

[SQUEAKING]

[RUSTLING]

[CLICKING] NORVIN W. RICHARDS: So OK, problem set 0, which some of you have already handed in-- it's not due.

Don't panic if you haven't handed it in yet.

It's partly a getting to know you problem set.

We're asking you why you're here and what you're hoping to get out of the class so we can try to tailor the class to your interests.

But one of the other things we ask you to do is to get started on the process of finding somebody to do field work with, so somebody who speaks a language that you don't speak and have never studied, that you're going to spend the semester harassing.

So you'll be meeting with this person every so often to ask them questions about how to do things in their language.

And so you'll have assignments, problem sets, in which we'll ask you to find out this, or that, or the other thing about your language.

So what I wanted to start with today was to talk a little bit about how to do that because it's not obvious.

And you'll get better at it as the semester goes along.

That's one of the reasons we're asking you to do it.

So in order to talk about how to do this, I'm going to make up a language, sort of a fictional language.

I thought about how to demonstrate to you how to do this kind of work.

And I thought about using an actual language.

But of course, at this point, I don't know what languages you folks are going to work on.

And so there's a danger that I might accidentally use a language that somebody is using.

So instead, I'm going to work on Martian.

So pretend that I have found a Martian to interview.

And we're doing Martian fieldwork.

The first thing I like to do if I'm working with an unfamiliar language is to ask the person to-- or the alien, if it's an alien-- to give me a name.

That's partly to make it simpler for you.

Pretty soon, you're going to move on to asking about sentences.

And if the sentences have a name in them, then at least you know that word in the sentence.

That wipes out one piece of the puzzle for you.

So I asked my Martian for a popular Martian name, and he gave me the name X!oo.

Now, we haven't yet talked about how to transcribe strange sounds.

So when you are writing down things in your language, we'll talk about this on the problem set, but there are at least two things you can do.

If your language is standardly written in the Roman alphabet, then you should feel free to just write things in the alphabet of the language.

So if you're working with a language that uses the Roman alphabet, just go ahead and use it.

If you're working with language that doesn't use the Roman alphabet, then you can make something up.

And you can ask the person you're working with if there's a standard way to write their language in the Roman alphabet.

That's sometimes something that happens.

But if not-- so in this example, the Martians don't use the Roman alphabet.

I asked the guy for a name.

He said, "X!oo." I was, like, OK, I'll use X, exclamation point for that clicky noise at the beginning.

And we'll go on.

Later, as I said, we'll be talking about how to think about how to write strange sounds, unfamiliar sounds, sounds that aren't contained in the languages that you're familiar with, maybe.

So we'll be talking about the International Phonetic Alphabet, which is a system for transcribing speech sounds.

But for now, since we haven't done that yet, we'll just make stuff up so.

There's a Martian name, X!oo. And then, you get started on sentences.

And you might want to start with simple sentences, like "X!oo is a linguist."

I got that one for Martian, "X!oo kuulduud bii." And that's a sentence.

I asked my Martian, how many words are in that sentence?

And they told me there are three.

And you might wonder-- well, I started with a name partly to make my life simpler.

I know what the first word means, but what do the second and third words mean?

And there are various ways to do that as you're working with the person that you're working with.

You could just straight up ask them things like, "Which word in here is the word for "linguist?" You could just say, "What's the word for linguist?" Or you could ask for another sentence that's minimally different from this one, just in, say, the word for linguist.

So ask, "How do you say X!oo is a physicist?" So you get that.

You discover that this sentence consists of three words, "X!oo," and then the word for linguist, which is "kuulduud," and the word for is, which is "bii." What I've done here is to present this piece of data, this sentence with the three words that have these three meanings, in the way that we're going to ask you to present the data.

And we'll again, on the first problem set, will reiterate this.

But this is the standard way you represent data in linguistics.

You'll have a sentence in the language of interest.

And under that sentence, under each word, you'll have a translation for that word.

So that's called the gloss.

So the gloss for "kuulduud" here is "linguist." And then on the third line, you have a translation of the entire sentence into English.

There's more to say, but for now that's what you need to know.

Does that make sense?

One of the things you do by doing it this way is it's an easy way to get across the fact that the word order of Martian is not the same as the word order of English, since the Martian sentence ends with the Martian word for "is." We're learning something about Martian word order. Moving on, you get some more Martian sentences.

"X!oo amsterdam dig dug," so "X!oo dug a canal," "X!oo is digging a canal," and so on.

So just depending on what we've asked you to find out, you that's going to guide what particular sentences you might ask for.

Probably what we'll do is ask you to get some basic sentences in the language.

And you'll want to have some sentences that have subjects and objects, like "X!oo dug a canal." One of the first things we'll ask you to do is to find out how to negate sentences, so how to say that something is not true.

So in this particular case, what I did was to get three Martian sentences, and then to get minimally different sentences in which we negated things.

So we're not going to say "X!oo is a linguist," we'll say "X!oo isn't a linguist."

And that changes it from "X!oo kuulduud bii" to "X!oo kuulduud noowee." Or the way you do "X!oo didn't dig a canal" is "X!oo amsterdam digwedug." So we've changed the verb "digdug," which means "dug," to "digwedug." That makes it negative.

So this is a way of gathering, bit by bit, bits of Martian data.

So in particular here, we're interested in Martian negation.

And we're finding things out about how negation is expressed. So a hypothesis I came up with on the basis of these facts looks as though the negative of "is" is just irregular.

So "bii" is "is," but "noowee" is "is not." Those don't look related to each other at all.

That just looks like an irregular correspondence, but that for "dig" changed to "digwedug," and "gudgid" changed to "gudwegid." And that makes me think, there's a "we" that goes in the middle of those words somewhere.

So for "digdug," we got "digwedug," and for "gudgid," we got "gudwegid." And at this point, we might have a number of hypotheses about where "we" goes.

I've put a couple of them up here.

Sorry, I should have made you guys generate the hypotheses.

Maybe we could think that "we" goes after the first syllable, so you start with "digdug" and you get "digwedug." Or maybe that it goes before the last syllable, so you start with "digdug," and you get "digwedug." That covers those two bits of data.

Anybody have another hypothesis they want to float about where "we" goes?

Yeah.

STUDENT: I'm not actually sure-- did you just completely reverse the order?

NORVIN W. RICHARDS: Yeah, to get from "digdug" to "gudgid," yeah, to get from the past into the present.

Yes.

But I'm asking you to give me hypotheses about negation right now.

But yes, you're right.

That's a hypothesis about how tense works.

The tense involves saying words backwards.

Yeah.

And we would want to find out whether that was true.

It would be exciting if that were true because there are not human languages that work that way.

But of course, this is Martian, so all bets are off, I guess.

Yeah.

STUDENT: In the exact middle of the word.

NORVIN W. RICHARDS: Yeah, so count letters, and these are six-letter words, and so you put "we" between letters three and four.

It could be that.

Any theories people want to push?

Yeah.

STUDENT: It could also be like in between syllables.

NORVIN W. RICHARDS: Yeah.

STUDENT: What is it that's-- I would ask-- in that case, I would ask for-- I would try to find a six-letter word that has-- that looks like a 4-2.

NORVIN W. RICHARDS: Yeah, I see what you mean.

So I just said you're counting letters, but you're absolutely right-- we could be counting syllables.

These are two-syllable words, and you put it between the first and the second syllable.

Yeah, that's absolutely right.

You guys have collaborated on an excellent hypothesis there.

Yeah, another thing?

Yeah.

STUDENT: You're also using the same verb for both of these situations.

[INAUDIBLE]

NORVIN W. RICHARDS: Could be, yeah.

So I took the flying leap of faith that yeah, there was something special about "bii." But maybe "dig" is something that's going to illustrate a general pattern, but you're absolutely right.

Could be this is also irregular.

Clearly what we need is more verbs.

Yeah.

STUDENT: Language [INAUDIBLE]. NORVIN W. RICHARDS: Oh, that's a nice thought.

So yeah, maybe "we" goes after the stress or before the stress.

Yeah, that's cool.

My Martian accent is not so great.

So we haven't been able to work on that.

But yeah, nice.

These are nice ideas.

So what we need to do is find more words.

How, for example, are we going to distinguish the two hypotheses that I have on the board here-- so after the first syllable or before the last syllable?

Yeah.

STUDENT: I want to get a word with three syllables.

NORVIN W. RICHARDS: Yeah, I want to get a longer word.

So if we have a longer, word we'll be able to find out what that is.

This was your point, too.

If we have a word where one syllable is really long, another syllable is really short, maybe we can learn something by doing that, so get some more words.

Here's "X!oo is singing," "X!oo yodeleehihuu," and "X!oo destroyed a spacecraft," "X!oo roovaa munchmunchyum." So here are two verbs that are longer.

And so we'll be able to tell, by negating these, which of the various hypotheses we've been floating are the most attractive ones.

Turns out we get "yowedeleehihuu" and "munchwemunchyum." So you're right, I'm not saying it right.

So what's the rule?

Where does "we" go?

STUDENT: After the first consonant.

NORVIN W. RICHARDS: After the first consonant, looks like.

Or if stress is on the first syllable, it could still be after the stress.

We have to study that.

That's absolutely right.

So now, we have a working hypothesis.

We could go get more verbs and test the hypothesis against-- if we could find a verb that had maybe all of these have initial stress, and if we work harder, we'll find a verb that has final stress.

And we'll learn something about whether stress matters.

Yeah, basically, I'm asking you to do science.

So you're going to gather data, generate a hypothesis about the data, realize that there are multiple hypotheses that are compatible with the data, try to figure out what kind of data you'd like to have that allow you to test your hypothesis further, go gather those data.

That's the idea.

Any questions about that so far?

That's the goal. A couple of general things-- maybe I should start with the last one.

You should be very nice to this person, the person that you're working with.

We're asking you to do some work for you.

But the Linguistics Department isn't offering to pay them, for example.

We're just hoping that you will be nice to them.

So we encourage you to treat them the way you would treat anybody who is helping you a lot, which hopefully, is nicely.

Find out what their favorite food is.

Bring it to them.

Offer to be nice to them in whatever way they need niceness.

It's maybe important to emphasize that, not just because these people aren't being paid, but also because this is something I have-- see, I teach a Field Methods class for graduate students.

And this kind of work, where you're working with a human being, is pretty different from, well, a lot of the kinds of scientific work that you do, and even a lot of the kinds of scientific work that linguists do.

Often, when we're gathering data about a language, we're doing it by reading your grammar, or by talking to a linguist, which is not quite the same as talking to a human being.

Linguists-- we can take shortcuts.

We know how to talk to each other in linguistic code and to get quickly to what it is that we want.

If you're talking to a normal human being, it's especially important to be nice, to remind yourself to be nice.

Because it's easy to find yourself irritated with this person when they disprove your hypotheses.

So if you've got a hypothesis, and the person then gives you data that disprove your hypothesis-- it's something I often see people do in class.

They try to talk the person out of it.

They're, like, "No, wait.

Are you sure?"

So don't do that.

Just gather the data.

Don't get emotionally attached to your hypotheses.

Be happy when you see your hypotheses die and get replaced by other hypotheses.

You should try-- I guess I'm going through this list backwards-- you should try to be organized.

And by that what I mean is this kind of work, it involves being fast on your feet to a certain extent.

So when I was doing that first bit of Martian data, it's like, OK, there's a "we" that indicates negation.

And it's going in the middle of the verb somewhere.

But what exactly do I mean by "middle of the verb?" And then we were generating various hypotheses about what that meant.

And that makes it clear what you need to do next, which is to get more verbs.

That's something that you discover in the middle of the session.

You find out how negation works.

Oh, it goes in the middle of the verb.

Then what I need is more verbs so that I can define middle in the appropriate way.

So you want to go into the session with a plan for what exactly you're going to try to find out and in what order.

And then two things-- my plans often look like flowcharts, or choose your own adventure novels, or something like that.

It's like I will ask this, and if they say yes, then I go over here.

And if they say no, I go over here.

If they say no to that, well, then we go over here.

So you make yourself a set of ways of dealing with various possible things that they might say.

and then the other thing you do is not get too attached to that, either.

So they may say something you didn't imagine them saying.

And you have to be ready to think on your feet, be ready to do whatever it is that they say. So when I say be organized, what I mean is, think ahead about what you will do under various circumstances.

But then also, be quick thinking.

And that's something you'll get better at as you do more and more of it. Don't assume that you're getting what you're asking for.

What do I mean by that?

I've done some field work on a language called Lardil, which is an Aboriginal language spoken on Mornington Island, which is a beautiful island off the northern coast of Australia.

So if you look at the map of Australia, there's a big dent in the northern coast.

That's the Gulf of Carpentaria, and Mornington Island is in the middle of that.

Lardil is spoken by Aborigines who have lived there for thousands of years.

I was once walking with a Lardil speaker and talking with him.

And we walked by a truck that was parked in front of a house.

And I asked him, hey, how do you say, "The truck is in front of the house?" And he thought about that for a second, and he said something to me in Lardil which meant, "The truck is to the south of the house," because in Lardil, that's what you do.

You talk about spatial relations entirely in terms of cardinal directions.

It's not that Lardil doesn't have a word for it "in front of," but it would have been unnatural in Lardil to say, "The truck is in front of the house." So he didn't answer my question, in a sense.

And in another sense, he did.

He told me what a Lardil person would say to describe what I wanted them to describe.

That may happen to you.

So you may ask somebody how to say something, and they may tell you something which is not exactly what you meant.

There sort of isn't any way to prepare for that.

You just have to do the best you can.

So find out everything about the parts of what they've asked.

So as we started off, I said, "X!oo kuulduud bii." That means, "X!oo is a linguist." And then you do some work to find out what does each word mean.

And as you do that work, you may be able to avoid some of these kinds of problems.

So there's a recording-- oh, yeah.

STUDENT: What if-- not that they don't necessarily have a word for something, but it's the English word that they just don't have another-- NORVIN W. RICHARDS: You should probably try to find something else, then.

That's a very good point.

So you should do things that are culturally appropriate.

I like to start, often, by asking people what their favorite food is.

And then, if they tell you, "My favorite food is apples," then all your sentences can be about apples.

"I'm eating apples," or whatever.

Yeah, that's a very good point.

Yes.

STUDENT: We have to verify [INAUDIBLE]..

So for example, in your example, if you have a hypothesis that no goes after the first syllable, does it make sense to [INAUDIBLE]??

NORVIN W. RICHARDS: Oh, it absolutely does.

So let me just repeat your question.

Does it make sense to ask the native speaker?

I've got this hypothesis, now, about what's going on.

It looks like "we" goes after the first syllable.

It absolutely does make sense to ask and it's totally fine to ask.

You shouldn't necessarily assume that they're right when they tell you.

Because-- this came up when we were talking last week-- you know many things about your native language that you don't have to think about in order to speak it.

And the consequence of that is that if somebody suddenly asks you, hey, what's the rule for this, you might not actually know.

Because it's effortless for you.

And so you may get a good response when you ask that question and you may not.

That means that there are two kinds of possible mistakes that you could make when somebody tells you their theory about what's going on.

One is to uncritically believe it because they're a native speaker.

And the other would be to discard it.

You see linguists do that, too.

They're, like, "I'm the linguist here.

I'm not going to listen to this person."

That's also a mistake because of course, their input on this is valuable.

It's just one valuable source of information, which you need to weigh against any other sources of information that you have.

Does that make sense?

It's a really good question.

Sorry, I have one other anecdote about Lardil.

I found a recording, one of the first recordings of Lardil, by an aircraft pilot.

So he wasn't a linguist.

He flew regular routes to Mornington Island, this really isolated place, and he got interested in the language.

And he sat down a Lardil speaker, and he was going to record a word list.

He'd gotten hold of a list of basic vocabulary.

And so he was going to try to get the person to record translations for all these basic English words.

And his list clearly started with pronouns.

So he was going to list a bunch of pronouns.

So he started with "I," said, tell me the word for "I." And the guy gave him the word for what you see with, this kind of eye.

Then he said the word for "thou."

And there's this pause on the tape.

You can hear the Lardil speaking, "thou, what the heck?"

And then he gives him the third person singular, the word for "he or she," which is actually a pretty good answer because in Lardil, you use the third person "he or she" under certain cultural circumstances, to indicate respect for the person that you're speaking to.

You speak to them as though they're in the third person instead of the second.

So you don't say "you" to them, you say "he" or "she." So he gave him a fancy word for "you," which is a pretty good translation for that whole action.

But these are just examples of you may not get what you ask for, necessarily.

You should be prepared for that. Now we're up to the second sentence on this slide.

So start with simple culturally appropriate sentences.

This is kind of what you were asking about.

So by "culturally appropriate," I mean if you're talking to someone from a tropical climate, don't make all of your sentences about snow and ice.

If you're talking to someone from one religion, don't make references to another religion in your questions.

In fact, maybe try to avoid references to religion in your questions, period-- basic stuff like that.

Like I say, I like to start by asking them their favorite food.

And then we ask lots of questions about X!oo ate this or X!oo is cooking that and things like that.

Sometimes, you make discoveries about what counts as culturally appropriate.

I once taught a Field Methods class on a Semitic language from Ethiopia called Chaha.

I started the class.

I was like, OK, I'm going to get a basic sentence with a subject, and an object, and a verb.

How do you say, "The man cooked the meat." The guy said, "I cannot say that." I'm, like, OK, why?

He said, "Men do not cook. And also, you do not cook meat," he said.

"You're supposed to eat meat raw, unless there's something wrong with it."

I said, "OK,

'The woman cooked the cabbage.'" He's, like, "Yes, we can say that."

We started with that. Whoops, I thought I told you not to do that, computer. And then, going up to the first bullet point-- I should work on this slide a little more-- one of the things you want to do, and this may be hard, is to try to convince the person you're working with that you are really, really interested in how they actually talk.

Depending on the language, a lot of people are taught by the educational systems that they grew up with that there is a correct way to speak their language.

And sometimes, they're taught that their way of speaking it is not the correct one, that they're bad at their native language.

That's distressingly common.

I do a fair amount of work on Tagalog, which is the language from the Philippines.

And Tagalog speakers often, when I'm first starting to work with them, they'll start by telling me that they're not very good at Tagalog, which is their native language.

They grew up speaking Tagalog.

But what they mean is they've been taught that real Tagalog doesn't have any borrowings from Spanish or English, that real Tagalog is the Tagalog that's spoken in isolated villages that they've never been to, where they speak the real, proper kind of Tagalog, which very few people speak.

And the people that I'm working with don't speak that and they feel bad about that.

So you have to make some attempt to convince a person like that that their version of the language is what you're really interested in.

And maybe you can tell them, I'm doing science.

I'm not here to judge you.

I'm not trying to find out whether you speak correctly or not.

I'm trying to find out how you speak.

And so I promise not to send a note to your parents or to your teachers in high school reporting on what you tell me.

That's not how this works.

This is I'm trying to understand how people actually talk.

That's what linguistics is about.

It's not about the rules that you learn in high school, which sometimes describe what you actually do and sometimes don't.

Does that make sense?

These are all things you may want to do. All right, well, then, today-- where are we-- today, we're going to get started on morphology.

That's our first topic.

And so things that we will get to, depending on how far we get today-- oh, yes.

STUDENT: Just as a question, is it appropriate to hypothesize about paradigms or just one element of [INAUDIBLE]?
NORVIN W. RICHARDS: I'm sorry, can you say more about that?

STUDENT: So if you're trying to create, for example, a chart of pronouns, is that a good thing to do or should you just focus on one word or what?

NORVIN W. RICHARDS: Oh, I see.

So in the problem set, we will ask you to find out something in particular.

So we'll ask you-- we'll have something that we want you to find out.

So that would be the thing to concentrate on.

In general, if you're working on a language, there kind of aren't guidelines about what it's OK to work on and what it's not.

So I'd encourage you, if you're working with this person and you discover that you've answered the question we've asked you to answer quickly in the session, then one of the things you can do-- part of being prepared-- is to do some thinking about other things you'd like to know.

And that could be-- one way is to sit down and get a paradigm of pronouns, or paradigm of verbs in the present tense, or whatever.

And of course, depending on the language you're working on, something like getting a paradigm of verbs in the present tense could be trivial or it could be impossible.

So you'll just have to find out what kind of language you're working on.

Yes.

STUDENT:

So kind of two questions.

One, when you say that you want how people really speak, if they're incorporating a slang, is that something that you want to just pick up or do you want to kind of tell them that [INAUDIBLE]?

NORVIN W. RICHARDS: Oh.

So basically, you want to write down everything that they tell you.

So if somebody says a sentence, and then they say, oh, but that's actually slang.

Here's the way you'd say it without slang.

You want to write down both of those sentences.

It's all data.

You're going to try to find everything else out.

It could be worth it to try to find out, when you say this as slang, what do you mean exactly?

Because that could mean this is only used by teenagers, and everybody is expected to grow out of this, and my mother would wash my mouth out with soap if she heard me speaking this way.

It could be that.

Or it could be-- so in the Philippines, I have people tell me, oh, this is slang.

And what they mean is it's not the Tagalog word for it.

It's the Spanish word for it.

And everyone uses the Spanish word for it all the time.

It's just that we feel guilty about it.

And so you'll have to find out which of those situations you're in.

It would be surprising if you could find it out on day one.

So for day one, probably what you want to do is write down both versions of the sentence, and maybe try to ask about what they mean exactly when they say it's slang.

Does that make sense?

STUDENT: Yeah.

NORVIN W. RICHARDS: So you may indeed get someone who tells you, here's how you say this.

Oh, but it's a bad way.

And you have to try to find out what they mean.

But if they just mean my high school English teacher would be displeased, my high school whatever teacher would be displeased if they heard me say that, then that's still data.

We're not passing judgment on things like this.

Yeah.

And then the other question?

STUDENT: I just have another question about when you said, like men cooking, and how they like [INAUDIBLE].

NORVIN W. RICHARDS: Can't say that, yeah.

STUDENT: I was wondering if you were ever in a situation where you just asked, oh, well, hypothetically, how would you say that or-- NORVIN W. RICHARDS: So in that particular situation, which was day one of the Field Methods class, I decided not to have that particular fight.

So we found out how to use the verb "to cook." And we found out the word for "man." And by the end, we probably could have figured out how to say, "The man cooked the meat." But that's another place for not being judgmental about the person you're working with, I guess.

If that's what they think, then fine.

We're not going to try to talk them out of that. We can, but not while we're doing linguistics.

Other questions about that?

Those are good questions.

OK.

So morphology, then-- so questions like what do you know when you know a word?

What's universal?

What's learned?

And why is the word "unlockable" ambiguous?

We'll talk about that, too.

So this is a cat.

Any questions?

It's clear so far.

So the word "cat" refers to certain kinds of things, including the thing that I've got a picture of here.

Now, I said, one of the things we're going to talk about is what things about language do you have to learn when you learn your native language, or any language?

And what other things are universal?

So we talked a little bit last time about the hypothesis that our brains are set up in such a way that we can only create language in some ways, and not others.

And one of the ways we find out about those aspects of our brains is by finding things, surprising things, that are true of every language that we know anything about-- so "universals," we call those things, things that are just always true.

Is it always true in every language that this is called a cat?

No, this is a lousy candidate for a universal.

There are a zillion words for cat out there in the world.

Here are some of them.

The famous linguist Saussure who had a French phrase which has been translated in English as the arbitrariness of the sign as the name for this phenomenon.

The fact that this is called a cat in English doesn't follow from anything else about English or about any other language.

And if you're going to learn a language, you've got to learn, assuming that language has a word for cat, you've got to learn that language's word for cat.

Questions about that? Arbitrariness of the sign-- quick sidebar about that-- of course, there are places where the arbitrariness of the sign seems not to be all that arbitrary.

So here are some Passamaquoddy words.

Passamaquoddy is a Native American language, Algonquian language spoken up in Maine.

There's a kind of bird in Passamaquoddy which is called kuhkukhahs.

What kind of bird do you think that is, kuhkukhahs?

It could be a cuckoo.

Any other theories?

It's an owl.

So it's their name for a great-horned owl.

They have another kind of bird called a kocokikilahsis, kocokikilahsis.

What's that?

STUDENT: [INAUDIBLE].

NORVIN W. RICHARDS: No, it's a chickadee.

Chickadee, kocokikilahsis.

So sometimes, there are things that are named after what they sound like.

Japanese has a kind of an adverb, "pikapika."

It refers to a kind of light, a quality of light.

What quality of light do you think it is?

STUDENT: Electric.

NORVIN W. RICHARDS: Yeah, has to do with electricity, yes.

Pikapika.

STUDENT: Flashing.

Flickering.

NORVIN W. RICHARDS: Yeah, flickering, flashing.

Yeah.

So some of you may have heard of Pikachu. "Chu" is the noise that a mouse makes.

It's like "squeak," so Pikachu's like "flash squeak," that particular Pokemon.

So yeah, "pikapika" means a flashing brilliant light.

If I had told you that "pikapika" meant a soft, gentle glow, that would have been kind of surprising.

So there's something non-arbitrary about certain places in the sign.

There are experiments on this where people show people shapes.

And you show people either a jagged shape or a gentle shape with lots of rounded corners.

And you say, "One of these is a dub dub, and the other is a tick tick."

And people are, like, "Yeah, the thing with the jagged corners-- that's the tick tick."

That's clear.

I have that idea. But putting aside those kinds of cases, signs are arbitrary.

In English, we call cats "cats."

But in Japanese, they're "neko" and they have other names in other languages. And even in cases of onomatopoeia-- so these Passamaquoddy words are onomatopoeic.

They are named for things that are named after the sounds that they make.

But take something like a frog.

They are onomatopoeic words for what frogs say in different languages, and they're pretty strikingly different from language to language.

Everybody seems to be able to hear something different in the call of a frog. So if we're trying to make a list of everything that you know about your native language, if you're talking about English, one of the things that we've got to list is that you know the word "cat" means cat.

And that's one of the many bits of information that's in your head.

Doesn't follow from anything.

We've just got to learn that.

So now, let's think what else is in your mental lexicon, your little list of everything you know about your language? Well, this could be lexical entry number two, "cats." Maybe.

So you could have a lexical entry for "cat" that says cat refers to these little, furry things that chase mice.

And then you could have another entry, "cats," that refers to more than one of those things.

That's one way we could do our lexical entries. But that seems kind of, I don't know, wasteful and inelegant.

Because what we're failing to recognize, if we decide to have one lexical entry for "cat" and another one for "cats," is that those two lexical entries seem to have a lot in common.

They both start with "cat."

And they both refer to groups of things-- one of them just one of those things and the other one more than one of those things-- that are furry, and chase mice, and chase laser pointers, those things. And moreover, the difference between them has to do with this S that's at the end.

And we see pairs of words that have that S at the end in lots of places.

It's not just "cat" and "cats," it's "dog" and "dogs," and "banana" and "bananas," and "computer" and "computers."

There's lots of things like that.

So there are two kinds of lexicons that we could imagine having, then-- one where we have lexical entries for "cat" and "cats," and "dog" and "dogs," and "computer" and "computers," and so on, and another where we have lexical entries for "cat," and "dog," and "banana," and "computer," and "-s"-- a lexical entry for this other thing that you get to add to nouns to make them plural.

And for one thing, if there's any premium at all on storage space, if it's at all useful to have a lexicon that's not all that large, well, lexicon number one is going to be larger than lexicon number two as long as you have any nouns in your lexicon at all.

Because lexicon number one-- if you have n nouns, you need $2n$ forms, singular and plurals, for each of them.

Whereas lexicon number two, if you have n nouns, you need n plus 1 forms-- forms for all your nouns plus "-s."

I'm oversimplifying, obviously.

Not every noun makes its plural with an S. Talk about that.

But do people see what I mean there?

So there's at least a prima facie reason to take seriously the idea that a word like "cats" is complex.

It has two parts.

There's the "cat" part and there's the "-s" part. Anyone want to object to that? Sorry.

In some languages, it would be really wasteful to try to have a lexical entry for every form of every word.

Here's a language of Papua New Guinea.

It's called Nimboran.

It has four different tenses-- future, and past, and recent past, and distant past.

There are suffixes on the verb that tell you things about the subject and the object, where there are 14 different types of subjects and objects that it recognizes.

So the subject could be singular, or dual, or plural.

There are locative suffixes.

There are aspects.

The result is that if you have a transitive verb, it has 23 and 1/2 thousand forms.

Whereas if you have a transitive verb and you are just going to list all of these suffixes, well, you need 49 of the suffixes.

So I said for English, if you were trying to list every form-- "cat," "cats," "dog," "dogs," "computer," "computers," you would need $2n$ forms if you have n nouns.

Well, in Nimboran, if you have v verbs, you need $23,520v$ lexical entries if you're going to list every lexical entry.

Take pity on the Nimborans.

Don't make them lists 23,520 forms in their heads.

Allow them, instead, to list their verbs, and the suffixes that go on the verbs, and rules for how those things go together.

That will be computationally much simpler.

They will not have to store as much stuff.

Does that make sense?

So that's a hypothesis that we're going to take seriously that our mental lexicon-- yeah, it contains words like "cat," but it also contains parts of words like "-s," this suffix that you can add to "cat" to make it plural.

And so we're going to try to understand how those kinds of things interact now. We actually have various kinds of evidence-- it's not just, well, it would save space in your lexicon-- Various kinds of evidence that human beings do divide words into these parts, that a word like "cats" is a word with two parts, "cat" and "-s."

One straightforward one is the fact that these are productive.

So if I make up a new word in English, if I tell you I have invented a cool, new machine which everyone is going to want to have in their house-- it's going to be extremely useful-- and it is called, let's see, I'll give it a name.

It's called a Blurk.

So that's my brand name.

I'm going to sell the Blurk.

I'll make millions.

Don't worry, I'll remember all of you when I'm on my yacht, working on my tan.

And the Blurk-- what's the plural of "Blurk" going to be?

STUDENT: "Blurks."

NORVIN W. RICHARDS: Yeah, if you want to buy more than one Blurk, as I recommend that you do, those things are going to be Blurks.

And there's no difficulty about that.

You know that English has this suffix that makes plurals, and you can add it to a word that you've never heard before because I just made it up.

That would be surprising if your mental lexicon contained "cat," "cats," "dog," "dogs," "computer," "computers"-- just a bunch of words that accidentally kind of resemble each other.

It looks as though that's not what your lexicon contains.

It contains a bunch of nouns and a general principle for how you make things plural, which you get to apply to "Blurk."

Does that make sense?

It's been shown-- we've shown this classic series of experiments by Berko in the '50s.

It's been shown that very young children can do this.

We will talk more about this later, but she had these pictures.

So she would show kids a picture of something.

She'd say, "This is a wug," and then the picture of two of the things that she had created.

And now there are two of them.

There are two-- and the kids would all go, "Wugs." Later, people began selling things with wugs on them.

They're a big deal among linguists.

So one reason we have to think that you have lexical entry for "-s" is that it's a procedure that you can apply to novel words.

Similarly, we seem to be hungry to create these things, these suffixes.

Classic case is "gate." So the original gate was Watergate, which was before I was born, so a really long time ago.

So sometime in the previous millennium, there was this scandal involving President Nixon and something that happened at the Watergate Hotel.

The Watergate scandal was not a scandal about water.

It got its name because it happened at the Watergate Hotel.

But people took the "gate" of Watergate-- because Watergate is so easily divisible into these two parts, because "water" is a word-- people took "gate," and it's become a suffix now.

So it's attached to words to give names for scandals.

So Nixon had Watergate, Clinton had Monicagate.

There was Irangate.

There have been various gates.

So "-gate" is now a suffix meaning "scandal."

People seem to be hungry to create suffixes, even where they weren't there before.

Yeah.

STUDENT: So like "-burger" and "-mageddon"?

NORVIN W. RICHARDS: Yes, right, like "-mageddon" or "-palooza."

Yeah, there are many of these that people create out of whole cloth.

That's a very good example. Other examples in the history of English-- there are words like "sculptor," and "beggar," and "swindler," which entered the languages as nouns.

So "sculptor" is from a Latin verb.

It involves a Latin suffix "-tor," which is used to create people who do things.

And "beggar" and "swindler," similarly.

It's an accident that they end in "-er."

But "-er" in English is a suffix that you add to verbs to create nouns meaning person who does that.

So you get "teach" and "teacher" or "sing" and "singer."

And so through a process of what's called back formation, people heard these words that ended in "-er," and they thought, "Oh, that's '-er.'"

I know that from 'teach, teacher.'"

And so they made up verbs that didn't exist before, like "sculpt," and "beg," and "swindle" by "removing" the "-er," basically, which hadn't originally been added.

Similar thing with "pea."

So originally, "pease" was a mass noun.

It referred to this group of small, little, round, green things that you could eat lots of.

So "pease" was a mass noun.

It was like "water," or "sand," or "ketchup."

But it happened to end in "-s," so it looks like a plural.

And it refers to something that you can divide into lots of-- there are the individual little, round, green things.

And so people made up a singular "pea."

And that's where that came from.

But originally, the word that we get from old English is "pease."

And it was originally not a plural.

People reinterpreted it as a plural.

So our mental dictionary, our lexicon, seems to have these things, these parts of words.

And in fact, so we can use them on unfamiliar words.

And we seem to be hungry to create them in places where there's any suggestion that a word could be divided into parts.

Yeah. STUDENT: When you use the word "lexicon," do we think of it as a dictionary of words and workings?

Or are we talking about the rules as well?

NORVIN W. RICHARDS: So it's day two.

It's not too clear yet what we're talking about, is it?

But I think right now, all we have to be talking about is a list of the words and the morphemes.

And you're absolutely right-- another thing that we'll have to have is a set of rules for how those things combine.

Actually, that's what we're going to move on to next.

That's absolutely right.

So for example, on day one, we talked about the fact that the S has different pronunciations depending on what you're attaching it to.

We want to have an account of that kind of thing.

Sometimes it sounds like an S and sometimes like a Z.

Sometimes, there are nouns that don't take an S at all.

So the plural of "ox" is "oxen."

I'll have to talk about that, too.

Good question.

Other questions about this?

These are all reasons to make you take seriously the idea that words can be divided into parts, that "cats" consists of "cat" plus a suffix, both of which are maybe listed in the set of things that you know in the lexicon, this list of things you know about your language. OK, good. So now, some terminology, including a word that Raquel just said, so get all of you caught up. Words like "cats," or "dogs," or "atrocious," or "culpable," or "unworthy"-- we're saying these are words that have multiple parts.

We can productively divide them and it's useful to divide them into parts.

Any part of a word, these parts of words, are what are called morphemes.

So "cat" is a morpheme.

"Dog" is a morpheme.

"-s" is a morpheme.

So is "atroc-" and "-ity" in "atrocious."

Those are all morphemes.

So that's the name for these parts of words combined. People sometimes distinguish the root, which is the thing to which prefixes or suffixes are added, things like "cat," and "dog," and "culp-," and "worth-," and "atroc-."

Those are all roots.

So they are the things to which you are going to add suffixes or prefixes, other kinds of things.

And then "-s" and "-ity" and "-able" and "un-," those are all affixes.

These are all-- most of them are suffixes.

One of them is a prefix.

But "affix" is a general term for these things that you add to roots. And then there's one last distinction to draw, which is between things that are free and things that are bound.

So to say that a morpheme is free is to say that you don't have to add anything to it.

It can be a word by itself.

So "cat" is a free morpheme.

"-s" is a bound morpheme.

So is "culp-" and "atroc-."

So "culp" isn't a word, "culpable" is a word.

"culp-" is a root, so it's a bound root.

You need to add a suffix to it, but it's something to which you add suffixes.

Yes.

STUDENT: Are all three morphemes in English?

NORVIN W. RICHARDS: Yes. Yeah, good question.

Yeah.

STUDENT: That doesn't necessarily apply [INAUDIBLE]

NORVIN W. RICHARDS: Yeah, so clitics-- I wonder whether we will manage to talk about clitics seriously.

But yes, you're right.

There's another kind of thing-- "clitic" is this name for these things-- that needs to be attached to something else. Yes, that's a very good point. Any questions?

So this is just all terminology.

It's terminology you will hear me use, probably.

A word can consist of just one morpheme, like "cat" or "dog."

And then there are other words, like "cats" or "industrialization," that consist of multiple morphemes. And then one other distinction that people draw-- and I hope that nobody will ask me to define this one very carefully, because it's a quick and dirty distinction people draw.

I promise that I will never harm you in any way for misusing this.

So you will not get counted off on problem sets for this.

People sometimes draw a distinction between what are called "open-class morphemes" and "closed-class morphemes." The idea is open-class morphemes are supposed to be morphemes for which you could make up another one.

You could add to the class of open-class morphemes, that's why it's called open.

So there are nouns like "xerox" and "laser" that are new nouns.

They came into the language comparatively recently.

When you discover a new thing, you come up with a name for it, and that's a new noun, you add it to the open class of nouns.

Or verbs-- there are verbs like "google" and "fax," or adjectives like "cromulent," that have been added to the language comparatively recently, as opposed to morphemes like "in," or "at," or "on"-- prepositions where it's unclear that you can make up a new preposition or a new determiner, a word like "the" or "an," or a new auxiliary, a word like "will" or "has," in "The professor has slipped on a banana peel."

You have that kind of "has."

We don't seem to be able to do that.

Now, we invented new nouns like "xerox" and "laser," or new verbs like "google" and "fax," because technology created new things that we could do.

I suppose you could imagine a future world in which, say, time travel suddenly becomes available.

And then it would be useful to have an auxiliary that means something like "happened in the past from our viewpoint, but from the future from someone else's viewpoint," or something like that.

It's unclear whether, when that happens, we will just do that-- make up those auxiliaries-- or whether we will be neurologically unable to because, well, auxiliaries are closed-class morphemes.

And you can't make more.

Interesting open question that we'll try not to talk about anymore. All terminology. One piece of literary evidence for the open and closed distinction-- this is a point that my colleague, David Pesetsky likes to make when he teaches this class.

It's a nice point.

The poem "Jabberwocky" from *Alice in Wonderland*, *Alice Through the Looking Glass*, is a poem which is tricky to understand.

So many of the words in it have been replaced by nonsense words.

But crucially, the words that have been replaced by nonsense words-- they're all open-class words.

So "'Twas brillig, and the slithy toves did gyre (HARD G) and gimble in the-- gyre (SOFT G) and gimble in the wabe," those blue things, they're all open class.

They're nouns, and verbs, and adjectives, so adjectives like "brillig" and "slithy," nouns like "toves" and "wabe," and verbs like "gyre" and "gimble." And the poem only works because we're open to the possibility that there are open-class nouns, and verbs, and adjectives out there that we don't know, so that's the sense in which we can make sense of this poem.

And you can tell that these are nouns, and verbs, and adjectives.

Like "toves" looks plural.

It ends in that same "-s" that we get in "cats," and so on.

If you tried to do "Jabberwocky," but replace the closed-class morphemes with nonsense-- so I tried to do that here-- it's also difficult to understand, but in a different way.

So "Jabberwocky," you read it and you think, oh, my vocabulary must be too small.

I wish I knew what these nouns were.

Whereas this thing, you just think, oh, the professor has some type of neurological problem.

Someone should call the police.

Something terrible has just happened.

I won't even try to read it aloud.

It would be too upsetting.

So all I've done here is to try to go through-- so all of the adjectives, and nouns, and verbs-- there are real ones, and I've just replaced the auxiliaries, and the word for and, and the prepositions, and the terminators.

I've replaced those with nonsense.

And the result of that is disturbing.

It's not the same as "Jabberwocky." That's a reason to take seriously the idea that open-class and closed-class morphemes-- they're different in a way that something in our brain cares about deeply. OK, cool.

So what's in our lexicon?

We have these entries that have information about sound.

So here's a word.

It's pronounced "cat." We're going to talk later about how to talk carefully about how to pronounce words, like what exactly you're saying when you say that it's pronounced "cat." But yeah, so one of the things that's known about this word is that it's pronounced "cat." Something about its meaning-- whatever.

I showed you a picture of a cat before.

Maybe that was better than what I've done here.

And then the kinds of information that I've been talking about-- you have to list whether the morpheme is bound or free.

Because that's not the kind of thing that is uniform across languages, necessarily.

So English, for example-- we've now several times said that the plural morpheme is a suffix, an affix.

It's a bound morpheme.

It needs to be attached to something.

In Tagalog, the plural morpheme is pronounced "mga." It's the boldfaced morpheme there.

And it's not a bound morpheme.

It's a freestanding word, so it doesn't have to be attached to anything.

So the way you say "big bananas" in Tagalog is "mga malalaking saging." "Mga" is this freestanding word.

It's at the beginning of that phrase.

It doesn't have to be anywhere near the word for banana.

So it's not attached to anything.

Tagalog orthography is mostly fairly straightforward.

This is one of the two words in Tagalog that's not spelled more or less the way it's pronounced.

So that's the plural morpheme.

It's pronounced "manga," this thing that's spelled M-G-A.

So you need to-- for a lexical entry, a word that's in your lexicon, we're going to need to list how it's pronounced, what it means, whether it's bound or free.

Here's another example of languages varying with respect to whether things are bound or free.

In English, the word "friend" is a free morpheme.

In Passamaquoddy, the word for "friend" is a bound morpheme.

It needs to be attached to something.

So in English, you say, "my friend." The Passamaquoddy word for "my friend" is "itap." There isn't a Passamaquoddy word "itap," so you have to add a prefix to the word for "friend" in Passamaquoddy, indicating whose friend it is.

It can't just be a word by itself.

So it's bound, needs to be attached to something else.

It's not a complete word.

So the lexicon of a given language has to indicate whether particular morphemes are bound or free. It has to indicate whether morphemes are prefixes or suffixes.

So for example, English has suffixes indicating the past tense.

So we have the verb "dance," and it has a past tense "danced," where we add this D to make it past.

Lardil has prefixes that indicate that verbs are in the past tense.

So the verb "to dance" is "luuli," and the past tense is "yuud-luuli," so there's a prefix "yuud-" that you add to the verb to make it past.

So you have to indicate whether morphemes are bound or free, whether they're prefixes, or suffixes, or something else.

So languages can vary with respect to what kind of affixes they have, and where they go, and what they mean.

And morphology is the study of the rules governing this kind of variability.

And that's what we're going to start the semester with, is spending some time studying morphology.

Part of the work of morphology is doing morphological analysis of languages that are not familiar, so looking at data sets and trying to piece together what all the morphemes are, trying to separate out the morphemes and figure out what they all mean.

You will surely be given problem sets in which you are asked to do this.

So I wanted-- I think this is what I'm doing next-- yeah, I wanted to show you a data set of the kind that we might ask you to deal with.

And let's work through it together and try to figure out what the different morphemes are.

So here are a bunch of verbs in Swahili.

Anybody speak Swahili?

Kind of?

Sort of?

Try to suppress your knowledge of Swahili for a second.

Nobody ask her what the answers are.

Here are a bunch of verbs in Swahili.

The first thing you want to do is look through all of these and look for words that have something in common in their meaning, and also seem-- and then try to figure out which part of the word is the morpheme that has that meaning. This is where I wish it was easier to show you things on a blackboard.

But does anybody see a morpheme in this list?

Oh, many people see morphemes.

Yes.

STUDENT: "ni" tends to indicate "I."

NORVIN W. RICHARDS: "ni" looks like it means "I."

So we've got "ni" in the first one, "ni" in the third one, "ni" in the fourth one, "ni" in "I will get it."

Yeah, a whole bunch of "ni"s.

Yeah, sounds good.

Yes.

STUDENT: [INAUDIBLE].

NORVIN W. RICHARDS: Say it again.

STUDENT: [INAUDIBLE].

NORVIN W. RICHARDS: Oh, yes, the verb "got"-- that's absolutely right-- looks like it's "pata." So all of the verbs that have "got" as part of their meaning-- if you look through this, I think there are only two verbs here-- there's "got" and there's "hit." And "got" looks like it's "pata." What's "hit?" **STUDENT:** "piga."

NORVIN W. RICHARDS: "piga," yeah, good.

Yes.

STUDENT: Actually, it seems like "pata" is more [INAUDIBLE].

And then there's "li" versus [INAUDIBLE]. NORVIN W. RICHARDS: So there's a "li."

So you're seeing a "li."

Where are you seeing a "li"?

STUDENT: [INAUDIBLE]. NORVIN W. RICHARDS: So you get "nilipata" for "I got" and "nita"-- do we see nitapaka or nita-- oh, we've got "nitakipata" for "I will get it," don't we?

Yeah.

Sounds good.

Let me move forward on the slide.

So this is great.

People are doing exactly what you want to do.

You can look through all of this stuff, look for patterns that you seem to see, try to isolate those patterns to figure out what's going on.

So one way to do this would be to start by finding the verb stems.

I deliberately jumbled the presentation at the beginning, just put them in a random order.

But one thing to do, and you guys didn't need me to do this for you-- you did it in your heads-- you make yourself a list of all the words that have "get" or "got" and all the words that have "hit." And then you would discover that "pata" is the one for "get" and "piga" is the one for "hit." And then maybe similarly, keep sorting them by their affixes.

And if you kept doing that, you would discover that there was a subject prefix at the beginning that's either "ni-" or "u-" or "wa-."

And then, that there is a "li-" prefix for past and a "ta-" prefix for future, and that there are also prefixes for the objects, "ki-" and "ku-" and "tu-" and "wa-."

So if we kept doing what we were just doing, this is where we'd eventually end up.

That's the analysis we would end up with.

Is that clear?

Does that make sense?

That's what we would be asking you to do.

We will surely ask you to do this on a problem set.

So we'll give you a bunch of data, and say, go through this.

Find all the morphemes.

And that's the kind of thing we'd want you to do. If there's anybody who is secretly thinking to themselves, I have no idea what just happened, that made no sense to me at all-- don't panic.

Send me email or talk to your TA during recitation.

This is the kind of thing that we'll try to practice some before you have to do it for real. And then the thing to do-- test yourself.

How do you say, "They will get us?" How do you say, "They will get us?" So that was Swahili.

The Swahili involved some verbs that had a bunch of prefixes on them.

And we have mostly been talking about prefixes and suffixes as the kinds of affixes that you add to things.

Just as a warning, there are other kinds of affixes out there in the world.

So I want to show you some of the other kinds of things that exist.

Tagalog is kind of famous for having what are called "infixes." So it has these morphemes that sometimes go in the middle of words.

We've got a bunch of Tagalog words.

They're all in the past tense.

They all contain a past tense morpheme.

What's the past tense morpheme?

STUDENT: "um."

NORVIN W. RICHARDS: "um," yes, it's "um."

That's right.

So you see it.

I think I highlighted it on the next slide.

I hope I was smart enough to do that.

Yes, there we go.

So Tagalog has infixes.

"um" goes-- where does it go?

What's the rule for where it goes?

Yes.

STUDENT: [INAUDIBLE]. NORVIN W. RICHARDS: Yeah.

STUDENT: Before the first vowel.

NORVIN W. RICHARDS: Before the first vowel is another way to say the same thing, yeah.

So in the words that start with vowels, it goes at the beginning because that's the first vowel.

In the words that start with consonants, well, it goes before the first vowel.

Exactly.

Yeah, that works.

Yeah, that works for Tagalog.

Now, we have to be careful when we say what an infix is.

So let me try to be careful about it.

Because I think I was careless about it a second ago.

So let me be careful.

An infix is an affix for which the rules say something like-- the rules for where it goes-- say something like, put it before the first vowel, or put it after the first consonant, or sometimes, put it after the first syllable.

A prefix is an affix for which the rule says, put it at the beginning.

A suffix says, put it at the end.

That's what infixes and prefixes and suffixes are.

And I'm being careful about this because this is something people sometimes get confused about.

A Swahili verb, like "I will get you there," doesn't have any infixes in it at all.

It's got a verb, "pata," which is preceded by three prefixes, each of which was put-- the rule for "ku-" says, put me right before the verb.

And the rule for "ta-" says, put me right before "ku-."

And the rule for "ni-" says, put me at the beginning.

Those are all prefixes.

So none of them say, put me inside something else.

None of those are infixes.

They're all prefixes.

And I'm saying that slowly and carefully because by the time you're done with all these prefixes, well, they aren't all at the beginning of the word.

There's a string of prefixes, but they're all prefixes.

Does that make sense, the distinction that I am drawing between prefixes that, through no fault of their own, find themselves not at the beginning of the word, and infixes which have rules like, put me before the first vowel.

I don't care where the word begins.

Does that make sense?

That's how we distinguish these things from each other.

And as I say, I'm going through it slowly because it's something that's confusing.

It's something people get confused by.

So if you're feeling confused, speak up. Tagalog has infixes.

There are languages like Egyptian Arabic, not every Arabic, that have what are called templates.

Here are a bunch of verbs in Egyptian Arabic involving "live" and "enter."

Anybody here speak Arabic?

Yeah, OK, so again, try to suppress your knowledge of Arabic for just a second. What do you think the morpheme is that means live? STUDENT: Maybe S, K, vowel, N.

NORVIN W. RICHARDS: So what do those verbs all have in common, those forms?

Yeah, they all have S-K-N. Or enter-- those all have D, X, L. Now X is that sound. This is something the Semitic languages are famous for.

They have what are called trilateral roots, verbs for which the morpheme is just a string of consonants, and usually three.

There are verbs that have two.

And the other morphemes-- the morphemes that tell you things like tense, and who the subject is, and things like that-- are often vowels that you put in between the constants that make up the verb.

It's called templatic morphology.

So S-K-N is to live in, and D-X-L is to enter.

And past tense with the third person subject is two a's.

So you get verbs like "sakan" and "daxal."

I'm probably saying them badly.

Do you want to pronounce them for us?

I'm probably not pronouncing them right.

Can you pronounce them?

STUDENT: [INAUDIBLE].

NORVIN W. RICHARDS: Say it again.

STUDENT: [INAUDIBLE]

NORVIN W. RICHARDS: Cool.

Yeah, so that's how this type of morphology works.

Tagalog again-- Tagalog has another kind of morphology, which is cool.

It's called reduplication.

This is how you form the future tense of certain types of verbs in Tagalog.

So the future of "swim" is "lalangoy." The future of "eat" is "kakain." The future of "become tall" is tataas.

What's the future morpheme in Tagalog? STUDENT: [INAUDIBLE].

NORVIN W. RICHARDS: Yeah.

STUDENT: [INAUDIBLE].

NORVIN W. RICHARDS: Yeah, it's like copy the first consonant and vowel. That's how you do futures in Tagalog.

It's specifically the first consonant.

And Tagalog does have syllables that end with consonants.

And you don't copy the consonant at the end of the syllable. But Tagalog has several different kinds of reduplication.

Here's another one.

If you want to say that something is rather adjective, there are a bunch of adjectives that start with "ma-."

Not all adjectives do, but there are a bunch of adjectives that start with a prefix "ma-."

And then the way to say that something is rather adjective is to reduplicate the first two syllables of the adjective.

If the adjective is only two syllables long, then you reduplicate the whole thing.

So you get "mataas-taas" is "rather tall," or "malapit-lapit" is "rather close." If it's longer than that, then you just copy the first two.

So you get "matali-talino" for "rather intelligent." So reduplicative morphemes-- there are three or four different types of reduplication in Tagalog.

You've got a morpheme which is a prefix, and it is sort of specified for phonological content, but just how many syllables.

Most prefixes, you've got a prefix, and it's got consonants and vowels in it, and you put that before.

You get a English prefix, like "un-" for "unhappy"-- that's a prefix.

It means whatever it means.

And it consists of the vowel, "uh," and consonant, N.

And you put that before adjectives to make other adjectives that mean not adjective.

Reduplicative morphemes are also prefixes or suffixes, but they don't have any specification as to what consonants and vowels are in them.

You just copy whatever is already there.

That's how reduplication seems to work. When I was first studying Tagalog, we had contests to see who could repeat the most syllables.

I remember one that we tried to pass off on our teacher was [SPEAKING TAGALOG] which means, "they are regretting it a little bit all the time," or something like that.

There's a Tagalog joke Tagalogs like to tell about Filipinos who are in an elevator, and there there's an American who's also in the elevator who is astonished when the elevator doors open, and one of the Filipinos, who's outside, asks the other, "babalaba," which involves the verb "baba," which is "to go down," reduplication, and the question particle, which is "ba."

So going down is "babalaba."

Tagalogs like the idea of an American having to react to that conversation.

So how are we doing?

So this is all a little tour through non-intuitive kinds of morphemes.

So yes, there are prefixes.

Yes, there are suffixes.

But there are other kinds of morphemes out there in the world.

And I want to warn you about those partly because you guys are all going to scatter and work on whatever languages it is you found to work on.

And I want you to be prepared if you encounter some of these types of morphology out there.

there is another kind.

O'odham, which is a language spoken by the traditional owners of the area around Tucson, Arizona, the Tohono O'odham, the desert people.

Yes.

STUDENT: [INAUDIBLE].

NORVIN W. RICHARDS: Oh, cool.

So yeah, this is the language of your place.

So it has what are called imperfect and perfect forms of the verb, which you can think of as being kind of like present tense and past tense.

And if you look at these, we're kind of cheating because I've got the name of this type of morpheme up there at the top.

If you look at these, it turns out if you study a lot about O'odham, you can convince yourself-- so if you look at them, you can see the imperfect forms are a little bit longer than the perfect forms.

So the perfect forms are things like "neo" and "nei" and "hin."

And the imperfect forms are forms like "neok" and "neid" and "hink." So your first hope might be that the imperfect versions involve suffixes, that you're starting with the perfect versions and adding suffixes.

But if you look at these verbs, you can hopefully convince yourself that that's hopeless.

The suffix is just kind of-- the consonant that's at the end just varies a lot from verb to verb.

Does that sound right?

So in fact, the going hypothesis about what's going on in O'odham is that this is a linguistically very unusual kind of morpheme.

It's called truncation.

The way you form the perfect form of the verb is to take the imperfect form of the verb and remove its last consonant, whatever it is.

So it's called truncation.

You're not adding something.

You're subtracting something.

Morphology usually doesn't subtract, it usually adds.

But this seems to be what's happening in O'odham. And then there are other things-- tone.

So there are tonal languages in the world.

If you've had the interaction with Mandarin, for example, you've heard of tonal languages, languages in which the pitch of your voice makes has an effect on the meaning of the words that you're saying.

So there are languages out there in which there are morphemes that are tones.

So Dinka, which is a Nilotic language spoken in South Sudan, there's a popular Dinka name, "Bol," which is a low-tone noun.

It can be inflected for case, so to indicate that it is the possessor of another noun, for example, if you want to say things like "Bol's brother." But what you do is to change the tone of "Bol."

So instead of just being "Bol," it's now "Bol," so it's a falling tone.

So Bol's brother is "manh e Bol," so brother of Bol, and "Bol" changes its tone.

There was an NBA basketball player for a while who was Dinka, Manute Bol.

It's apparently a really common name. We spent a semester trying to understand Dinka in a graduate-level Field Methods class.

Most Dinka morphology is tones, and vowel length, and other kinds of things.

We were always deathly afraid that we were missing half of the morphemes because they're quite hard to hear.

And then-- this is the last thing before I let you go-- there are arguably cases of morphemes that are not pronounced at all.

So there are words like "cat," and "dog," and "sheep," and there are plural morphemes like "-s"

And then maybe the plural of "sheep" also has a plural morpheme.

It's just that that plural morpheme is pronounced-- You can't tell, but I'm opening my mouth.

So maybe there are morphemes that have no pronunciation at all, they're just morphemes.

You shouldn't necessarily believe that just looking at this, but it's a possibility that we might want to take seriously.

All right, good.

I think this is probably a good stopping point.

So just to summarize, and then I'll let you go-- for every morpheme, we're going to want to indicate what's its sound, what's its meaning.

Is it a bound morpheme or a free morpheme?

And if it's bound, what kind of bound morpheme is it?

Is it a prefix, a suffix, an infix, any of these other kinds of things?

All kinds of things you'd want to understand if you want to understand everything about the morphology of a language.

We'll pick it up here next time.