

[SQUEAKING]

[RUSTLING]

[CLICKING]

**NORVIN**  
**RICHARDS:**

All right. So last time, we were talking about English plurals. And we went through this fairly fast so I wanted to talk about it again a little bit just to make sure we're all on the same page. The descriptive fact is that English plurals, putting aside "children," and "oxen," and "fish," and "sheep," and other things like that, there's a general plural that's used most of the time in English that we typically spell with an S. But you've heard me talk about how I feel about English spelling.

It's pronounced in at least three different ways, sometimes as a "z," like in "dogs," sometimes as an "s," like in cats or giraffes, and sometimes as a schwa followed by a "z," like in "bridges," or "brushes," or "messes." And so descriptively, it's schwa "z" after what's called a strident. So the stridents are a particular class of fricatives that have a lot of high frequency noise. They are "s," and "sh," and also the affricates that end in those fricatives, the "ch," and the "j," "tʃ" for that matter. Those are all stridents.

And so you get schwa "z" after a strident, and then if you're not looking at a strident, it's just voicing. You get "s" if the sound before the plural is not strident, is voiceless, and you get "z" if it's voiced. And we had talked about all that before.

And what I asked you to do last time, and I just want to go through this exercise again real quick just to make sure we're all following it. Oh, I get to take this off. I keep forgetting that.

Want to go through the story again real quick. Forget for a second about the strident thing. We said there are at least two imaginable stories. We're in a room full of very imaginative people. There are lots and lots of imaginable stories, but let's concentrate on two that seem particularly attractive.

One would be, the plural suffix is underlyingly an "s," and after a voiced sound, it becomes a "z." So it starts off as an "s," that's the one you're getting in "cats." And when you put the "s" after the "g" in "dog," it voices to a "z."

And the other imaginable story would be the opposite. It would say the plural is underlyingly a "z," and after a voiceless consonant it becomes an "s." So that would say the "z" that you're getting in "dogs" is the basic plural suffix. And it's devoicing in words like "cats" because it's preceded by a voiceless consonant.

And we convinced ourselves that one of these is-- or I tried to convince you, let me put it that way, that one of these is more attractive than the other, because one of these allows us to treat the sound-changing question as a general property of English phonology, rather than as something we must specifically state about this morpheme. So I'll just go through this again. On a theory where the suffix is an "s" and it voices after a voiced sound, we ask ourselves, could we make that a general fact about English? That is, is it generally true that if you have an "s" at the end of a word, you can't have a voiced sound before it?

Are there any English words that end with an "s," and before the "s" there's something voiced? Can anybody come up with one, a word like that? Do people see why I'm looking for one? Yeah, Faith?

**AUDIENCE:** What about "ribs"?

**NORVIN** So ribs, if I were going to write that in IPA, would be that. That's a "z" sound. So is there a word where there's an  
**RICHARDS:** "z" sound that's, right before it, there's something voiced? Yes?

**AUDIENCE:** "Tense."

**NORVIN** "Tense." Yeah, that's a good one. So that's "tense" in IPA. I guess if I'm being more specific, there's an aspirated  
**RICHARDS:** "t" there, "tense." OK, so that's one where that could be the right theory, but it would have to be a theory that made a specific reference to this morpheme that said, special thing about the plural morpheme, it voices after a voiced sound. Because there's nothing about English phonology that prevents us from having words that end in an "s" immediately preceded by a voiced sound.

Suppose we do it the other way around. If the plural is underlyingly a "z" and then we say it devoices after a voiceless consonant. Can we think of any English words that end in a "z," and before the "z," there's something voiceless? Sorry, you have another comment?

**AUDIENCE:** Are we not thinking something like plushes, or something that's like [INAUDIBLE]?

**NORVIN** OK, so plushes, suppose I write that down, "pluh," "shes." This is an instance of what I asked you to not think  
**RICHARDS:** about for a while, but you're a rebel, I'm sorry. Here we've got the plural suffix and it's after a strident, so we're getting this schwa that's put in here because there's a strident before it.

I started this by saying, let's put that aside for now and we'll come back to it, so good point. But actually, this isn't an example of a word that ends in a Z and before there's something voiceless because this is voiced. So we're looking for a word that ends in a Z, and before the Z, there's something voiceless, sort of the opposite of tense. Are there any words like that? I heard an "uh."

**AUDIENCE:** "Blitz"?

**NORVIN** Sorry?

**RICHARDS:**

**AUDIENCE:** I don't know, I was thinking "blitz," but that's [INAUDIBLE].

**NORVIN** "Blitz"? OK. Well, so that's a word that when we spell it, we spell it like this.

**RICHARDS:**

**AUDIENCE:** But it still sounds like an "s."

**NORVIN** Yeah. Right, exactly. When we pronounce it, we pronounce it like that, I think, "blitz." Yeah, we spell it like that  
**RICHARDS:** because we got it from German. Yeah? OK.

So yeah, no. There aren't any English words like that. We don't have words like that. There aren't any words like "cat-z." That's not a possible English word. And so if we're willing to say that the plural starts out as a "z," well, then we can handle this part of the-- not Raquel's part, not the part about "brushes" or "plushes," where there's a strident before it.

But putting the stridents aside, we can handle this fact that the plural suffix is sometimes a "z" and sometimes an "s." We can make that part of English phonology generally. We don't have to make any statements specifically about this suffix, which is pleasing. So maybe that's an argument for making that move.

So yeah, hypothesis two, the plural is underlying a "z," and it devoices after voiceless consonants. That can be part of a general English fact, which is English doesn't have words that end in a voiceless sound followed by a voiced sound. Similarly, after a strident, we get schwa "z," "brushes," "messes," "latches," "mazes," "plushes," that's Raquel's example.

And English doesn't have words that end in two stridents. So the plural of "plush" is "plushez." It isn't "plushz." But we generally don't have sequences like that. And actually, this is an instance of we don't have "z" after a voiceless sound. But we also don't have-- yeah, what would we be looking for? I'm trying to think of something that ends in "dz." Is this a real word, or is it just something people use in crossword puzzles?

**AUDIENCE:** I think it's a tool.

**NORVIN** Tool, like an ax, right? So if I get to pronounce this like this, the plural of it can't be "adz-z," right? It's "adzez," I  
**RICHARDS:** guess. Yes. Actually, I don't know why I went for obscure tools. I could have done "mazes," which we have up here on the board. OK, yeah.

**AUDIENCE:** "Rose"?

**NORVIN** Sorry?

**RICHARDS:**

**AUDIENCE:** "Rose."

**NORVIN** "Rose." "Rose" would have done even better, yes. "Rose." Yeah, plural is "roses." So English doesn't have words  
**RICHARDS:** that end in multiple stridents, and so yeah, we're putting a schwa there. Not something that we have to state maybe specifically about this morpheme, it's just a general fact about English phonology.

So yeah, we can state rules that say things like an obstruent-- I'm sorry, I haven't introduced you to the word "obstruent." Obstruent is a word that covers stops and fricatives. Obstruents are sounds that create a build up of pressure in the oral cavity. So stops and fricatives are obstruents.

Liquids, and glides, and vowels, and what else, liquids, and glides, and vowels, and nasals are not obstruents. So oral stops and fricatives, those are obstruents. Obstruents become voiceless after something voiceless. So underlying "cat-z" becomes "cats."

And we have another rule here that inserts a schwa, and this is really just an exercise in showing you what phonological rules can look like. That second rule inserts a schwa between two stridents at the end of a word. So "inserts a schwa," the way you say that with these rules is "nothingness becomes a schwa." Yeah, I always liked that way of describing insertion.

So you have this place where there isn't anything and it turns into something, namely a schwa, between stridents, so "brush-z" becomes "brushez." So we can state these rules, but we can think of these rules as things that English does in order to enforce its general conditions on what words can look like in these particular cases. Does that make sense so far? Questions about any of that?

Oh, yeah, and then, if the only goal-- sorry, I should have remembered I was going to do this here. If the only goal of these sound changes is to create words that obey general conditions on English phonology, then we might ask ourselves, suppose you start off with that word. What is that word I've got down there at the bottom? Forget about the plural suffix on it. What's the singular?

**AUDIENCE:** "Brush"?

**NORVIN RICHARDS:** "Brush." Yeah. So suppose we start with "brush" and we're going to add the "z." Why not change the "z" to an "s"? After all, it's right next to a voiceless sound, giving you "brushs."

And then they insert a schwa, giving you "brushes." That's not what you do. And we could wonder, why not, particularly if I've posited the two rules that I've got here, right? So I've got a rule that is going to devoice the "z" if it's at the end of a word and after something voiceless. And I've got a rule that inserts schwa between stridents.

If I applied that first rule first and then the second rule, I would get this consequence. Does that make sense? And there are at least two ways of thinking-- sorry, you're making hand gestures that suggest you can see where I'm going with this-- There are at least two ways of thinking about this.

There's the mechanical way, which is to say, well, we're learning something about these rules. They don't apply in that order. You don't do the first rule and then the second rule. You do the second rule and then the first rule. That's one way to think about this.

There's another way to think about it, though. Look, what we've been saying right along is these rules are things that English does in order to make these plurals obey general English rules about how sound can be put together. I'm waving my arms a lot because I'm avoiding a technical term. And that's dumb, so let me just teach you a technical term.

Phonotactics, this is the conditions on how sounds can combine, so what the rules are for which sounds can be where in a word. And I've now several times in the course of this lecture, I've almost said the word "phonotactics," and then stopped and said, wait, I haven't taught them that word yet. So I've been saying things like "the rules for how words can combine." So now you know that word, too, "phonotactics."

Rules of English phonotactics include things like "English words can't end in a voiced sound that's immediately preceded by a voiceless sound," or "English words can't end in two stridents in a row." So we have these general conditions on English phonotactics, these conditions on how sounds can combine. And those two rules, those two things that happen to sequences of sounds are ways of enforcing those general conditions on phonotactics. Does that make sense?

If we think about it that way, that is, if we think, there is, on the one hand, the rules-- the descriptions of the things that are happening. And then there is, on the other hand, the reasons why these things are happening. Does that make sense?

So the reasons why these things are happening are things like, English doesn't like two stridents at the end of a word. That's why that second rule is happening. That's what it's for, it's to stop that from happening in the case of the English plural.

So we were going to draw this distinction then between phonotactics, which say there are some combinations of sounds that are bad, and things like these rules which say, and if you have these combinations of sounds, here's what you ought to do to fix the problem. If you think about it, if I just tell you, having a word that ends in two stridents is bad in English. So if I start off with "brush"-- oh, dear. Now I have to write an "r" upside down. That's always hard.

If I start off with "brush" and we're saying that the plural is underlyingly a "z," what we in fact do is to introduce a schwa. And we think the reason that we're doing that is, well, we're going to make reference to the fact that English generally doesn't allow words to end in multiple stridents. But if our only goal is to make sure this doesn't end in multiple stridents, well, there are lots of ways we could fix that problem.

We could get rid of a strident. The plural of "brush" could be "bruhz," or "brush." We could introduce something other than a schwa. We could introduce a different vowel. It could be "brush-eez."

We could introduce a consonant. It could be "brushts." Actually, that's not so easy to say either. "Brush-dz." Yeah. We could introduce some other consonants that would work better than these.

Heck, we could introduce lots of consonants and vowels. The plural of "brush" could be "brush-glors." You can just introduce a whole chunk of stuff in here. There's all kinds of stuff you could do to fix that problem.

This is what you, in fact, do. So when we say we're going to cover these facts about the different allomorphs of the English plural with general English phonology, is what I said, we got ourselves halfway there. We came up with these generalizations about English phonotactics. English doesn't like words that end in two stridents, let's say.

And then we also have to have this solution to the problem, insert a schwa. The account of what's happening in English plurals needs both of those components. Does that make sense? Some of you are looking at me as though I'm making sense. It's always hard because you're all wearing masks.

So I appreciate it, you've spent all this time working out ways of communicating emotions just with your eyebrows, which is great. All of you are waving your eyebrows in a semaphore-like fashion at me. I appreciate it a lot.

So getting back to this question, why not first devoice the "s," and then introduce the schwa? The answer to that might be, well, that first-- so I said, there are two ways of talking about the answer to that. One is the mechanical way, which says, no, that's not the order these rules apply in. That's the way we had talked about this before.

We went through these Lardil cases, and I said, sure looks as though we need to be willing to say, there are all these things that happen to these words, but we need them to happen in order so that we get the right answers. And that works. And in this particular case, we could say that. It would also work. We could say, the reason you don't do what I've got up there on the board, the reason you don't first devoice the "z" and then introduce the schwa is that that's not the order the operations take place in. But maybe this way of talking in terms of phonotactics is also helpful here.

So we could say to ourselves, the reason that you don't first do that first thing is that it doesn't solve all the problems. Inserting a schwa solves all the problems at once. By inserting a schwa, you now no longer have a word ending in two stridents, and you also no longer have a word ending in a voiced sound preceded by a voiceless sound. Because the "z" at the end is now preceded by a schwa, which is voiced.

So maybe there's some kind of principle of minimal repair, maybe, that says, look around at the various things you can do. Do the most effective one. That could be a way to talk about this. We're going to need to look at more cases to try to decide.

But the point of going through the English plural in this level of detail was to introduce you to this idea. And having introduced you to this idea, we're now going to spend some time with this idea, this idea that when we're looking at a phonological problem, it's useful to think about it in these two halves. There's, on the one hand, what's the problem? Why are sounds changing?

And on the other hand, what are the sounds doing? What's the fix? What's the repair? And we want to think about both of those things. Yeah. So in English, we've talked about a couple of kinds of problems that English plurals can create, and now we're also talking about some specific repairs.

And we raise questions for ourselves. Why those repairs? Why not other repairs? We'll come back to that issue. One consequence of all this is that we're able to apply the rules of English plural formation to words that don't have the phonology of English words. Here are two words from other languages. Anybody want to pronounce them for us? Yeah.

**AUDIENCE:** "Bach" and "rouge."

**NORVIN**  
**RICHARDS:** Yeah, "Bach" and "rouge." Yeah. So where "Bach," if I'm being unbearably pretentious and I want to demonstrate for you the fact that I speak some German, I might pronounce the name of the great German family of German composers, the Bachs, was a big family, generations of Bachs writing all kinds of things.

I might pronounce it with a velar fricative. The standard English way to pronounce it is with a velar stop because we don't have velar fricatives. But if I feel like being pretentious, I'll pronounce it with a velar fricative, "Bach." And then I've already done this, but what's the plural? "Bachs," right? It's with an "s."

Why is it with an "s"? Well, because the repairs that we've been talking about are repairs for specific problems. So by hypothesis, the plural of this starts off as this. And now you have a word that ends in a voiced sound preceded by a voiceless sound.

And the standard English repair for that is to devoice, so we change this "z" to an "s." I get "Bachs." Shows us that what we've got in our heads is not just-- so we've been going around this fact for a while now. What we have in our heads is not just a list of English nouns in their singular and plural forms. What we have are rules, algorithms for making plurals.

And you can apply those algorithms to words that are not English words that have sounds in them that we don't have in English, like "Bach," or "rouge," which is the French word for "red," but I guess has been borrowed into English as a name for a component of makeup. If you're talking about a bunch of different kinds of rouge, which of these various kinds of rouge do you like best? Well, I like those.

What's the plural of "rouge"? "Rouges" [with schwa and "z"]. "I like those rouges over there. I like these lipsticks better than those rouges." What did I do here? I inserted a schwa. Why? Well, because this is a strident there. It doesn't matter that it's not an English strident. We don't have that, except in words that we borrowed from French, like this one.

Yeah? OK. All right. So this has all been an attempt to-- whoops, I spelled the "r" right side up again. This has all been an attempt to get you to take seriously the idea that it's useful when you're looking at a phonological problem, a phonological process, to ask yourself both, what is happening? So what has changed?

What were the original things that I was combining? Let's say if I was adding an affix to a word, and what has happened to them? What form do they have now? Ask yourself that. And also ask, why? So what general properties of the language are we trying to enforce with this sound change? Yes?

**AUDIENCE:** I was thinking about how you were saying that certain sound combinations just don't sound right. And I was thinking about how if you didn't know what part of speech the word "pore" is, then if you were like, OK, I'm going to pluralize it, then it would sound weird to say "por-s." But then if you knew it was supposed to be an adjective, then "porous" would actually sound kind of fine. So maybe there's some element of more structure that needs to be known to define what sounds good or weird?

**NORVIN** I think I might see what you mean. What was the word that you started off with?

**RICHARDS:**

**AUDIENCE:** "Pore."

**NORVIN** "Pore." You mean that word? Yeah. And so we have those in our skin, little holes in our skin. And the plural is that, right? Yeah. Oh, I see. But you're saying-- so yeah, there's an adjective, "porous." Is that what you're thinking of?

**RICHARDS:**

Yeah. And yes, so I'm trying to think about whether I can think of any adjectives that end with "-orz." I have "pores" on the brain, and "s'mores," and "floors," though everything I'm thinking of off the top of my head is plural. There are some generalizations about phonological differences sometimes between, occasionally, under certain circumstances, things of different syntactic categories.

So there are languages that draw distinctions between, say, nouns and verbs, or nouns and adjectives. And nouns have a particular phonological signature, and adjectives have a different one. We'll actually get a chance to talk about an example like that when we get to Japanese, which has something like that. It's common, for example, for-- well, yeah. I'll leave it there. When we get to Japanese, we'll see something a little bit like that.

And so maybe, getting back to your original comment, your original comment was, I'm talking as though what makes something look like a good English word is just going to be true of all English words. But maybe there are cases where we have to ask, does this look like a good English adjective or a good English verb? Yeah. And people have found things very vaguely like that, and I'll talk more about it when we get to Japanese.

Yeah, nice point. Other points people wanted to make before we do Yawelmani? Yeah, Joseph?

**AUDIENCE:** I'll ask you a question about transcription of "porous." If you use the power, would you use-- why would you use [INAUDIBLE] backwards C shape?

**NORVIN**

Oh, you would use this? I think I would be tempted to pronounce that "pah," "ah," "pars." That's an "ah" sound, and so I guess that's why I wanted to spell it like this. I thought you were about to ask me why I'm not spelling it, say, like this, "porz" which I guess I could also do, like indicate the aspiration.

**RICHARDS:**

I'm going to quickly erase this before anybody has any worries along any of these lines. Oh, and this actually brings me to something. I was raised, for some reason, to talk about decisions like this, decisions about whether to spell aspiration on English voiceless stops, to talk about that as a choice between what I was taught to call a "loose" and a "tight" transcription.

But there is a more general term, which turns out to be used a lot more. I don't know who did this to me. The terms that people use more commonly are "broad" and "narrow." One of the TAs pointed this out to me after last time. He came up and said, why are you calling them "tight" and "loose"? I'm like, because I'm weird. I'm sorry. So "broad" and "narrow" is what you'll see more often, if you look in the literature.

So I'm glad you asked your question because it allowed me to come clean about this. Other questions about why I am weird? Yes?

**AUDIENCE:**

Which one is broad, and which one is narrow?

**NORVIN**

I'm sorry. Narrow is when you are trying to represent every fact. Broad is when you leave out facts that are predictable. So a broad transcription of "tense" would leave out, say, the aspiration on the "t." Because an English voiceless stop in that position is going to be aspirated, whereas a narrow transcription is trying to come as close as it can to a spectrogram. It's going to represent everything about the speech signal.

**RICHARDS:**

I was taught to call that tight, but apparently I was taught by strange people. Yeah. I knew that I was taught by strange people. I just didn't realize how strange. Any other questions about that? All right.

Yawelmani. OK, so I'm sorry. Let me do the intro to this slide again. So what I just did by taking you through the English plural forms was to try to introduce you to the idea, get you used to the idea which we're now about to see in action, again, in a different place. The idea that when you are looking at a phonological problem, it is useful to think both about what exactly is happening, what sound changes are happening, so in English, here we are inserting schwas or devoicing consonants. That's one kind of thing that's happening.

It's useful to think about that. And it is also useful to ask yourself, why are these things happening? Can I think of this as a way of enforcing a general pattern in the language? It's useful to think about both of those things.

So I'm about to show you another example of that in action. And let me just spoil the surprise for you right now. If there's anybody here who hates spoilers in movies, you should cover your ears or something.

I'm going to show you a bunch of data from a language originally spoken in Northern California. I believe it's no longer spoken. It was called Yawelmani. And it was a language that had a general ban on having three consonants in a row. Now we're going to see that general ban in a bunch of different places with different fixes in different places.



So the recognition that these different things that Yawelmani is doing under different circumstances are all instances of this ban was kind of a discovery, and people saying, yeah, it's doing this, and it's doing this, and it's doing this. And what all of those things achieve is avoiding sequences of three consonants in a row. So you guys have an advantage on the phonologists and the Amerindianists who were studying Yawelmani. They were mostly concentrating on what's happening in this form of the verb, what's happening in that form of the verb.

Yeah. But you have the advantage that you have seen this slide. So remember what this slide says, and now let's look at some Yawelmani. Here are a bunch of Yawelmani verbs in their future forms. I don't speak Yawelmani so I won't try to pronounce these for you.

But you can see that there's a suffix here, which is spelled E-N. And that suffix is the future tense suffix in Yawelmani. So far, so good? Now here's the gerund. The gerund is a form of the verb. Doesn't matter what the gerund is, but just so you know, a gerund is a form of the verb that allows it to be used as a noun, turns it into a noun.

So when you're saying things in English like "swimming is fun," what you've done is take the verb "swim," and by adding "-ing," you've turned it into a gerund, that is a noun, the kind of thing that can be the subject of a sentence like "swimming is fun." These are gerunds in Yawelmani, and as you can see, Yawelmani gerunds involve a suffix, "-taw."

Except in that last sequence of verbs, "sing," "pulverize," and "fight," you don't just add "-taw." You also insert a vowel, the vowel that I'll pronounce "ee", the vowel that's written with the letter "i," inside the original verb. So you don't get "ilk-taw," you get "ilik-taw." And you don't get "logw-taw," you get "logiw-taw."

And because you saw the last slide, you know why Yawelmani is doing this. Yawelmani is doing this because it hates having three consonants in a row. So it's OK to add "-taw" to "mut" (swear) or "xat" (eat). I said I wouldn't try to pronounce Yawelmani but I guess I lied. Because there you're just putting two consonants in a row, and that's fine.

But "sing," "pulverize," "fight," those verbs underlyingly end in two consonants. And if you add "-taw" after them, you're going to have three consonants in a row, and that's bad. Yawelmani doesn't like three consonants in a row, so you introduce this vowel.

Now I just said that's why Yawelmani is doing this. At this stage, you could just look at this and go, well, no. Surely you're overreacting. Look, there's a rule. If you're forming the gerund, you add "-taw," and if the verb ends in two consonants, you insert a vowel between the two consonants as well. But wait, there's more.

So here's one rule. Nothingness changes into an "i," so you insert an "i" between the first and second consonants when you have three consonants in a row. That's what that rule says.

Here's another rule. Here's the desiderative. So you can take a verb in Yawelmani and add a suffix, "-hatin," that gives you a new verb that means, "want to (verb)," so "want to know," or "want to sink," refraining from wondering why you would ever want to sink.

The desiderative suffix is usually "-hatin," except if you're adding it to a verb that ends in two consonants, like "speak" or "lift," well, then the desiderative suffix is no longer "-hatin." It's just "-atin." You take off the "h."

OK. So here's another thing that Yawelmani does. If you've got two consonants and then an "h," you get rid of the "h." Again, we have two rules, both fine rules. They both work.

But by just stating them, by saying, here are two rules, here are two things that Yawelmani does, we're obscuring something we feel like. Yawelmani does both of these things, but they both have the same consequence. They are two ways to avoid strings of three consonants in a row. Yes?

**AUDIENCE:** Is this three consonants [INAUDIBLE]? I see [INAUDIBLE] double Ls. I don't really see that. Is that actually just two consonants sounds that are [INAUDIBLE]

**NORVIN**  
**RICHARDS:** Yeah. So it's two, yes. It is a geminate "l." I say this out of my vast, vast knowledge of Yawelmani. I'm being ironic. I don't know anything about Yawelmani, but this is a geminate "l." It's an "l" sound that's held for two beats. So yes, we need that to count as two consonants.

You're raising a really good point. We have to ask ourselves, when we say it's bad to have three consonants in a row, what counts as a consonant? This had better be one. Yeah. Good question.

All right, more Yawelmani. Here is a passive suffix, spelled H-N-E-L. I won't attempt to pronounce it. So here we've got the verb "to be tied" and the verb "to be hit." So you can take the verb "to tie," "t'ik'e," which has two of those cool ejectives, and you can add this passive suffix to it, H-N-E-L.

Maybe all of you can imagine what's going to happen next. If we add this suffix to something that already ends in a consonant, well, then we get rid of the H. So "to be helped" or "to be held under the arm," those are two verbs that end in consonants, and now the suffix is just "-nel."

So in the last slide, we saw that "h" goes away if it's preceded by two consonants. In this slide, we see that "h" goes away if it has consonants on either side of it. Fine, we can say it that way. We can state different rules for all of these morphemes.

And in fact, the first people who worked on Yawelmani money did just that. They were like, OK, the passive suffix is "-hnel," unless the verb ends in a consonant, and then it's "-nel." The desiderative suffix is "-hatin," unless the verb ends in two consonants, and then it's "-atin." You can do that but you're missing a generalization, which is Yawelmani is a language that hates having three consonants in a row.

So this is like the distinction that we were drawing when we were talking about English plurals. When we were talking about English plurals, we said, yeah, English doesn't like words that end in two stridents, or words that end in a voiced sound preceded by a voiceless sounding, which doesn't allow words like that. And English has repairs, things it does, it devoices, or it introduces a schwa. We're seeing something similar in Yawelmani. Yeah?

**AUDIENCE:** So in two examples, we had "-hatin" and "-nel," which were both [INAUDIBLE].

**NORVIN**  
**RICHARDS:** Yeah.

**AUDIENCE:** [INAUDIBLE], should we try to go through the sounds itself? Or would this make someone who's trying to come up with the rules mad to consider something like, if "h" is part of the suffix, then drop the "h," instead of the position of "h," the three consonants?

**NORVIN** I'm sorry, can you ask your question again? I'm not sure I'm getting it. Can you just say again?

**RICHARDS:**

**AUDIENCE:** So in "-hain" and "-nel" example, the conclusion was about [INAUDIBLE] and the three consonants. Could it also be about whether "h" is part of the added suffix?

**NORVIN** Oh, I see. I see, I see. That's a nice point. So could you say, suffixes that begin with an "h" won't begin with an

**RICHARDS:** "h" if the "h" is going to create a sequence of three consonants? Yes.

Yes, indeed, that covers everything I did with my last two rules, though it's not something that's easy to state with the rule formalism that I showed you. Maybe the response to that is, so we need a better rule formalism. But no, that's absolutely right.

Really what you're asking, in a way, is, is it important that those examples involved in "h" that was at the beginning of a suffix? Could I give you any examples where there was a verb that ended in two consonants, let's say, of which the last was an "h"? And then when you add a suffix, the "h" will go away. That's what these rules are predicting.

And your rule is predicting something else. And I don't know enough about Yawelmani to know whether there are examples that allow you to draw the distinction. But you're absolutely right, that's what you'd want to go do is to find out whether the suffix matters.

**AUDIENCE:** So if you have a suffix which has "h" in the second place of a consonant--

**NORVIN** That would be another good place to look, wouldn't it?

**RICHARDS:**

**AUDIENCE:** --in that case, would the "h" drop, or [INAUDIBLE]?

**NORVIN** So yeah, let's make up a Yawelmani consonant. If there were a consonant in H-E-L, I guess these rules predict

**RICHARDS:** that if you added that to a verb that ended in a consonant that the "h" would drop. And so that's what these rules predict.

The imaginable rule that you're talking about that says "h" at the beginning of a suffix is particularly vulnerable, and you'll drop an "h" at the beginning of a suffix as a way of fixing this general rule. And then if you can't do that, then you insert a vowel. Maybe that's a way to talk about it. That makes a different prediction about this kind of suffix.

I'm pretty sure there aren't any suffixes that have that shape. I don't know much about Yawelmani but I'm pretty sure there aren't any things like that. But all of us should now go find things on Yawelmani and read them. Yeah, so this stuff is all out there. It'd be interesting to find out.

But you're right, this is exactly-- what you're doing is exactly what we want to do now. So I'm showing you one set of rules that would cover these data. And it's worth asking yourself, what other kinds of rules would cover these data?

And how would we find out which of these rules are the right ones? And the only answer is the boring one, which is, go learn more about Yawelmani. But you're right, that's the first thing to do.

**AUDIENCE:** Yeah, my main question now is more of the lines of what you said. This rule of formalism doesn't allow these kinds of rules, right, so do we just not want to [INAUDIBLE]?

**NORVIN**  
**RICHARDS:** No. Well, so we want to find out. Because if there are rules-- you're raising a really good point. If there are rules like that, then we want a rule formalism that allows us to state them.

It's not like we would have to kill ourselves making that rule formalism either. So the rule formalism that I showed you has a symbol in it for a word boundary that says there are special things that happen at the end of a word. So there's this symbol that says, in English, if you have two stridents at the end of a word then you've done something wrong and you must introduce a schwa.

No reason we couldn't introduce a symbol for morpheme boundary. And then we would use it to capture your generalization. In order to find out whether we need that for Yawelmani, well, we need to know more Yawelmani. But the question you're raising is exactly the right question, and it's how we find out whether we need devices like that.

Yeah, cool. That's linguistics you're doing there. Yeah?

**AUDIENCE:** What exactly are the apostrophes?

**NORVIN**  
**RICHARDS:** Oh, good question. These particular apostrophes are markers of ejective stops. So the verb to hit is "tok-o" with an ejective "k." That's what those are.

People remember ejective stops. All of you were ejectively stopping at me during the phonetics part of the class. This is where you make a glottal stop and express some air from your mouth during a stop by moving your larynx, shoving the air out that way, "ka." OK, cool.

So to summarize then, we have these rules and this interesting discussion about whether they're the right rules. There are various ways of categorizing the rules. And what I'm suggesting here is that we might want to be willing to abstract away from the particular rules that I posited and say, Yawelmani doesn't like strings of three consonants in a row.

And it has these general principles that say, you can introduce a vowel to break up sequences, and you can get rid of an "h." And the question that was getting raised over here was, is it just, you can always get rid of an "h"? Or is it, you can get rid of an "h," but only if it's the beginning of a suffix? Because that was the case in all of the examples that I showed you, to which, unfortunately, the only answer is, go ask someone who knows more Yawelmani than me, which is most people.

No, that's not true. There are several people who know more Yawelmani than me. So do people see this? We're making the same move here that we made when we were talking about the English plurals. So we said, yeah, English has these particular things that it does, these repairs. And these repairs are there because of these conditions on English phonotactics, rules about how sounds can combine in English.

Similar kind of thing here. There's a principle of Yawelmani phonotactics. Don't have three consonants in a row, and there are these repairs that you use to repair violations of them that you have created by adding suffixes to things.

Yawelmani was the first example that people first-- made people think about phonological problems this way. It was described as a conspiracy, that is, the phonologists who first noticed this about Yawelmani were saying, yes, we have all these rules and they do various things. But they all have the consequence that you get rid of three consonant sequences.

And so it's as though there's a conspiracy, and all of these different rules are conspiring to have the consequence that you never have three consonants in a row. And then we might want to know, why? Why doesn't it like having three consonants in a row? There's all kinds of work to do.

I want to show you another example of a conspiracy. And we can probably get some ways into this before we have to stop. This one is from Japanese. So in order to show you this, I need to tell you some things about how Japanese pronunciation goes. This is all going to be from the Tokyo dialect of Japanese.

So this is how pitch accent works in Japanese. So here are four words. Does anybody here speak Japanese natively? Any Japanese people here? Oh, cool. Can you pronounce these words for us?

**AUDIENCE:** "Makura-wa, kokoro-wa, atama-wa, sakana-wa."

**NORVIN**  
**RICHARDS:** Cool. So I just broke my heart listening to you say those words that way. There are various ways to pronounce these words. Let me pronounce them a different way and then you can tell me why I pronounced them wrong. The first one I think we agreed on, it's "makura-wa."

There are speakers who will pronounce the second one "kokoro-wa," and the third one, "atama-wa," and the last one, "sakana-wa." But for you, that's apparently-- so you were pronouncing all but the first one the same way, I think, low on the first one, and high on all of the others. This is a point of variation between dialects of Japanese.

So people from different parts of Japan, when I was living in Japan, I would talk about going to other places. And the people I was living in Tokyo, the people in Tokyo would say, oh, they speak Japanese so strangely over there. They don't say "HAsHi," they say "haSHI." They put the high tone in a different place, put high pitch in a different place.

So I want to show you some things about how accent works in Japanese, how accent is pronounced. So first, I'm going to tell you some things about the laws of accent realization, the way I was taught them. And then I'm curious, actually, where are you from, where?

**AUDIENCE:** I'm half-Japanese. My mom's from Japan, so I just went to a Japanese school in the US.

**NORVIN**  
**RICHARDS:** Oh, wow. Awesome. Cool. That's cool that you speak Japanese so well. My son, whose mother is Japanese, is attempting to follow in your footsteps. Yeah. I have to get you to tell me how it worked for you.

Cool. So let me tell you something things about how accent realization works. By accent, we're talking about the pitch accent system of Japanese. So if you decide to study Japanese, one of the things you must learn is where the pitch of your voice needs to be high and where it needs to be low.

And the basic rules for this in Tokyo Japanese go like this. There are words that don't have an accent anywhere. The example on the slide here is "fish," the last word.

And in words like that, the first syllable is low and the others are high. So you get "saKANA-WA," low, high, high, high. And then, when there is accent, the accent perturbs this distribution of lows and highs in a particular way that I now tried to describe for you.

It goes like this. The accented syllable is high, so "pillow" has accent on the first syllable. "Heart" has accent on the second syllable. "Head" has accent on the third syllable. So you get a high on the accented syllable, and every syllable after an accented syllable is low.

So pillow is "MAKura-wa," high, low, low, low, because it's got accent on the first syllable. And then, heart and head have accent on places that are not the first syllable. And so they have high on their accented syllable and then low from then on. So heart is "koKOro-wa," low, high, low, low. Low on the first syllable because, well, low on the first syllable is the general thing, and high on the second syllable, and then low from then on.

Don't worry. You're not going to be quizzed on this. Actually, I'm really just telling you this so that you will know why we might care about where accent goes in Japanese. Mostly what we're going to be talking about in just a second is what the rules are for where accent goes in Japanese.

Though if none of this makes any sense, or if you're wondering, why on Earth are we talking about all these highs and lows? It's really just so you'll know what we're talking about. We're talking about what the rules are for what goes high and what goes low in Japanese.

So there are these regular rules that go for "fish." It's like, if you have an unaccented word it's low at the beginning and high from then on. If you have any accents, the basic rule is, put a high on the accented syllable, low from then on, and otherwise, act like a fish. So "pillow" has a high tone at the beginning because it's accented on the first syllable and then it's low from then on, "MAkura-wa."

And then, everything else tries to be low, high, high, high, with the overriding principle that you have to have a high on your accented syllable and low from then on. That's the basic way that this works. And I promised Raquel that when we got to Japanese I would tell you about a way in which languages sometimes distinguish verbs from nouns and other kinds of things.

Japanese nouns, as you can see, get to have accent or not. So "fish" doesn't have an accent and the rest of these words have accents. And if they have an accent, the accent can be on any syllable of the word.

Verbs in Japanese only get to choose whether they're accented or not. They don't get to choose where the accent is. And that's not uncommon for languages to make that kind of distinction to have a richer array of possible accent types in nouns than in verbs. That's one of the kinds of noun-verb phonological differences people sometimes settle on.

So really, this is just here for your greater education. If any of you were thinking about learning Japanese, this is one of the things you will have to learn. I'll feel bad if, now, any of you were thinking about learning Japanese but have now changed your mind. It's not that bad, really.

And then there are minimal pairs. So "rain" in Tokyo Japanese is "ame." "Candy" in Tokyo Japanese is "ame," so they have the same consonants and vowels in them in the same sequence, but different positions of pitch accent. "Candy" is unaccented and "rain" has an accent on the first syllable.

Or the one that everybody always uses is "chopsticks," which is HAsHi, "bridge," which is "haSHI," and "edge," which is "haSHI." "Bridge" and "edge," there's a lot of beautiful Japanese phonology trying to figure out whether there's a difference between the pronunciations of "bridge" and "edge." The place where everybody can hear a difference is when you add suffixes.

So if you add, say, the nominative suffix, "-ga," to those, "edge" is like fish. So not only will edge be low, high, but then the "-ga" will also be high, so you get "haSHIGA." Whereas "bridge" has an accent, that means there'll be a high on the "-shi," but then it'll be low from then on. So "edge," the nominative is "haSHIGA," but "bridge," the nominative is "haSHIga," low, high, low. So all fun things to look forward to if you decide to try to learn Japanese.

Now here's a generalization. And remember, I told you when we were doing Yawelmani and also when we were doing English, we're going to talk about various kinds of things this language does under different circumstances. But here's a generalization that holds in Japanese, at least Tokyo Japanese. Words have at most one accent. They don't have more than one accent.

And so we're going to look at cases where words are going to experience a temptation to have more than one accent. And they're going to do various things to avoid that, various things, kind of like Yawelmani was experiencing the temptation to have three consonants in a row, and it saved itself in various ways under different circumstances.

We're going to see the same thing in Japanese and the moral is going to be the same. Here's a language that has a bumper sticker. It has an inspirational poster on its wall. Don't have more than one accent in your words. There's a cute picture of a kitten or something under it.

And then the way it achieves that is going to vary from word to word. That's going to be the moral of what we're going to see. Let's look at that.

There's "pillow," "pillow" has accent on the first syllable. Yeah, so "from the pillow" is something like, "MAkura-kara," and "to the pillow" is something like, "MAkura-made." The heart, the head, yeah, same kinds of deal.

So "from the heart" is "koKOro-kara," with accent just on "koKOro." To the heart is "koKoro-made," with accent just on the "-ko." "From the head" and "to the head," same deal. There's an accent on the last syllable of "head."

But when we look at "fish," and remember that fish is underlyingly unaccented, that's why there aren't any accented vowels there in "sakana," the word for "fish." When we look at "fish," we look at it and we find a difference between "from" and "to." So for "from the fish," the whole sequence, "sakana-kara," is unaccented. But for "to the fish," the sequence "-made" has an accent on "-made." It's "sakana-MAde," with a dip at the end there.

So "from" and "to" act the same for "pillow," "heart," and "head," the accented nouns. But for the unaccented noun, the word for "fish," which doesn't have an accent on its own, then we see a difference between "from" and "to." "From" doesn't have an accent but "to" acts like it has an accent all of a sudden.

A conventional way of talking about what's going on says, yeah, there are, what, four, or five-- six! There are six morphemes in this slide. There's "pillow," "heart," "head," "fish," "from," and "to." "Pillow," "heart," and "head" are accented. "Fish" is unaccented. We already knew that. I showed you that on the earlier slide.

"From" is also unaccented. "From" is like "fish," but "to" is accented, and that's why it's showing up as accented in that phrase that means "to the fish," "sakana-MAde." "Made" doesn't just mean "to," it means "as far as." It suggests that someone is crawling on the beach up to the fish. They got to the fish. They got that far, "sakana-MAde."

So there are six morphemes on this slide and four of them are accented, "pillow," "heart," "head," and "to." So we only get to see that "to" is accented when we combine it with an unaccented noun, because there's this general principle that you can't have a word that has more than one accent in it. So when you add to to a noun that's accented, to loses its accent. "To" and "from" act the same way. Does that make sense?

So here's case number one of Japanese working out a way to make sure that a single word only has a single accent in it. Here's a repair that it takes. It deletes the accent on "to," on the word for "to," "-made."

There are other repairs you could imagine. It could have gotten rid of the accent on the noun instead, but it doesn't. That's not what it does. "Fish," "pillow," here's another Japanese word, "even," as in "even a fish." Try to imagine a circumstance in which you would want to say, "even a fish," or "even a pillow."

"Even" is accented. We saw that "fish" is unaccented and "pillow" is accented. But when you add this word for even, "-gurai," both of those nouns become unaccented. So it's sakana-GUrai, and it's makura-GUrai, even though it's MAKura and saKANA. So "pillow" is accented on its first syllable normally, but it loses its accent if you add this "even" thing. That's the repair that I just alluded to accidentally.

So "even" is like "to" in that it has an accent. So if you were going to add "even" to these nouns, with "fish," no problem, with "pillow," there is a problem. You're in danger of having two accents. And the repair in this case is to get rid of the accent on "pillow." Raquel, did I bulldoze a question?

**AUDIENCE:** I had a somewhat related question to the topic in general, which is just you're saying that languages will be like, I don't want this to happen?

**NORVIN** Yeah.

**RICHARDS:**

**AUDIENCE:** Do we observe times in languages where they seem like they don't want things to happen, and they just break their rules all the time? Not like English and spelling, but something like they have certain things they definitely don't want to do, so you get just lots and lots of examples of times [INAUDIBLE]?

**NORVIN** Of apparent counterexamples? Well, we saw something sort of like that when we were looking at Lardil. Maybe  
**RICHARDS:** you remember, I showed you that it was useful to think that nouns don't like to end in the vowel "u." The vowel "u" changes to "a." So there was an underlying [NON-ENGLISH], which means "blood," which you get to see in the accusative, which is [NON-ENGLISH].

But the nominative is [NON-ENGLISH]. And we said, well, that's because Lardil doesn't like words to end in "u." it changes the "u" to an "a." Lardil also doesn't like words to end in "k." So there's an underlying word for "boomerang," which is underlyingly [NON-ENGLISH], which you see in the accusative. It's [NON-ENGLISH], but the nominative is [NON-ENGLISH].



And so we said, yeah, it doesn't like words to end in "k." But Lardil also has words that are underlyingly ending in a "u" and then a "k." So this is the word for "story." The accusative is [NON-ENGLISH], but the nominative is [NON-ENGLISH]. So you get rid of the "k" at the end, but now what you've got at the end is an "u," which we said when we looked at "blood," Lardil doesn't like. Is that the kind of thing you're talking about?

**AUDIENCE:** Yeah. So just is it actually common that languages will break these important rules, or is it actually pretty infrequent?

**NORVIN**  
**RICHARDS:** So we're going to see, I think it's fair to say that it's common. So I'm deliberately finding some cases, it may not feel this way, but I'm finding some cases that are comparatively simple, where there is a single principle that a language is trying to achieve and it achieves it in various ways. That's why we're talking about this kind of case.

But there isn't any conflict between the various things that a language wants to do. So we're talking about cases where these languages only have one thing they want to do and they always achieve it. There are cases where a language has multiple things that it wants to do and they're not compatible with each other, and the language has to choose.

So you can convince yourself that it wants to do both of these things, but sometimes it just has to give one of them up. And Lardil might be a case like that. That's a kind of thing that happens.

So what we'll end up with is a picture in which languages might have many things that they want to do, but they have a list of priorities. And we're talking in these cases about languages that-- we're only talking about priority number one. It always wins. You always do whatever you have to to achieve that.

But there are also languages that have priority number one, and number two, and number three, and number four. We find examples like that, too. Does that answer your question?

**AUDIENCE:** Yeah.

**NORVIN**

**RICHARDS:**

**AUDIENCE:** So taking the case to a study of English. I would assume that no double stridents is very high priority.

**NORVIN**

**RICHARDS:**

**AUDIENCE:** Because I've never heard it.

**NORVIN**  
**RICHARDS:** We don't have any words like that. Right. Yeah, that's a good example. So that's a case where English just will not tolerate cases where a word ends in two stridents. Yeah, we don't have words like that. Good example. Yeah.

All right. Let me continue crunching through Japanese here. So again, Japanese doesn't allow for words with more than one accent. We've seen that "-made," this word for "to," loses its accent after an accented word. And now we're seeing that if you have an accented word, it will lose its accent before "-gurai."

So again, Japanese has this general thing, very high priority, no words with more than one accent in them. And then it has various fixes depending on the particular circumstances. We've talked about two so far. We'll see some more.

OK. So Japanese avoids having more than one accent in this unit consisting of a word along with its suffixes through various means. You either get rid of the first accent or the second, depending on which accent exactly it is that you're talking about. We can maybe think of this as an example of the kind of thing that [INAUDIBLE] Japanese's highest priority is, don't have a word with more than one accent. And then it has these other priorities, like keep the accent on the noun, and keep the accent on "-made," the word for "to," and keep the accent on "-gurai," the word for "even."

And what we're seeing maybe is that we should list the priorities as only one accent. That's number one. And number two is keep the accent on "-gurai," this word that means "even." And number three is, keep the accent on nouns. And then, number four is, keep the accent on "-made," this word for "to." And these priorities we should think of as being in this order.

So Japanese really only wants one accent per word, that's the most important thing. And then also, it really wants to keep the accent on "-gurai." It would like to keep the accent on nouns. So if it just has to choose between the accent on a noun and the accent on "-made," well, it'll keep the accent on the noun. It'll lose the accent on "to."

But if it's choosing between the accent on a noun and the accent on "-gurai," on even, well, it'll choose the one on "-gurai." So it's as though we have, again, this ranked list of priorities, these things that Japanese cares about. And this sort of way of thinking about things raises all kinds of questions, like, what kinds of things do languages get to care about, and why? And what determines which things are more important than which other things? Is there anything to say about that?

These are all open topics in phonology, things people work on. I'll show you a few more facts about Japanese before we have to stop. Here are some Japanese compounds.

So compounds where you take two nouns and put them together. And of course, you may all be imagining potential problems, because as you know, a single word can only have one accent in it. What's striking about compounds is that the compound word, the word that you create when you put two words together, indeed, it can only have one accent in it. But the accent it has in it doesn't have to be the accent of either of the two components.

So take the last example, there's a place. It's a place I lived in Japan for about a year, Chiba. Chiba ken. So Japan is divided into what are called prefectures. They're like states, so there are a certain number of them in Japan. There's a city that's the capital of Chiba prefecture, Chiba City.

If you've ever read any William Gibson, you've read about it. That's science fiction. Chiba is not like that. The place itself has accent on the first syllable, so it's "CHIba." And the word for "prefecture" has an accent on it, it's "ken."

But the compound, "Chiba prefecture," has one accent. That's sort of what you expect, words should only have one accent, but it is on the one syllable that it is not accented ordinarily. It's "chiBA ken." Sorry, "chiBA ken." That's right, "chiBA ken," so accent just on the second syllable, not the syllable that's ordinarily accented in "Chiba," and not the syllable that's ordinarily accented in "ken," the other one.

You also get accent in compounds. You can see in the first example, you get accent in compounds even if the components of the compound are not accented themselves. So a "milk drinking child," "milk drinking" is itself a compound, but anyway, "milk drinking" is not accented.

It's "tinomi," and "child" is not accented, it's "ko." But the compound has an accent, which is on the "i" there, so it's "tinoMIko." Yeah, so a nursing baby, "milk drinking child." Which prefecture is your mom from? Do you know?

**AUDIENCE:** She's from Tokyo.

**NORVIN**  
**RICHARDS:** She's from Tokyo? Cool. Great city, Tokyo. So yeah, so all of these compounds, they have one accent in them, exactly one accent. And the accent is not necessarily the accent of either of the components. In fact, I think I've carefully set it up so that it isn't in any of these examples. Where is the accent going in these compounds? Yes?

**AUDIENCE:** The second to last syllable.

**NORVIN** So it's going on the second to last syllable in all of these examples. Yes. Is there another way you could say it?

**RICHARDS:** Yes?

**AUDIENCE:** But would it be, like, on the last syllable of the first part of the compound?

**NORVIN**  
**RICHARDS:** It's going on the last syllable of the first part of the compound. I haven't given you any examples here yet that distinguish those two theories but those are both perfectly good theories, what's going on. Yeah?

Here are some places to distinguish them. I especially like the last one. So the Japanese word for "fried potato," or for french fries-- "furaido poteto," fried potato.

Well, what we can see actually is that neither of those theories is right. If we ignore "nursing baby" and "Kagawa prefecture," where is accent going in "raw egg," and "field mouse," and "fried potato"? Yes?

**AUDIENCE:** Isn't it called the antepenultimate?

**NORVIN**  
**RICHARDS:** Oh, it is called the antepenultimate, yes. That is true in all of these examples. It's going on the antepenultimate syllable, that is, the syllable which is before the penultimate syllable, that is, the syllable which is three syllables from the end. Yeah, that's true for all of these. There's another way of saying it, though, sort of like there were two ways to say it the first time. Yeah?

**AUDIENCE:** The first syllable of the second.

**NORVIN**  
**RICHARDS:** The first syllable of the second part of the compound. Yeah, that works for all of these. I can't remember if I have any slides that show this, but that's actually the right way to talk about it.

The right way to talk about where accent goes in a compound is, it goes at-- so first, it has to only have one accent. The accent has to be next to the boundary between the words and it can't be final, so it can't be on the last syllable. So in words like "Kagawa prefecture," so when you take "kagawa" and "ken," what you get is "kagawa ken."

So there the accent goes at the end of "kagawa" because it can't be final. It can't be on the word for "prefecture" because that's only one syllable long. But on "fried potato," it can be on "potato," on the first syllable of "potato" because it's still between the boundary, next to the boundary between the words and it's not final. And then, if possible, that's what you prefer. So you prefer "furAldo POfeto" to "furaiDO poteto," where the accent would be at the end of the first syllable. Does that make sense? Make sense?

So here's another place where-- so I did something like this over here. We'll just end with this and we'll pick it up here next time. Here's a place where it's useful to think of Japanese as having a bunch of priorities which it sort of has in an order.

So if it's starting off with "kagawa" and "ken," Kagawa prefecture, it has to decide, what should I do? Should I keep both of the accents I've got? Should I just have one accent, and if I'm going to have one accent, where should it go?

We've seen already from other examples in Japanese that it has a very high ranking preference for there only to be one accent. And so it's not going to keep two accents. That's the first candidate there, the first thing that it's imagining maybe being able to do.

And then when it's trying to decide where the accent should be, the single accent, it has these various considerations. It wants the accent to be near the boundary. It would like the accent to be on the last word. But more important than having the accent on the last word is avoiding having accent on the last syllable.

So when it's deciding between having the accent on the last syllable, which would put the accent on the last word, and putting the accent at the end of the first word in the compound, it chooses to put it at the end of the first word of the compound, because, well, that puts it near the boundary and avoids having it be final. So Japanese has these various things it's trying to do and it can't have everything that it wants. So it would like to accent the second word.

It would like to put the accent on the second word. That's what we've seen when the second word is long enough, then the accent will go on the second word. But when the second word is so short that that would put it at the end of the compound word, then it doesn't go on the second word. It doesn't go at the end of the word.

So avoiding having the accent at the end of the word is more important than putting the accent on the last word. So here's a place where Japanese is acting as though it has many things that it wants and it chooses the best one. This is a very influential way of thinking about phonological problems, which we will talk about more next time when we have more time. Are there any questions about it before I let you guys go? Yes?

**AUDIENCE:** Does this have a formal name?

**NORVIN** Yes. It is called Optimality Theory, and we will talk more about it next time. You are seeking to make your choices optimal, to make them as good as they can be. Other questions? OK. So again, I'll put up a new problem set today, and I'll see you guys next time.