

# COMMUNICATION & COGNITIVE ARCHITECTURE

## Week 4: Planning Conversations Together

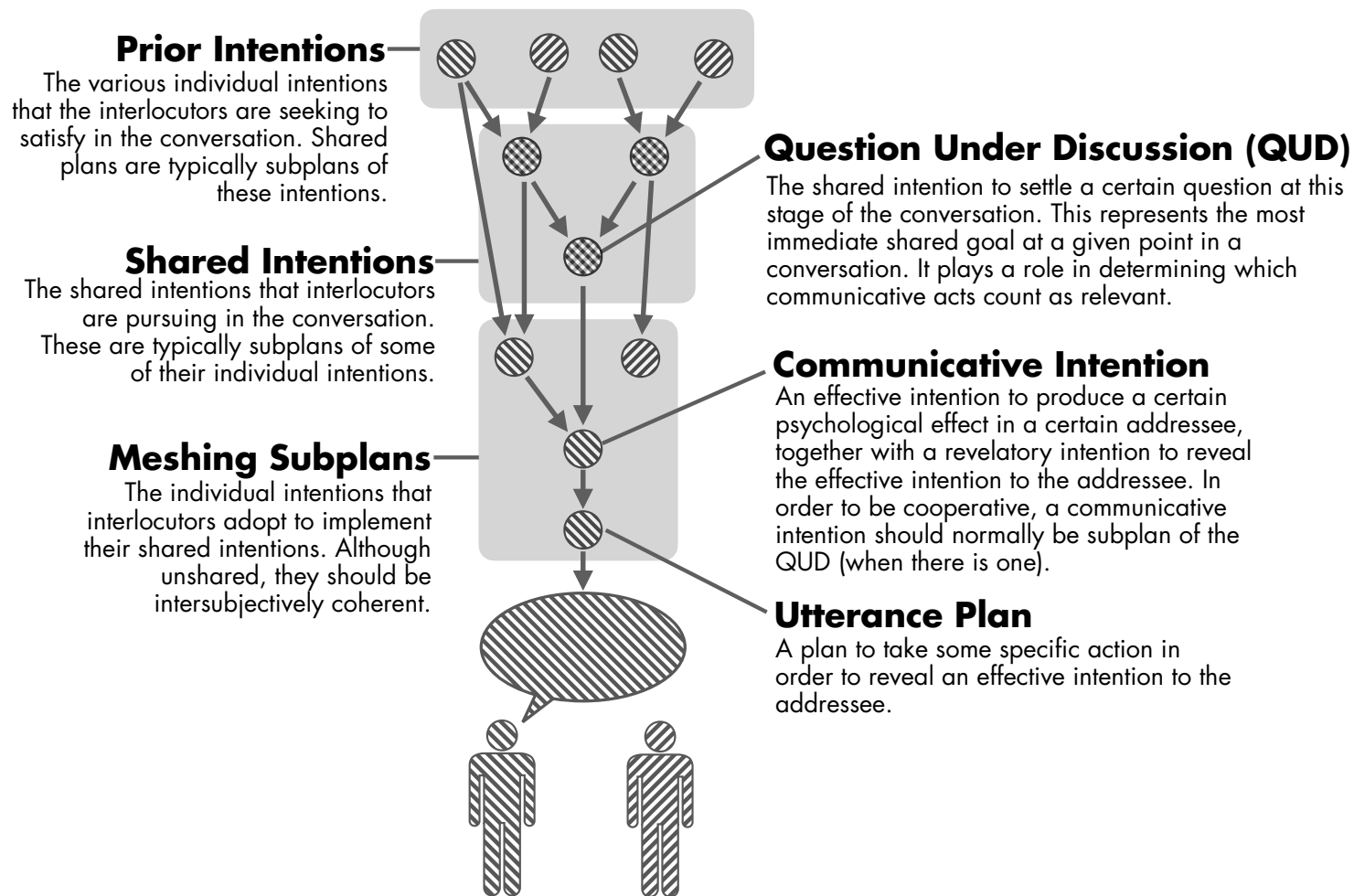
Daniel W. Harris



# 3. Planning Conversations Together

(Sept 28)

## CONVERSATION PLANS



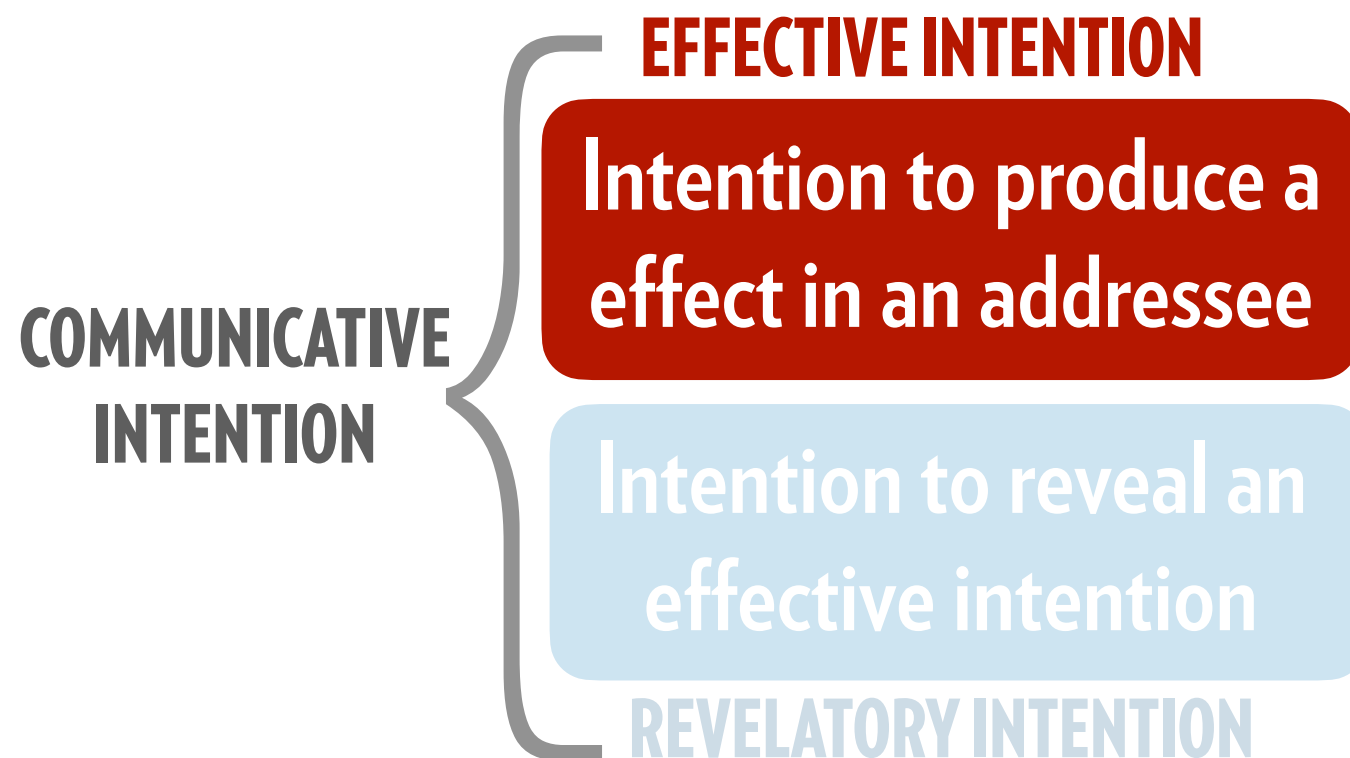
We reveal our intentions to our addressees to allow them to coordinate their communicative efforts with ours.

More generally, we reap many benefits from treating communication as a shared, cooperative activity that is governed by shared plans.

# **Warning:** **Sausage being Made**



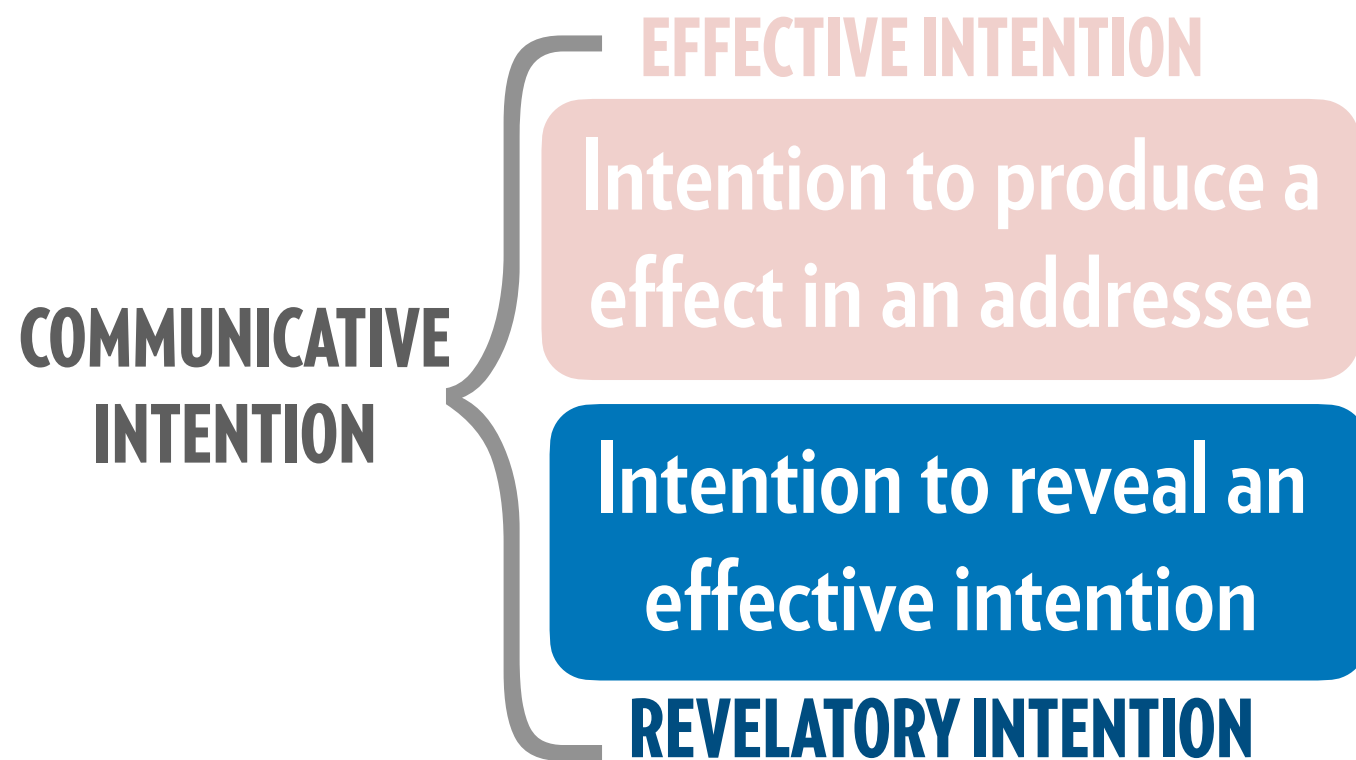
# Why Communicative Intentions?



We form effective intentions as part of the process of designing what we say for our addressees.

As a result of their role in this process, they set the terms of successful communication.

# Why Communicative Intentions?



We form revelatory intentions as part of a highly effective strategy for achieving our effective intentions.

Part of what makes this strategy effective is that it leverages our addressee's trust and cooperativity.

# Why Conversation Plans?

- They allow us to work together to achieve our conversational goals. This makes communication way more efficient. This is why we form revelatory intentions.
- Several of our most successful models in pragmatics are best explained by taking their subject matter to be components of larger conversation plans:
  - Roberts' QUD-based model is a model of our shared plans to resolve and refine questions.
  - MacFarlane's plan-expressivism is a model of our metalinguistic plans about how to use context-sensitive expressions.
  - Grice's theory of conversational implicature is based on some of the principles that drive conversation plans in informative conversations.

# Why Conversation Plans?

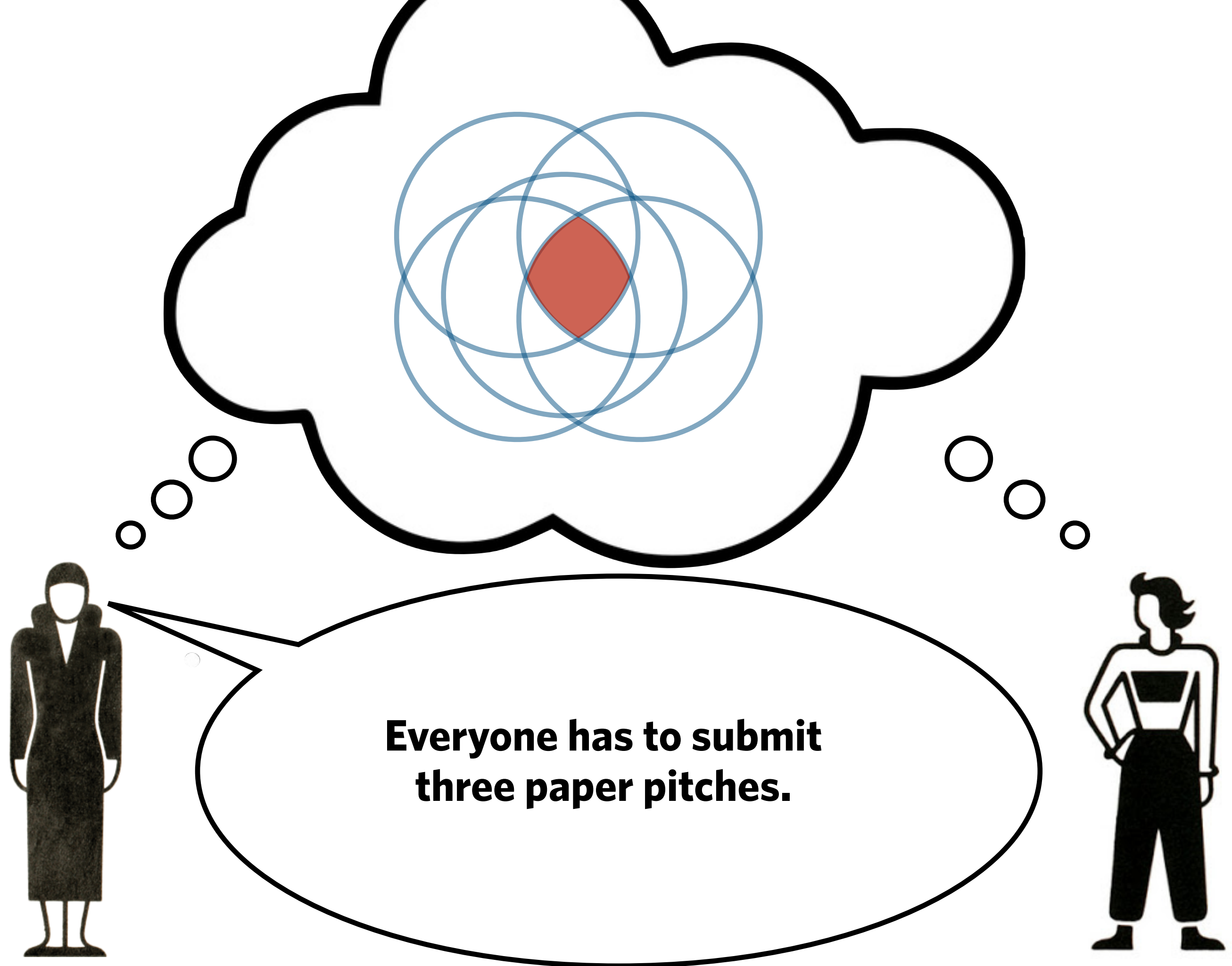
- They allow us to work together to achieve our conversational goals. This makes communication way more efficient. This is why we form revelatory intentions.
- Several of our most successful models in pragmatics are best explained by taking their subject matter to be components of larger conversation plans:
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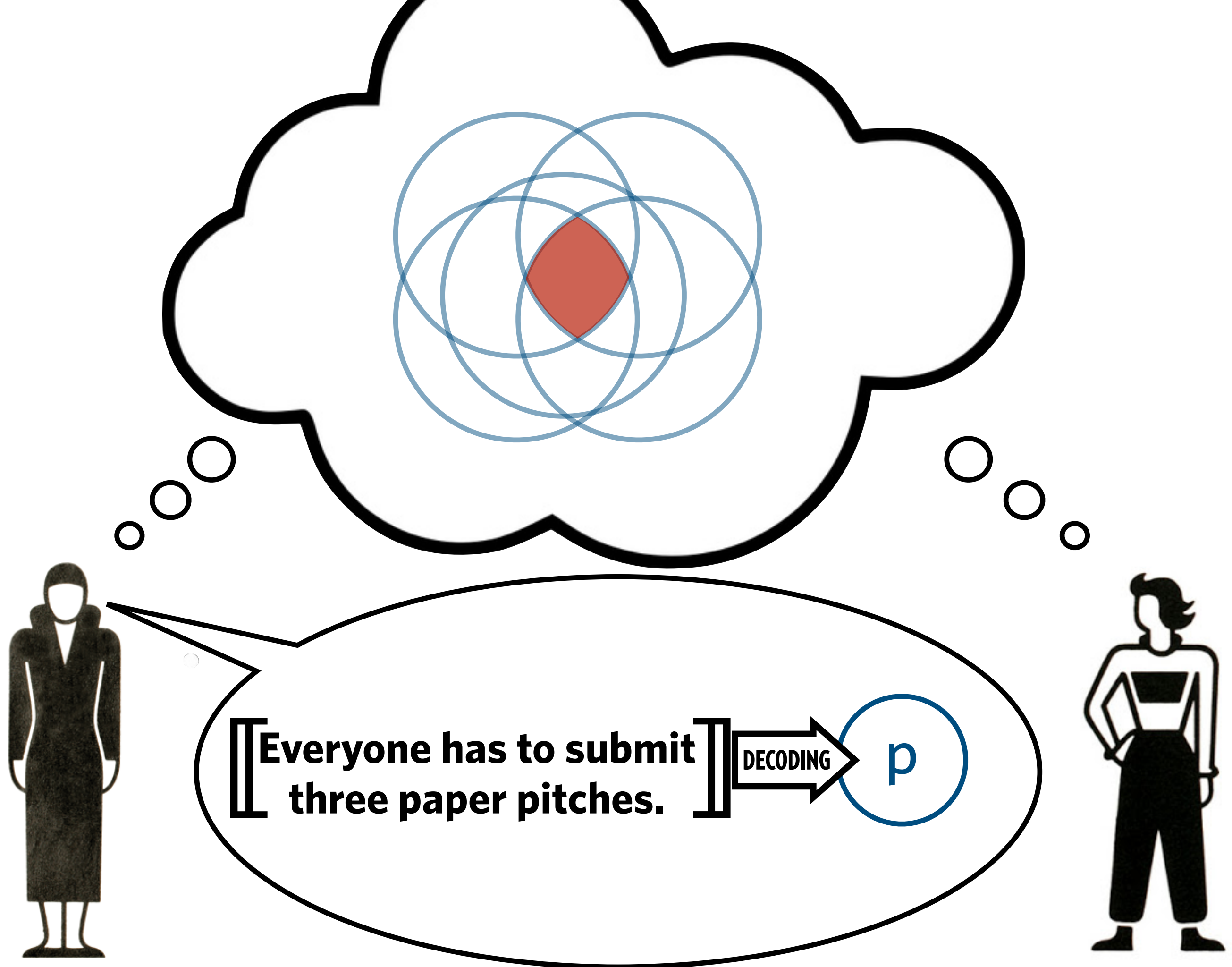


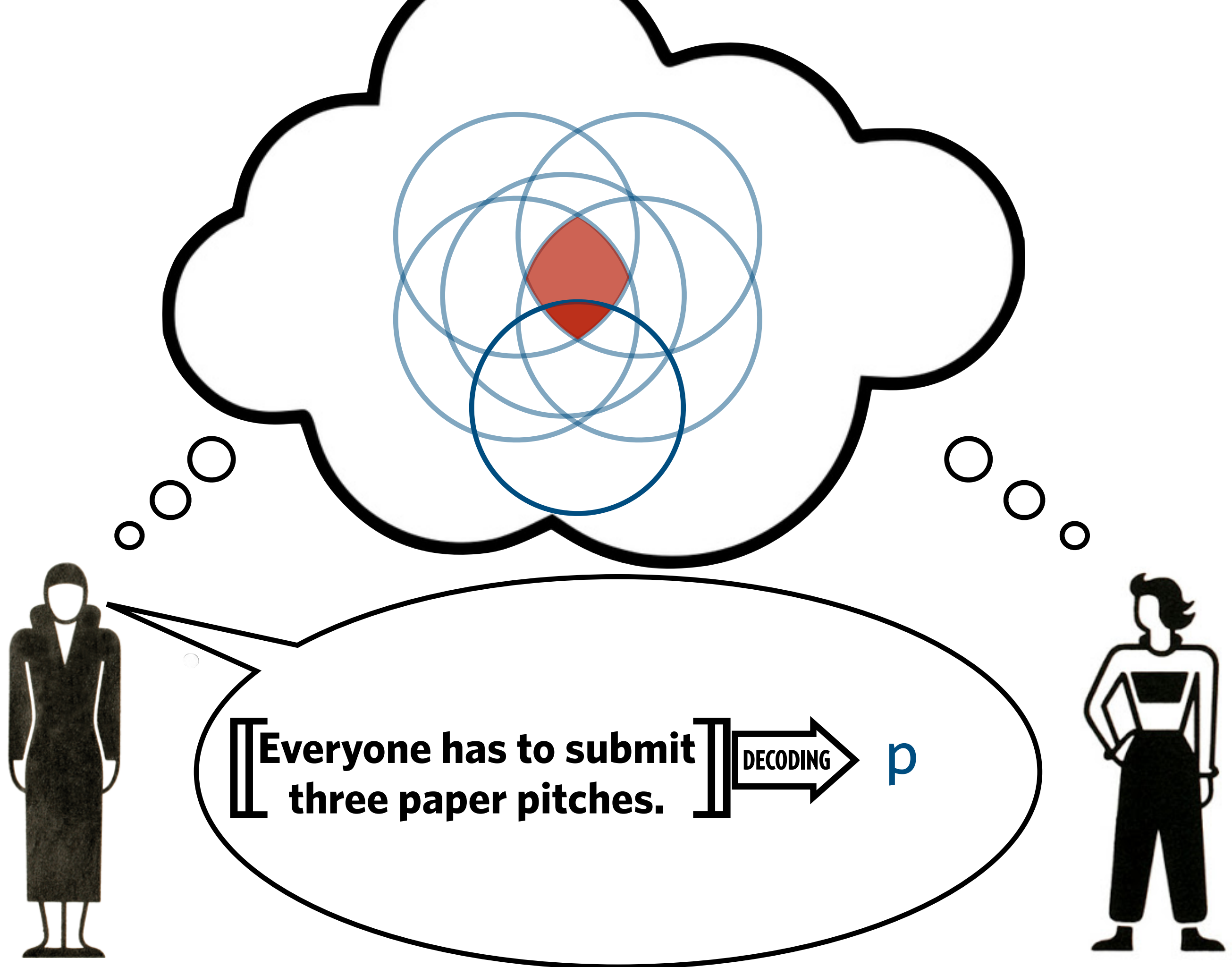
# Pragmatic Competence

- A capacity to intelligently navigate conversation plans is part of what it takes to be a competent communicator, and a competent language user.
- Of course, none of this is necessary for *every* use of language.
- However, our competence with the kinds of plans that these models capture helps to explain our communicative virtuosity.
- This is a different project than the one that Buchanan & Schiller are engaged in, which seems to be to say what is common to all cases of (Gricean?) communication.



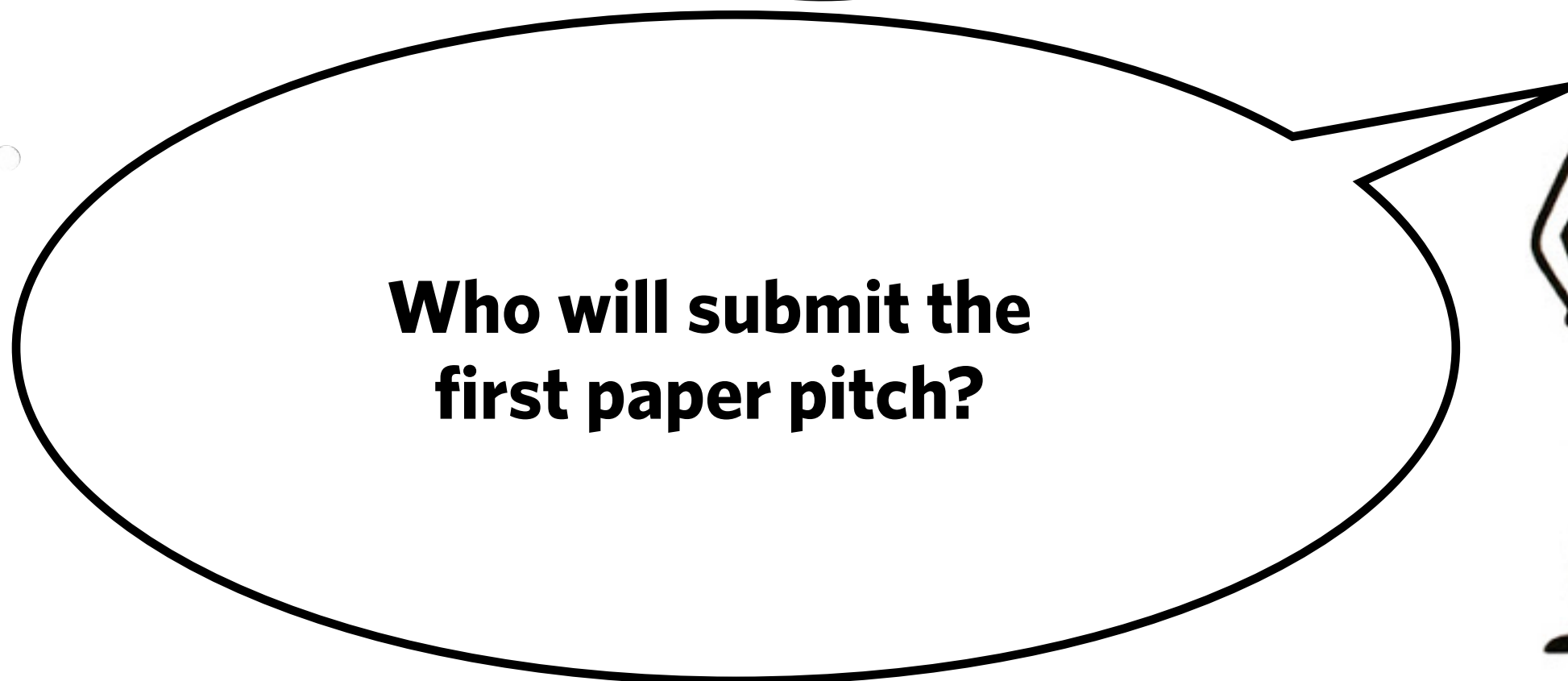
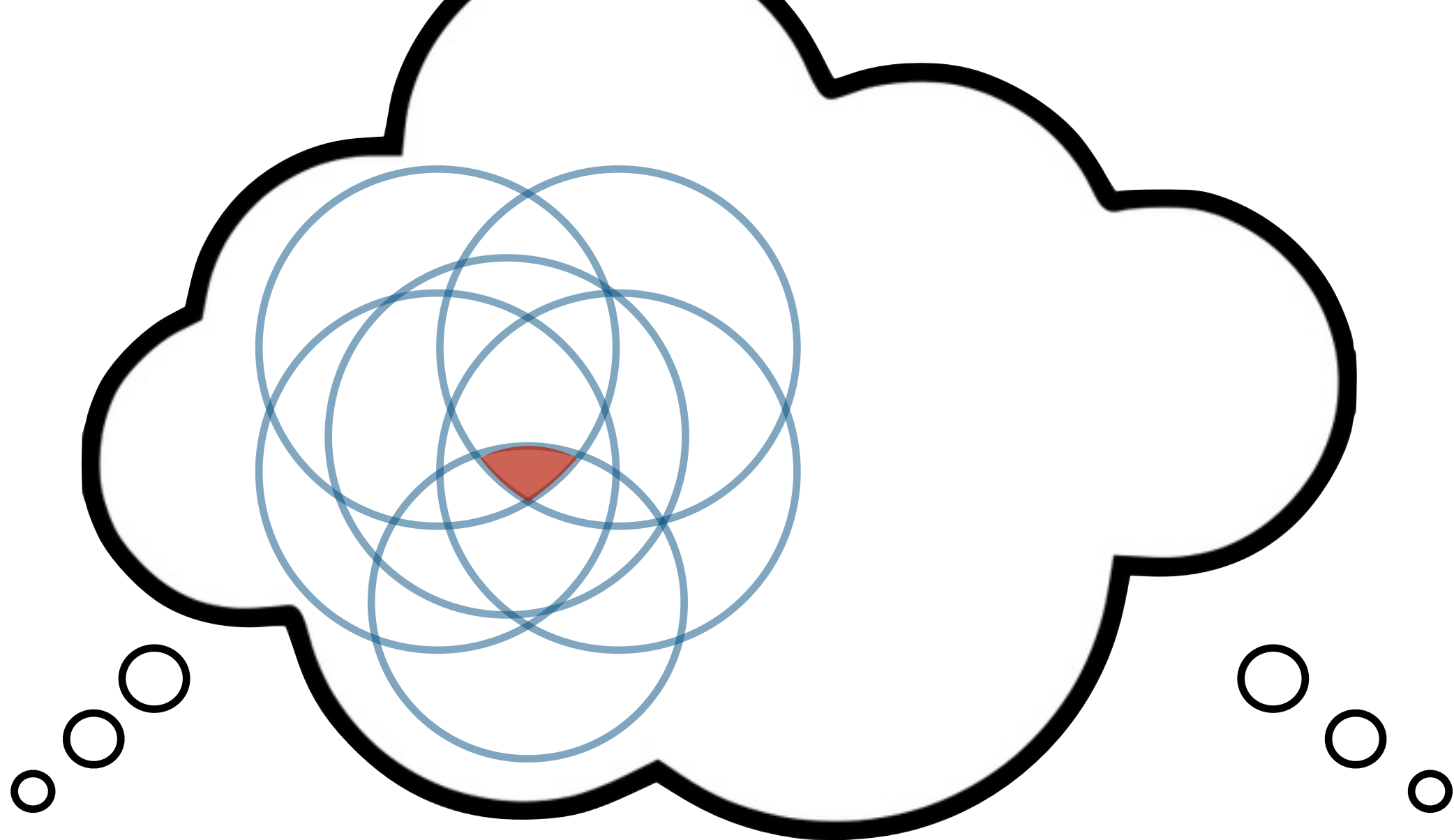




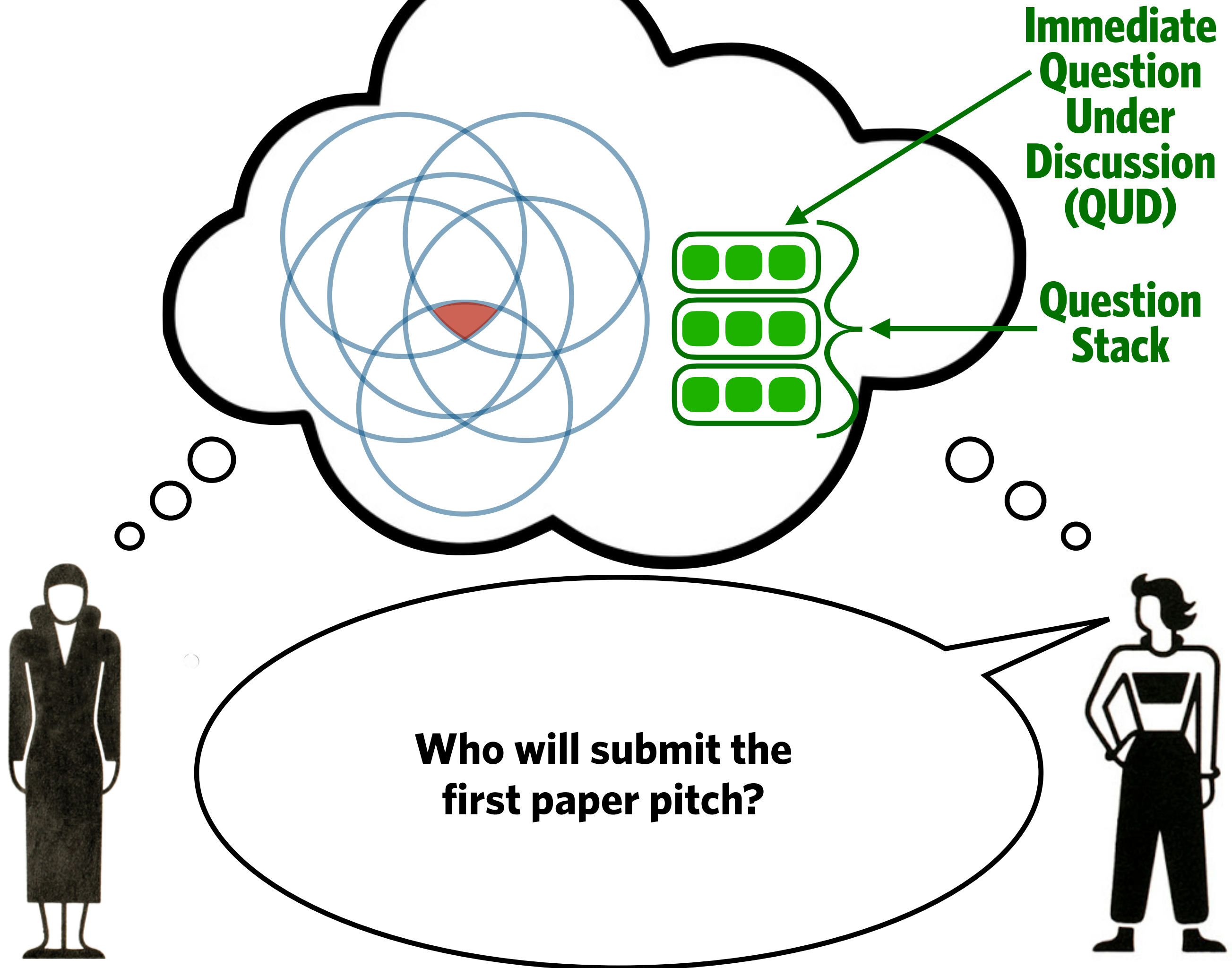


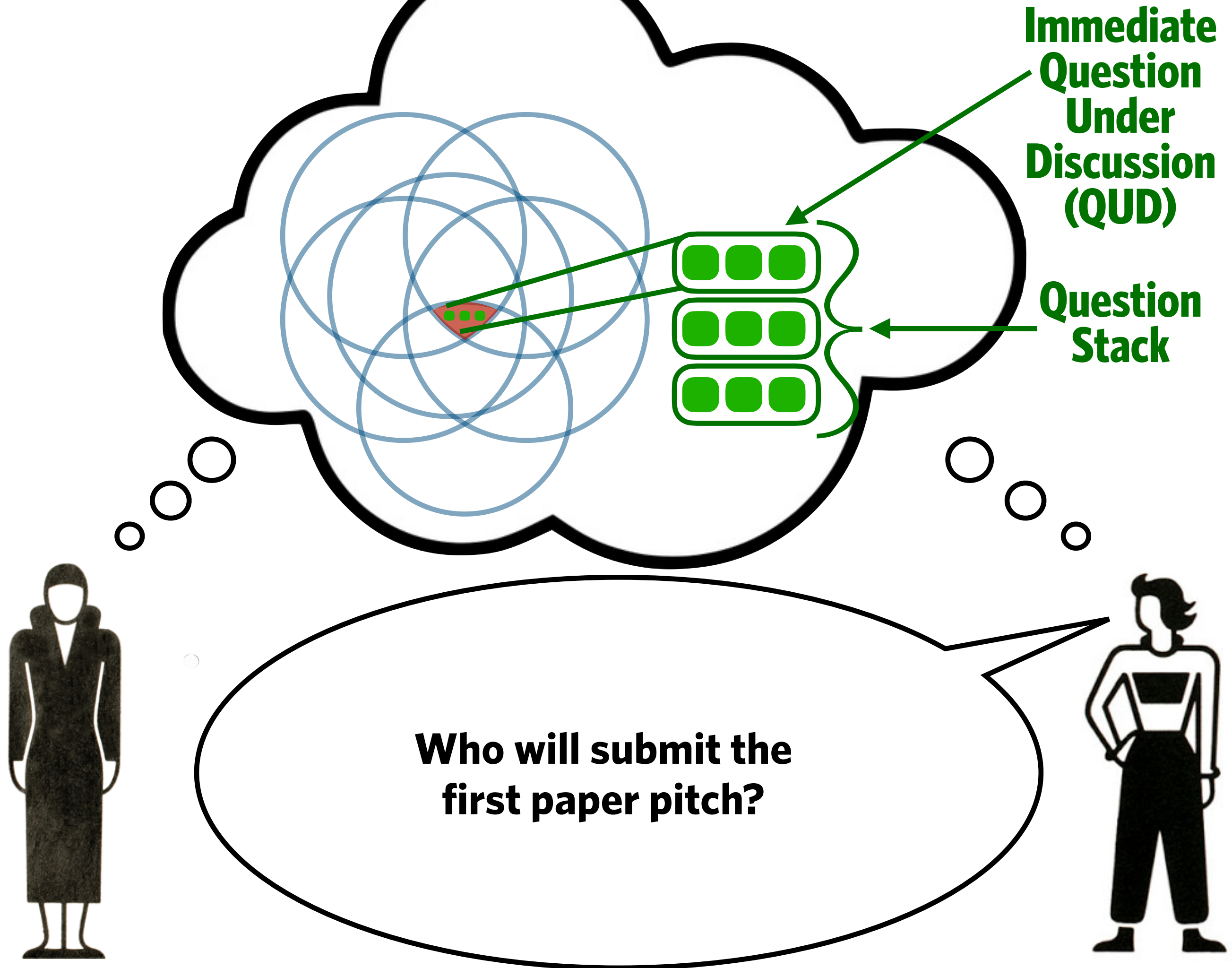
## **Kristin**

...There's this part of Stalnaker's Context and Content which leads up to an explanation of defective contexts that I'm a little hung up on right now. Stalnaker: "Each participant in a conversation has his own context set, but it is part of the concept of presupposition that a speaker assumes that the members of his audience presuppose everything that he presupposes" (85). This is all well and good but there's something about having 'his own context set' that I can't shake...

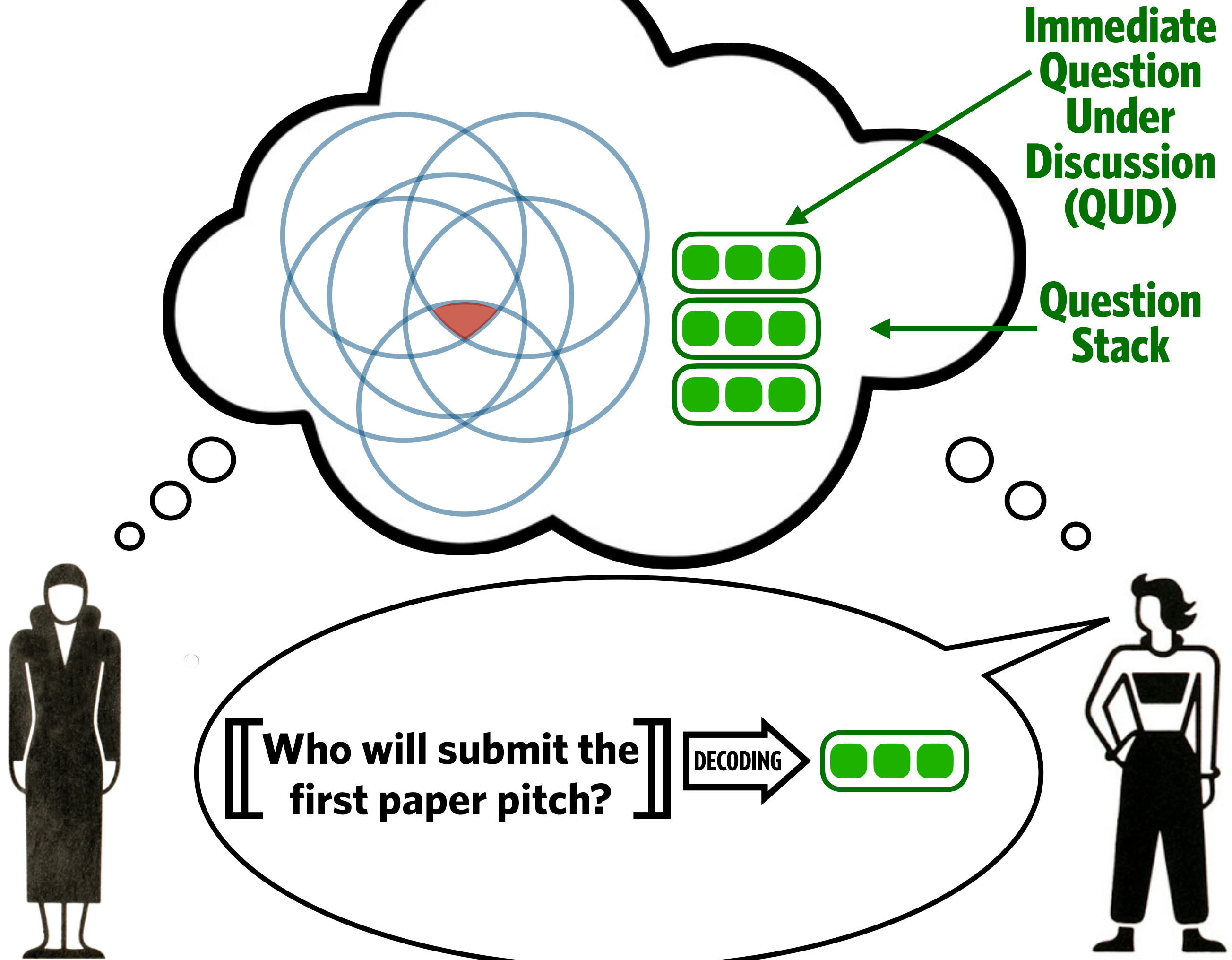


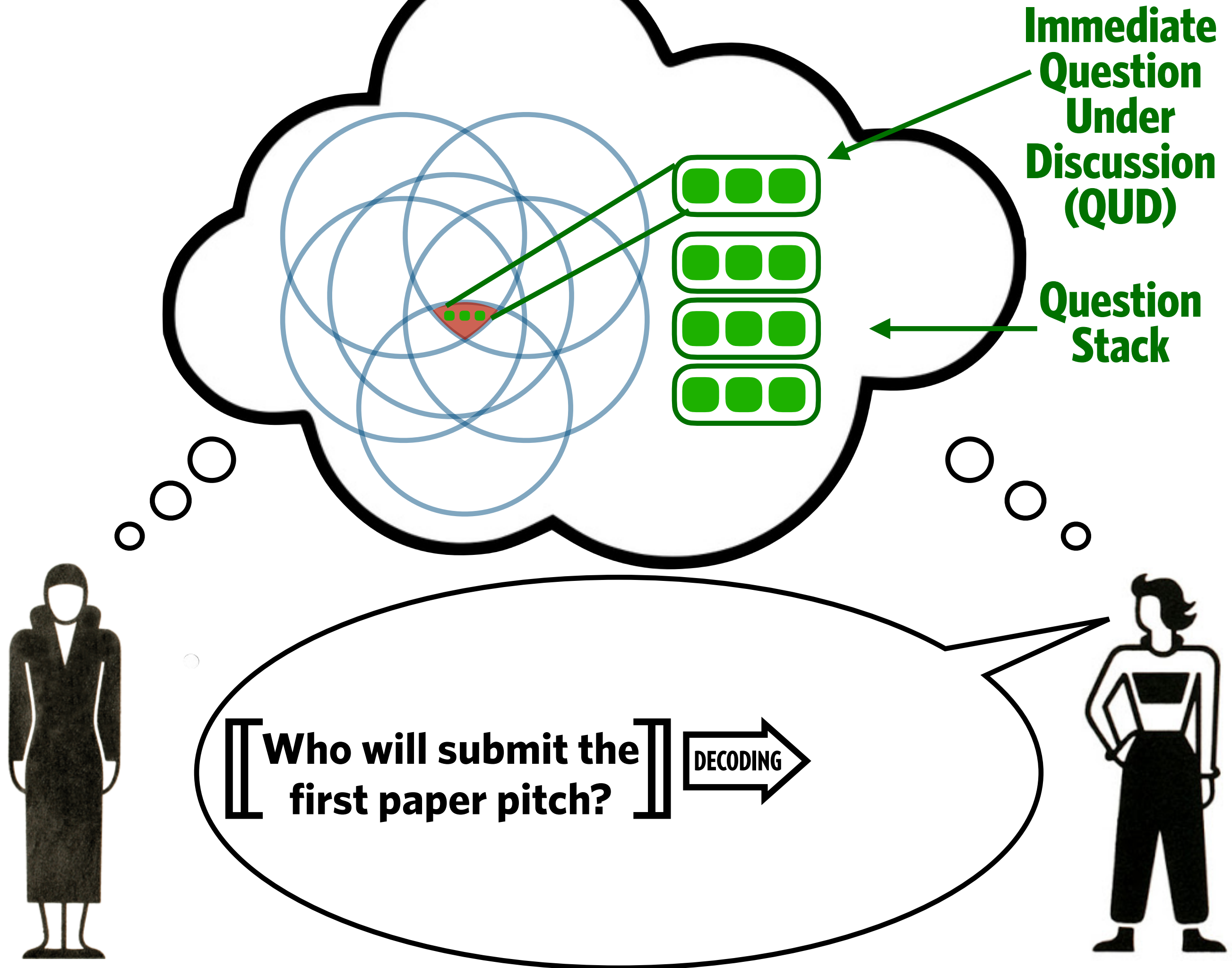


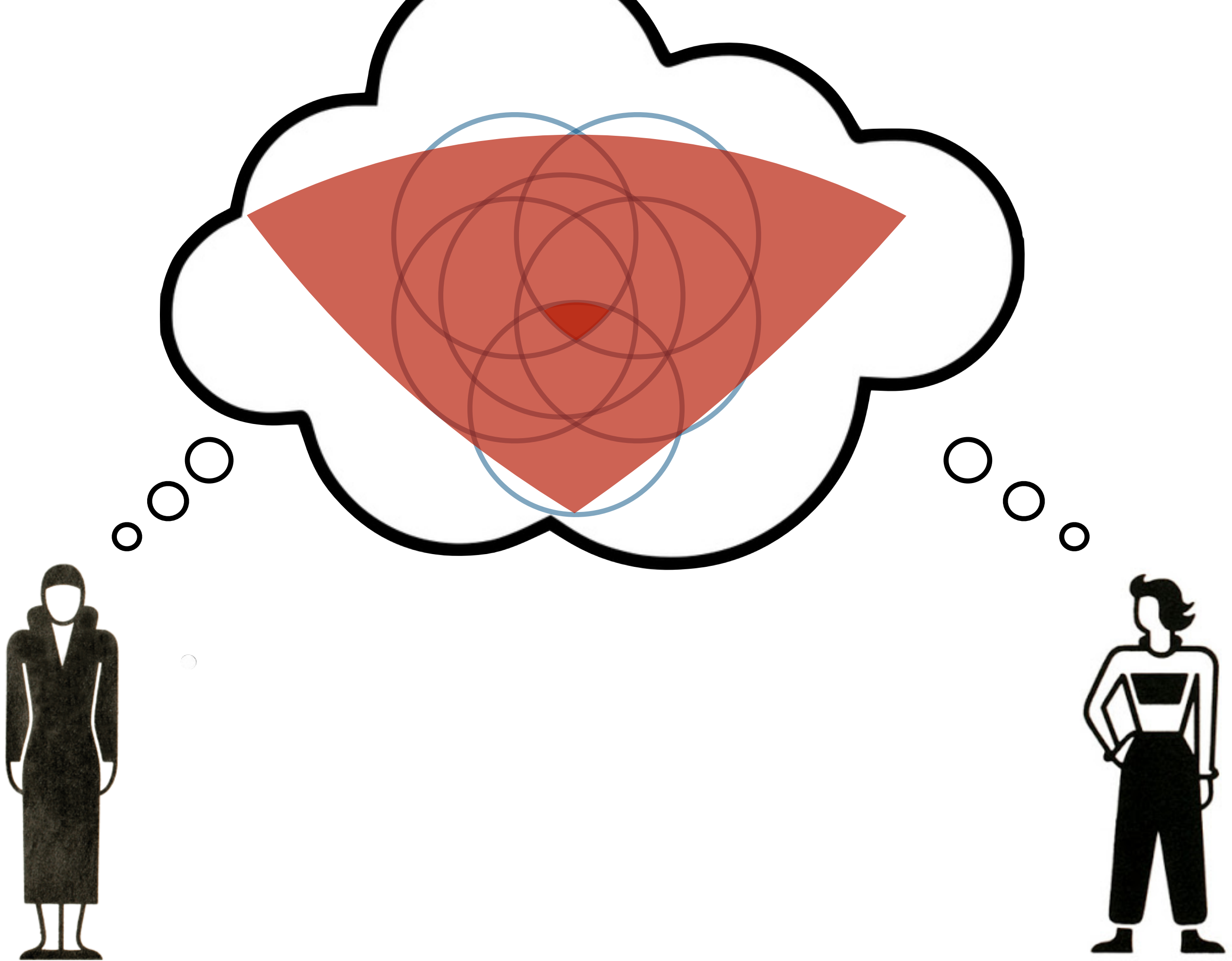














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**$W_{13}$**

**$W_6$**



Note: Any actual context set will include way more possible worlds than this—infininitely many. This is a toy model (of a another model).

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Will Dan finish a draft of the next chapter on time?

**W<sub>1</sub>**

**W<sub>4</sub>**

**W<sub>2</sub>**

**W<sub>3</sub>**

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**Yes**

**W<sub>10</sub>**

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**W<sub>9</sub>**

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**No**

Will Dan finish a draft of the next chapter on time?

**W<sub>1</sub>**

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**W<sub>6</sub>**

**Yes**

**W<sub>10</sub>**

**W<sub>7</sub>**

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**W<sub>8</sub>**

**W<sub>12</sub>**

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**No**

**No!**

# Will Dan finish a draft of the next chapter on time?

**W<sub>10</sub>**

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**W<sub>13</sub>**

**No**

**No!**

**$W_1$**

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**$W_6$**

# Who will submit the first paper pitch?

**W<sub>1</sub>**

**Alanna**

**Sadie**

**W<sub>4</sub>**

**Eleonora**

**W<sub>7</sub>**

**W<sub>10</sub>**

**Shin**

**W<sub>2</sub>**

**Griffin**

**Steven**

**W<sub>8</sub>**

**W<sub>11</sub>**

**Petru**

**Elliot**

**W<sub>3</sub>**

**W<sub>5</sub>**

**Minxin**

**W<sub>12</sub>**

**Theo**

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**Theo**

Steven will  
submit first.

**Cornelia**  
**W<sub>6</sub>**

**W<sub>9</sub>**  
**Steve**

**W<sub>13</sub>**  
**Kristin**

# Who will submit the first paper pitch?

**Steven**

**W<sub>8</sub>**

**Steven will  
submit first.**



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Alanna

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Minxin

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Theo

It won't be  
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Cornelia  
**W<sub>6</sub>**

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Steve

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**W<sub>12</sub>**

**Theo**

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**W<sub>6</sub>**

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**Steve**

**W<sub>13</sub>**

**Kristin**

It will be  
someone  
whose name  
starts with "S".

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**W<sub>4</sub>**

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**W<sub>6</sub>**

**W<sub>9</sub>**

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**W<sub>13</sub>**

**Kristin**

**#**  
**Philosophy is**  
**fun.**

## **Eleonora**

Could help explain how vague or seemingly infelicitous utterances can often still be successful without causing a breakdown in communication. I am thinking of something along the lines of Kratzer (2012), who suggests that conversational participants “can extract the information they are after under the presumption that assertability conditions are satisfied.” (Kratzer, 104). In this case, suppose that ‘assertability conditions’ = ‘shared plans’ to answer a QUD. If conversational participants are operating under some Gricean maxim of cooperation, they might be able to successfully interpret even those utterances that may be vague or seemingly infelicitous, by working under the assumption that the speaker is (trying to) answer the QUD, or ask a subquestion related to the previous QUD.



## **Elliot, responding to Eleonora:**

I think the example used on page 13. of the chapter is a good case of your first point:

S: What did Hilary eat?

A: She went swimming.

I've always heard you're not supposed to eat before you go swimming. So A's seeming irrelevant contribution could be taken as meaning Hilary didn't eat anything

## **Eleonora**

It helps explain why speakers are often parsimonious with their utterances, and avoid excessive prolixity/addition of unnecessary information. If conversations really are shared intentions to answer a specific QUD, then speakers will normally aim to keep their utterances relevant to just answering that question.

# Who will submit the first paper pitch?

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**Cornelia**  
**W<sub>6</sub>**

**W<sub>9</sub>**  
**Steve**

**W<sub>13</sub>**  
**Kristin**

It takes time-  
management  
skills to do  
assignments  
early!

## **Cooperative Principle:**

"Make your contribution such as it is required, at the stage at which it occurs, by the accepted purpose or direction of the talk exchange in which you are engaged."

## **Maxim of Quantity:** Information

- Make your contribution as informative as is required for the current purposes of the exchange.
- Do not make your contribution more informative than is required.

## **Maxim of Quality:** Truth

- Do not say what you believe to be false.
- Do not say that for which you lack adequate evidence.

## **Maxim of Relation:** Relevance

- Be relevant.

## **Maxim of Manner:** Clarity ("be perspicuous")

- Avoid obscurity of expression.
- Avoid ambiguity.
- Be brief (avoid unnecessary prolixity).
- Be orderly.

We can now characterize the notion of Relevance in terms of the question under discussion at a given time (cf. Grice's relativization of his Maxim of Relation to "the purposes of the discussion") and what it is to address such a question:

- (15) A move  $m$  is *Relevant* to the question under discussion  $q$ , i.e., to  $\text{last}(\text{QUD}(m))$ , iff  $m$  either introduces a partial answer to  $q$  ( $m$  is an assertion) or is part of a strategy to answer  $q$  ( $m$  is a question).

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**Minxin**

**W<sub>12</sub>**  
**Theo**

Will it be  
someone  
whose name  
starts with “S”?

**Cornelia**  
**W<sub>6</sub>**

**W<sub>9</sub>**  
**Steve**

**W<sub>13</sub>**  
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**Theo**

**W<sub>9</sub>**

**Cornelia**

**W<sub>6</sub>**

**W<sub>13</sub>**

**Kristin**

**Steve**

Will it be  
someone  
whose name  
starts with “S”?

**No**

**Yes**

## **Cornelia**

I think the idea of a stack of questions is very helpful, and maybe we can explain even more aspects of communication with it + intentions. We may posit intentions corresponding to the different levels of the stack (i.e., intentions to answer the question on that level), not only the QUD-plan. Thus, we could explain how utterances can be (a) odd/seemingly infelicitous or (b) lack to be genuinely cooperative, even though the interlocutors share a QUD-plan. Both case (a) and case (b) arise when interlocutors do not share an intention to answer a question lower on the stack.

## **Cornelia**

A case of (a): a barista at a cafe I went to asked me if I frequented the east village. Since it was a direct question, it became the QUD, which I did intend to answer. Nevertheless, I was perplexed because I didn't know why he asked. Did he want to find out whether I should join some sort of rewards program? Did he want to give me some discount for being a local? Or was he simply being nice and making small talk (something I still had a hard time navigating as a German where we simply wouldn't do that)? I cannot have an intention to answer the question lower on the stack because I did not know what that lower-ranked question was.

## **Cornelia**

A similar case, (b), would be a conversation where a person A is trying to get someone else B to give some information or admit something against B's will. An attorney might do that to a witness on the stand, or a parent might ask their teenage kid something like "Did you have fun last night?", trying to get their kid to admit that they went out without asking. In these cases, inquisitor A hopes to get B to answer the QUD, purposefully not asking the lower-level question they're pursuing because B does not intend to answer that one.

## **Eleonora**

I am...skeptical that the 'conversational plan' model does not require further machinery in order to be successful.

Specifically, I think that human communication is often constrained by objective standards which cannot merely be extrapolated from an answering-the-QUID based structure, or by appealing to shared conversational plans. Although I do not believe that there would be any problem with claiming that these constraints are partly imposed by the shared conversational plans, I do think that postulating something like assertability conditions is required to account for successful human communication. (Broadly speaking, I am thinking of assertability conditions as being met whenever an utterance is warranted by a speaker's epistemic state, evidence available, or context of utterance).

## **Eleonora**

The reason why I suggest this is because I believe that adding a notion of this kind yields a conversational model which can account for a wider range of conversations – for one, Harris himself points out that not all conversations are as organized as those centered around answering a QUD; similarly, some conversations seem to involve no shared plans whatsoever. But I think it would be hard to account for such conversations with a shared-intentions based model.

## **Maxim of Quantity:** Information

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## Eleonora

As a side-note, I also think that it would help better explain the strangeness of (1) on p. 11, which I do not believe is due to the fact that “it’s very difficult to think of any conversational goal that could unify the successive utterances into a conversation”; rather, it seems to me that a more plausible explanation is simply that the utterances in (1), though true, violate assertability conditions.

(1) Ann: Johnny Cash once went by the nickname, ‘the Undertaker.’

Bob: I am a little bit hungry.

Ann: The Hawaiian island Lāna‘i has a population of about 3300 people.

Bob: My mother’s maiden name has six letters.



## **Kelly**

I'm interested in the position and the generation of QUD in cooperative conversation planning. It appears to me that QUD is placed at the initial beginning of a shared planning process, meaning that a shared planning conversation begins with a QUD. However, I'm inclined to think that in most shared planning situation, we don't usually know or have a specific shared QUD in the beginning. This leads me to think that a QUD needs to be first identified and generated in order to start a shared planning process, for a conversation to have a clear goal. ("...the immediate goal of a conversation can be represented as the question that the interlocutors are trying to answer at that moment." (12))

## **Kelly**

However, the identifying/generating work is not really allocated a space in the shared planning process, at least in figure 2. In context of a sub-inquiry in the question stack (where the primary QUD already exists), asking a question is discussed as a significant move, "setup move".

"Roberts says that to ask a question is to perform a "setup move," which focuses interlocutors' attention on a collection of answers that could constitute alternative paths toward their informational goals (12)." I'm wondering if the (ideally shared) labor that goes into establishing a QUD is implied? It seems to me that this labor is significant cognitive work that determines how the entire shared planning process goes.

## **Steven**

I don't really believe that this type of meandering conversation exists (and disagree that Roberts eschews meandering conversation in her quest for an idealized model - which wouldn't be very idealized if it failed to account for the most rudimentary conversation).

## **Steven**

Roberts adopts Stalnaker's proposition that the goal of conversation is to answer the question, "What is the way things are?". Given that "things" is semantically underspecified, it is fair to argue that this QUD extends to our inner, psychic architecture. Unlike other objects in the world, however, our psychic structure is invisible and generative, and so reveals itself through its interactions. Thus a conversation where the QUD is "What is the way YOU are?" will naturally take a meandering path - appearing tangential to the outside world, but having a dynamic (and maybe perfect) logic in its development. (Such conversations are frequently JCAs, though this isn't a prerequisite.)

## **Steven**

Alternatively, if we take “What is the way things are” as the apical QUD in a distended, decades-long conversation (as is the case with friends), then a QUD-subplan would be to improve one’s capacity to communicate with another. The QUD-subplan would then be a mutual, psychic exploration a la meandering conversations, during which we discern the boundaries of Quantity, Quality, Relevance, and Manner that permits an expanded use of implicature and, in agreement with Harris, vastly improves our communicative capacity. Insofar that implicature induces in my addressee a simultaneous processing of multiple possible worlds, honing in on the contours of another’s thought processes permits a greater flow of information between conversational partners, and thus is a JCA that advances us in our goal to address the primary QUD-plan, “What is the way things are?”

## Petru

It seems to me that most of our conversational activity is not nearly as goal-directed as Roberts' model proposes. Treating communicative interactions as a sort of (almost) game-theoretic assembly line through which definite goals are planned out and accomplished seems to leave out a great deal of our communicative practices.

Harris agrees (Ch. 3, p. 20), rightly claiming that Roberts' account idealizes away from, among other things, a great deal of our conversational exchanges which otherwise "exhibit [a] looser flow." However, in trying to isolate the difference between strict (re: constructed around the fulfillment of a fairly definite shared plan) and loose (re: constructed around, if I may, shooting the shit with friends) communicative interactions, he ends up characterizing both as fundamentally goal-directed activities, where the sort of goal attached to the latter is something more formlessly ludic than that attached to the former, yet still roughly structured around featuring QUD-plans as subplans. "Our purpose is not to meet any immediate material need, but to enjoy each other's company, entertain ourselves, and maybe acquire some new information along the way insofar as that's compatible with having fun" (Harris, p. 21).

## Petru

I have two problems with the picture thus far:

(1) It just isn't obvious to me that shooting-the-shit conversations exhibit any kind of goal-directedness in the way that more rigorous conversations wherein we are trying to solve a specific problem do. Describing the former as serving some vague purpose like 'Have fun' or 'Enjoy each other's company' seems to me to be an exercise in post hoc rationalization. Do goals like 'Have fun' and 'Pick a restaurant for lunch' exhibit the same problem-structure, such that we can talk about the differences between the communicative exchanges they induce as merely a matter of degree of constraint on permissible options? **It doesn't seem to me that informal goals associated with shooting-the-shit conversations exhibit a 'problem-structure' at all; if that is not the case, it would help to get some direct argument to that effect.**

Claiming otherwise seems to rest on the kind of highly idealized conception of cooperative rational activity that motivates game- and decision-theoretic modeling; and indeed, much of the language in the chapter is reminiscent of it (e.g. "setup moves" and "payoff moves"). But, as Harris explicitly avows, his proposal is supposed to help us lift the idealizations associated with Roberts' model and thereby move us closer to psychologically real territory.

## **Sadie, Responding to Petru**

...I am interested in the particular ways in which someone might seem to go 'off-plan' in these more casual conversations – whilst shooting-the-shit conversations don't seem to have the same problem structure as conversations where we make decisions, I think these cases suggest that our more exploratory goals aren't entirely post-hoc rationalizations.



## **Sadie, Responding to Petru**

Following the line of comparison in the chapter to playing with young children - preventing your child from moving freely between activities (insisting a child complete their block structure before moving on to painting) in this free, unstructured time does seem to me to be a misstep away from what you'd been trying to achieve, just as getting distracted in the more clearly goal-oriented completion of a class project would be. Going back to conversation, Harris gives this example from a problem-solving case:

'if we're all starving, say, and we only have a half hour to spare for lunch—then it will be genuinely norm violating for you to start talking about something else before we've resolved the question'

It seems to me like if there's no urgent need to eat, and a group of people are enjoying a casual and meandering conversation, it might be similarly norm-violating to insist that no one talks about anything else until you've all figured out what you'll all have for your next meal, or otherwise refuses to 'drop' a topic where everyone else has moved on (and 'wrung most of the enjoyment' from it). I think here it does seem like there's a lack of shared plan/goal... But I also agree that characterizing these types of conversation as having too much in common misses something!

## Petru

(2)...in most of the examples discussed so far, shared plans comprise some clear, definite, propositionally-articulable goal (e.g. 'Pick a restaurant for lunch') with clear conditions of fulfillment (i.e. we either pick a restaurant or we don't). Another way to say the same thing: The ways in which the question 'Where are we eating lunch?' "partitions the context set into a set of complete and mutually exclusive answers" (Ch. 3, p. 12) is easy to see – or at least easier to see than in the following cases. When it comes to shooting-the-shit conversations, the conditions of fulfillment for goals like 'Enjoy each other's company' or 'Have fun' seem to be much less definite. Put otherwise, the ways in which questions like 'How do we enjoy each other's company?' might create a partition of the context set comprising complete and mutually exclusive answers to such a QUD is totally unclear to me. The QUD's subject is simply way too broad for such a context set to emerge; but if Harris wants to maintain that QUDs play any role in organizing even shooting-the-shit conversations, then something like such a context set must emerge. Part of the functional role of a goal somewhere upstream in a planning schema is the systematic constraint of downstream QUD-plans and other subplans in ways compatible with its fulfillment. If all we can say about the systematic constraints on QUD-plans showing up downstream from a goal like 'Have fun' is just that they're 'looser' than they would be in more rigorously goal-directed conversations, then the model has a serious explanatory gap.

## Elliot

In Section 4 Harris gives various ways context sensitive expressions can be explained as part of shared conversational plans. Quantifier restrictions seem like another potential application. Suppose Mike and Reggie are standing in front of a group of basketball players.

Mike: Everyone is super tall.

Reggie: Has anybody ever played here before?

Mike can rely on who both he and Reggie can see in front of them to establish a domain of quantification. Reggie can then ask a question using the domain they've established.

One interesting aspect I think this example brings out is that our metalinguistic moves often establish the meanings of more than just the particular context sensitive expression used. In the above example, Mike has shared a plan about how to use "anybody" by using the word "everyone" (and plausibly also "most" "few" "none" etc). In the original gradable adjective example, it also seems plausible that Mike has established a plan about "short", "average", etc.

## Shin

I am wondering how MacFarlane's plan-expressivism is well situated in Harris' view (though we of course do not have to commit MacFarlane's position). According to MacFarlane's plan-expressivism, the content of a sentence containing "tall" in positive form (e.g. "they are tall") is a set of pairs  $\langle w, d \rangle$ , and the sentence always has the same fixed content (MacFarlane 2020, p. 649). By defining context set as a set of  $\langle w, d \rangle$ , which vary across conversational contexts, plan-expressivism nicely capture the effect of metalinguistics usage (and factual or hybrid usage).

Of course, I think it is plausible that the appropriate value of  $d$  in a conversation is a part of shared plan and interlocutors use "tall" in accordance with their plan (Harris chap.3 p. 22) (or this idea would be more elaborated if a metalinguistic QUD is properly defined as a partition of a set of  $\langle w, d \rangle$ ). However, it seems to me that plan-expressivism, which insists that the sentence containing "tall" always has the same content, is *prima facie* conflict with Harris' point in chapter 2, that is, context-sensitivity expands the expressive power of natural language by speakers using context-sensitive expressions to communicate different contents. How can this be settled?

## **Theo**

I'm curious about the extent to which you think psych/linguistics sheds light on your proposal here. Do you have thoughts about which sorts of cognitive abilities/ToM stuff is necessary to engage in the complex social behaviors your shared cooperative plans model relies on, and do you have expectations about what the differences in communication would be for people who don't (perhaps yet) have them?

## Responding to Indirect Speech Acts

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Indirect speech acts, like the request *Do you know the time?*, have both a literal meaning, here “I ask you whether you know the time,” and an indirect meaning “I request you to tell me the time.” In this paper I outline a model of how listeners understand such speech acts and plan responses to them. The main proposals are these. The literal meaning of indirect speech acts can be intended to be taken *seriously* (along with the indirect meaning) or merely *pro forma*. In the first case listeners are expected to respond to both meanings, as in *Yes, I do—it's six*, but in the second case only to the indirect meaning, as in *It's six*. There are at least six sources of information listeners use in judging whether the literal meaning was intended seriously or *pro forma*, as well as whether there was intended to be any indirect meaning. These proposals were supported in five experiments in which ordinary requests for information were made by telephone of 950 local merchants.

# Why do you ask? Good questions provoke informative answers.

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## Abstract

What makes a question useful? What makes an answer appropriate? In this paper, we formulate a family of increasingly sophisticated models of question-answer behavior within the Rational Speech Act framework. We compare these models based on three different pieces of evidence: first, we demonstrate how our answerer models capture a classic effect in psycholinguistics showing that an answerer’s level of informativeness varies with the inferred questioner goal, while keeping the question constant. Second, we jointly test the questioner and answerer components of our model based on empirical evidence from a question-answer reasoning game. Third, we examine a special case of this game to further distinguish among the questioner models. We find that sophisticated pragmatic reasoning is needed to account for some of the data. People can use questions to provide cues to the answerer about their interest, and can select answers that are informative about inferred interests.

**Keywords:** language understanding; pragmatics; Bayesian models; questions; answers

“where are you?” that permit answers at many levels of abstraction (Potts, 2012). While most of this work has focused on *answerer* behavior, it suggests that the question itself is important in prompting a relevant answer.

Recent work on Rational Speech Act (RSA) models (Frank & Goodman, 2012; Goodman & Stuhlmüller, 2013) has mathematically formalized pragmatic language understanding as a form of recursive Bayesian inference, where listeners reason about speakers who choose utterances that maximize information gained by an imagined listener. In this paper we extend the RSA framework to address simple question-answer dialogs. The immediate challenge in doing so is that the speaker utility in RSA is based on direct information provided by an utterance—since questions don’t provide direct information, we must say what utility they do have.

We suggest, following Van Rooy (2003), that the value of a question is the extent to which it can be expected to elicit information relevant to the questioner later in the dialogue.

## **Steve**

Dan agrees, in response to a criticism from Buchanan and Schiller, that sometimes communicators can do without the "bells and whistles" that he's laying out in the chapter, but that the bells and whistles are still operative and explanatorily useful:

"Concluding that conversation plans are explanatorily inert from the fact that we can sometimes succeed at communicating without them would be like concluding that power tools are pointless or inexplicable from the fact that people sometimes build houses using only hammers and handsaws."



## Steve

I think the important point isn't just that sometimes communication *succeeds* without these plans; it's that communication *takes place* without them. And if that's right, then this model is not a description of how (all) human communication works. Maybe one would say, in response "We're not trying to explain how ALL communication works. Just some, focusing on the most cooperative." But this response seems to section off massive amounts of communication as non-theoretically-problematic, and unnecessary to explain, merely because they aren't explicable by the model.

I think a question that should drive a better response is this: how is it that we can explain communication in the absence of conversation plans in a way that is parasitic on the plan model? One possibility: maybe the reason why a stranger shouting a random piece of information at me from his balcony is weird, infelicitous, w/e, is that we don't have a meshing conversation plan.

## Steve

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I think a question that should arise is: how is it that we can explain communication in the absence of conversation plans in a way that is parasitic on the plan model? One possibility: maybe the reason a stranger shouting a random piece of information at me on this balcony is weird, infelicitous, w/e, is that we don't have a meeting conversation plan.

What do you mean by the distinction between communication "succeeding" and "taking place"?

## Steve

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