What Do You Mean?

Semantics Linguistics Research with Professor Kathryn Davidson

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Figure courtesy of the Davidson Lab.

Although language is all around us, we seldom stop to question why we speak the way we do. What are the implicatures and presuppositions of our conversations? How do we mentally represent information, and how do we convey this to other people? Are some languages more expressive than others? The study of semantics, the subfield of linguistics that deals with meaning, aims to address such topics through scientific methods. Kathryn Davidson directs the Meaning & Modality Lab and serves as a Professor of Linguistics at Harvard. Her work encompasses semantics, pragmatics, and development. She has written two books, Semantics and Depiction and Formal Semantics and Pragmatics in Sign Languages, and through her study of American Sign Language (ASL), she investigates how we view language, communication, and our interactions with the wider world.

Caroline Song (CS): Could you tell me about your work and what you study?

Kathryn Davidson (KD): The subfield of linguistics that I work in is concerned with how language expresses meaning. That sounds so hard to pin down: "meaning," what is that? We're interested in trying to take insights from philosophy in terms of logic and theories of how language can convey meaning that have accumulated over millennia, insights from psychology about how our mind works, how we form concepts, and how we learn things, and linguistics in the ways that languages can vary.

We have the sensation that we are communicating facts about the world, and sometimes not even true facts about the world: things we want to happen, things we wish could happen, ways things could have been but aren't. We can use language to talk about things that aren't even real! It's incredibly expansive.

It can be something as simple as when I say, "Everyone understood the reading." Clearly, I don't mean every single person in the whole world. So, who is everyone? We do experiments in my lab where we give participants a piece of language and try to see what they understand to have followed from it in order to try and build theories of linguistic meaning. English is a natural starting point, because everybody in our lab speaks English and it's very well studied. But, we also do a lot of work in American Sign Language, Nicaraguan Sign Language, and Japanese Sign Language. We have a lot of other spoken languages—we currently have projects on Mandarin, German, Bangla, Turkish, Hindi, and French.

With these languages, we can ask questions like: are languages conveying the same kinds of things for people? Are there places where they differ? Are there places where they can't express the same kind of thing? You set up experiments collecting people's inferences and, using quantitative analysis such as statistical modeling, try to build models of meaning.

CS: I think it's neat how you can take something so nebulous and implicit, like meaning, and deal with it in a rigorous, scientific way.

KD: Exactly. There's this nebulous notion of meaning people ponder as they gaze up. And as far as, what does it all mean? Sometimes we misunderstand each other. Are we coming in with different starting points, are we not making our message clear, what went wrong? How can we study it analytically?

A lot of people in the last year or two have been interested in the same kind of questions, but in artificial intelligence. It's natural to use tools and models from natural language semantics on these AI models. Does ChatGPT know what I mean? Can AI also derive the same kind of inferences from linguistic sentences that humans do? We have a couple collaborations with computational linguists at Boston University and a collaboration with Johns Hopkins where we're interested in modeling that.

CS: I know that you've done a lot of behavioral studies with groups of native speakers. I was wondering if you could tell me about some of that research.

KD: There's a conference in June called Experiments in Linguistic Meaning. One of the projects that our group is presenting looks at how language and gesture trade off. If you're trying to refer to an object, there are all kinds of ways I can direct your attention to make it clear what I'm referring to. In that project, we compare English speakers, Mandarin speakers, and American Sign Language signers. We're interested in how they trade off verbal content—words that are clearly things you have to learn in your language, like big, yellow, and fuzzy—with gestures that you can also use to narrow down items—like showing how tall or wide an object is. We did a series of experiments where we were manipulating these various factors and also manipulating the objects that people had a choice to pick from on the screens.

	unmodified	adjective	gesture
English	"Pass me the bowl"	"Pass me the small bowl"	"Pass me the $[SMALL]_g$ [1] bowl"
Mandarin	"Digei wo zhe ge wan" (Pass me this Cl. bowl)	"Digei wo zhe[2] ge xiaode wan" (Pass me this Cl. small bowl)	"Digei wo zhe ge $[XIAODE]_g$ wan" (Pass me this Cl. $[SMALL]_g$ bowl)
ASL	 BOWL 2-GIVEo-1	modified  Nmm: oo BOWL SMALL 2-GIVEo-1	

Table 1. Use of gesture, articles, and descriptors in ASL, English, and Mandarin for the item "bowl," where brackets indicate that a gesture has been used to substitute an adjective (Wang et al., 2026).

It seems like gestures are often superfluous. We usually want it to be backup information, redundant with what we're saying. That's true in spoken English. We were interested in sign languages where you have words, but then you have gestures with the same articulators. We found a really big difference between English and ASL. Then we realized that actually, maybe this wasn't because ASL is a sign language, but because it doesn't have the word "the" the same way that English does. So we thought we should look at a language that doesn't have the same kind of definite article. Mandarin is a great example. It turns out that ASL was behaving the way it was because of that feature. So, it shared this aspect with Mandarin; it was not about being a sign language.

CS: I saw that you did work on code switching in Mandarin definite noun phrases.

KD: Yes, that's led by Alice Wang, who is a grad student here. What I thought was beautiful about her study is she picked a bunch of things that are natural to code switch. Let's say she was in an English speaking context, but wanted to insert a Mandarin word for an opera. If you know you want to codeswitch the noun, how do you decide whether to put a determiner, definite article, demonstrative, or nothing? How do you build up that noun phrase? Do you make it fit the language of the noun that you're going into, or do you make it fit the context of the language you have been speaking up to that point? It turns out it's conditioned on what's called the matrix language, meaning the language that you're using before you code switch. If you're using English, you're going to use "the" and "that." You're even going to prefer Mandarin translation equivalents of those, more than you would prefer what, in the Mandarin context, would have been better. You could see the tradeoff, in the process of codeswitching.

There are so many interesting questions in code switching. It has potential to tell us about the way that language structure interfaces with the psycholinguistic process of getting it out of your mind. You pull from both languages that you know, think about the languages that the other person knows, and use them together to make the best sentence that you can.

CS: I'm someone who's bilingual in Mandarin and English. Looking at your studies, even if I have the implicit knowledge of the language, it's never something that I thought about. So I think that's really cool, that it's forcing me to learn new things about what I thought I already knew.

KD: It's such a good example. What do we know that we don't know we know? We know it implicitly, but we don't know it explicitly. So much linguistic knowledge is like that. Turns out that goes for knowledge about code switching, for example.

CS: I know that you're spent a lot of time examining ASL. Has there ever been a moment where you're studying ASL and you realize that it's broken a linguistic theory or done something that people who communicate primarily verbally wouldn't really think about?

KD: I think almost every linguist has had that experience, no matter what language they're studying. I think it's one of the things that most linguists share that is exciting when you're thinking about what's going on in a language. Quotation is something I like working on in this domain, because when we think about quotation, we often think of quotation marks written on a page. Learning how sign languages work inspired me to think differently about what quotation is, because actions and reported speech look very, very similar in sign languages. For example, if I say, "he was nailing this," and then I showed you how he was nailing it, I don't usually put the action in quotation marks. So it's interesting, because in sign languages, these two things look very similar.

CS: I know that your lab focuses on not just meaning, but also modality.

KD: By modality in this context, we mean, what is the way that the language is conveyed? Language can occur in lots of different modalities: It can be verbal, manual, visual, tactile, or written. For a long time, people just thought about written language. Yet there are many nuances to speech that don't get captured in text, like prosody. But if you extend that further for sign languages, there's much evidence that they have all the



Figure 1. English-to-Mandarin survey seen by experiment participants in "Code-switching in Mandarin and English Definite Noun Phrases" (Wang et al., 2026). Translation of question: "Lisi has an assignment, next week [they] have to give it to the teacher." Participants are asked how "natural" or "unnatural" the two responses are, which are "that assignment is very difficult" and "assignment very difficult."

complexity and characteristics of spoken languages, and they're occurring in a different modality. My lab has a special focus on trying to think about how the mode of communication of a language constrains, expands, or influences the way that meanings are expressed.

CS: When you started out learning linguistics, did you always know that you were interested in semantics and discourse?

KD: When I was an undergraduate, I studied mathematics. But as I was doing that, I took these linguistics classes on the side, because that sounded fun, and I realized that the most mathematical of those were the semantics classes. In the semantics classes, they used complicated logic and game theory, but we applied it to language, and I thought that was the coolest thing I'd ever done. Linguistics, in general, is very much based on pattern recognition. I've never really wavered from the semantic side of things, but over time, I got more inspired to draw collaborations and insights from other aspects of linguistics, depending on the problem.

CS: Speaking of your process of doing linguistics, do you have any highlights or struggles that particularly stand out to you?

KD: I struggled to have any sense of what I would ever want to do, and I think I didn't have a lot of pressure to have an answer to that. I think I was lucky, because I don't think I would have ever come across linguistics. But in retrospect, that was great, because I had plenty of time to try new things, and through that you can really discover something you love even more than what you initially thought you would like. Usually those who end up here fell into it through some happy set of circumstances.

Sometimes people get very focused on one thing that they feel like they have to do, but some of my most interesting research projects came about because I was open to something a student wanted to try and isn't what I suggested.I allowed myself to be open to it, and then they usually end up in a really interesting place. So being able to follow an unexpected path is good, and maybe one of the most fun things about having a job as a researcher.

CS: With all the research that you've done over the years, why do you think that linguistics research is so important?

KD: I think there's this clear fact that we uncover again and again: when you rigorously study languages, they're all equal in a very deep sense. In surface ways, they might look different, but as soon as you do any rigorous analysis, they're so clearly of equal complexity and equal productivity and equal value. Often in the world, languages are not treated as equal, whether it's in an education context, legal context, or hiring context. The work we do as linguists reaffirms, again and again, the equality that's often denied. In the context of sign language work—that's a set of languages where still, many, many people do not see them as equal. Deaf kids are often encouraged to avoid learning sign language so that they can focus on speaking.

CS: Before I let you go, do you have a specific message you want to send out?

KD: It's both a linguistics point, but it's also a non-linguistics point, and I think it's relevant for Harvard students in particular: Do not think about everything in life as an optimization. Because then you're going to narrow yourself to some set of constraints against which you're going to optimize, and you don't know that those are the right constraints.

When it comes to languages, there are so many dimensions, there is so much value in the diversity there. It's not that we just value the diversity for its own sake, but they each contribute unique things. And it doesn't make sense to think about that as an optimization problem. Because usually, if you can manage to have something not perfectly optimal, things can happen in interesting ways.

This interview has been edited for length and clarity.

References

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