[SQUEAKING]

[RUSTLING]

[CLICKING]

NORVIN RICHARDS: So morphology. Remember morphology? We were talking when we talked about morphology about the fact that a word like "unlockable" is ambiguous. It can mean either it's possible to unlock it, or it is not possible to lock it. So it can be a desirable property of a lock or not.

When we talked, I think, about the fact that at least I want to pronounce it a little differently depending on which of those things I say. So The door is unlockable" means it can be unlocked. But the door is broken, "It's unlockable," means it cannot be locked. I have this desire to put an extra oomph on "un-"-- an extra little demi-stress beat on "un-" if I mean the thing on the right.

And what we said, when we were talking about this, was we can account for this kind of ambiguity in the following way. We'll say some things which are clearly true. First, "-able" combines with verbs to make adjectives. There are a bunch of verbs that you can make into adjectives this way.

So you can take a verb like "sing," or a verb like "understand" and get adjectives like "singable" or "understandable." And to say that something is singable is to say that it's possible to sing it, right? That's what that means. "Understandable" means it's possible to understand it.

So there's a "-able" suffix that changes verbs into adjectives. And then, we said, there are two "un-"s. There's an "un-" that combines with verbs and makes verbs. That's an "un-" that means something like undo the effects of, or change something so that it is no longer in the state that it would have been if the verb had applied to it, or something like that.

So "untie" means "take something and do things to it such that it is no longer in the state that it is standardly in after you have tied it." Or to put that a little more briefly, "take something that was tied and make it so it is not tied." That's what "untie" means. Similarly for "undo" and a bunch of other "un-"s.

Yep. So there's an "un-" that applies to verbs, and has-- it's sometimes called a reversitive meaning. You change it so that it's back from the state it would have been in.

And then there's another "un-," let us call it "un-" number two. "Un-" number two combines with adjectives and makes adjectives that mean more or less "not (adjective)." So "unkind," or "unfamiliar," "unfortunate." These all mean not the adjective, whatever it is. And so what we said was-- oh, hey. Raquel?

AUDIENCE: So I have a horrible thought, and it's random.

NORVIN RICHARDS: Oh, no.

AUDIENCE: But when you were saying, put something so that it's no longer tied, I would argue that not only are we saying make it so it's no longer tied, but leave it in a similar state that it was at the beginning chronologically, because you can chop a shoelace in lots of little pieces, and it's no longer tied. [INAUDIBLE]

NORVIN RICHARDS: Oh, well that's a nice point. Yeah. So if I take-- let's see.

If I untie a shoelace, first of all, it has to start off tied, is that right? So if I have a shoelace which is not tied, I can't untie it. Yeah. But if it's tied and then I take scissors and I cut it into many small pieces, have I untied it? No, surely not.

When Alexander cut the Gordian knot, he wasn't untying the knot. He was being more direct than that. Good point.

So you have to put it-- so what you just said, I like the way you just said it. You have to put it back in the state that it was in before it was tied. Is that the way to say it?

AUDIENCE: Going back and tie it, [? essentially. ?]

NORVIN RICHARDS: Yeah. Yeah. So yeah, that's a nice point. Undo. I mean, because what we said-- we talked about this in class, that there are lots of things. That it's hard to do this. This "un-" is kind of picky about what it can combine with.

So the "un-" that attaches to adjectives can attach to lots of adjectives, but you can't-- if I take some shoes, I can't unwash shoes, or unwash socks. That doesn't mean "take the socks and make them dirty again." You could imagine that it would, but that's not what it means. And maybe that's related to your observation. Yeah, it's interesting to think about.

Joseph, did you have a--

AUDIENCE: Yeah, I was going to-- based on what Raquel said, does the final-- after you "un-" something, is that going to be able to be redone? So if I untie a shoelace by cutting it up, now--

NORVIN RICHARDS: Yeah. It can't be tied again. Well, let's see. If you undo an operation on a computer, does it have to be possible to do the operation again? I don't know, maybe.

Yeah, there is a redo, isn't there? Yeah? Yeah, I wonder. Maybe that is what it means. Maybe it means-- yeah. And as you say, this is related to Raquel's point, you have to put it in a state such that the verb could apply to it again, maybe. Maybe.

Yeah, so there's a lot. What I actually did on the slide was just to say, "un-" number one combines with verbs to make verbs. And then my mental notes to myself say, vamp something about what it means. You guys are doing some sophisticated thinking about what it means. It's a little complicated, figuring out what it means, as you can see. Nice point.

Still, what I've said on the slide, apart from the vamping, I think is true. There's an "-able" that changes verbs into adjectives, and there are "un-"s, one that combines with verbs, and another that combines with adjectives. Does that sound right so far?

And what all of this means is the ambiguity of "unlockable," we get to attribute it to basically the fact that there are two "un-"s. So you could have attached the "un-" before you attached the "-able," or you could have attached the "un-" after you attached the "-able." Because the "-able" is going to change a verb into an adjective, and "un-" can combine with either a verb or an adjective.

So that was the way we were talking. So the idea was you can start by attaching "un-" on number one, so "lock," giving you this new verb, "unlock," which is related to the meaning of "lock" in mysterious and complicated ways that we've now been talking about. And then you can attach "-able" to that and give you an adjective, "unlockable."

And I drew trees like this before and said, yeah, these trees are kind of a representation of the order in which you did things. That's all they're for, is to say you started by putting together those two things at the bottom of the tree, the verb and that prefix, and you created a verb. That's what that prefix does, it takes verbs and returns verbs. And then that verb gets to attach the second thing you do. That verb attaches to the suffix, and now the suffix changes that verb into an adjective.

Or you can do things in the other order. You can attach "-able" to "lock," giving you an adjective, and you can take "un-" number two and attach "un-" number two to that adjective, giving you a new adjective meaning "not lockable." And so "unlockable" is ambiguous. And the ambiguity, we said, comes from the fact that, well, there are two "un-"s, which is something we can observe.

There's an "un-" that goes on verbs and an "un-" that goes on adjectives, and there's a "-able" that changes verbs to adjectives, right? Yes. And that means that there's an "un-" that can go before the "-able," and there's an "un-" that can go after the "-able," and so we get this ambiguity. And the ambiguity is what we would expect it to be. Yeah? This is all review.

Having said all this, I guess what we expect is that you could have two "un-"s, I didn't put this on the slide anywhere, that it would be possible to say it is "un-unlockable," which I think is true, actually. "This door is broken. It is un-unlockable." That would mean it cannot be unlocked. I think that's true.

Go ask some people whose minds have not been contaminated by linguistics. Go harass your roommates or whoever. You'll make yourself popular that way. And if you are going to try to learn from me how to make yourself popular, then boy, are you in the wrong class.

OK, is this all clear? So the important part of the story is to say, yeah, "unlockable" is a word. It's got three morphemes in it, a prefix, and a root, and a suffix.

But it isn't just three morphemes in a row. Those morphemes were assembled in an order. You assembled them pairwise. You first put two of them together, and then you added another one to the result of that first putting together, and that order has consequences for interpretation.

So it's not false to say that unlockable consists of three morphemes, a prefix, a stem, and a suffix. But it's not a complete description of what's happened either. It is that, but it is also those trees, or those trees represent something, namely the order in which you did things. Does that make sense?

Now what we're going to do now is start talking about syntax, which is the study of how words are assembled to make sentences, words, sometimes things smaller than words, as we'll see. And we're going to see that it's useful to think of sentences as being put together in a bunch of operations more or less the way "unlockable" is-- that we take pairs of words and put them together to form larger objects the way I just did for "unlockable."

Just to give you an example of the kind of thing we're going to talk about, I think I talked with you about this on the first day. Just as with "unlockable," it is true, but it is not a complete description to say that is three morphemes, a prefix, and a stem, and a suffix. That's true, but it's not a complete description. A complete description involves those trees or some equivalent explanation of the order in which you did things.

Similarly, these two sentences, "John walked up the stairs," and "Mary looked up the reference," it's true, but it is not a complete description to say that those are two sentences that consist of a noun, a verb, a preposition, a determiner, and a noun. Did I say anything that alarmed anybody just now? So those are two sentences that consist of five words.

That's true. And we can say things about what kinds of words they are. There are nouns up there, and verbs, and prepositions like "up," and I just called it a determiner, "the." People sometimes call it the definite article. You'll hear me call it the determiner a lot in this class.

It's true to say that those two sentences consist of those five words. But just as with the two versions of "unlockable," we can convince ourselves that it's not a complete description, that it's helpful to think about the order in which you assembled these things. So what I told you last time was, effectively what we're going to want to say is, there was an operation that created the substring "up the stairs" in that first sentence. That's what we call a constituent.

And there is no similar operation creating a substring "up the reference" in the second one. And again, this is review, but it's review from the first day. What I convinced you, I think, I hope, I tried, was that there are various syntactic phenomena, various things you get to do with sentences that treat "up the stairs" as a single object that syntax gets to manipulate in various ways. We're going be talking about that, about what that means exactly.

And the same syntactic operations don't get to treat "up the reference" as a single thing. So we said it's possible to ask questions like, "Up which stairs did John walk?" It's fairly stuffy questions. It's a strange way to ask the question, but you can say it. As opposed to, "Up which reference did Mary look?" which is gibberish.

So we're going to draw a distinction. This is maybe the first time that I've shown you a case where syntacticians have to care passionately about the difference between one sentence, which is complete gibberish, and another sentence, which is not great. There's a fair amount of great syntax that's built on those kinds of distinctions.

Or similarly, if I say, "John walked up the stairs," and you're surprised for some reason, you can say, "Up the stairs?" That's not a weird thing for you to say. Whereas if I say, "Mary looked up the reference," and you're surprised, no matter how surprised you are, you're not going to say, "Up the reference?" That's a weird response.

So the point is, just as with "unlockable," yeah, it's three morphemes, prefix, stem, suffix. But having said that, we haven't said everything. We have to know which parts of "unlockable" are single parts. Is it unattached to "lockable," or is it "unlock" with a "-able" attached to it? Those are different adjectives with different meanings.

Similarly here, it's not enough to say, yeah, we've got these five words of these types. We've got to know which of these things go together, which things are parts, single parts. And there is a part, "up the stairs," what we call a constituent, that various kinds of syntactic phenomena care about, like the syntactic phenomenon can I repeat this if I'm astonished? Yeah, that's a test-- kind of test for this property of constituenthood.

So there's more to a sentence than its parts. We've got to know, in what order did you put those parts together, just like with "unlockable." Yeah? Makes sense?

So we're going to do syntax. We want a theory that's going to divide sentences into three kinds. There are, on the one hand, sentences that you've heard a zillion times before, like "We're going to class." And on the other hand, sentences that you have possibly never heard anyone say, but that are fine. So if I say, "My anteater is hula dancing," you may never in your life have heard anyone say that.

Maybe you have. Some of you may have had more exciting lives than I have. But it's an OK sentence. As opposed to, "We're class going to," which I've given a star there. Recall that the star is what syntacticians give to things that are bad.

So syntacticians are the opposite of normal people. When we see things we don't like, we give them a gold star. Usually, it's not gold. It's black. I guess that makes a little more sense.

This three-way distinction is worth highlighting, because if I had only given you the first sentence and the second sentence, "We're going to class," and "We're class going to," the first sentence is good, and the second-- and the last sentence is bad, some of you might be thinking, well, that first sentence, it's a sentence I've heard lots of times before. Maybe when I was a small child, I heard my parents say that. And I heard them say it and I remember it now. And maybe that's all. Maybe that's what syntax is, it's the ability to remember things you've heard people say.

But the existence of the second class of sentences shows that that's hopeless. So you're not just remembering things you've heard people say when you're deciding which things deserve the black star and which things don't. You're not just categorizing sentences into sentences you've heard before and sentences you haven't. You've got this intuition about which sentences are acceptable.

And it's not just about which sentences are in your input, which sentences you've heard people say. It's something else. We're going to try to figure out what that is.

But I'm giving you these three sentences to slay a hypothesis that you might be entertaining. Stop entertaining that hypothesis. Make it go home. It's not a good hypothesis. It won't do you any good. Is that clear? Are people clear on the hypothesis that I'm attempting to slay? Yeah?

AUDIENCE: Maybe to [INAUDIBLE] a modified version, what if it's not particular sentences that we're remembering, but structures of sentences that we've built up over time?

NORVIN RICHARDS: Yeah. So if we pursued that-- that's that's much more sophisticated than the hypothesis I was trying to slay. So this is day one of syntax So no, you're raising a good point. What if all you're doing is remembering chunks of sentences?

So maybe you've never heard anybody say, "My anteater is hula dancing," but maybe you've heard people say "anteater." Maybe you've heard people say "My anteater," maybe not. But at least you've heard people say "My (noun)," and you've heard people say "anteater," and "is hula dancing." Well, yeah. Maybe you've heard somebody say something like that. So maybe there are some parts of this that you could be acquiring that way.

We're going to have to be-- we're going to have to pursue that hypothesis long enough to find out exactly what it says, right because what I just said, which wasn't really the hypothesis, it was an attempt to represent it, we're going to have to figure out how to rule out "We're class going to," because you probably have heard people say "we're," and "class," and you've heard people say "going to." Someone asks, "Where are you going to?" We've heard people say that.

And so we're going to have to be careful about that hypothesis to try to figure out how we could use it to rule and-- to draw the distinctions that are on the board. But you're right. So just to summarize this conversation you and I have just had, I said, there's a fairly stupid hypothesis, which says-- and I'm raising it partly because it's been seriously entertained in the literature before, which says, all you're doing is remembering things people have said, and that's what distinguishes grammatical sentences from interpretable sentences. That's false.

So we have this distinction between sentences that are grammatical and sentences that are ungrammatical that isn't just a list of all the sentences you've ever heard before. You can take a sentence you've never heard before and accept it. You're raising the point there could be a better version of the stupid hypothesis, one that said, well, maybe there are some parts of the sentence that you've heard before, which is true.

We're going to have to be explicit about which subparts count and what exactly we mean when we say that. But you're right, there could be a better version of that hypothesis. Good point. Other questions? Did I successfully answer your question? Yeah. OK, all right.

So let's talk about what's wrong with "We're class going to." They have several hypotheses about what's wrong with it. One could be that it doesn't mean anything. It's a thing people sometimes say. When I'm trying to explain to people-- when I'm on an airplane flights and people ask me, what do you do for a living?

How I answer depends on whether I feel like talking to the person or not. So if I feel like talking to them, then I will tell them that I work on endangered languages, which is something I do I work with, languages that are down to their last few speakers, and try to work with them. And then sometimes they're interested in that and they talk to me. If I would like to get them to leave me alone so that I can read a book or whatever, I tell them I'm a theoretical syntactician. That usually ends the conversation fairly quickly.

But when it doesn't, when they say, "Oh, what's that mean? What do you work on?" Then I will say, well, I'm trying to figure out why some sentences are grammatical and others aren't.

And I'll give examples. And sometimes they will say, "Oh, but what does that mean?" "We're class going to." Maybe that's what's wrong with it. It doesn't mean anything.

But the problem is we're capable of distinguishing grammaticality, even in sentences that don't mean anything. So this is a famous example of Noam Chomsky's. In fact, I think if you look him up in like Bartlett's *Familiar Quotations,* you'll find this first sentence, "Colorless green ideas sleep furiously."

He actually offered that sentence as a part of a pair of sentences. He wanted people to contrast that sentence with the same sentence backwards: "Furiously sleep ideas green colorless." So consider those two sentences. And the point is neither of them means anything. So the first one doesn't mean anything. And then if you turn your attention to the second one, it also doesn't mean anything.

But they have a different status. So the second one doesn't mean anything and it's ungrammatical, whereas the first one, it doesn't mean anything, but you feel as though-- and this is what I'm slowing down right about here where I say it doesn't mean anything. Because the reaction people sometimes have right about here-- does anyone want-- here, sometimes people say, "Oh, but look. Suppose 'colorless' meant 'boring,' and suppose 'green' meant 'environmentalist,' and suppose 'sleep' and 'furiously' meant different-- suppose these words meant something other than what they mean. Then the sentence would mean something!"-- which is true.

But it's another way of saying the same point. Yeah, the first sentence, "Colorless green ideas sleep furiously," is meaningless if you don't mess with the meanings of the sentences. But it obeys the rules for how words can be combined. If the words meant something else, the sentence would be fine.

We can have English sentences that consist of two adjectives modifying a noun. And then there's a verb, and then there's an adverb. Not that one, but "Big green monsters snore loudly," that would be fine.

So when the person on the airplane flight next to me says, "Oh, what's wrong with 'We're class going to' is that it's a meaningless sentence," if I'm really, really desperately trying to end the conversation, I bring out these kinds of pairs. So it's not about meaning. We have this intuition that there are sentences that are OK and sentences that are bad, which is separable from our intuition about what means something and what doesn't.

I've just been asserting things about our feelings about these sentences. Do people have this feeling about these sentences? First, that they're meaningless, and second, that the first one is OK and the second one is bad? Yeah, Raquel?

AUDIENCE: I can't remember the word for this, but you were saying that certain types of words are categories that you can add more words to, even if you don't know what they like modifiers and things like that. And like, "This house is very [blope?]" That's grammatical, even if you don't know what it means, or you can't make that--

NORVIN RICHARDS: Oh, yes. Yes. We were talking about open class and closed class morphemes. So *Jabberwocky* is a poem that you can write, changing all the lexical items to nonsense words, but you couldn't do that with functional items. Yeah, that's right.

AUDIENCE: So maybe in situations where something doesn't really make any sense, your brain still knows that OK, maybe it almost like that kind of class where you're like, well, I mean, you can fit like an adjective like this--

NORVIN RICHARDS: Yep.

AUDIENCE: --even if it means something ridiculous right here, and it sounds OK even if it's [INAUDIBLE].

NORVIN RICHARDS: Yeah. That's a nice way to put it. I guess this is similar to what I was trying to say about a reaction I sometimes get to this sentence, which is, you say "Colorless green ideas sleep furiously" doesn't mean anything. And people will sometimes say, "Well, but if these words meant something else, then it would be OK," which is true. Yeah?

AUDIENCE: I wonder if it just has to do with the idea [INAUDIBLE]

NORVIN RICHARDS: Yeah. I think I may not have heard all of that, but the idea was the first sentence, it's clear what "colorless" and "green" are trying to do. They're both trying to modify ideas. Is that right?

And it's clear what "furiously" is trying to do. It's an adverb and it's trying to modify "sleep." When I say it's meaningless, what I mean is you can't sleep furiously, right?

And things can't be both colorless and green. And if they could, well, ideas couldn't have those things. They're abstract, right? That's the sense in which this is a meaningless sentence.

I think you're raising the point, which is a good point, yeah, it's meaningless, but the words in it are fitting together the way they should. The adjectives are going where adjectives go. They go before the noun, that's what they're supposed to do. And in the second sentence, they're not doing that.

Is that the relation to the point that you're making? Yeah. Yeah? So that's the intuition that we have, that it's possible to have feelings about sentences of the form, well, I don't know what this is supposed to mean, but the parts are all in the right place. We are in the syntax part of this class. It's all about parts being in the right places.

We will eventually do the semantics part, which is about meaning. But the point is that it's possible to study these things independently of each other. So completely independently. So when I was showing you "unlockable," what we were really doing was morphology, but we were also talking about meaning. We were interested in the fact that word had two different meanings.

We talked about the fact that it meant different things. So we get to use semantics as kind of a probe into what's happening in morphology. We'll do things like that in syntax. But our feelings about whether sentences are grammatical or not, or acceptable or not, are separable from our feelings about what they mean. That's the point, if anything.

The reverse, there are sentences that are ungrammatical, but-- that are meaningless, but grammatical, like "Colorless green ideas sleep furiously." On the flip side, there are sentences that are meaningful, but ungrammatical, the sentences where it's very clear what they should mean, but you just can't say it that way.

Here's a quadruple of examples that's meant to show you that. So you can say, "Put the sweater on," you can say, "I put on the sweater," you can say, "I put it on," you cannot say, "I put on it."

The meaning is not the problem here. It's clear what "I put on it" would mean. But there are facts about how English pronouns work and how English particles work that mean that you don't get to say that. It's not a meaning thing. It's something about syntax. It's something about how these parts get to combine. You want to try to understand that.

The only point of these few slides has been it's possible to study syntax independently of meaning, where by independently, I just mean the facts of syntax don't just reduce to facts about meaning. They also don't just reduce to facts about what you've heard before. That's what I've been trying to show you.

Here's another thing you might think about what's wrong with "We're class going to." It ends in a preposition. Where any of you taught in school you must not end sentences with prepositions? Some of you were--

AUDIENCE:	[INAUDIBLE]
NORVIN RICHARDS:	Yeah. Some of you were not. That's kind of interesting. I was. I was beaten by English teachers for ending a sentence-- that's not true. I was not beaten. I was spoken to harshly by English teachers for ending sentences with prepositions. Do you know why we were told not to end sentences with prepositions?
AUDIENCE:	It's reductive? Because I guess-- because where are we going to could just be a [INAUDIBLE].
NORVIN RICHARDS:	So there are some cases like that but look there are also cases like, "Who are you talking to" where-- sorry, where-- who am I apologizing to? The chalk, I guess. "Who are you talking to" where, without the "to," it doesn't have to be about redundancy, I don't think.
	Is this a sentence that you've ever heard anyone say? Is this OK? Yeah, this is, I think, pretty good English.
	So when our English teachers were telling us not to end sentences with prepositions, we should have asked them, what are you talking about? Because the fact is that English speakers end sentences with prepositions every day. Do you know why your teacher told you not to do that? Yes?
AUDIENCE:	Maybe it's because the object isn't clear?
NORVIN RICHARDS:	Well-- but is it? I mean, it's kind of-- if I ask you, who are you talking to? There's a sense in which the object isn't clear. I'm asking you who the object is, right? So it shouldn't be any harder than, who are you--
AUDIENCE:	Who are you talking--
NORVIN RICHARDS:	--describing, yeah. Yeah?
AUDIENCE:	Is it because the "who" is supposed to be the direct object of "you are talking to" this person, so it's like, "to whom are you talking"?
NORVIN RICHARDS:	So yeah. What your English teacher wanted you to say was, "To whom are you talking?" which many English speakers are capable of saying, possibly because their English teachers frightened them into it. But it's not my go-to way to say this. I don't know about you guys.
	So here, "who," the question word, is up here at the beginning by itself. Here, "to whom" is part of this phrase that's at the beginning. But question, why does "to" have to come along, according to your English teacher? Yes?
AUDIENCE:	Is this another example because that's how it's done in Latin?
NORVIN RICHARDS:	Yes.
AUDIENCE:	[INAUDIBLE]
NORVIN RICHARDS:	Yes. Yes. Your English teacher told you to do that because Latin, actually, among many other languages, doesn't allow you to do this. You have to do this. English is quite rare in being able to do this. Most of the languages of the world can't.

And some time in the 15th, 16th century, a number of grammarians decided that English would be way cooler if it were more like Latin, and so they began declaring that it was. And that's why your English teacher told you that you can't say this, which is ridiculous. We should be proud of the fact that we can say this, because, as I say, it's rare.

Most languages can't do this. We should have this on our flag or something like that. There should be a stranded preposition, a preposition at the end of the sentence. So yeah, no reason English has to be like Latin. Or like I say, a zillion other languages.

Most of the languages of Europe, French, or German, or Italian, or whatever, you can't leave prepositions at the ends of sentences. But those teachers don't have to tell their children not to say things like, who are you talking to, because they literally can't, and none of those kids would ever do that. But in English, we can. We should be proud of that.

So that's not the problem with "We're class going to." It does end in a preposition, but many perfectly fine English sentences end in prepositions. There's a distinction-- yeah, there's the example "Who are you talking to?" There's a distinction that's worth drawing between what's called prescriptive and descriptive studies of grammar.

So what we are doing in this class is trying to figure out what people actually say, what the rules are for putting sentences together in English. There are other kinds of things that people say about how English should be spoken. We're not going to talk about that stuff, except to mock it the way I did just now.

So prescriptive grammar is the study of rules that your teachers might have taught you in school about how to speak, some of which, just to stop mocking it for a second, your teachers might have tried to tell you things that would genuinely improve the quality of your writing, like get rid of ambiguities of various kinds. So if you're now mentally composing nasty messages to your English teachers, don't send them. They had your best interests at heart, and they probably taught you a lot of things that were valuable.

But they also taught you some things that became popular around the 15th, 16th century because people thought that English would be better if it were more like Latin. And so we're not going to try to improve your writing in this class, except insofar as the writing advisors can do that. We're not going to be talking about prescriptive studies of English grammar.

We're not going to talk about how you should speak, or how you should write. We're just going to talk about how you do. So this is going to be a study of descriptive grammar and not prescriptive. Yeah?

AUDIENCE: So for that second sentence on the board, "What are you talking about?"

NORVIN RICHARDS: Oh, this one? Yeah?

AUDIENCE: How would you answer that such that something [? throws ?] the word [? around. ?] Because "About what are you talking?" is--

NORVIN RICHARDS: I can't do that in English, "About what are you talking?"

AUDIENCE: That sounds wrong, actually. Whereas "To whom are you talking?" sounds fancy and snobbish, but still right.

NORVIN RICHARDS: Yeah, yeah, yeah. No, you're raising an interesting distinction. So in many languages, most languages, including Latin, you have to say, "About what are you talking?" and you have to say, "To whom are you talking?" So these are languages in which you never leave a preposition at the end of the sentence. You always bring it along with the question word to the beginning of the sentence.

But you're raising a really interesting point. In English, there's this distinction between the examples where leaving a preposition behind is what you prefer, "Who are you talking to" But you can kind of say, "To whom are you talking?" And others, were "About what are you talking?"

Do other people have this intuition, that "About what are you talking?" is worse than "To whom are you talking?" I have that feeling, too, I think. There are other examples. There are examples that are really quite bad.

And other examples which get better. So things like "We left despite her warnings." And then consider two kinds of questions you could ask about that. "What did you leave despite?" And "Despite what did you leave?"

Is either of those acceptable at all? "What did you leave despite?" and "Despite what did you leave?" Who prefers "What did you leave despite?" Who prefers "Despite what did you leave?" Who would do anything to avoid saying either of these things? Yes. Yeah, yeah, yeah.

So here's another example of one sentence that's quite bad and another sentence that's only bad-ish. You might want to try to understand what's going on. So there's a fruitful area of research here.

OK, English doesn't-- English is happy to leave prepositions at the ends of sentences. But in which cases is it happy to do the Latin thing? And in some cases, it's happier than others. It's interesting to try to study.

Another distinction to make. So we've drawn this distinction now between meaningless on the one hand and ungrammatical on the other. That sentence can be both meaningless and ungrammatical, but it can also be meaningless and grammatical, like "Colorless green ideas sleep furiously." We've drawn that distinction. We've drawn a distinction between prescriptive and descriptive statements.

So prescriptive statements are things like "Don't end sentences with prepositions," which are-- how shall I say this?-- false. Not a good description of what English speakers actually do. They are aspirations. We're not going to do that. We're just going to study what English speakers do.

So here's another useful distinction. It's sometimes called competence versus performance. Imagine that I am standing up here talking to you. So far, this should be easy to imagine. Except I'm not standing.

Imagine that I'm standing up here talking to you and I say, "This is the--" and then I Inhale a fly. So imagine that-- oh, I don't have to wear a mask. I keep forgetting that. Imagine that I take off my mask and I Inhale a fly. So I say, "This is the--" and then I stop. I'm like [IMITATES COUGHING] and I stop right there.

And then imagine that this experience is so traumatizing for me and also for the fly, that I just I never complete that sentence. So I say, "This is the--" and then I stop.

There are two attitudes that we could have to me having uttered that sentence. That's the sentence I uttered. "This is the cough, ugh, puh." That's something I said. And I'm a native speaker of English.

So there are two kinds of things we could say. One would be to say, we're developing a theory of all of the kinds of sentences that Native English speakers can say. And that was one. "This is the cough hack splutter." And so we want a theory that allows that to be a sentence of English. That's one kind of thing we could say.

This is one of those moments that happens a lot in classes where the professor says, "Here's one thing we could say," and then describes something completely ridiculous. You could do that.

But here's another thing we could say. We could say, no, look, if we're developing a theory of all of the things that native English speakers can say, native speakers of any language at all, but we're going to start with English, what we want is not a theory that covers "This is the cough, hack, splutter." That's not going to be one of the sentences we're going to try to get.

We're going to try to get sentences like, "This is the answer" or whatever. That's going to be a sentence, whatever it is I meant to say. And then there are going to be other things. Flies, sudden heart attacks, and then other kinds of things that are maybe less clear to think what to say about them.

Flies, sure. Sudden heart attacks, yeah. What about if I forget what I was going to say in the middle of a sentence. I know that's hard to imagine, but imagine that I did something like that. I'm in the middle of a sentence, and I'm talking, and then I just forget where I was going, and-- where was I going with that? Who knows. That could happen.

So what we're going to have-- so this is a different approach, and it's the one that you might imagine I'm recommending. What we're going to have is the idea that we're going to develop a theory of what English speakers say, but we're going to imagine the kind of English speaker who never inhales flies, and never forgets what they were going to say, never has a fatal heart attack, and only speaks in completely grammatical sentences. There might not be any speakers like that.

If you have ever looked at a transcript of somebody talking, there aren't any sentences in there, unless the person is reading a text, or unless the person is Noam Chomsky, I have to say. It was quite weird reading transcripts of Noam Chomsky talking, or listening to Noam Chomsky talk, because, in fact, he talks in complete sentences, paragraphs. It's kind of astonishing.

Normally, if you look at the transcript of somebody talking-- speaking of Noam Chomsky, I've often heard him say this. Journalists know that the best way to make someone look like a complete idiot is to quote them accurately. Just to write down exactly what they said, because they'll say "um" and "uh" and they'll stop, and they'll pause, and they'll change what they said, and they'll inhale flies. Things will happen such that their sentences are not fully grammatical sentences. What journalists, in fact, do is to clean up all that stuff so that people sounded like they were talking in complete sentences.

So we're going to develop a theory of what English speakers say, but it's going to be a theory that's divorced from reality to a certain extent. We're going to imagine what people would be like if there were no distractions, and no flies, and no sudden homicides, no falling asleep in the middle of your sentences, all of that stuff.

So the distinction here is competence versus performance. We're imagining a speaker who's kind of like a frictionless plane, that there are various kinds of complications, and there's no air resistance or whatever else. Various kinds of complications don't arise. So we're going to be talking about speakers' competence, what they would do if there were no distractions and no problems.

There's also performance. That's the study of what people actually do. And we want to study that, sure, but we're going to develop a theory of competence on the theory that it'll be simpler in the hope that by abstracting away from various kinds of complications, we'll get a clearer picture of what's going on. Does that makes sense? That's how we're going to do syntax.

Similarly, "It's raining" is a possible sentence of English. "John thinks that it's raining" is a possible sentence of English. "Mary thinks that John thinks that it's raining" is a possible sentence of English. In fact, for any sentence in English, it's always possible to create a longer sentence, so take any sentence, S.

Here's a recipe for another sentence of English. You can always say, "She thinks that S," where she maybe refers to different people in every clause. So you can say, "It's raining." "She thinks that it's raining." "She thinks that she thinks that it's raining." "She thinks that she thinks that she thinks that it's raining" can keep going arbitrarily long. There is no bound on the length of English sentences.

When we say it that way, you can tell that I am talking about competence because no matter how many recordings of English speakers you go through, you will never find an infinitely long sentence. Nobody actually says these things. But the reason nobody says an infinitely long sentence, the idea is going to be-- That isn't a fact about grammar. It's a fact about life.

And we don't care about life in this class. The fact that if I were to start saying, "She thinks that she thinks that she thinks that she thinks that she thinks that she thinks that she thinks that she thinks that it's raining," then eventually people would stop listening to me, or I would run out of breath, or I would need to take a break to eat, or I would die-- there are various reasons that I will eventually stop uttering my infinitely long sentence,

but we're not going to have a grammar that says-- we're not going to try to find out what's the longest sentence anybody ever uttered and try to get that fact to be a fact that we want our grammar of English, our theory of the possible sentences of English-- We're not going to try to predict that.

What we're going to have is a theory that says English sentences can be arbitrarily long. And then, yeah, eventually people die, and so nobody ever says a sentence that's infinitely long. But that's about death. That's not about-- and we're not going to talk about death in this class, except when we do.

Does that make sense? Yeah? So that's another move we're going to make, another instance of us caring about the difference between competence and performance. Nobody ever performs an infinitely long sentence, but we're competent to produce them.

So enough talking about what we're going to do. Let's begin doing it. Questions before I begin doing some syntax?

Here's the sentence, "I will find the red book." grammatical sentence. Acceptable. It's clear what it means, although we've just said it doesn't matter whether it means anything.

I said early on we're going to want to have a way of saying which parts of this sentence were put together as units, like with "unlockable." We wanted to be able to say "unlockable" is ambiguous because it can consist of a unit "unlock" to which you've added "-able," or a unit "lockable" to which you've added "un-." That's what that ambiguity comes from.

And we're going to do a similar kind of thing with syntax. We're going to look for these units. And what we're going to find is that there are various phenomena that care about whether something is a unit in that tree, a single blob of structure. So in a sentence like, "I will find the red book" for example, we'll see that syntax treats that string, "The red book" as a unit.

There are various phenomena that care about that. So one of them is what's sometimes called topicalization. It's possible to say things like "The red book I will find." For me at least, it's easiest to say things like that if I follow it up with "The blue book, I will leave right where it is." It's OK to say things like "The red book I will find."

It's OK to take a substring like that, "the red book" and put it together with another similar substring conjoined with the word "and." so you can say things like, "I will find the red book and the blue pencils." It is OK to use "the red book" as a possible answer to a question. This is like the stuff we were saying before about things you can say if you're astonished. So you can say "the red book" as, basically, a sentence under the right circumstances. For example, if somebody has just asked you what will you find.

These are all ways in which "the red book" is treated as a single object that syntax gets to refer to. I hope I was smart enough to contrast it with something else on the next slide. Yes, I was. But let me give you one other test.

Yeah, this is a test. I can say things like "what I will find is the red book." So I can rearrange the words of the sentence in a way such that there is a word, "is" before that string "the red book." It puts a special kind of emphasis on "the red book." It's called clefting.

Contrast that with-- so this is not just a property of every three-word string in the sentence. So "find the red," for example, is not a constituent. It's not a phrase. It's not something we need to make reference to. So you cannot say things like "find the red I will book."

So "the red book, I will find," "the blue book, I will leave where it is," fine. But "find the red I will book, leave the blue I will pencils." No. Can't do this with just any random three-word string.

Similarly, there is no question-- there are questions to which the answer is "The red book," like "What will you find?" There are no questions to which the answer is "Find the red," apart from "What are the third, fourth, and fifth words of this sentence?" So put aside mental linguistic games like that. You can't-- and there's no question that will give you that answer. Yeah?

AUDIENCE: What color do I need to find?

NORVIN RICHARDS: "What color do I need to find?" "Find the red." Really? Oh, I see. You mean "What color book do I need to find?" "Find the red."

AUDIENCE: How [? about ?] "Find the red one?"

NORVIN RICHARDS: Find the red-- I want to say "Find the red one." Yes. Is there a faster way to convince you of that?

Or similarly, if I switch to my other way of eliciting fragments of sentences, if I tell you I will find the red book and you're amazed, you can say, "The red book?" But if I tell you that I will find the red book and you're amazed, you're not going to say, "Find the red?" I think. Do you think that's true?

But yeah, I take your point about-- to the extent that you can use "the red" as shorthand for "the red one."

AUDIENCE: It's red acting as the noun, not red acting--

NORVIN RICHARDS: Yeah. Yeah. Yeah, no. That's an interesting point. Several people have points about that point. Joseph?

AUDIENCE: I think "Find the red" is an acceptable answer to a question that you're finding this-- suppose you have this fictional-- this children's game where there's a bunch of little tiles. You have to find the red--

NORVIN RICHARDS: Yeah yeah.

AUDIENCE: --the red ones.

NORVIN RICHARDS: Yeah. So this is like your example where we're going to treat red as a noun that you're going to go find.

AUDIENCE: I guess this is kind of the same thing-- "land of the free," "home of the brave."

NORVIN RICHARDS: Oh. Yeah. So we have some cases where we have things that you certainly-- should be adjectives, that either we're getting to use them as nouns, or we're getting to modify nouns that you can't hear, however we want to talk about that. Yeah, good point. Good point. Yeah? Other points about this?

So all this slide is meant to convince you of is that "the red book" and "find the red" don't have the same status. "The red book," we want it to be a substring that has certain privileges, can be used for these various types of phenomena, as opposed to "find the red," which you can't do those things with. So it isn't just these are phenomena that pick out three-words substrings. It's these are phenomena that pick out certain substrings and not others of the sentence, certain strings of words and not others of the sentence, and we're going to try to figure out theories about why those are the special strings.

And what we're going to do is we'll say just as with "unlockable" we were taking pairs of things and putting them together to form larger things, larger units. We'll do the same thing here, only with words. We had this operation, we were calling it merge, that takes pairs of things and puts them together into a larger thing.

And similarly here, what we're going to do to create a sentence like "I will find the red book," we'll start with just the end of it, "find the red book" is we're going to take pairs of things like "red" and "book" and put them together. And then we'll take that unit that we've created by putting together "red" and "book" and we'll put that together with this word, "the." And then we'll take that thing that we've created by putting together "the red book" and we'll add "find."

So just as with "unlockable," we were taking pairs of things and putting them together in pairs to create these larger and larger structures. We're going to do the same thing to create sentences out of words.

This way of talking about it has the virtue of giving us a vocabulary for talking about those kinds of observations we were making on the last two slides. So when we say "the red book" is a unit that various things get to apply to, things like what I called topicalization where you take a chunk of the sentence and put it at the beginning, and it has some kind of emphasis. Because this is syntax and not semantics, we won't worry too much about what it means.

When we say that's something you can do to the string "the red book," but not, for example, to "find the red," this tree gives us a way of talking about that. There is a unit that we created in the course of putting things together in pairs that is just "the red book." it's the unit that I've circled there.

But there is no unit that we've created as we've been putting these pairs together that consists just to "find the red." Do people see that in this tree? So there's a node in the tree, if you want. It's the one that I circled in red that consists just of the words "the red book." But there is no thing that I could circle that would consist just of the words, "find the red."

There are other things I could circle. I could have circled the largest thing, but that corresponds to "find the red book." Or I could have circled a thing that consists just of "red" and "book." It would just be "red book." But there's nothing that's just "find the red." And that's what we're going to relate to all those observations we made on those two slides.

I've said this now a couple of times, this is meant to remind you of stuff we were doing when we were doing morphology. When we were doing morphology, we were using this operation, we called it merge, that assembled pairs of things and created new things. When we were doing morphology, we were then saying when you put these two things together, you have a new thing, and we're giving that thing a label whose properties are determined by the things that you put together.

So when you put together "un-" number one, and "lock," it's part of the specification of un- number one that when you combine it with a verb, what you get is a verb. So the tree on the left there, "lock" is labeled as a verb, and "unlock" is also labeled as a verb. People see that.

And then when you combine that verb "unlock" with a "-able," it's a property of "-able" that it merges with verbs and the thing that you create as a result is an adjective. And so the whole thing is "unlockable. This is what we were doing with labels before. We're going to want to do something similar for syntax. We're going to want to label the parts of these trees.

What kinds of labels are we going to use? Well, look, I just gave you all these diagnostics to try to convince you that when you say things like, "I will find the red book," "the red book" should be a unit, right, phenomena like topicalization should get to make reference to it. We have to decide what to label that.

Notice there are a bunch of things that have all of those properties. So if I said, "I will find red books," well, you'd be able to topicalized "red books." So "I will find red books." Or "red books I will find." "I will find red books," and you're amazed: "Red books?"

Similarly, "I will find those red books about linguistics." Yeah, "those red books about linguistics," that's a unit a similar kind. You can say "Those red books about linguistics, I will find." Yes, so that's a unit we want to be able to make reference to. "I will find books" similarly "books I will find" or "I will find books." "Books?" You're amazed. So "books" by itself is apparently a unit of the same kind.

So apparently the important part of that, the thing that all of those have in common, is that they contain a noun. So we're going to name that phrase after the fact that it contains a noun. So when we put together "red" and "book," what we get has properties that are determined by the fact that it contains a noun. If there were no noun, it wouldn't have those properties. Similarly, with "the red book."

The things that can go in that slot, the things that can go after "find," we just saw in the last slide, there are various kinds of things that can be larger or smaller. What they all contain is a noun. So we're going to name that thing after those kinds of units, after the fact that they contain a noun. We'll give it the label "noun."

Kind of like when we added "un-" to "lock" and got "unlock," we said, oh yeah, this is also a verb. It acts like a verb in every other way. You can use it as a verb: "I unlock the door." You can add things to it that can be added to verbs, like "-able."

So similarly here, when we're trying to decide what kinds of things can go in this slot, the slot that's right after "find," the thing that they all have in common is that they contain nouns. So we're going to name them after the fact that they contain nouns. We'll call them all "extended nouns." Yeah?

Similarly, there is another unit in "I will find the red book," not just "the red book," which we said is this extended noun. There's also another phrase, "find the red book," which is also a unit. And it was the unit that we were constructing in the slides when I was showing you trees for how to construct "find the red book." and it passes these tests for unithood, constituency.

You can say, "Find the red book I will," not only if you are Yoda, but also if you say something like, "I said that I would find the red book, and find the red book I will." It's more or less OK sentences of English. Or if I say "I will find the red book" and you are amazed, you can say, "Find the red book?" (No one has ever found the red book. It's been lost for centuries.) And various other things that are on this slide.

"Find the red book" is also a constituent, also a unit that we're going to want syntax to be able to make reference to. And just as we said "the red book," the important part of "the red book" is the noun, that's the thing that determines that that phrase is OK in that place. Yeah, there are various phrases that you can put in that place and they all have nouns in them.

Similarly, all the things you can put in this place have verbs in them. They don't have to have anything else. You can say things like "I will leave," and then "leave" has all the properties we just ran through. "I said I would leave, and leave I will." "Leave" is a unit of the same kind as "find the red book." Or "I will leave" and you're amazed. You can say, "Leave?"

So "leave" is a unit of the same kind as "find the red book." So the important part for this part is the verb, the part that determines that that's the kind of phrase that can go in that position. And so when we're putting together "find" with "the red book" we said "the red book" is kind of an extended noun. It's a large unit whose special property is that it contains a noun. "Find the red book" we're going to give that the label verb, because having a verb is the important part for that. So yeah, so far so good?

So yeah, one more. You can say "I will find the book in the garage." "In the garage" is a unit, it's a constituent. It's a phrase, it's the kind of thing syntax gets to care about.

And again, if I say, "I will find the book in the garage" and you're amazed, you can say "In the garage?" If I want to, I can topicalize "in the garage." I can say things like, "in the garage I will find the book."

It's a prepositional phrase. The kinds of things that can go in a prepositional phrase include prepositions and noun phrases. "The garage" is another noun phrase.

There are also prepositional phrases that seem to just contain a preposition, like, "I will look up," where, again, if I say "I will look up" and you're amazed, you can say, "Up?" (Why will you look up?) "I said I would look up, and up I will look"-- Maybe. Yeah?

AUDIENCE: How do we know that "up" isn't like an adverb describing "look"?

NORVIN RICHARDS: Yeah. Yep. Yep, yep, yep. Yes sir?

Adverb. Adverb is a funny word because there are a lot of things that can be used. So if by adverb, we mean thing that modifies the verb, there are a lot of things that can be used that way, including adverbs like "I will leave quickly," where "quickly" is an adverb.

But also prepositional phrases like "I will leave in a chariot" where the prepositional phrase is like an adverb. Or maybe even noun phrases like "I will leave the day after tomorrow," where "the day after tomorrow" sure looks like a noun phrase. It's got a noun in it, "day," and then "the" before that, but we know that can go at the beginnings of noun phrases.

So there are probably-- so the word "adverb" can be used to cover a bunch of things, including things that we don't have any other word for, like "quickly," which is an adverb, but also things that we would give other labels to like "noun phrase" or "prepositional phrase." And so I think you might be right that this is an adverb in the sense that it modifies the verb. I think I might also be right in the sense that it's a prepositional phrase that's being used as adverbially. Does that make sense?

So what I'm trying to do is work out a way for you and I to both be right, which is always my goal in discussions. Yes?

AUDIENCE: What about a sentence like "I will wake up"?

NORVIN RICHARDS: "I will wake up."

AUDIENCE: Does it make sense to say [INAUDIBLE]?

NORVIN RICHARDS: Yeah, that's a nice example. "I will wake up." So probably-- I mean, I just tried to convince everybody that it was OK to say up-- I said, "I would look up and up I will look." But "I said I would wake up and up I will wake," I'm not even going to try. And similarly, I think, if I say "I will wake up" and you're amazed, you're not going to say, "Up?"

Yeah. That's a nice example. There are a bunch of things that look like prepositions that combine in an interesting way with verbs in English and a lot of other Germanic languages. And "wake up" is one of those.

And this is actually the kind of example that I was exploiting in the first slides I was showing you about syntax, even the ones on the first day that you can say-- so wake up, you can say "I will wake up." You can also say, "I will wake up the cats." It's unwise but it's grammatical.

But I think "up the cats" is not a prepositional phrase. Notice, for example, that if I say I will wake up the cats and you're astonished as you might well be, you can't say "Up the cats?" And "I said I would wake up the cats and up the cats I will wake," this is no good. Yes?

AUDIENCE: I think that's not because kind of combined with the verb you can say "I will wake up" but you can't say, "I will wake down."

NORVIN RICHARDS: Yeah. Yeah, yeah, yeah. Yeah. So I think-- we don't want to think of "up the cats" as a unit. We want to think of "wake up" as a unit that has the cats as an object. So this is the point you were making, and I think that you are also making, that there's something special about that interaction. Yeah.

AUDIENCE: Is that an interesting pair, "Are you up for lunch?" or "Are you down for lunch?" They mean the same thing.

NORVIN RICHARDS: And so we are learning-- this is why I'm glad I'm not a physicist, yes. So I work in the domain in which up and down can be the same thing. Yeah. If I were a physicist, then if NASA were to hire me, the spacecraft would have all kinds of problems. That's a nice example.

Relatedly, "I will wake up the cat" is OK. You can also say, "I will wake the cats up," which is different from "I will walk up the stairs." You cannot say, "I will walk the stairs up," I think. And relatedly-- I exploited this in an earlier slide-- you can say, "I will wake him up."

"I will wake them up." But "I will walk them up," no good. In fact, it's the other way around. I think, right? "I will walk them up." What are you going to do with those stairs?

"I'm going to walk them up." No. You have to say I will walk up them. You cannot say, "I will wake up them." You have to say, "I will wake them up."

So these "up"s are different. So "up the stairs" is a prepositional phrase. "Up the cats" is not a prepositional phrase. We need different structures for these verb phrases, and we will develop them. You had a--

AUDIENCE: Yeah. I was also going to say, but you can say-- if you're taking someone home, you can say, "I will walk you up to your room."

NORVIN RICHARDS: Yes. "I will walk you up to your room." You can say, "I will walk the student up to her room." You can't say, "I will walk up the student to her room." Can you?

AUDIENCE: But yeah, so it's like the opposite.

NORVIN RICHARDS: Wait. Can you say, "I will walk up to the student to her room?"

AUDIENCE: No.

NORVIN RICHARDS:	No.
AUDIENCE:	That implies you're walking on the student, which--
NORVIN RICHARDS:	Yeah, OK. So if the student is lying down, yeah, and I'm using her as a ladder then, yes. But if not-- so I think "I will walk the student up to her room" is different from all of these, actually, kind of interestingly. I think maybe "up" is modifying "to her room."

We want there to be a constituent "up to her room." Notice that if I say, "I will walk her up to her room" and you're amazed, you can say, "Up to her room?" which suggests that that's a constituent.

Yeah, that's a nice third thing I should talk about when I'm talking about this. Cool. Oh, yeah? |
| **AUDIENCE:** | Yeah, I had a question. So I think there's something different between waking up or walking up. In a sense, you could say, [INAUDIBLE] and that would make sense. So it's kind of like, I don't know, an adjective, in some sense, is describing [? state. ?]

But at the same time, it's not an adjective. It's describing a verb. So I was wondering if there's any big distinction between waking up and like walking up [INAUDIBLE]. |
| **NORVIN RICHARDS:** | So that's a very nice example. So in a way, waking the cats up, it's a little bit like painting the cats red. Not in very many ways, but in this way. If you paint the cats red, you paint the cats.

And as a result of that, the cats are red. The cats change into cats that were not red before and now they are cats that are red. Similarly, if you wake the cats up, the cats were not up before. But when you're done, the cats are up. And possibly also red. It depends on how you did it, I guess.

So I think you're absolutely right that we want "wake the cats up" to have "up." "I will wake up the cats." We want "up" to not be a preposition that's combining with the cats to be a prepositional phrase. It's something else. It's like a predicate of some kind.

It's like "red" in "I will paint the cats red." And yeah, as we study these verb phrases further, we'll want to have structures that give them that character. That was a very nice example. Did you have a question a while ago? No. Joseph? |
AUDIENCE:	I think that that does fit. You can also wake the cats.
NORVIN RICHARDS:	Yes, you can wake the cats. You can also paint the cats. You shouldn't, but you can. Yeah. Yeah. Did you have a question?
AUDIENCE:	Yeah. So with the example of walking her up to her room, I think you need to say, "I will walk her up."
NORVIN RICHARDS:	Yes.
AUDIENCE:	Right?

NORVIN RICHARDS: Yep.

AUDIENCE: I think because the "up" is modifying "to her room," but I don't think [? so. ?]

NORVIN RICHARDS: It doesn't have to, does it? No. I will walk her up. I will walk her up to her room.

I will-- but similarly, you can walk the student-- so I keep going to the student from her, because there's a difference between pronouns and non-pronouns. You can wake up the cats or you can wake the cats up. You can wake them up, and you cannot wake up them. So a pronoun has to go before this kind of "up," but the cats can go on either side.

So "I will walk her up," you're absolutely right. That's the way to say that. But I think you also have to walk the student up. You can't walk up the student, unless the student is lying down and you're walking on her.

But if you mean you're going to walk with the student so that the two of you are up, so we want "walk the student" up to be different from "wake the cats up," and maybe also different from "walk up the stairs." Yeah, it's a third kind of thing, which, as we work further on this, I'm-- in a way, I'm glad that we're running out of time because it means that I have a week to create slides about this.

But we're going to want different structures for this. You guys are making excellent points about this. So we're developing probes into the structure of the inside of the verb phrase that mean that we're going to need at least three different kinds of structures for a sequence that looks like verb, them, up, or verb, up, them.

So we've got now three kinds of examples to talk about. There's "wake them up," there's "walk her up," and there's "walk up them" as in "I walked up the stairs." And that seems to be three different things that we need three different structures for.

But for "walk up them" we want "up" and "them" to combine to be a propositional phrase. But for these other two, we want something else. We're going to want to circle around and try to find out what that other thing is. Yeah. Am I getting at your point? You're absolutely right. Yeah, so we need a way of covering that. Lots of people had hands. Does anybody else-- yeah?

AUDIENCE: I was going to suggest something else [INAUDIBLE] Even though you can't say, walk the-- "walk the stairs up to your room."

NORVIN RICHARDS: "I walk--"

AUDIENCE: You could potentially say, "Climb the ladder to your room?"

NORVIN RICHARDS: Yeah. That's because you can climb a ladder. So you can climb a ladder, and you can go up to your room. That's the one where I think we want "up" possibly to modify to "your room." Or maybe not. Maybe this was your point, maybe we want "up" and "to your room" to be separate adverbs.

But just like you can walk up to your room, you can climb a ladder up to your room. The ladder isn't--

AUDIENCE: --or the stairs.

NORVIN RICHARDS:	Yeah. Yeah. And similarly, to the extent that you can say "He's walking the stairs," which I think you can sort of say, it means he's on the stairs, walking. I think that's what you're doing there.

I hate to do it, but I want to ruthlessly squelch everything else you guys want to say, because I have a triumphant slide that I want to show you. And then maybe we can unsquelch you and come back. So here's the idea, just so it's clearer for everybody.

For the easy case, the one that I want to refocus your attention on, "I will find the book in the garage," what we want to do is construct a structure for this that's sensitive to all of the tests for structure that we've been developing, and it's going to involve putting things together via pairwise merge and creating labels for the things that we create via pairwise merge that are typically labels that come from one of the two things that we've merged.

So when we merged "the book" or "the garage," we're going to create something we're going to give the label "noun" to. Or when we merge "in" together with "the garage," we're going to create what I've been calling a prepositional phrase, something that we'll give the label "p" to, saying this has the properties that it has-- it contains a preposition "in." Similarly, we'll combine "find" with "the book" and we'll combine "find the book" with "in the garage," and we'll end up with a structure like that.

Is anybody shocked by this slide? You are, yes. What did you want to do? You're gesturing. You want to combine things in a different way?

So actually, you may be right. No, here's a better way to say-- we may both be right. So this is an example where this way of merging things creates a well-formed structure. Notice that if I say, "I will find the book in the garage," it's OK.

"I said I would find the book in the garage. And in the garage, I will find the book." That's a unit that topicalization gets to make reference to. That's a property of this tree. So our tests get to tease this out now.

Now I'm regretting us being almost out of time because there are many things to say. What we're going to see next is that when we construct syntactic trees for strings of words, it's often the case that we get ambiguities like the "unlockable" ambiguity, places where there is more than one way to combine things. And I think you may be looking at this slide and thinking, oh, but there's another way to combine these words, and you're absolutely right. There is.

And what we'll do is develop tests that allow us to see which way we've combined words in different ways. And we'll find cases like "unlockable" where, depending on in what order you combine things, you get different meanings, and our tests will combine with that. Yep? All right. Thanks, everybody. We will do this again on Tuesday.