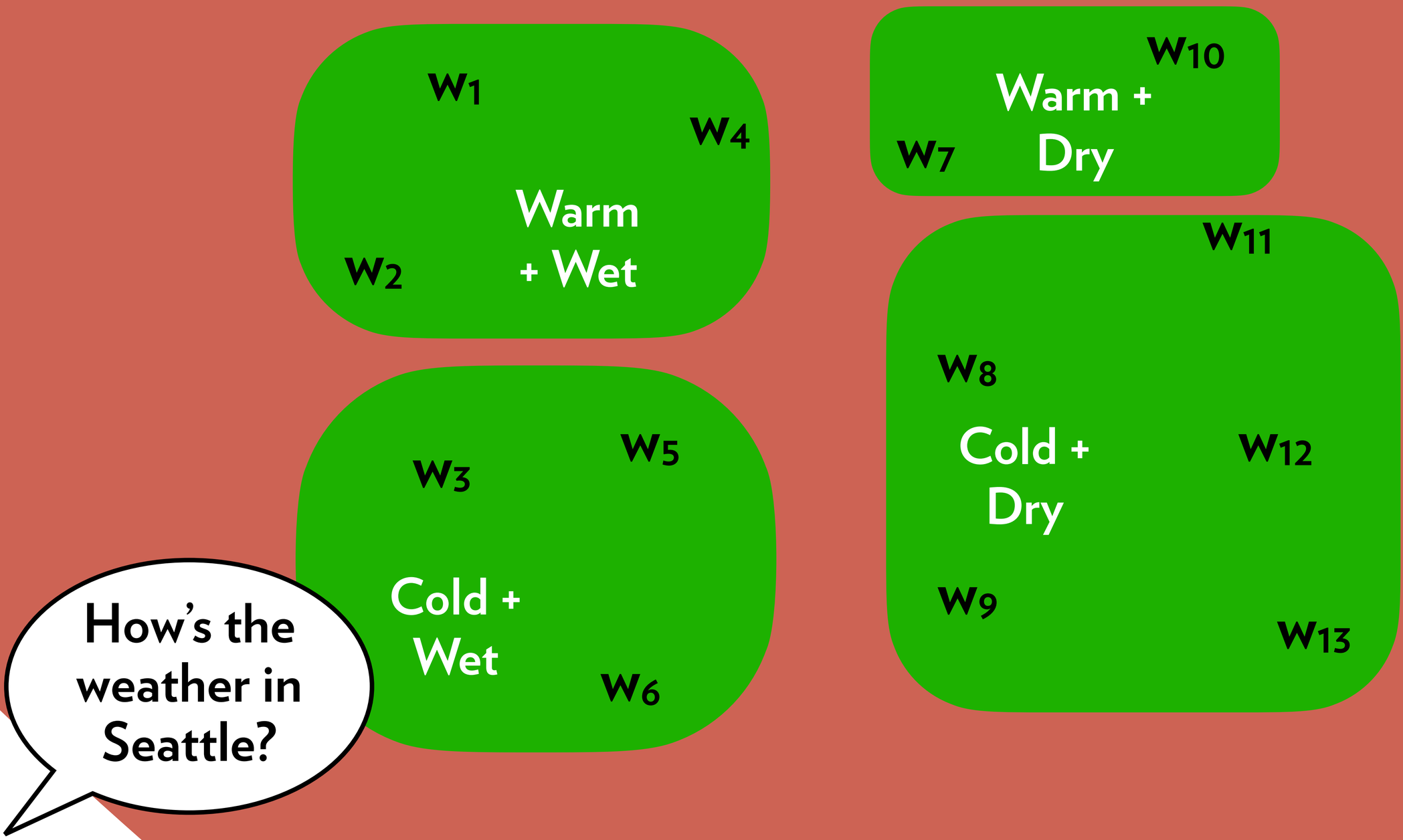
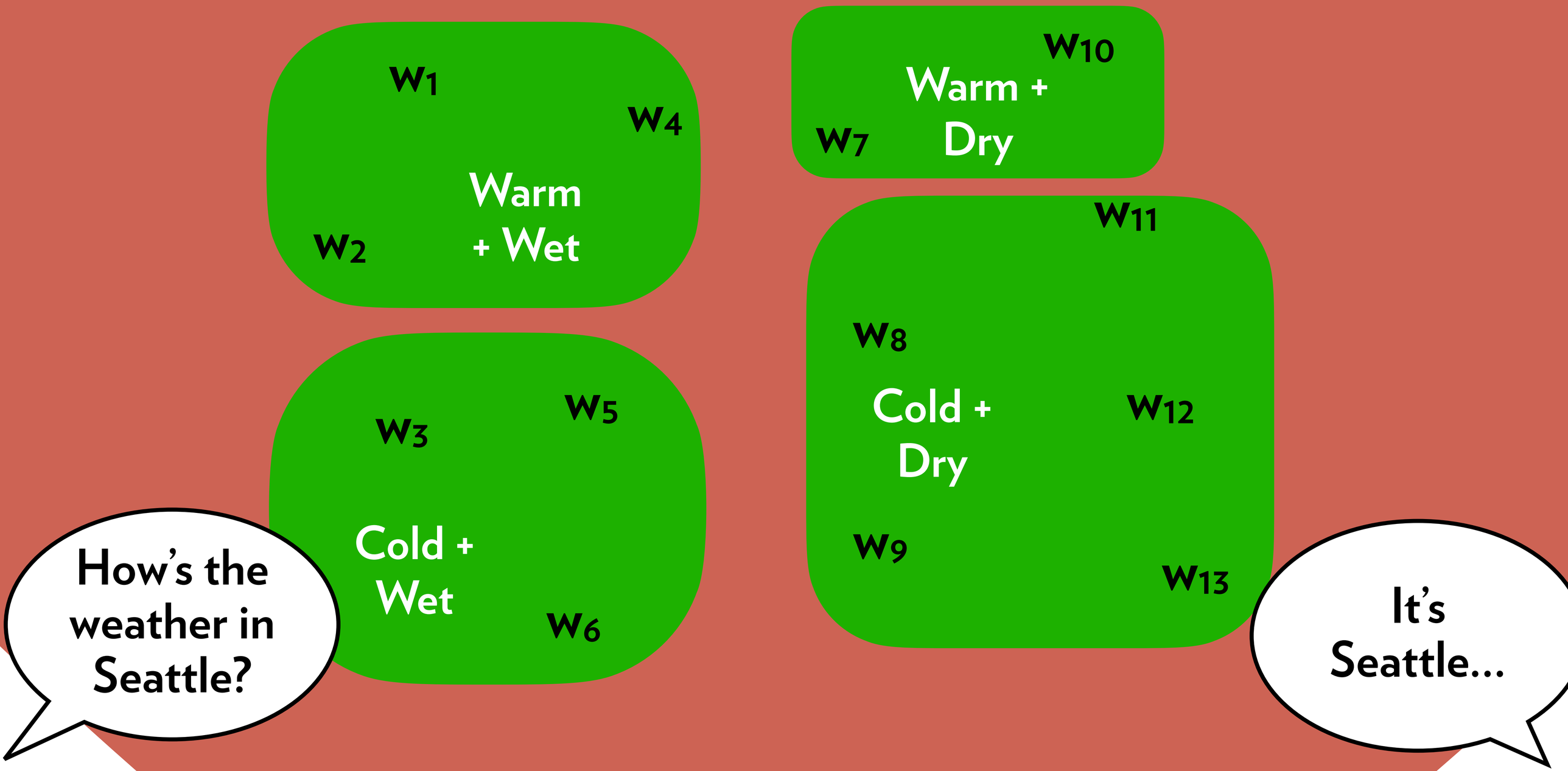
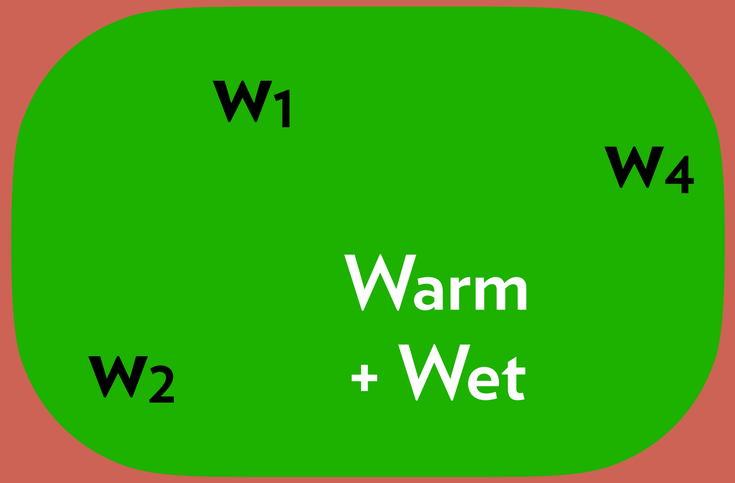


QUD: How's the weather in Chicago?



QUD: How's the weather in Chicago?

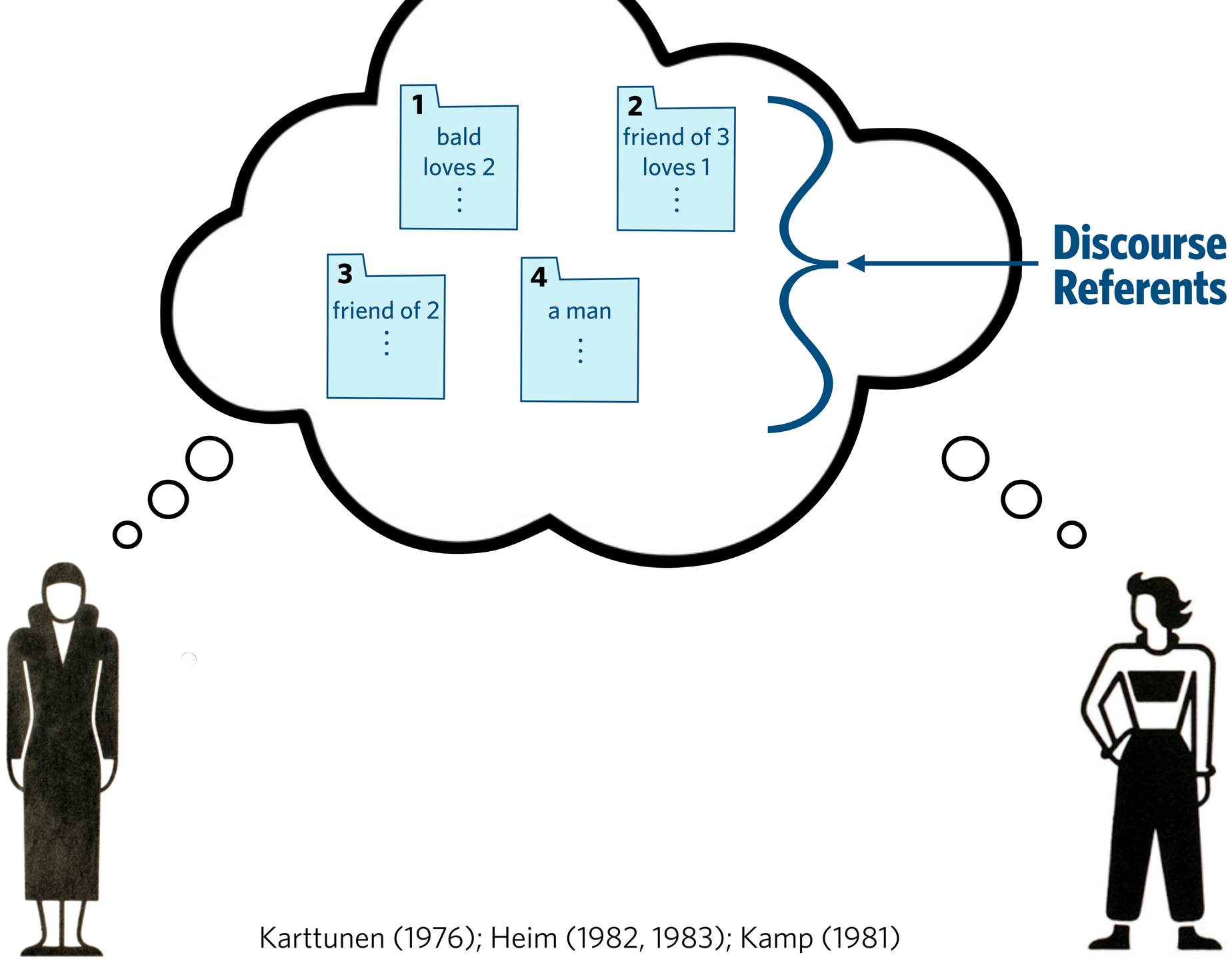


How's the weather in Chicago?

It's LA...

QUESTION:

Which cognitive mechanisms are being modeled by the QUD model?



Karttunen (1976); Heim (1982, 1983); Kamp (1981)

I propose that the common ground of a context be identified with what I have been calling the “file” of that context. As we will see, files cannot be construed as sets of possible worlds, although each file determines such a set.

—Heim (1982)

QUESTION:

How do we build these contexts out of interlocutors’ states of mind?

MAYBE WE SHOULD ADD...

- *Hyperplans* to explain non-factual discourse (Gibbard 2003, Yalcin 2012) or metalinguistic updates (MacFarlane 2016)

- *Additional bodies of information* for tracking fictional vs. factual discourse (Stokke 2023) or off-record communication (Camp 2018)

- A *to-do list* (Portner 2004), *domain goals* (Roberts 2018, or representation of *mutual preferences* (Starr 2020) for imperatives to update.

- A table that records updates that have been proposed but not yet accepted or rejected (Farkas and Bruce 2010)

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THE PSYCHOLINGUISTIC TRADITION

THE PARADOX OF MUTUAL KNOWLEDGE

(Clark and Marshall 1981)

1. According to iterated theories, treating p as CG requires forming an infinite number of propositional attitudes.
2. It takes a finite amount of time to form each propositional attitude.
3. But we come to treat proportions as CG in finite amounts of time.
4. Therefore, iterated theories are false.

We use heuristics to choose common ground from “shared bases”:

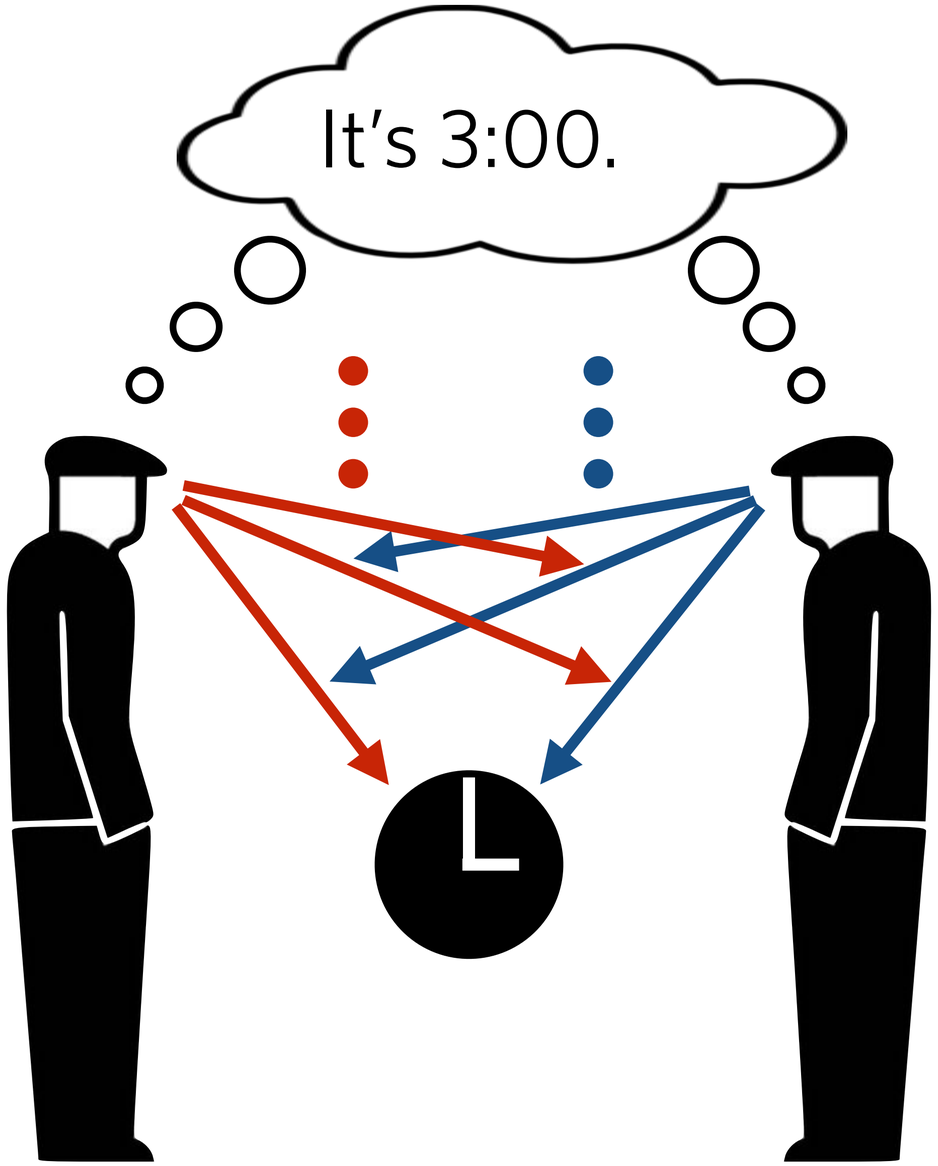
Physical Copresence

Linguistic Copresence

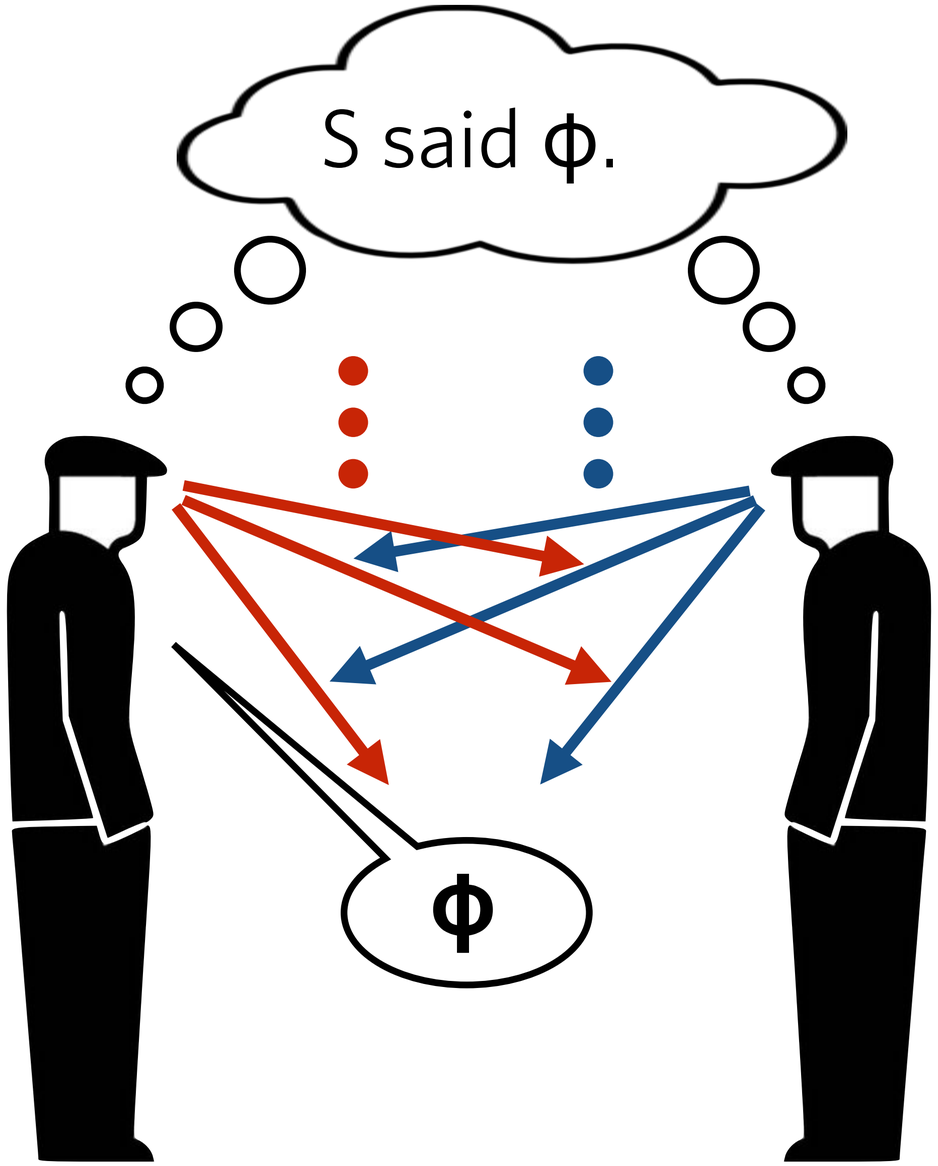
Cultural Copresence

Herb Clark

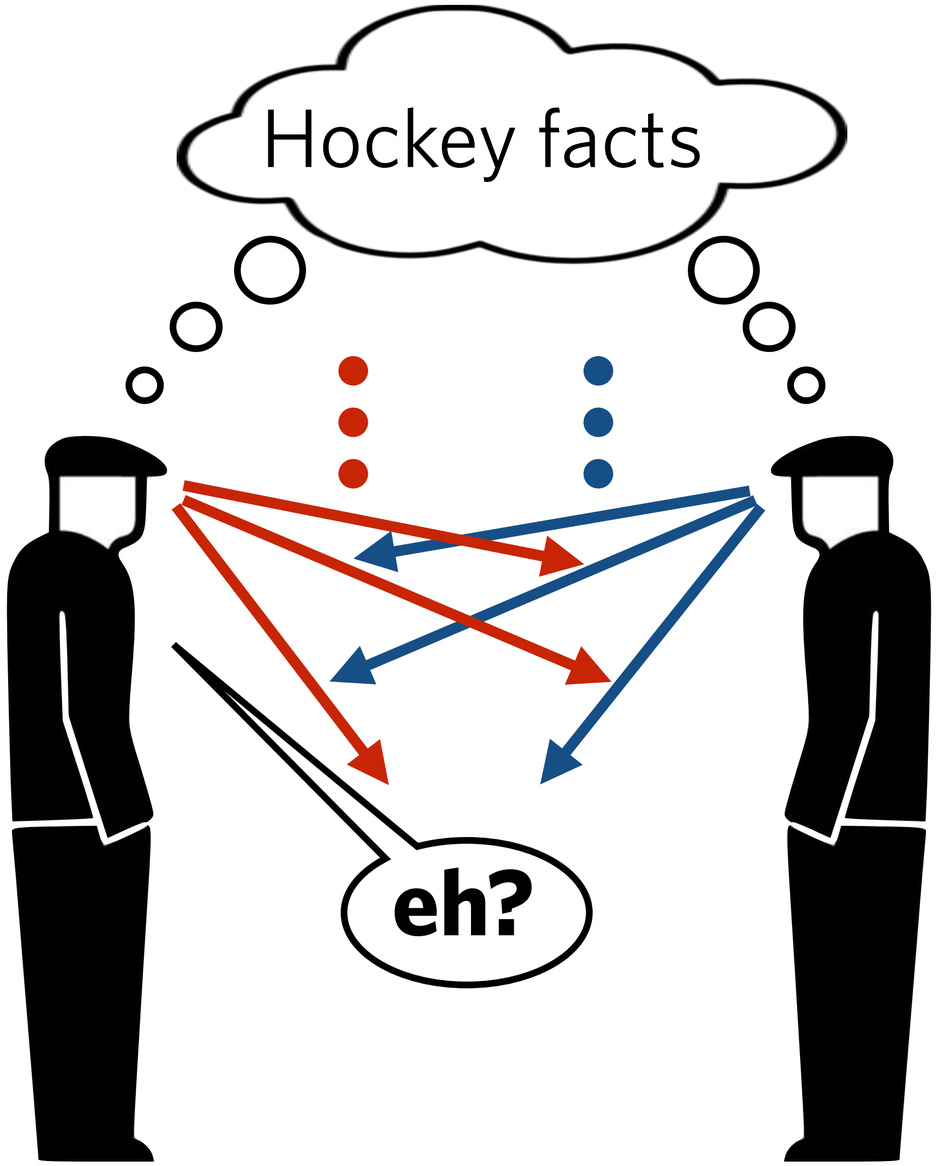
PHYSICAL COPRESENCE HEURISTIC

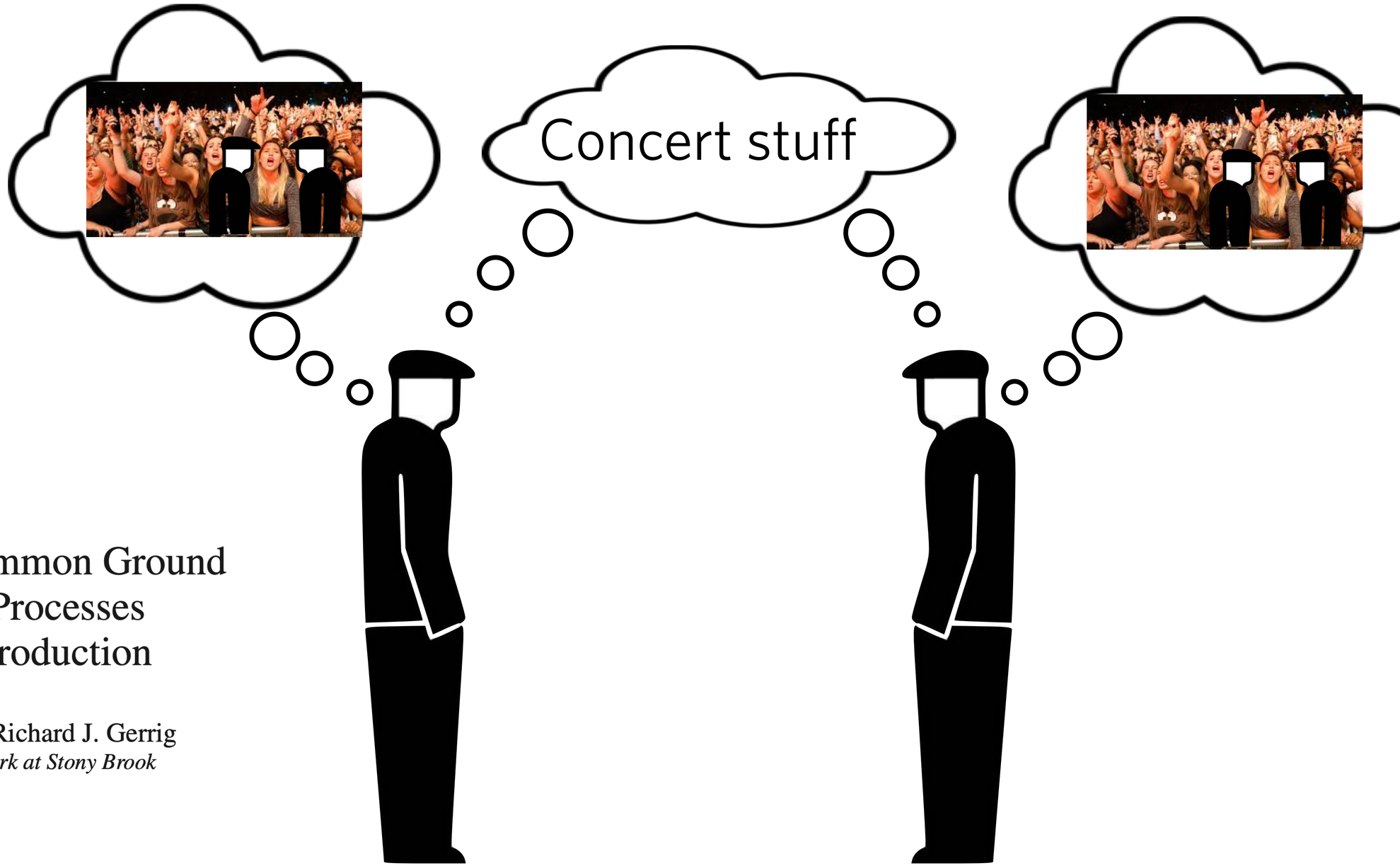


LINGUISTIC COPRESENCE HEURISTIC



CULTURAL COPRESENCE HEURISTIC





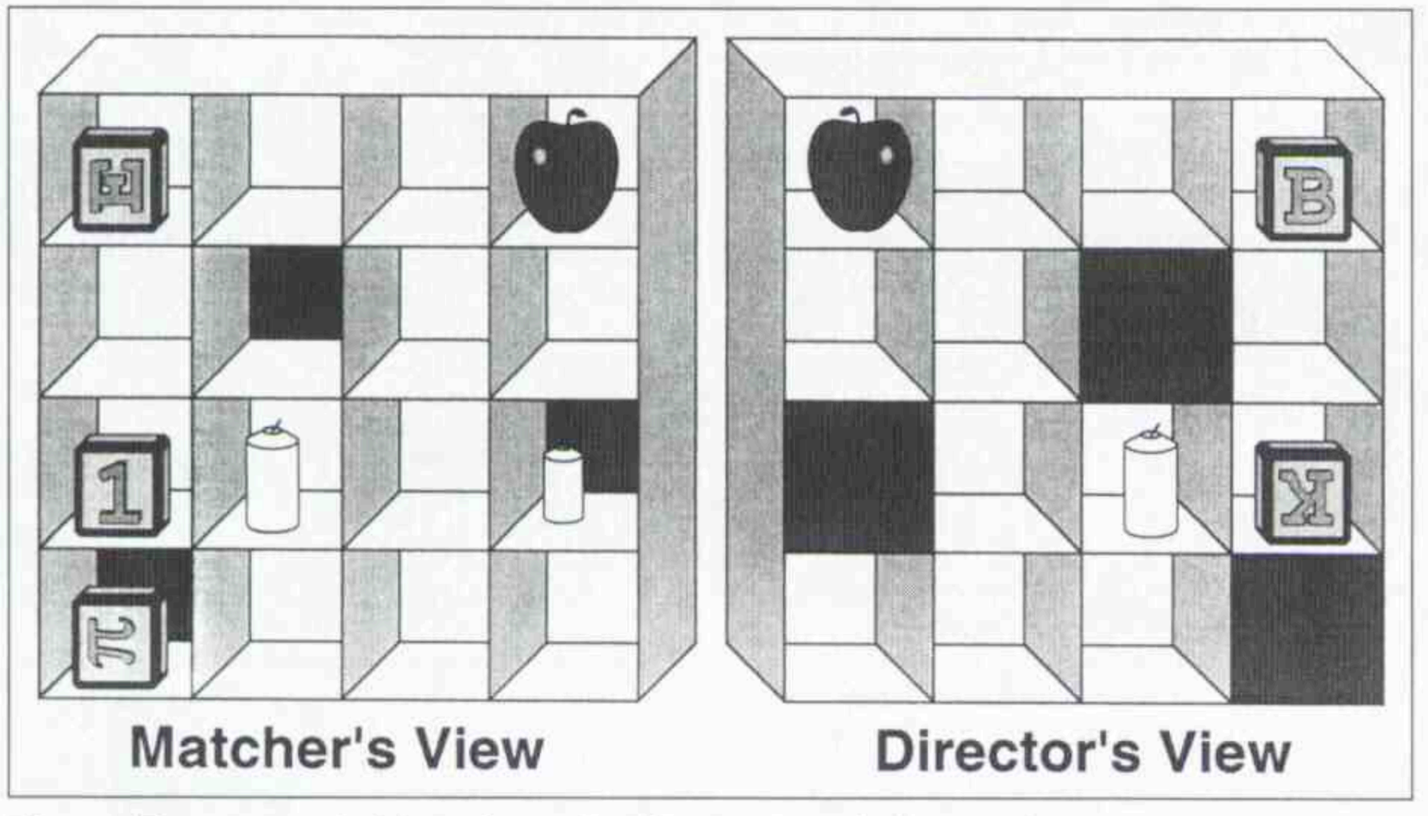
DISCOURSE PROCESSES, *40*(1), 1–35

Conversational Common Ground and Memory Processes in Language Production

William S. Horton and Richard J. Gerrig
State University of New York at Stony Brook

THE DIRECTOR TASK

Keysar, Barr, and Horton (1998): "The Egocentric Basis of Language Use: Insights From a Processing Approach,"



Director's instructions to Matcher:
"Put **the bottom block** below the apple."

If the Matcher moves the block marked ⊏, then they have reasoned "egocentrically"—i.e., failed to account for the Director's perspective.

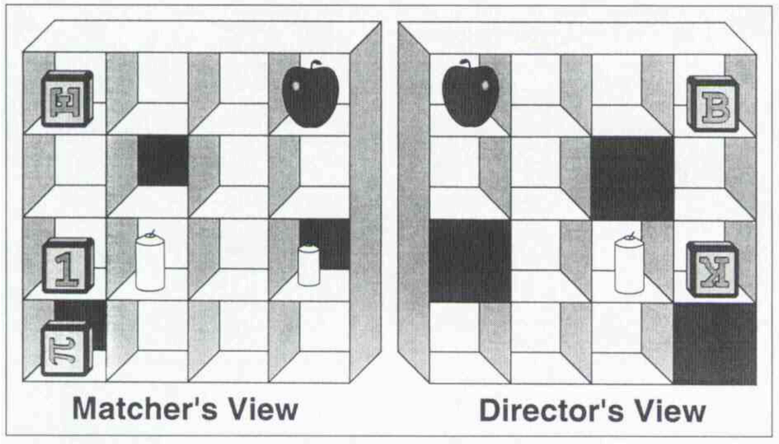
PATTERNS OF BREAKDOWN

We usually perform in ways that are sensitive to others' perspectives.

But we predictably get worse in some situations:

- cognitive load → more egocentric (Keysar 2008)
- Verbal-working-memory deficit → more egocentric (Lin et al 2010)
- Time constraints → more egocentric (Horton and Keysar 1996)
- Younger children → more egocentric (Keysar 2008)
- Repeated conversations with egocentric interlocutor → less egocentric (Hawkins et al 2008)

DIRECTOR TASK



Keysar et al's Interpretation:

- We are egocentric by default.
- Computing CG is an extra, slow, costly step that we do only when we have the resources.

PHILOSOPHICAL PERSPECTIVES

Philosophical Perspectives, 32, Philosophy of Language, 2018
doi: 10.1111/phpe.12114

PROVINCIALISM IN PRAGMATICS

Josh Armstrong
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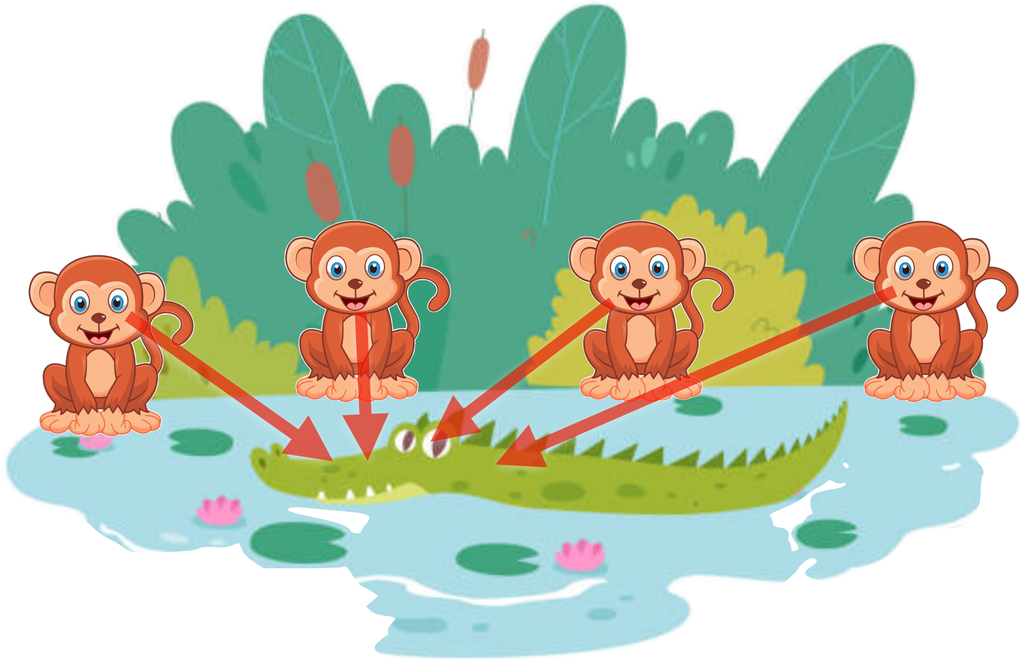

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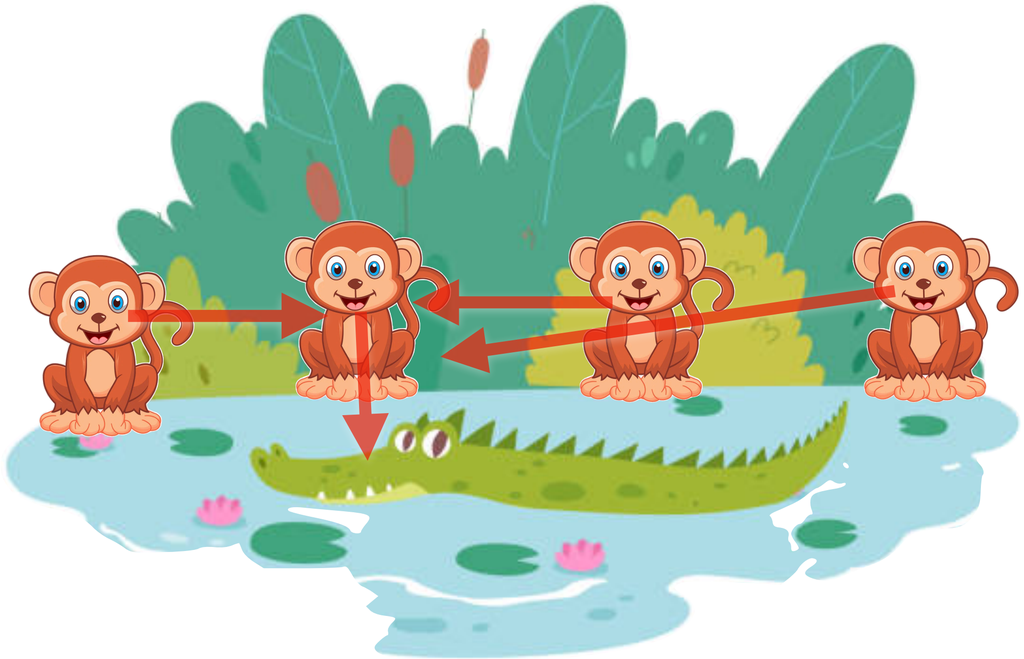

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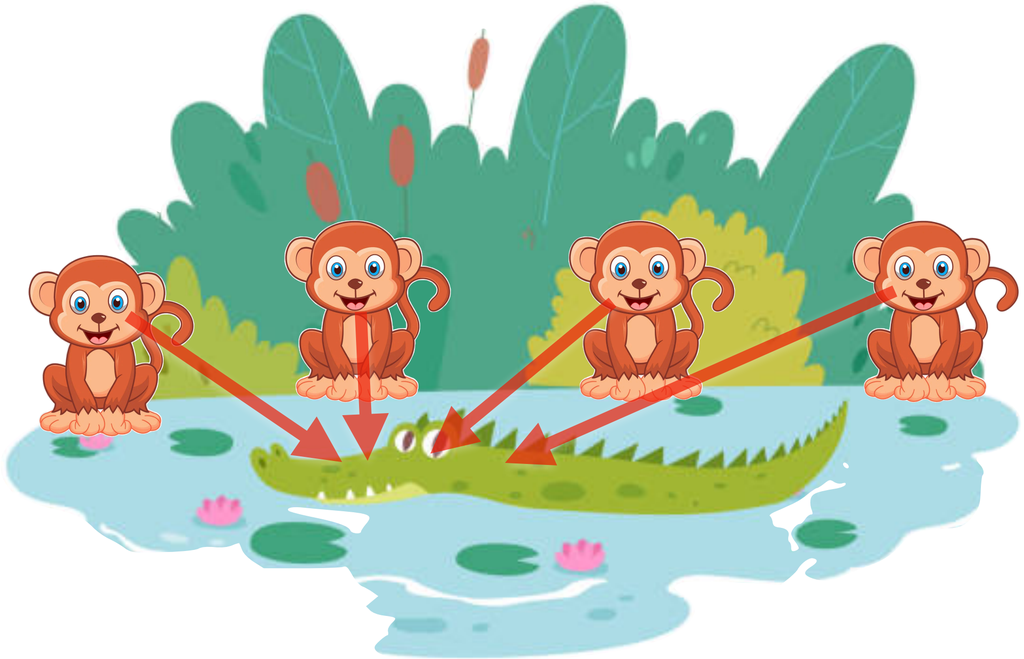


THE QUARTERLY JOURNAL OF EXPERIMENTAL PSYCHOLOGY, 2013
Vol. 66, No. 5, 1026–1034, http://dx.doi.org/10.1080/17470218.2012.725058

Routledge
Taylor & Francis Group

Your words are my words: Effects of acting together on encoding

Terry Eskenazi[1], Adam Doerrfeld[2], Gordon D. Logan[3], Guenther Knoblich[1,4], and Natalie Sebanz[1,4]

[1]Donders Institute for Brain, Cognition, & Behaviour, Radboud University Nijmegen, The Netherlands
[2]Department of Psychology, Rutgers University, Newark, NJ, USA
[3]Department of Psychology, Vanderbilt University, Nashville, TN, USA
[4]Department of Cognitive Science, Central European University, Budapest, Hungary

FLOWERS

Carnation
Rose
Tulip
Water lilly

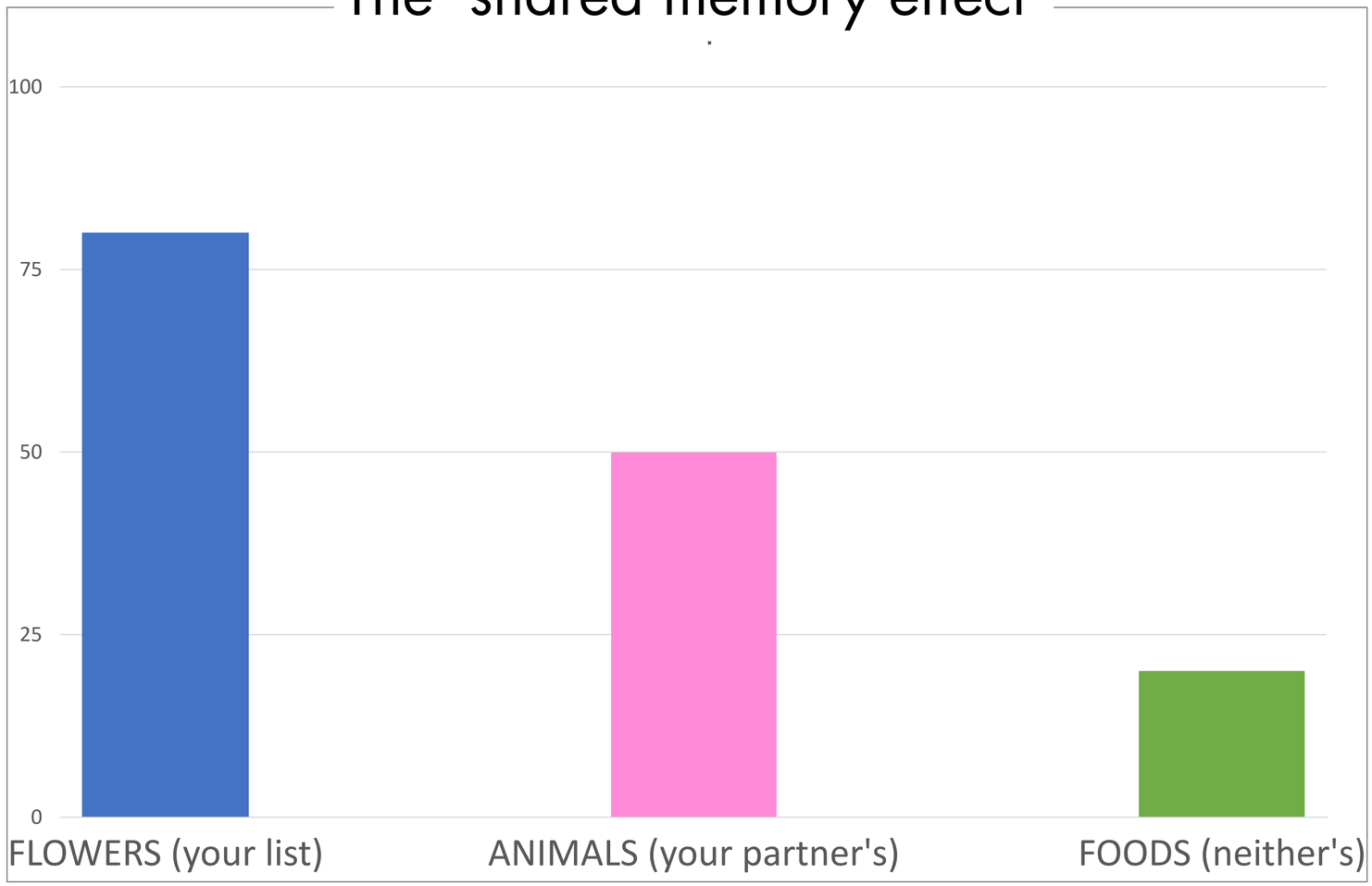
ANIMALS

Dog
Cat
Lion
Whale

FOODS

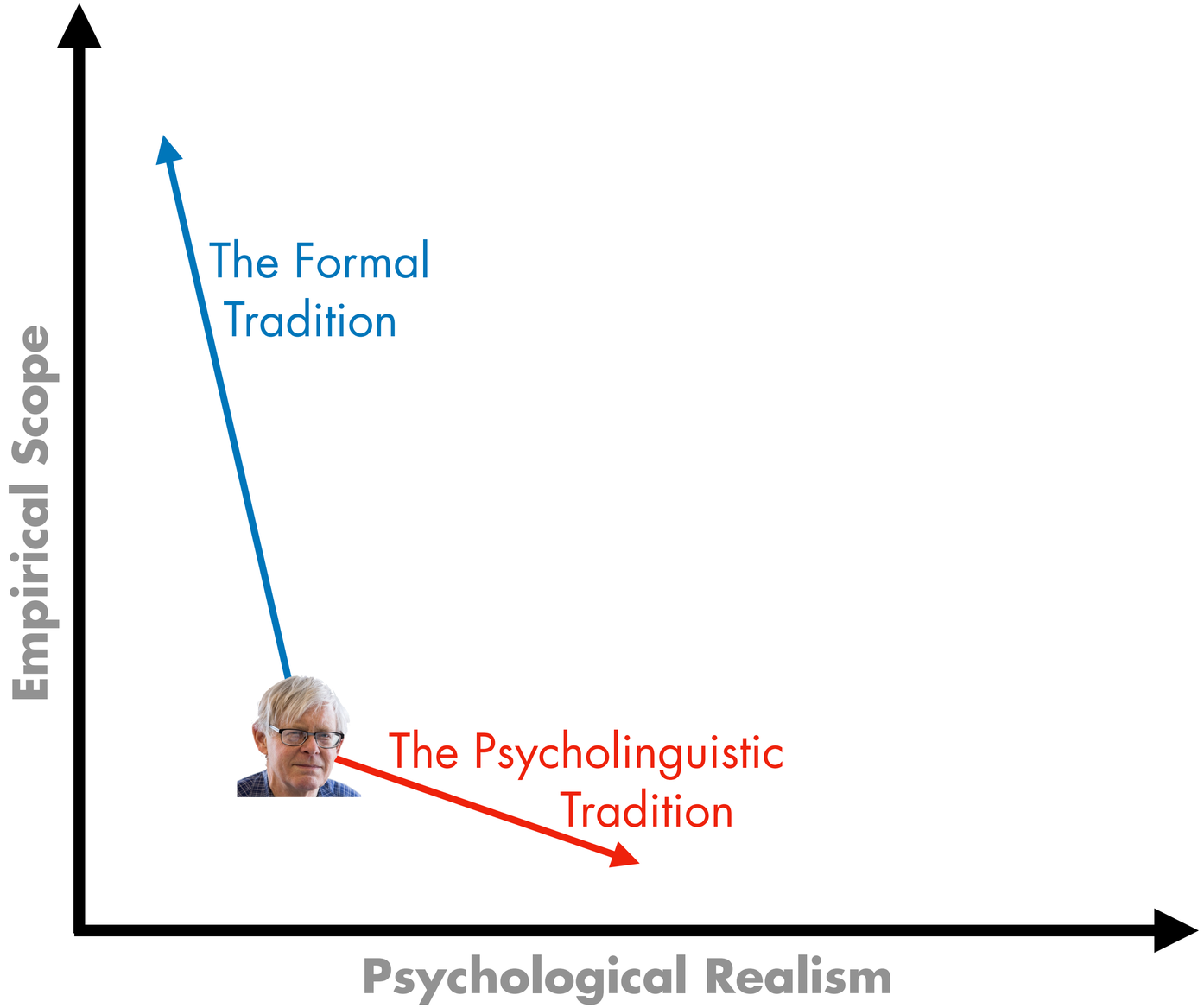
Pasta
Soup
Cake
Broccoli

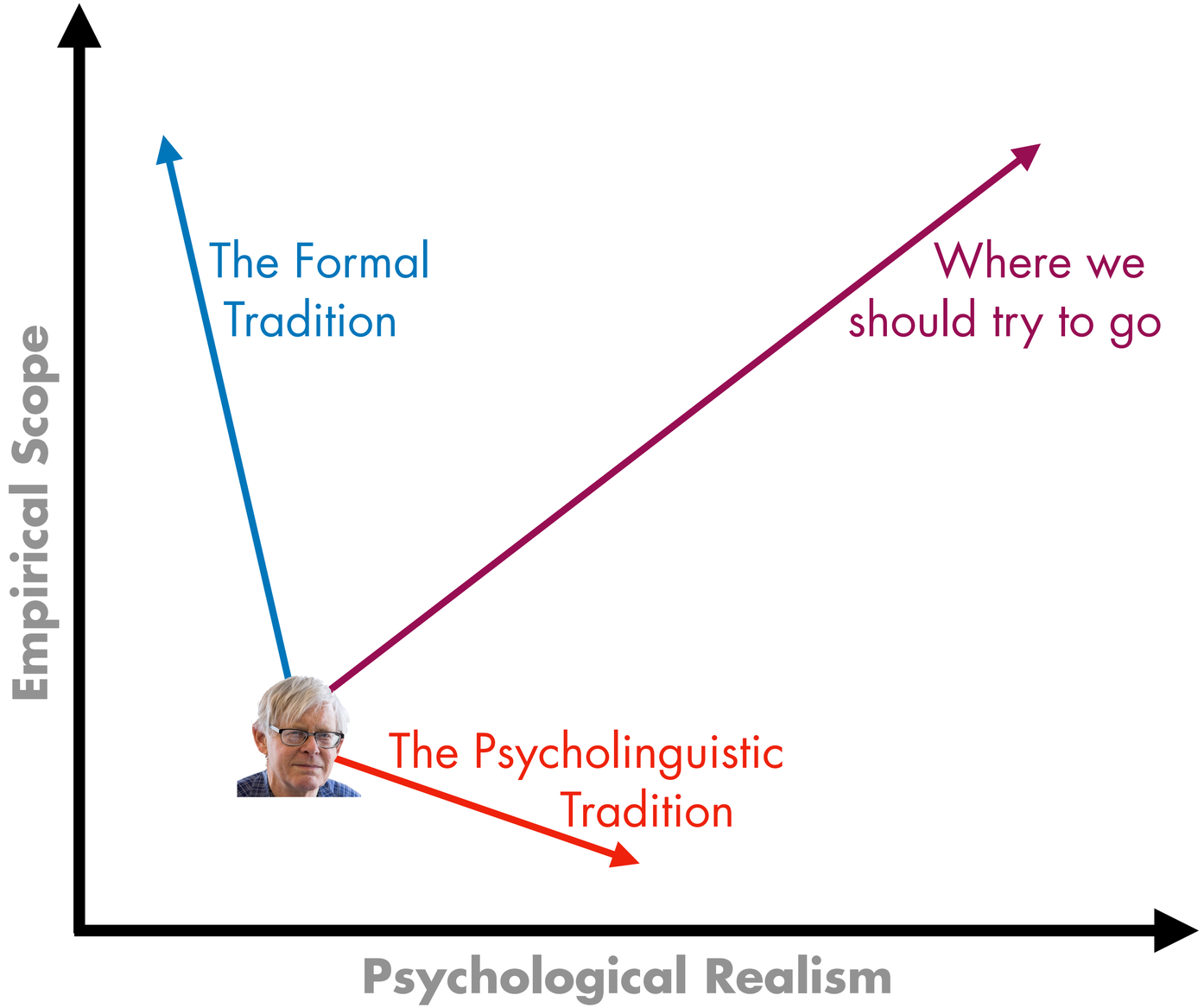
The 'shared memory effect'



(Eskenazi et al., 2013; Elekes et al., 2016; Elekes & Sebanz, 2020; Elekes & Király, 2021)

COMBINING THE TRADITIONS


Empirical Scope
The Formal Tradition
The Psycholinguistic Tradition
Psychological Realism


Empirical Scope
Psychological Realism
The Formal Tradition
Where we should try to go
The Psycholinguistic Tradition

PSYCHOLOGICAL REALISM

A psychologically realistic model makes predictions not just about truth/felicity judgments, but also about:

- cognitive architecture
- representational format
- cognitive resources

ITERATED ATTITUDES

Common Knowledge (Iterated)

A and B commonly know that p if and only if:

1a. A knows that p;

1b. B knows that p;

2a. A knows that B knows that p;

2b. B knows that A knows that p;

3a. A knows that B knows that A knows that p;

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⋮

THE PARADOX OF MUTUAL KNOWLEDGE

(Clark and Marshall 1981)

1. According to iterated theories, treating p as CG requires forming an infinite number of propositional attitudes.
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THEORIES OF BELIEF
(& OTHER PROPOSITIONAL ATTITUDES)

What is it to believe *p*?

1. **Dispositionalism:** To be disposed to judge *p*, to infer consequences of *p*, to pursue one's desires as if p is true…
2. **Functionalism:** To possess an inner state that plays belief-that-*p* roles in perception, inference, and action.
3. **Interpretationism:** To be predictable and explainable using a theory that attributes the belief.
4. **Representationalism:** To possess a mental representation (e.g. a sentence in LoT) whose content is *p*.

According to these views, there is nothing unexpected about acquiring infinite beliefs in finite time.

You could do so by having access to Clark's heuristics, or other mechanisms posited by psycholinguists.

Notably, Stalnaker and some other formalists explicitly endorse theories like these.

But: they are abstract, or maybe superficial: they tell us almost nothing about psychological mechanisms.

1. **Dispositionalism:** To be
   of *p*, to pursue one's des
2. **Functionalism:** To posse
   roles in perception, infer
3. **Interpretationism:** To b
   that attributes the belief
4. **Representationalism:** T
   sentence in LoT) whose

Clark and Marshall's paradox of mutual knowledge assumes representationalism about belief (& knowledge, etc.)

But their opponents mostly reject representationalism.

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WHY NOT (ALWAYS) ITERATED ATTITUDES?

Philos Stud (2020) 177:2713–2733
https://doi.org/10.1007/s11098-019-01335-8

We talk to people, not contexts

Daniel W. Harris[1]

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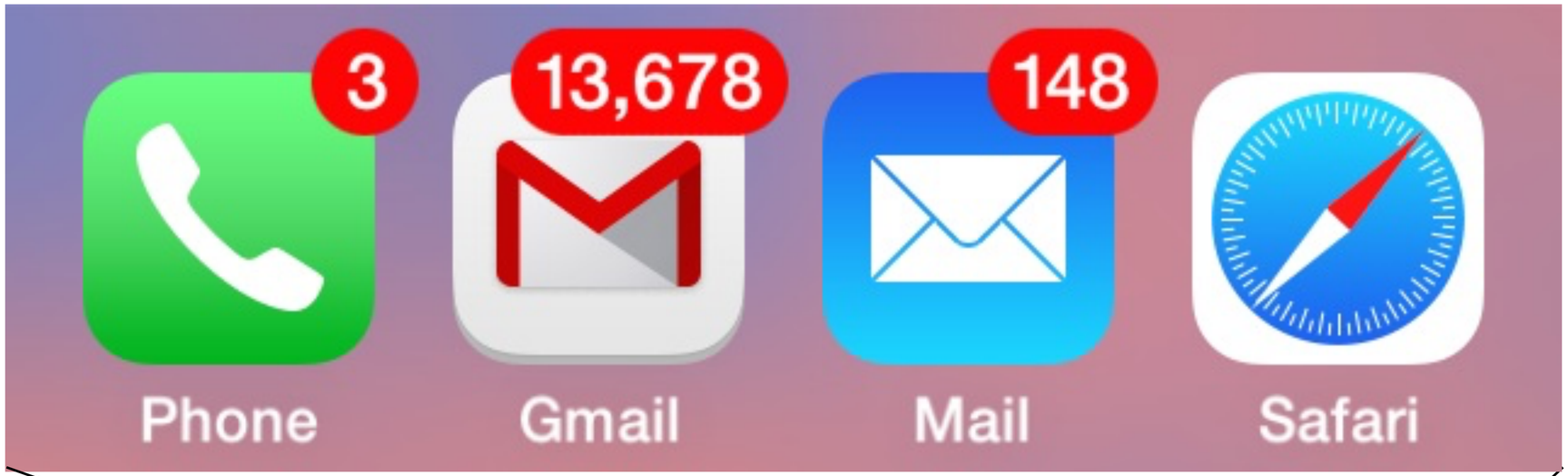
Abstract According to a popular family of theories, assertions and other communicative acts should be understood as attempts to change the context of a conversation. Contexts, on this view, are publicly shared bodies of information that evolve over the course of a conversation and that play a range of semantic and pragmatic



(Rubenstein 1989; Binmore 1998)

Last Will

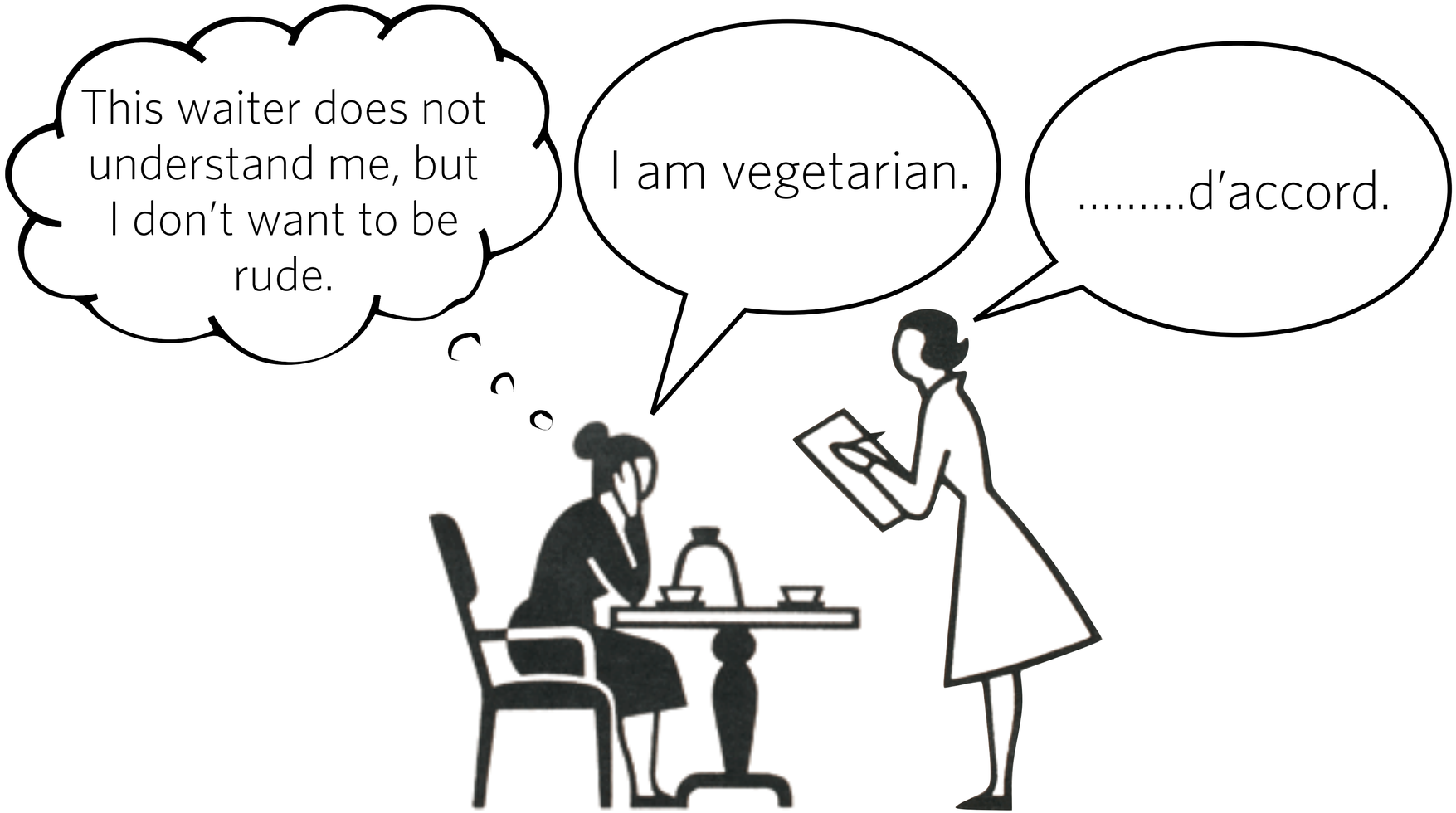
— and —

Testament

The guy in the back has no idea what I'm saying.

⟦most⟧ = λX.λY. X∩Y > X−Y

Generalized quantifiers again? Yawn!


This waiter does not understand me, but I don't want to be rude.
I am vegetarian.
.....d'accord.

Cancel

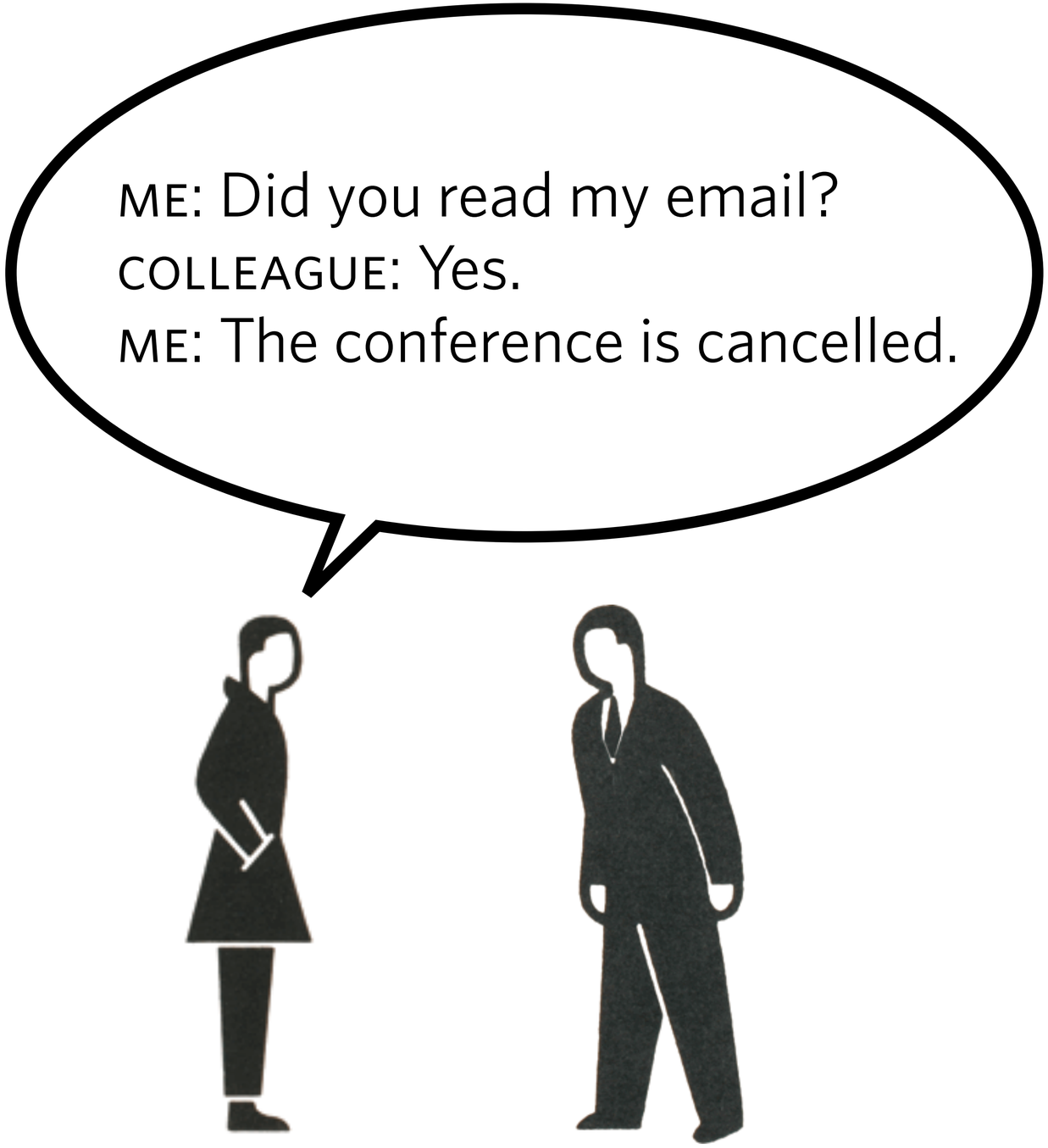
Heads up

To: colleague@CUNY.edu

Cc/Bcc, From: danielwharris@gmail.com

Subject: Heads up

Just wanted to let you know that I will have to leave your seminar early today, to attend a conference.



HARRIS (2020) CONCLUDED:

Successful communication doesn't require updating common ground, or even intending to do so.

Anaphoric links can completely bypass common ground.

Common ground only really exists in idealized models.

HARRIS (2025) MODIFICATION:

Successful communication doesn't require updating ~~common ground~~ **iterated attitudes**, or even intending to do so.

Anaphoric links can completely bypass ~~common ground~~ **iterated attitudes**.

~~Common ground only really exists in idealized models.~~

HARRIS (2025) MODIFICATION:

Even in iteration-averse situations, we still try to distinguish between information that we can safely treat as background information from information that we can't.

We just must not be using iterated attitudes to do that.

Definite Noun Phrases

A speaker should use a definite noun phrase to refer only if it is common ground that the referent satisfies the noun phrase's presuppositions.

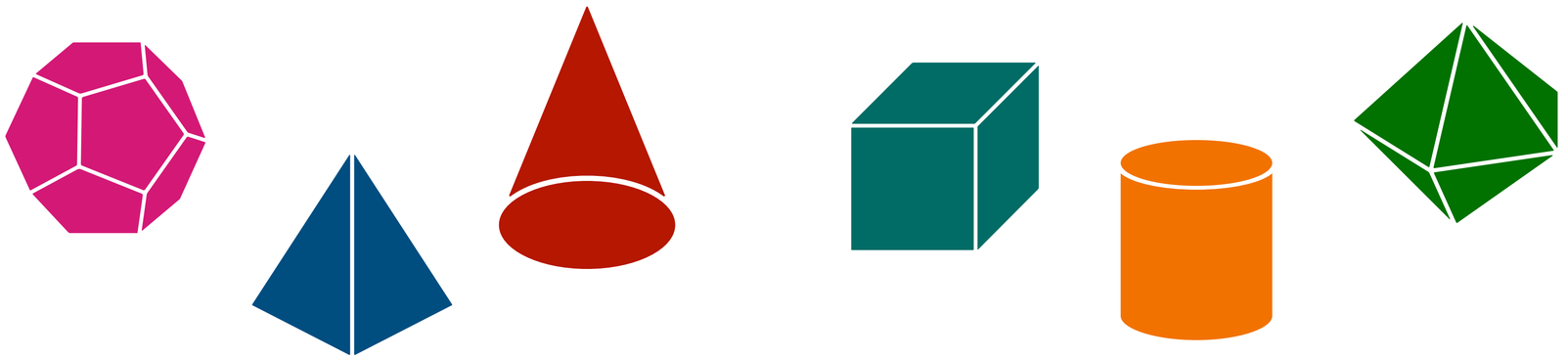
He looks pumped.

???

He looks pumped.

✔

COGNITIVE PLURALISM

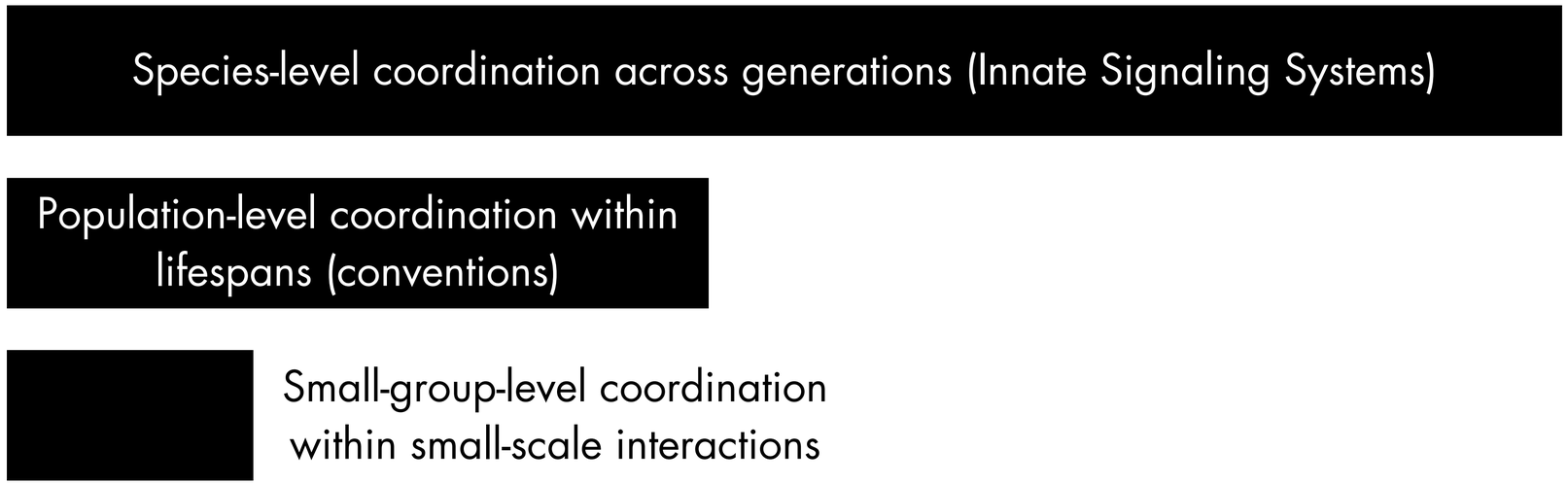


WHAT IS THE PROBLEM SOLVED BY COMMON GROUND?

Short-term cognitive coordination problems.

Coordination at Three Timescales

- Common ground is always a solution to a coordination problem.
- But we solve coordination problems at different time-scales:



- Common ground is a solution of the third, short-term kind.

COGNITIVE PLURALISM ABOUT COMMON GROUND

We use a plurality of (mixtures of) cognitive strategies for choosing which information to treat as background.

COGNITIVE PLURALISM (IN GENERAL)

Our minds typically have many different ways to solve their most important problems, each solution having its own costs and benefits that make it useful in different scenarios.

REASON FOR PLURALISM 1: COST-BENEFIT TRADEOFFS

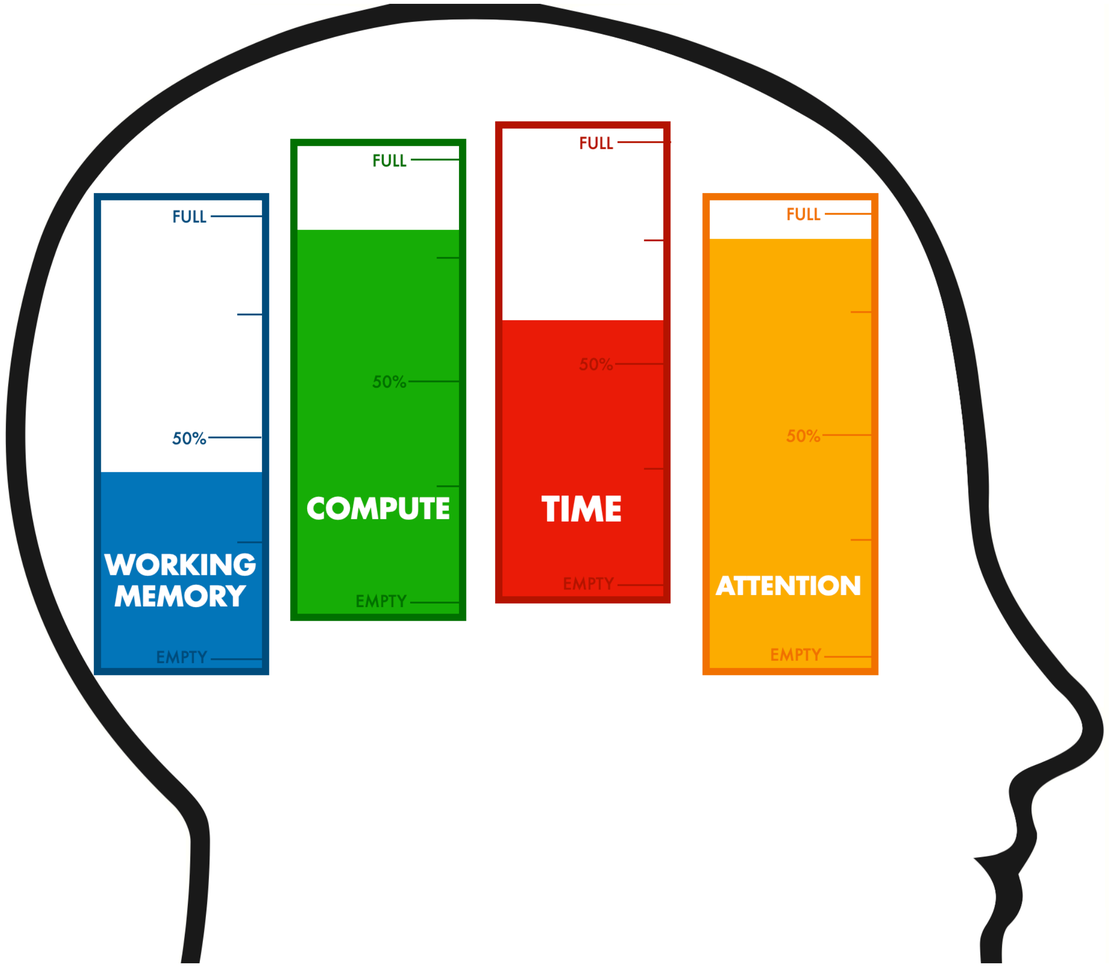
What makes a cognitive strategy good?

Coordination

You are more likely to treat P as background when your interlocutors will too, and less likely when they won't.

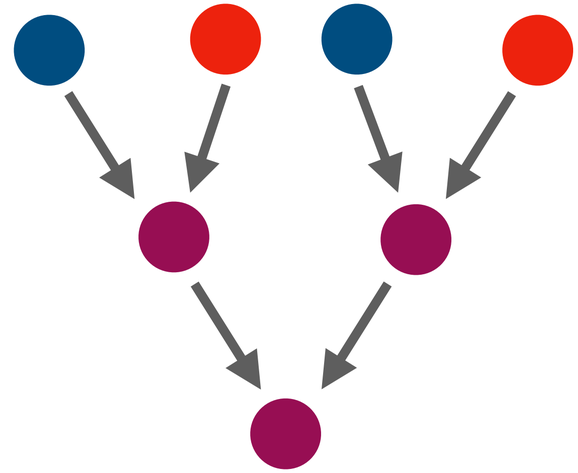
What makes a cognitive strategy good?

Ease
The strategy won't overtax your cognitive resources.



What makes a cognitive strategy good?

(Instrumental) Rationality
You are more likely to treat information as background if this will further your goals, less likely if not.



WHY ACCEPTANCE AND NOT BELIEF/KNOWLEDGE?


I heard you had some trouble. ... Stupid, people behaving like that with guns. The important thing is you're all right.

What makes a cognitive strategy good?

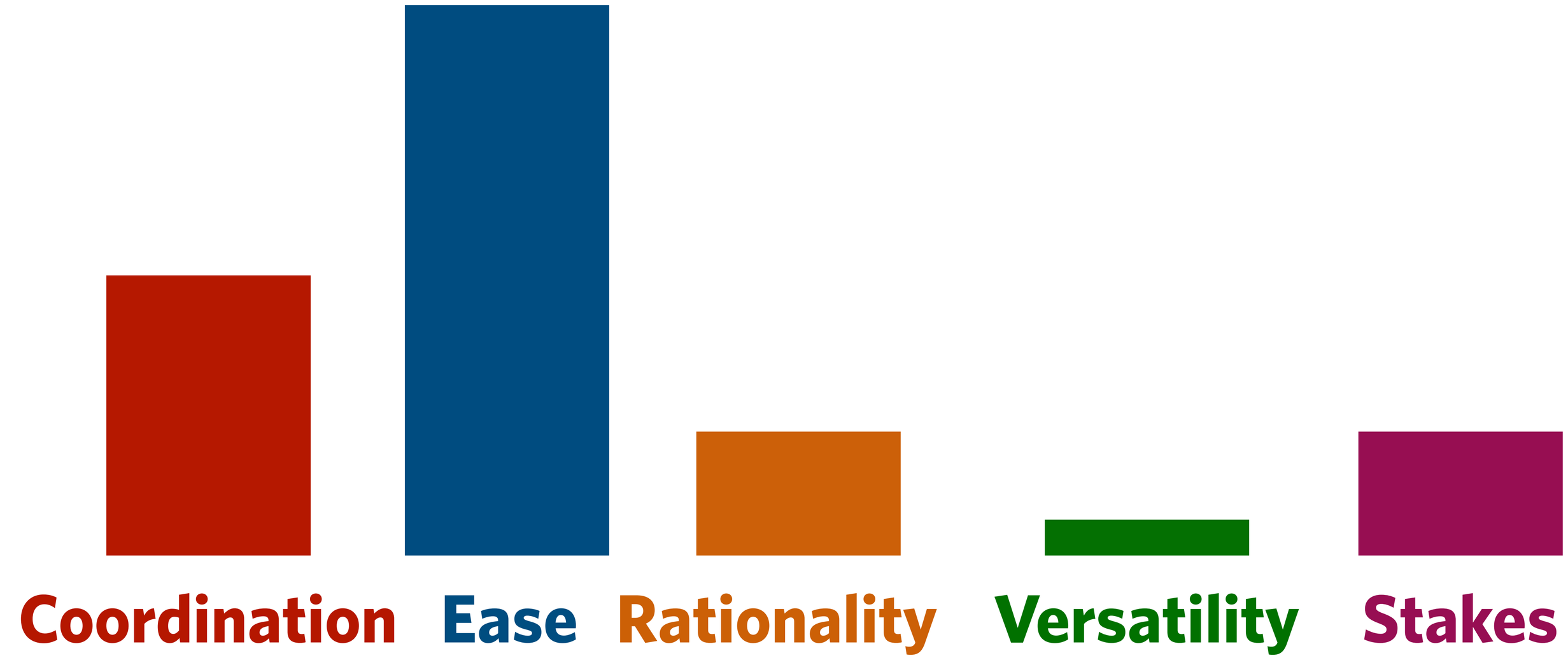
Versatility
This strategy will work across a range of contextual and cognitive environments.

What makes a cognitive strategy good?

Stakes(-Sensitivity)
You will be less likely to treat P as background information if the consequences of doing so could be very bad.

We have different strategies that optimize for these features in different ways.

Some strategies prioritize minimizing cost



PHILOSOPHICAL PERSPECTIVES

Philosophical Perspectives, 32, Philosophy of Language, 2018
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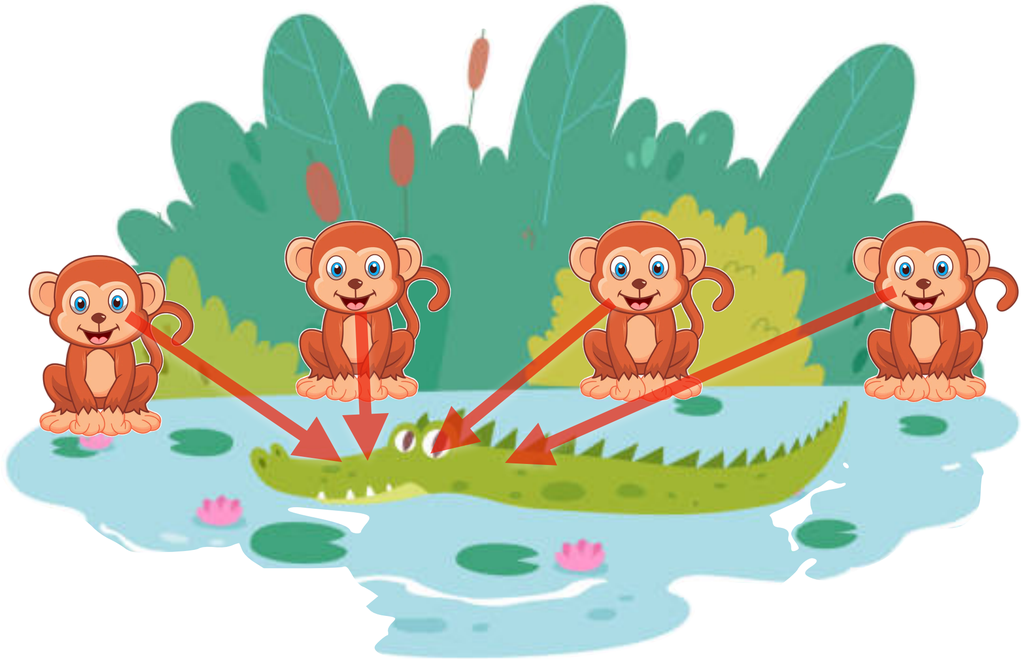
PROVINCIALISM IN PRAGMATICS

Josh Armstrong
UCLA



Some strategies optimize for coordination, rationality, and versatility at any cost

Coordination Ease Rationality Versatility Stakes

Sometimes, we combine strategies

Doug is Canadian

Presuppose hockey facts.

Doug is Canadian

Presuppose hockey facts.

Does Doug know that I am Canadian?

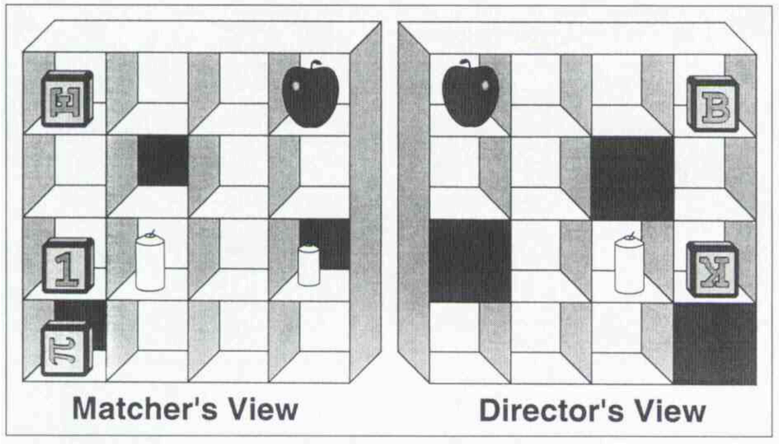
Would he remember who Bobby Orr is?

...

Group membership heuristic

Group membership heuristic
+
Metarepresentation

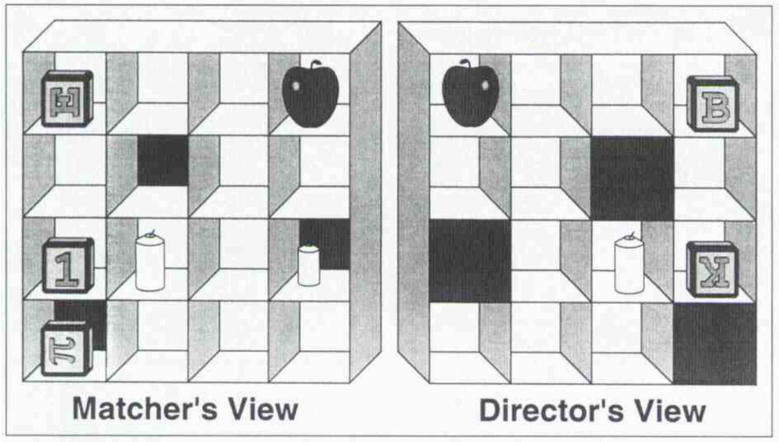
DIRECTOR TASK



Keysar et al's Interpretation:

- We are egocentric by default.
- Computing CG is an extra, slow, costly step that we do only when we have the resources.

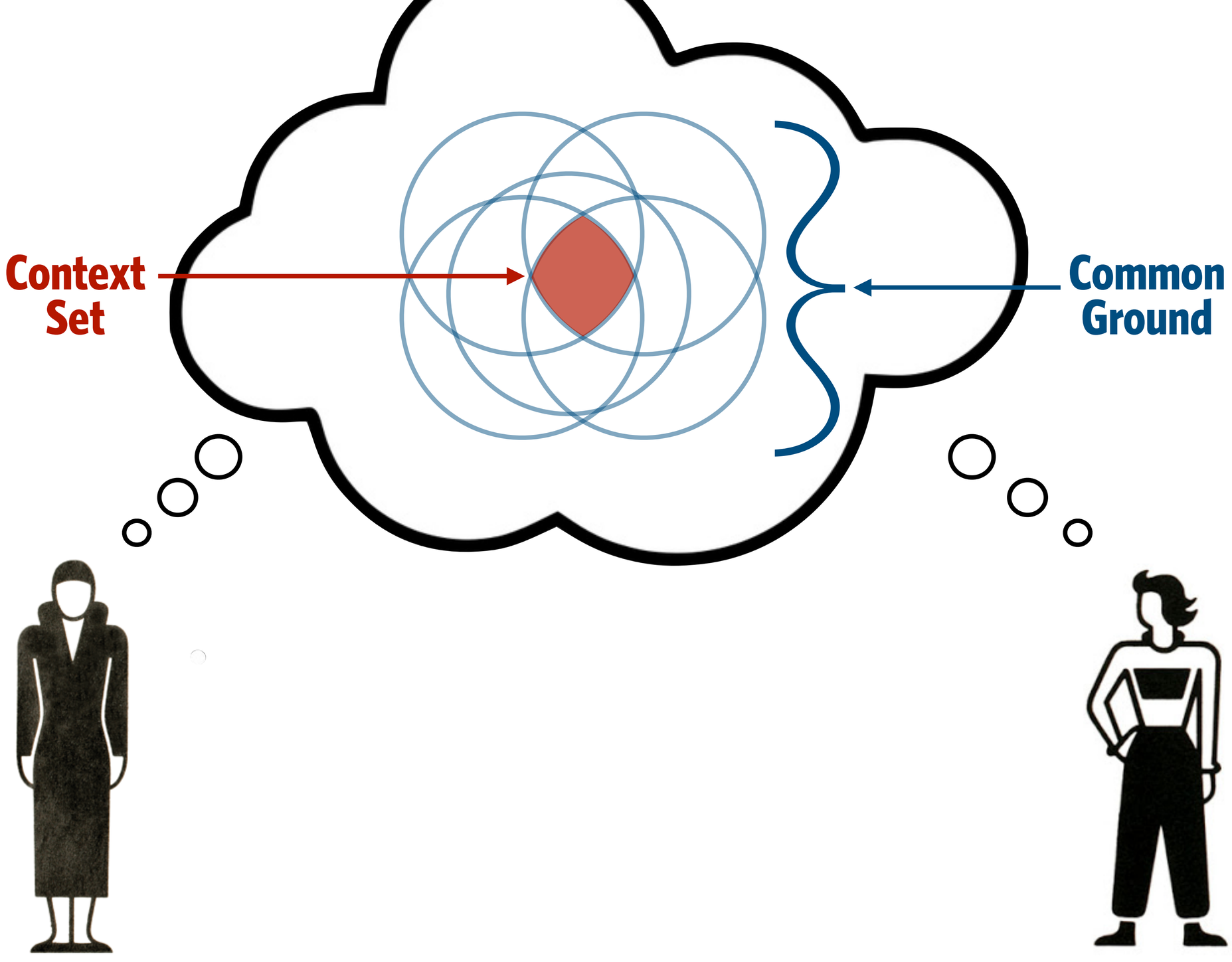
DIRECTOR TASK

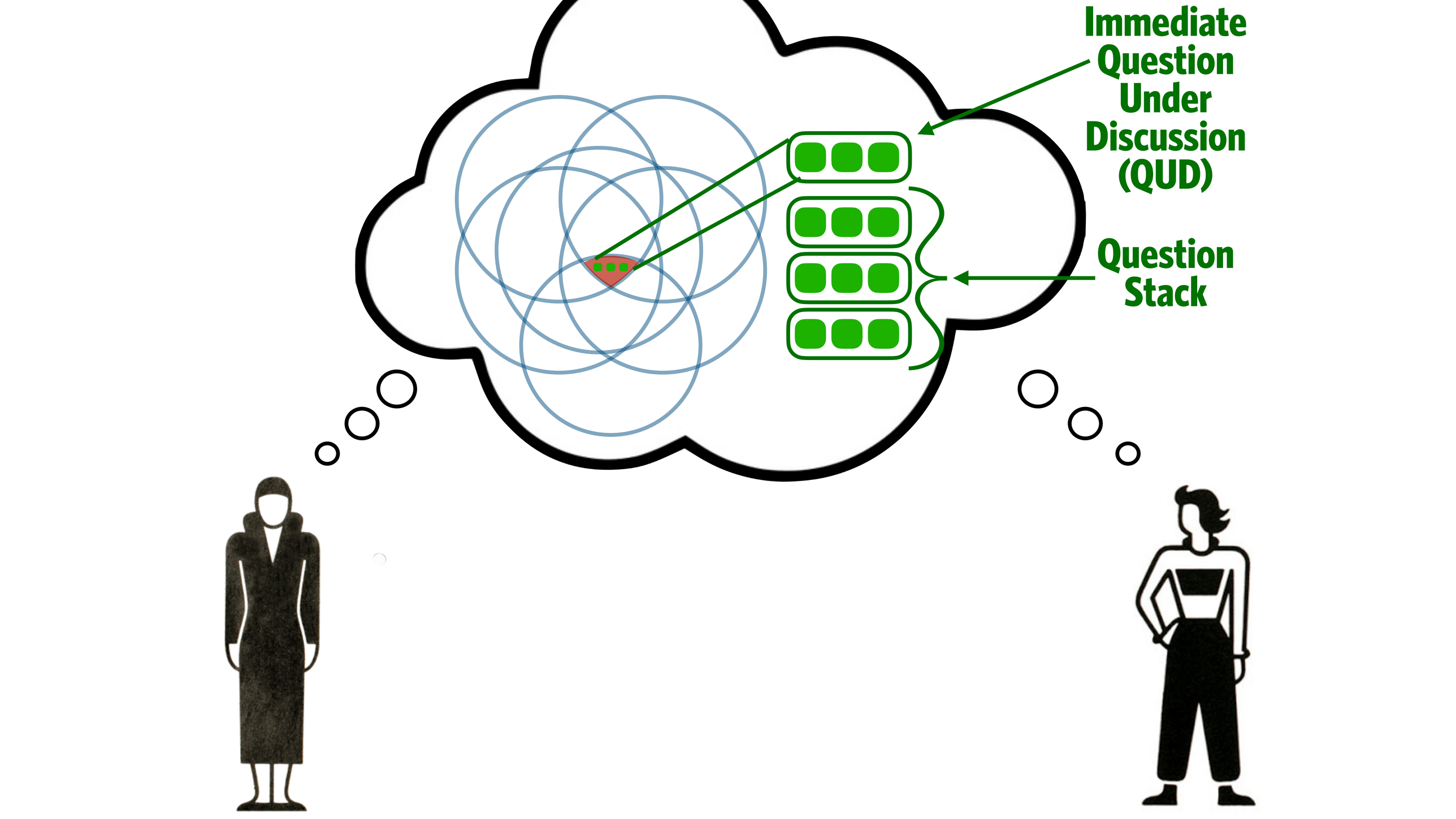


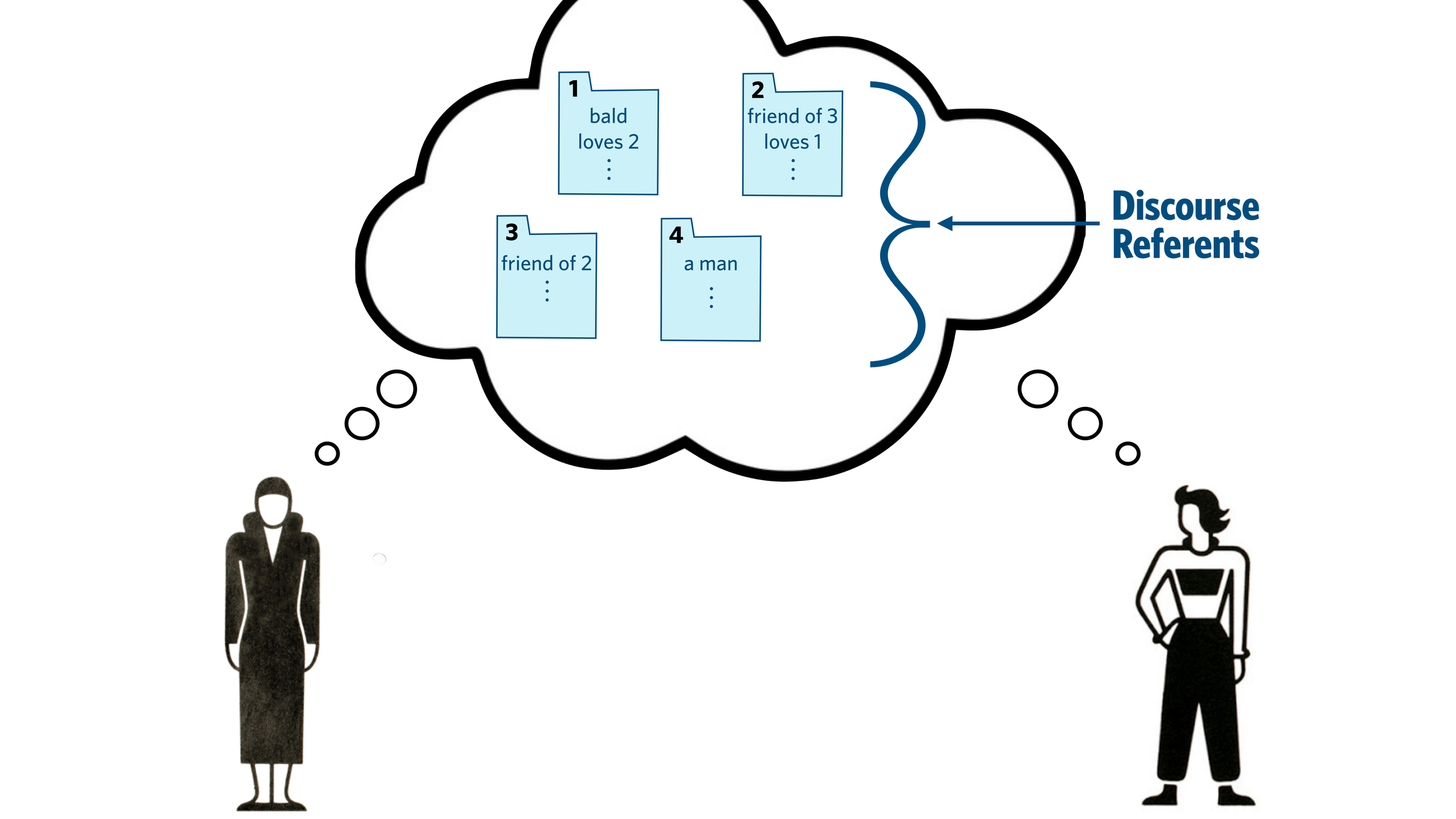
A Pluralist Interpretation

- A very simple and easy, and usually pretty reliable cognitive strategy: treat any information that's visually available to you as CG.
- In the director task, we see this strategy mixing with other, slower and costlier strategies, which win out when the resources are available.

REASON FOR PLURALISM 2: REPRESENTATIONAL FORMAT


Context
Set
Common
Ground


Immediate Question Under Discussion (QUD)
Question Stack


1
bald
loves 2
2
friend of 3
loves 1
3
friend of 2
4
a man
Discourse
Referents

I propose that the common ground of a context be identified with what I have been calling the "file" of that context. As we will see, files cannot be construed as sets of possible worlds, although each file determines such a set.

—Heim (1982)

QUESTION:

How do we build these contexts out of interlocutors' states of mind?

“Object Files” in Vision Science

An object file is generally characterized as a representation that (i) sustains reference to an external object over time, and (ii) stores and updates information concerning the properties of that object.

—E.J. Green and Jake Quilty Dunn (2021):“What is an object file”

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Forthcoming in Oxford Studies in Philosophy of Language, Volume 4. Eds Ernie Lepore and David Sosa

Discourse Referents in a Dynamic Pragmatics

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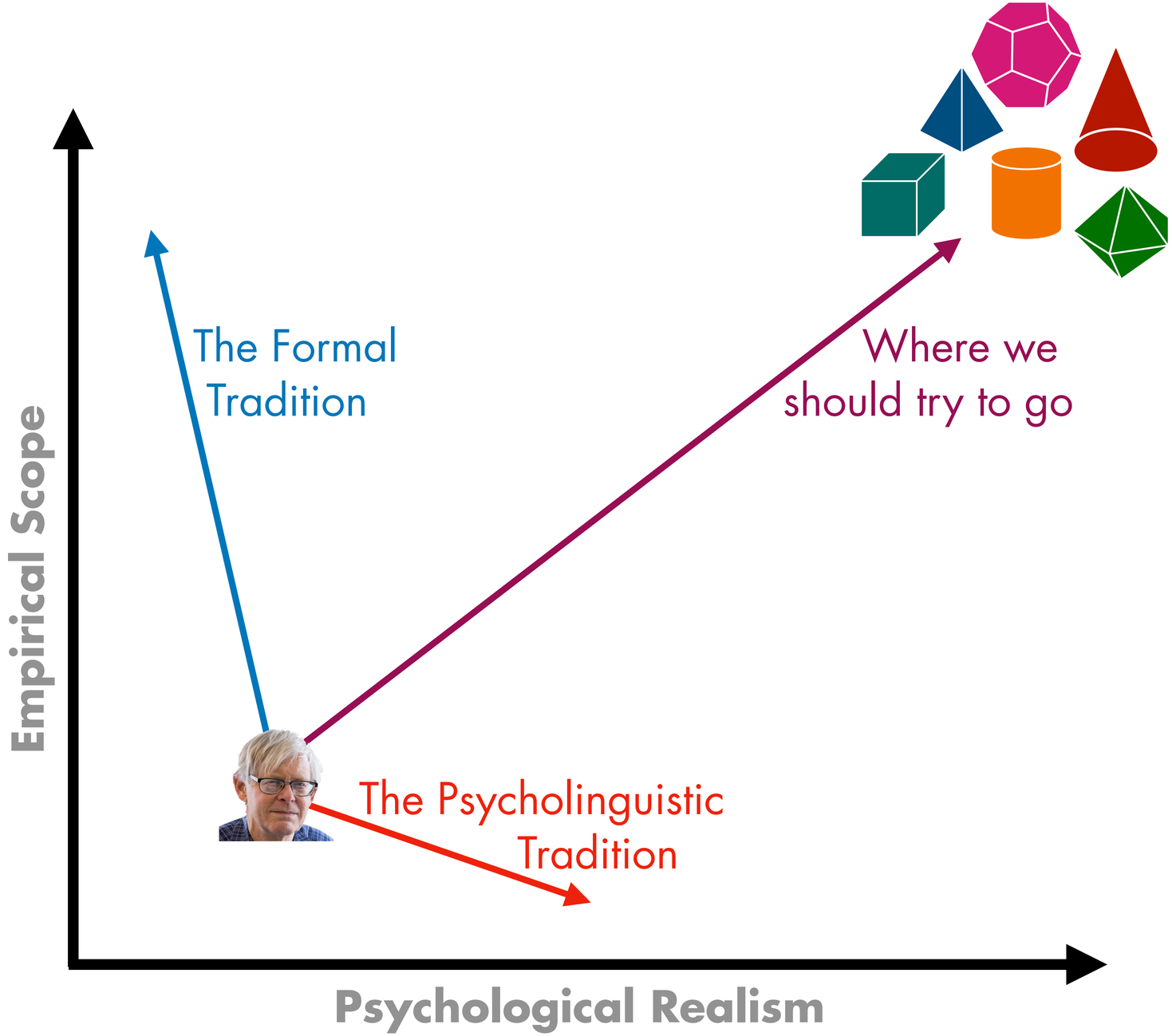
1 Introduction

A formal theory of conversational contexts invariably has to address the question of what elements are represented in a context. Many such theories include *discourse referents* to track anaphoric connections (Kamp (1981), Heim (1982), Kamp & Reyle (1993), Stokhof et al. (1996), Roberts (2003, 2004b), Brasoveanu (2008), a.o.). A discourse referent is like address at which one stores information that hangs together according to the discourse. While discourse referents have been used in accounts of many kinds of anaphora (event, temporal, propositional, etc.), the scope of the present paper is restricted to those that license singular pronominal anaphora or sin-


Empirical Scope
Psychological Realism
The Formal Tradition
Where we should try to go
The Psycholinguistic Tradition

DAY 5:
FACTIVE MINDREADING

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