[SQUEAKING]

[RUSTLING]

[CLICKING]

NORVIN RICHARDS: All right, so one of the things we've learned in this class is that language is complicated. At least, maybe you already knew that, but we've spent a semester looking at various ways in which language is more complicated than you might have-- than you might have realized before you came in here and in ways that maybe you hadn't thought about much.

These are a few of the things we've talked about, various special properties of language, fancy things that language does that we've spent the semester puzzling over. And if language has all of these complicated properties, the recurring question, which I've raised a couple of times, is how do we acquire this?

We're going to talk seriously about language acquisition sometime next week. But a provisional answer to this that people have offered and taken seriously is that at least some of this stuff is innate, in the sense that-- I think I've said it this way before-- part of being a human being is having the kind of mind that constructs language in certain ways, but not others.

So if we ask questions like, why do languages have binary branching? Why not ternary branching? The answer is, well, we're not equipped with ternary branching. The human brain does it this way and not some other way. And that leads to lots of other interesting questions, like why? What is it about human minds that are set up this way? Can we get that to follow from anything else, any deeper conditions? But that's a claim that's out there, which we have referred to a couple of times.

We don't start with a blank slate. We start with a rich body of linguistic knowledge, and learning our actual language is a matter of filling in some details. But it's very clear that not everything is innate. For example, here's a cartoon. It has a cat in it. And the fact that animal is pronounced "cat" is an accident. It could have been something else.

So Saussure famously pointed this out and called it the arbitrariness of the sign, that, for the most part, what word the language has for a given thing has to do with the phonetic inventory of the language and other properties of the language, but the English word "cat" refers to cats, but that's kind of a historical accident. It could have referred to dogs or mice or anything else. Just happens to refer to cats.

And the fact is that kids, if you're ever around small kids, you'll hear them trying out theories about what words mean and being wrong. I was once around a small child who used the word "moon" for every light. So the hall light was a moon, and the moon was a moon, and the sun was a moon. Everything was a moon.

And sometimes these mistakes survive to adulthood. So take the word "livid." What do you think of the word "livid" as meaning, if you're a native speaker of English or even if you're not? Very angry. That's what it often means. It's originally a color term. It meant white. Because there was an idea that when people got really angry, their faces turned white. They were white with rage.

You sometimes see the expression, his face went livid. When I was a kid, I thought that meant his face was red because I think of people who are angry as being red. But originally, that's what the word meant. It meant white. And then yes, I think for most of us, now it means angry.

Or I used to believe in the verb "misle" until-- I'm embarrassed to say when I stopped believing in the word "misle." I was an adult. Did anybody else have the verb "misle"? Is there anybody who right now is thinking, what are you talking about? Of course, there's a verb "misle."

I believed in the verb "misle" because I had read it in expressions like this. I had been "misle-d" was what I believed. It wasn't-- I think-- I don't believe I actually used the word in conversation and had somebody correct me. I think this was, like, I was in my 20s or something when I sat down and was like, wait a minute. So stuff like this happens.

And sometimes these mistakes catch on, and people-- and sort of survive into adulthood. As I say, I was in my 20s, and I still believed that there was a verb "misle." If I were a king or something, then if my subjects tried to convince me that there wasn't a verb "misle," I would just have them beheaded. And before we knew it, there would be a verb "misle" in English. Or if I were somebody else who was hugely, hugely influential, like a linguistics professor or something. Wait a minute.

There are also various forms of semantic drift that languages undergo, where words change what they refer to. "Livid" is maybe an example of that. It used to mean white, and now it means angry. Here's another example. The modern English word "bead" originally meant a prayer.

So there's still-- there's a German verb "beten." That's the verb "to pray." It's related to the English word "bead"-- in Old English, the ancestor of the word "bead" meant a prayer. The switch from prayer to bead, you know, small, round object, came via rosaries, which are devices for counting prayers in certain religious traditions, including Catholicism and others.

So if you're in a religious tradition where it's important to say a certain number of prayers, you have this little device that has beads on it. And you're counting the prayers using this device. So if you're asked, what are you doing? Well, you're counting prayers. But there's another sense in which you're counting, well, beads, like small, round objects on a wire. And this is thought to be how the word shifted its meaning.

Or there are other things like this, words widen or narrow their meanings. In Old English, "steorfan" meant "to die." It's cognate with German "sterben." It's the ancestor of modern English "starve," which went through a stage of-- sort of originally meant "die." It went through a stage of meaning specifically "die from hunger."

And today, I think of it as basically just meaning, be very hungry. So you can still say "He starved," and have that mean he died, I guess. But I'm a lot more likely to use it in an expression like "I'm starving. Let's have lunch." Maybe when I say that, I literally mean I'm dying of hunger, or figuratively I mean I'm dying of hunger.

Or there's a French word "negre" which means a Black man. It has a descendant in modern Haitian Creole, "neg," which just means man. So the meaning of that has broadened for reasons that are not all that hard to understand. So Haitian Creole speakers, when they refer to men, they're often referring to Black men, since Haitian Creole speakers tend to be Black. So yeah, in Haitian Creole, I am a "neg," although in French, I am not a "negre."

Or similar specialization of a term, there's the old English word "chniht," which meant a servant, and has a cognate in modern German, "knecht," which means something like a boy or a servant. It's the ancestor of the modern English word "knight," who was originally specifically a servant of the king.

The reason that the English word "knight" has all of those unpronounced letters in it is that those are there in an attempt to pronounce the word or spell the word as it was once pronounced. We spell that with a K at the beginning because it used to be pronounced "cniht." There used to be a K there.

And then English got out of the habit of pronouncing K before N, and so we have words like "knight" and "knee" where the K is still there as a memorial to the times when there was a stop there at the beginning. Same deal with the G-H, which spelled a [HISSES IN BACK OF THROAT] sound in the middle.

Or this is one of my favorites. The old English word "housewife," "huswif," which is the ancestor of the modern English word "hussy." That's undergone some semantic change over the years, as it's gone down through the years. There's a disturbing tendency for words that refer to women to undergo pejoration, that is, to become worse in their meaning.

There's possibly a corresponding tendency. If you look at lots of languages, there are lots of languages in which the modern word for "man" is straightforwardly related to earlier words for "man," but in which the word for "woman" has been replaced by some other word for "woman."

And I assume it's related to this tendency, that words for women tend to become insulting over time in lots of different cultures, and so you need to replace them with something. Maybe relatedly, it's not uncommon for modern words for women to originally refer to queens or noblewomen.

That's true, for example, both in German and in Zulu. The modern Zulu word for "woman" used to mean "queen." It replaced an older word for a woman that became insulting. Disturbing cross-linguistically fairly common tendency.

Or-- this is my actual favorite in this list because I wonder about the confusion that it must have caused-- so there's a Proto-Austronesian word reconstructed as "wada," which was an existential construction. It meant "there is." It has a nice, straightforward descendant in Tagalog, "wala," which means "there is not." I don't know how that happened.

There's an Arabic word, "wala," which means something like "no." If you want to say there are no books, you use "wala" to say that. And it's possible that Tagalog got influenced by Arabic. It was in contact with Arabic. It has Arabic borrowings. So maybe that's got something to do with it. But yes, there's presumably a fairly weird period in the middle there, where people were having existential crises.

I just used a star. You guys are used, by now, to seeing stars on sentences that are ungrammatical, and that is how stars are used in syntax. But when people are doing historical linguistics, stars mean something else. They mean, this is a word that we don't actually see in any documents, or you can't hear it. It's our theory about an ancestral form.

So Proto-Austronesian is the ancestor of a bunch of languages of the Pacific, mostly. So the languages of the Philippines and Indonesia and New Zealand and Hawaii. It's this gigantic geographic area that they went over. Plus some who got lost and ended up in Madagascar. There's an Austronesian language over there, too, Malagasy.

The ancestor of all of those languages, it's called Proto-Austronesian. And that form that I just showed you for "there is" is a reconstruction of what they think that word would have been in Proto-Austronesian. We haven't met any Proto-Austronesians. They didn't leave us any documents. It's a hypothesized underlying form, given all the forms that we can see. That's what star means in historical linguistics.

So various kinds of semantic drift. Recuttings-- so the example of "misle" is an example of that. I saw the word "misled," and I thought that it was the past tense or the participle of a verb, "to misle." There are other lots of examples of this with the indefinite article in English.

So the indefinite article in English has two forms. It's "an" before a vowel, and it's "a" before a consonant. So we say "an apple," but we say "a banana." Yes, good. I always worry about when to stop spelling banana. It's not easy.

A consequence of that is that if you hear a sequence like-- this is one of the examples for which this happened-- you hear a sequence like "a nickname," it's sort of hard to know whether you're hearing "a nickname" or "an ickname." So "nickname" was originally "ickname," "ekename." "Eke" is an old word for "also." It has a cognate in German, which is "auch."

It shows up in *The Canterbury Tales,* in the prologue to *The Canterbury Tales.* If you ever read the prologue to *The Canterbury Tales,* Chaucer says something like "and Zephyrus eke, with his swete brethe"-- "And Zephyr also with his sweet breath." So that's what that "eke" is. It's an "also name," that is, a name that you have in addition to your other name.

If ordinary sound changes had taken place, the word for "nickname" would be "ickname," but it's not, because of confusion about where the N went, basically. There are a bunch of words like this in English. This is another example.

Middle English had a word "pease" which was a mass noun. By mass noun, I mean it referred to a certain kind of stuff that didn't have a plural. We have a bunch of words like this, words that don't ordinarily have plurals. Words like "water" or "ketchup" or "flour," where if you have a barrel of flour, you don't talk about it as a barrel of 16 million "flours." That's not what you're talking about. You're talking about a substance, right? A stuff.

Same deal with ketchup or water. You can talk about different kinds of flours being different flours. I guess if you were really, really into ketchup, you could do the same thing with ketchup, right? I'm fond of the ketchups that you get in Southeast Asia, or whatever.

"Pease" used to be a mass noun like that. It was just a name for this green stuff that consists of lots of little round things. But because this particular mass, well, can be subdivided into these little individual, round, green things, and because the word "pease" happened to end in a Z sound so it looked like a plural, it got reanalyzed as a plural. And so they made up a singular "pea," which didn't exist before.

English has done a lot of things like this, sometimes called back- formation, where you take a word that looks polymorphemic, although it's not, and pretend that it is. Another one, which I don't think I have anywhere in here, is we had for a long time a word, "beggar."

That noun was in the language for a long time. It ends in a sequence that's pronounced schwa R-- I've lost my ability to write the IPA symbol for R-- which sounds like our agentive suffix, the "-er" that's at the end of "teacher." And so people made up a verb, "beg." But it wasn't originally a polymorphemic word.

That's one reason it's not spelled "begger," which is what you would have expected if you were adding the teacher suffix to "beg." It's spelled like this because, well, this is not the "-er" suffix. It's just pronounced like it. So the verb "to beg" got back-formed.

Another similar kind of recutting. Here are three Old English words. The positive form, "near," which is "neah." Then that has a comparative form, "nearer," which was "nearra." And then there was a superlative form, "nearest," which was "neahsta."

All three of those words have descendants in modern English. "neah" is the ancestor of "nigh," which we sort of still have in modern English, as a sort of archaic-sounding word for "near." Don't use it so much anymore.

The comparative, the word that meant "nearer," turned into "near" in modern English. And "neahsta," the superlative, the nearest, is the ancestor of the modern English word "next." Regular sound change applied to "nearra" to give you "near" and obscured the fact that it was a comparative. So comparatives normally end in a schwa-R sequence.

And because of regular sound change, basically you were adding the comparative suffix to something that ended in a vowel and then an H. The consequence was that you couldn't hear anymore that it was a comparative, so it got reanalyzed as something that was not a comparative. So it's now our word for "near." It's more or less replaced "nigh" as our word for "near." And then we built new comparatives and superlatives on that. It was originally comparative.

All kinds of entertaining things happen to languages, sometimes as a matter of somebody like me goes through life a fairly long time believing in a verb, "to misle." And if I had a more forceful personality and more political clout, then I might have been able to force other people to believe in the verb "to misle" as well.

Some of this presumably also is a matter of not misunderstandings, but just people deliberately being weird. I mean, if you think of things that people do with language today, they have done this all their lives, pretending that words mean things other than what they mean just for fun, as a way of having a good time or confusing your parents or whatever else.

The other big kind of sound change, though, that I mainly want to talk about today are what are called sound changes. Here are some numbers from various languages of Europe. Are they all Europe? Yeah, mostly. Yeah. Yeah. Europe, widely-- well, Sanskrit. That's not in Europe.

So Sanskrit, Greek, Latin, Gothic, which is an ancestor of the Germanic. No, it's not. It's an old Germanic language. It was spoken around the Crimea. Old Irish, Lithuanian, Old Church Slavonic, which is an ancestor of the Slavic languages. Basque, and Turkish.

If you look at these languages, I've highlighted the second line because it's the line in which this is clearest. You can see a lot of these languages have words for the number two that look kind of similar to each other except for the last two, which really, really don't.

So you've got words that have a "d" and then a "u," or OK, Gothic has a "t," the voiceless version of a "d." And then sometimes there's a "w." Old Irish lost out on the "w." And then you get to Basque and Turkish, where there's no "d" and no "t" and nothing rounded at all. Yeah.

AUDIENCE: What does the colon mean?

NORVIN RICHARDS: Oh, those indicate long vowels. Sorry. Good question. I should have said that. Yeah. Actually for Latin, I should have used a macron. I should go in there and fix that.

So a hypothesis that people could entertain, then-- and this was famously entertained for the first time a few centuries ago-- was that it's not just the case that these various European languages have similar sounding words for one, two, and three, but that these words are similar sounding because they're related to each other.

The word for this is cognates. These are all descendents of a common ancestor. And that Basque and Turkish are not part of this group. They don't have words that are cognate with those. I don't know why I specifically boxed the words for three. The claim is that the words for one and two and three in most of those languages in that table are cognates with each other, and that Basque and Turkish are the ones that are left out.

So I just said, hey, look, these words look kind of similar to each other. And that is indeed often how this kind of thing starts. You look at two languages and say, hmm, these languages look kind of similar. I wonder if they're related.

But big discovery from the early days of systematic linguistics was the observation that it's possible to be more systematic than this. So it isn't just a matter of saying, oh, look. These languages look similar to each other. We can actually state laws, generalizations, about which sounds correspond to which other sounds.

So we can do better than just saying, these languages look similar. We get to say things like, for example, where Latin and Greek have a "d," English has a "t," for a certain set of words. So the Latin and Greek words for "two" and "eat" and "ten" have "d"s in them, which correspond in English to "t"s.

Or the words in Latin and Greek that are related to "kin" and that second word means field. They have a "k" as corresponding "k" sound in English. These words that have a "b" in them-- words that have a "b" in them are weirdly rare in Proto-Indo-European, the ancestor of all of these languages.

There are a couple of examples here. "Cannabis," the second line there, is thought to probably be a borrowing into Proto-Indo-European from some other language for several reasons. One is that it has a "b" in it, and that's rare in Proto-Indo-European. Another is that it's weirdly long. Proto-Indo-European words are mostly not three syllables long.

So a hypothesis is that the ancestors of the Latins and the Romans and the Greeks and the Sanskrit speakers and the Gothic speakers, the Proto-Indo-Europeans, as they were roaming around Europe conquering various people, encountered some people who had discovered cannabis and were like, cool. We will take that. And while we're at it, we will borrow your word for it. Apparently, something like that happened.

So there's this generalization-- it's called Grimm's Law because it was discovered by a Dane named Rasmus Rask and then discovered again by Jacob Grimm, who was one of the Grimm brothers of the *Grimm Fairy Tales.* This observation about systematic sound correspondences between the oldest versions of these related languages.

You can see with the benefit of all of the phonology that we did at the beginning of this class that what's going on is that where Latin and Greek have voiced stops, English and other Germanic languages tend to have voiceless stops. So there was a general sound change. And there's more to Grimm's Law than that, but that's one of the observations that the Grimm made.

Once we've looked at a bunch of languages and figured out all the sound laws that we need, we sort of get to posit these underlying forms. I was talking about this for Proto-Austronesian. These, you can think of them as being like the underlying forms we talked about when we did phonology, right?

We posit these sound changes, and we have a sort of point of origin for all of these words. It's the form that undergoes different sound changes in different languages with the consequence that you have different languages. That underlying form, the language that has those underlying forms, is sometimes called the proto language. So I've been talking about Proto-Indo-European and Proto-Austronesian.

Here's one of the examples of Grimm's Law at work. We look at Sanskrit and English and Latin. I don't know why I said them in that order. And we convince ourselves that where Sanskrit and Latin have a "d," English has a "t." That's part of Grimm's Law, so it has the consequence that voiced sounds in Sanskrit and Latin correlate with voiceless stops in English.

If we look at the vowels, so we have an "a" in Sanskrit and an "e" in Latin. And if we look more widely at correlating words, words that look like they might be related in Sanskrit and Latin-- here are a bunch of examples. What kind of a sound do you think we should posit as the proto sound, a proto vowel for "eat" in both Sanskrit and Latin?

Have a look at those data and tell me what you think.

AUDIENCE: [SNEEZE]

NORVIN RICHARDS: Bless you. Is there a generalization that we can draw of the form wherever Sanskrit has an "a," Latin has an "e"? That's true for "eat" and "tooth." And for the first one in "field." But we're seeing that for "sheep" and "two" and for the second vowel in "field," there are other Latin vowels that correspond with Sanskrit vowels.

So what type of a vowel should we posited as the original vowel in "eat"? Can we predict the Sanskrit vowels-- or sorry, the Latin vowels from the Sanskrit vowels? No. Right? There aren't generalizations like, wherever Sanskrit has an "a," Latin as an "e." What should we do? Yeah.

AUDIENCE: So we [INAUDIBLE].

NORVIN RICHARDS: Yeah. So if we do it the other way around, if we say the original vowels were more like the Latin vowels, and Sanskrit underwent a bunch of sound changes that squashed many of the vowels together. So the original vowels "e" and "o" and also "a," like the first vowel in "field," all three of those vowels became "a," "ah," in Sanskrit.

This is the same kind of reasoning we were using when we were originally doing phonology. We can't predict the Latin vowels from the Sanskrit vowels, but we can predict the Sanskrit vowels from the Latin vowels. Namely, the Latin vowels all got squashed together. So Latin has kept an older vowel system that Sanskrit has simplified to a certain extent.

So we'll posit a Proto-Indo-European stem, "ed-" for "eat." Sanskrit undergoes a change, where the "eh" becomes "ah." English undergoes Grimm's Law and also some changes with the vowels, which we'll get a chance to talk about in the second. And Latin preserves at least that much of the Proto-Indo-European form.

It's worth being careful. Just like at the beginning of this class when we were doing phonology, we started off with sound changes, looking at data sets, where it was often the case that you could posit an underlying form that was the same as some form that you could see on the surface.

But I think we saw, back when we were doing phonology, that wasn't necessarily true. There were cases where it was useful to posit an underlying form that always underwent some kind of change. It never just surfaced in its actual form. And this also happens when we're positing proto forms.

It hasn't happened in this particular case, so this-- I carefully picked a case where life was simple, and Latin has just kept the Proto-Indo-European form. But we can't rely on that happening every time. Sometimes there are cases where we'll want a positive proto form that just doesn't survive in its unchanged form in any case.

Sound changes. The study of sound changes-- first of all, the discovery that sound changes were regular, that you could make statements of the form wherever this language has sound X, this other language has sound Y, that was a big early discovery in linguistics and the starting point for a lot of the work that started getting done in phonology as people started getting interested in the questions of what kinds of sound changes there were and why some kinds of sound changes were more common than others and what motivated them and why they happened and so on.

Similarly, the discussion that we had when we were doing phonology rule ordering, where we decided that it was useful sometimes to posit-- we talked about this for Lardil, for example-- that it's useful sometimes to posit an original form, an underlying form, and have it undergo sound changes in a particular order.

I think we talked about it as being like an assembly line, right? It first goes to the place where it undergoes this sound change, then it undergoes the sound change, with the consequence sometimes that the second sound change creates something that would undergo the first sound change, but it's too late. We looked at examples like that.

Way back when we were talking about Lardil, we had a rule that changed "u" to "a" at the ends of words that changed underlying "muwu," which is the underlying word for "water," to "muga." And we had another sound change that got rid of "k' at the ends of words. So if you had a "k" at the end of the word, it would drop, which changed underlying "naluk," which is the word for "story," to "nalu,"

But it was important that these rules applied in this order because "nalu" doesn't then change to "nala." So that was one of the kinds of cases we were talking about when we were talking about ordering rules in a particular order.

All of that talk started in work on historical linguistics, where it's easy to imagine, in fact, that a bunch of sound changes have taken place, and they've taken place in a particular order. And people got interested in possible relations between sound changes.

Some kinds of sound changes are cross linguistically fairly common. So here's one. "w" changed to "gwa," for example, in Chamorro. Chamorro is a language of Saipan in the Pacific. It's closely related to Tagalog, which is a language of the Philippines. They're both Austronesian languages.

So for example, Tagalog has a word "asawa," which means "spouse." So Tagalog kinship terminology mostly doesn't indicate the gender of the person you're talking about. So they don't have words for husband or wife. They just have this word "asawa," which means spouse. You can say male spouse or female spouse, but you don't, usually.

So Tagalog has a word, "asawa." In Chamorro, this is "asagwa." So the "w" has become a "gwa." Tagalog has a number, "dalawa," which is the number two. That corresponds to "hugwa" in Chamorro, and this "wala," which we were talking about before, which means "there isn't" just in Tagalog. All over Austronesian means "there is," and that's what it means in Chamorro. But it doesn't start with the "w" in Chamorro, it starts with "gwa."

If you think about what a "w" is, the fact that a "w" becomes a "gwa" in Chamorro is maybe not such a weird fact. So think about what a "w" is. A "w" is a glide that corresponds to the vowel "u." If you think back, way, way back, months ago, when you were young and carefree and knew a lot about phenology and had not yet encountered syntax and semantics, maybe you remember that the value "u" has rounding, right? Your lips are rounding. But it's also high and back.

What that means is that your tongue is bunched up toward the top of the back of your mouth. So back then, we were doing group exercises like saying "oo-wee" over and over again. And when you did that, you discovered that your lips were rounding and unrounding, but also that your tongue was shifting from the back of your mouth to the front of your mouth.

So "w" is a glide that corresponds to the vowel "u." It's a version of the vowel "u" said very fast, basically, in which your tongue is bunching up toward the back of your mouth, reaching toward the top of the back of your mouth, and your lips are rounding.

So if you think about what you do when you do a "g," a "guh," a voiced velar stop, well what you're doing is your tongue is touching the back of your mouth, right? It's making a velar closure back there.

So the fact that a "wa" has become a "gwa" in this language is sort of understandable. A "gwa" is just a "w" that got out of hand, right? It's your tongue not just bunching up toward the back of your mouth, but actually colliding with it, making a closure back there.

And I'm going through all this because this sound change didn't just happen in Chamorro. It also happened in Welsh. So Welsh has a bunch of words. I've just given you one, which is "man." The Welsh word for "man" is "gwir." It's related to the Latin word "vir," [pronounced "weer"], which we have as "virile" and English words like that. The "vir" is actually also, I think, related to the "were" in "werewolf," which is a man, a man-wolf.

Welsh has another word which they borrowed from-- borrowed from Latin, "gwin," which is "wine." So they borrowed that from Latin. They changed the "w" sound at the beginning to a "gwa." So Latin underwent-- Welsh, sorry, underwent the same sound change.

There are also some words that got borrowed from Proto-Germanic into late Latin, that is, Latin right before it was about to break up and turn into all the Romance languages, in which the Proto-Germanic "w" got realized in late Latin as a "gwa."

So the Proto-Germanic word for "war," which was "werra"-- it's an ancestor of the modern English, "war"-- got borrowed into late Latin as "gwerra." And you now see that in English words like guerrilla, in the sense of a person who fights a particular type of warfare.

If you study any Romance languages, the old Latin word for "war" was "bellum." But that word, I believe, vanished from all the Romance languages. What they all have are descendants of this word. So if you study Italian or French or Spanish, you need to learn words for war like "guerre" and "guerra."

Those are all descendants of this Germanic word. So the late Latins, I guess, were really impressed with the Germanic attitude toward war. They borrowed this word, and they completely replaced their word for "war" with it, as far as I can tell.

AUDIENCE: Do we know why "bellum" disappeared?

NORVIN RICHARDS: No. At least, I don't. Yeah. This just became the cool word for war. So I mean, we have it in expressions that we've borrowed from Latin, like "antebellum." But as far as their normal word for war, it got replaced with this.

Or we also have words in English where we have both of these words. So there's the Proto-Germanic word for "guard," which was "ward." We have that as a word, "ward," to ward off a threat or something like that. It got borrowed into late Latin as "gward." That's the modern word for "watch" in lots of languages. So in Italian, if you want to watch TV, the verb you use is "guardare." You guard the TV. You watch it carefully.

And English has both of these words now, so we have "ward" and we also have "guard." They both have the same root. They're both from Proto-Germanic "ward," which came to us straight in the form of "ward," and then took a little detour into Latin to become "guard." And then we borrowed it again in a different form.

Big discovery, then. Grimm's Law, this change from "w" to "gwa," so lots of big discoveries. But one of the big discoveries was that sound change was regular, that you could do better than just saying these words look kind of similar to each other. I bet these languages are related.

You could actually say, oh, yeah. These words are-- these languages are related because there is this general law about how sounds in language X are related to sounds in language Y. This was called the Neogrammarian Hypothesis, and it was one of the big, early discoveries.

It shifts emphasis away from looking at lists of words that look kind of similar. What we're looking for are lists of words that can be related by regular sound change laws, which is not the same thing. There could be lots of sound changes. The sound changes could be really radical.

The result could be that the words don't look like each other at all. The point is to discover that there are regular correspondences between the words and the lists. Does that make sense? That's how you discover that two languages are related.

So just to give you a dramatic example of this, here are three words for the number two in three languages whose names I have cunningly hidden from you. We'll call them language A, language B, and language C. And I will tell you that two of these words are related to each other and the third is not.

You're probably suspecting a trick. But go ahead, somebody fall for it. Which of these two languages do you think are related to each other? Yes.

AUDIENCE: B and C.

NORVIN RICHARDS: B and C. Yes, see, you're right. But that's because you know how this kind of thing works. You're supposed to say A and B. Would somebody go ahead and say A and B? I would feel better.

AUDIENCE: Is it A and B?

NORVIN RICHARDS: Yes, yes, it's A and B. Excellent suggestion. Thank you. But of course, he's right. It is B and C. "Er" Is the Mandarin word for two. "Erku" is the Armenian word for two, and Greek has "duo" as it's word for two.

And the way you convince yourself of this is by discovering that wherever Greek has a "dwa," Armenian has an "erk," which is a pretty radical sound change. It took people a while to discover that Armenian was an Indo-European language because Armenian has had really radical things happen to it, with the consequence that its words don't look all that Indo-European anymore.

But it underwent this general sound change, and the point is you discover that the sound change is general, and that's how you convince yourself that it belongs to this club. Yeah.

AUDIENCE: Why?

NORVIN RICHARDS: Why did it do that? So there isn't any really good answer to that, but you could think. If you imagined first that they decided that it wasn't good to have words start with "d" and "w." Like, that's too many consonants at the beginning. We don't want that. We're going to add a vowel. So they'll add a vowel at the beginning.

This alternation between "d" and "r" is not such a strange thing to do. So an "r" is kind of-- it's not unlike the relationship between "w" and "u", that "d" is an actual stop, an "ruh," it is unlike that. "d" is an actual stop, and "r," especially if it's a flap, is you're just sort of whacking the part of your mouth that where you make the "d" stop.

And then the fact that "w" became a "k," well, we've seen "w" becoming a "gwa" in Welsh and in Chamorro. And a "k" has a stop in a place where a "w" would just be an approximant. So it's maybe not a completely crazy set of sound changes. I should say, it's not always possible to understand why a language underwent the sound changes that it did.

There's a beautiful example. I have sometimes used this as a problem set in this class. If you were going to have another problem set, it might have been about this. There's an Algonquian language, Arapaho. If you look at the Algonquian languages, the Proto-Algonquian can be reconstructed to a fair degree of confidence.

There are a bunch of Algonquian languages. They're very well studied. There are sound changes. It's not all that hard to relate them to each other. Arapaho is an Algonquian language, but it has undergone sound changes like-- I'm trying to remember them all. "p" has become "chuh." "m" has become-- what has "m" become? "m" has become "b." There's a sound-- so with the consequence that-- oh, no. "m" has become "chuh." They've both become "chuh." they've blended together.

So the consequence is that the word for "dog," which is the one that I can remember off the top of my head. There's a word for "dog" that in Wampanoag, which is spoken around here, is "anum." This is a schwa. And in Passamaquoddy is "alum," and in Cree is "ateem."

And so there's an "m' here that corresponds, and there are vowels here that have undergone various kinds of sound changes. There's a sound here, which is kind of mysterious. It's unclear how to represent it in Proto-Algonquian. But so here's one Wampanoag. Here's Passamaquoddy. Here's Cree.

And the Arapaho word for it is "fench." Yeah. So you've got "anum," "alum," "ateem" and then "fench" is the Arapaho word. So the Arapahos, I don't know what happened to them. But they underwent sound changes that it's very hard to justify to yourself. It's unclear what happened.

I was once talking with a linguist about this, and his theory was that what happened with the Arapaho was that they became a horse culture. When horses were brought to the US, the Arapaho got really into horses. And his theory was there must have been a generation of Arapaho who just sort of stopped listening to their parents, It underwent all kinds of radical sound changes because they were too busy riding horses.

This is an example where-- thank you. One of you deliberately fell for the trap that I was setting. An example where you convince yourself that these two, the Mandarin and the Armenian words, are not related, despite having some stuff that looks like it's in common. It's really the Armenian and the Greek words that are related.

Another example where you have two words that look similar, but the two languages are not related. There's a beautiful memoir by a guy named Dixon, Robert Dixon. He's a linguist who did-- he wrote a book called *Memoirs of a Field Worker* which was about his work in Aboriginal languages in Australia in the '60s.

It's a nice book. And one of the things he talks about is going-- he was traveling around different Aboriginal areas, talking to different speakers of different languages. And there was a particular language that he managed to find possibly one of the last speakers of, a language called Mbabaram, which no longer has any speakers at all. This was in the '60s.

And he was very interested in this language. It was supposed to be quite different from some of the languages that were near it. And he finally found a speaker who was finally willing to talk to him and sat down with this guy. And the guy said, OK, let me start teaching you some Mbabaram words. Do you know our word for "dog"?

And he was like, OK, no. What's your word for "dog"? And the guy smiled, and he said, "dog." And Dixon was like, OK, this has to be a joke. But it turned out it was not a joke. Most of the languages of the world probably have a word for "dog." There are dogs in lots of places. And "d" and "o" and "g," they're not such uncommon sounds. And 6,000 whatever languages in the world, and yeah, this kind of thing happens every so often.

So these are completely unrelated languages. Mbabaram "dog" can be related to-- what is that, a proto [INAUDIBLE] form, "gudaga," which changed in some related languages to other sounds. So you have "gudaga" in Yidiny, and you have "guda" in Dyirbal. And in Mbabaram, they got rid of the first syllable, and they got rid of the last vowel. And before you knew it, you had "dog."

English also has a word "dog." It's not from Australia. So we have-- it originally referred to another kind, a particular kind of dog, a mastiff. And it's taken over as our word for "dog." Our older word for "dog" was "hound," which we still have.

And this is the kind of thing that happens. So you know, Persian and English have the same word for "bad." Malay and Greek have very similar-looking words for "eye." And it's just a coincidence. How do you know whether you're looking at a coincidence? Well, you ask yourself whether you can posit regular sound changes.

So English and Kaqchikel Mayan have words for "mess" that sound more or less the same. That's the kind of thing, if I just tell you in isolation I have two languages that have the same word for "mess," if you want to know, are those languages related, well the way you find out is by trying to find out whether you can come up with sound changes that apply to more than one word.

Is it generally the case that where this language has an "m" this other language has an "m'? Where this language has an "s," this other language has an "s"? In the case of English and Kaqchikel, the answer is no. So here are a bunch of other words with "m"s in them, and they don't have "m"s in Kaqchikel.

You can't rely on it being the case that every English word with an "m" in it would have an "m" in Kaqchikel, even if the languages were related. But you are entitled to hope that it'll happen more than once. So this looks like a coincidence. Any questions about any of this?

Just as an in-class exercise, I wanted to try doing some historical linguistics, reconstructing some sound changes. Here are some Polynesian languages. So they are languages from the Polynesian branch of the very large Austronesian language family. Hawaiian, which is spoken in Hawaii, and Maori, which is from New Zealand, and Tongan, which is from Tonga, and Samoan, which is from Samoa.

These are all languages spoken in islands of the Pacific, particularly the eastern Pacific, or not too far from Hawaii-- between Hawaii and New Zealand. And these are all words that look pretty related to each other. And so let's see if we can figure out any sound correspondences.

Maybe we can start by looking at the things that I have made green here. What do you think? What sort of proto sound should we posit for the sound that is in green in these kinds of examples? There are at least two theories that we could take seriously-- hypotheses we could take seriously, right? There's a third kind of hypothesis. Maybe it's an "m," right? But let's put that possibility aside for a second. We're not going to do that unless we're driven to it.

So the two theories that we could take seriously are maybe it's a "k" or maybe it's a "t." Anybody have a theory about what we ought to do? Joseph?

AUDIENCE: [INAUDIBLE] --that maybe the majority rules and it's the "t."

NORVIN RICHARDS:	Yes, so we could do this democratically and say, yeah, there are more "t"s on this slide than there are "k"s. Majority rules. Yeah.
AUDIENCE:	I would also go with "t" because Hawaii is a more geographically isolated area.
NORVIN RICHARDS:	Yeah. All of these-- I mean, these are all islands. Amazing story. These people started-- the Proto-Austronesians are supposed to have started in Taiwan and headed out in outrigger canoes and settled all of these islands in the Pacific, tossing consonants overboard when they got to too heavy, as far as I can tell.

But you're right. Hawaiian was near the end of their journey. So they're supposed to have started in Taiwan. New Zealand and Tonga and Samoa were all closer to where they started than Hawaii. So maybe Hawaii-- we're justified to think that Hawaiian might have undergone some of the special sound changes.

I can also tell you something special about Hawaiian. I don't know whether this will come up later. Hawaiian does not have a "t." It's one of the few languages in the world that does not, which is why, if you've ever heard, there's a song that is sometimes played around Christmas which involves the Hawaiian version of "Merry Christmas"-- "Mele Kalikimaka."

"Mele Kalikimaka" is the Hawaiian version of "Merry Christmas" because Hawaiian has no t," and it also has no "s," So they need to replace the "s" in "Christmas" with something, and what they replace it with is "k" because that's the best they can do. That's the closest they've got to that.

So yes, Hawaiian has no "t." So the idea that maybe there was a t," and in Hawaiian, it became a "k," has some initial plausibility. So yeah, we'll posit a sound change in Hawaiian from "t" to "k." And we'll posit a some Proto-Polynesian forms that will have "t" in them. That is, they'll look like the Maori, Tongan, and Samoan forms, and then we'll posit the sound change in Hawaiian that changes that "t" into a "k."

So far, so good. Here are some more forms. What should we do with these? So it's either a "k" or it's a glottal stop. Maybe for now we should just sit on this problem because here, just this principle of doing this kind of thing democratically, maybe it doesn't help us. We've got two votes for "k" and two votes for glottal stop.

This might be a place where it's easier to imagine a "k" becoming a glottal stop than it is to imagine a glottal stop becoming a "k." "k"s becoming glottal stops, that's a thing that happens pretty commonly in various languages. And in fact, that's what people standardly do in this case. So in Hawaiian, we posit a "k" changing to a global stop in these kinds of examples. Maori and Tongan are the ones that are being conservative here. We'll see an additional reason to say that in just a second, I think.

Here's the additional reason to say that. Here are a bunch more words where Tongan has glottal stops in unpredictable places. So at the beginning of the word for "day" and twice in the word for "love" and in the middle of the words for "leg" and "voice."

And it's not because-- so if you want to learn to speak Tongan, one of the things you have to learn is that some words begin with glottal stops, and others begin with vowels. So "dawn" starts with a vowel, and "day" starts with a glottal stop. And distinguishing these from each other is tricky.

The fact that Tongan is putting these glottal stops in places that can't be predicted--

[SNEEZE]

Bless you. Leads us to think that what's going on is that those were glottal stops in Proto-Polynesian, and they've been lost in all the other languages. So here's place where predictability trumps democracy.

We can't predict where Tongan will have these glottal stops. We can predict where Hawaiian, Maori, and Samoan will have glottal stops. So Hawaiian and Samoan will have glottal stops wherever there's a "k" in Maori and Tongan. And Maori just won't have glottal stops.

So it's always predictable where the glottal stops are in the other languages. It's not predictable where they are in Tongan, so we'll posit them for the proto language. So Aloha in Hawaiian, which literally means "love," in Proto-Polynesian is "'alo'ofa" with two glottal stops in it. And you can see, incidentally, another sound change. The "f" became "h" in Hawaiian and also in Maori.

So Hawaiian has undergone sound changes, "k" becoming glottal stops, "t" becoming "k," and glottal stop vanishing. This is sometimes-- so I'll just do that again dramatically with a sagittal section here. So Proto-Polynesian "ata," "dawn," has become "aka." In Hawaiian, "t" has become "k," with the consequence that Hawaiian has no "t." "k" has become glottal stop, so Proto-Polynesian "kula," which means "red," has become "'ula" in Hawaiian. And Proto-Polynesian glottal stop has vanished.

This is sometimes called a chain shift. And there are different ways of thinking about chain shifts, but they're not-- cross-linguistically not uncommon. I'll show you another kind of example of one in just a second, where you have sound A becoming sound B, sound B becoming sound C, and sound C becoming sound D.

And it's often difficult to determine the order in which things like this happen. One way to think about this is the Hawaiians got rid of Proto-Polynesian glottal stop, and then they were like, now that we have no glottal stop, we're free to pronounce our "k" as glottally as we like. We don't have to worry about the "k" getting confused with the glottal stop.

And so the "k" began drifting backwards and becoming a glottal stop. And then they were like, wait, wait. We have no "k" anymore. Our "k" is gone. It's just become a glottal stop. We miss "k." We will change our "t" into a "k." And then who knows what would happen, how they would manage to come up with a "t"? Maybe if we keep an eye on Hawaiian, we'll get to see what they do. It's at least one way to talk about these kinds of chain shifts.

Another famous chain shift, which is called the Great English Vowel Shift-- sorry, the English Great Vowel Shift. It is the reason that if you study almost any other language of Europe, you'll learn vowels that have a certain set of sounds associated with them. They are the sounds, more or less, that those symbols have in the IPA.

So in lots of languages, this symbol is used for a vowel that's pronounced "ee." But in English, it's pronounced "I." Or that in lots of languages, this symbol is used for a vowel that's pronounced "a," but in English, it's pronounced "ee." This is all because of the Great English Vowel Shift.

What was the Great English Vowel Shift? It went like this. Around the 14th century, English had long vowels in these positions. English also had short vowels. We'll put those aside. So there were long vowels, that were just vowels that were held for a long time. And they were in those positions in the mouth.

So you had an "ee," an "ay," an "aa," and then an "ah," "aw," "oh," and "oo." We had all those long vowels. And then the "ee" and the "oo" became dipthongs. If you think about holding an "ee" for a long time, your tongue is in a position of maximum tension. It's front and high, and you're supposed to hold it for a long time.

And you can understand how something like that might have changed into a dipthong. So instead of holding an "ee" for a long time, you were allowing yourself to begin the vowel with your tongue in some more central position and then just sort of gesture in the direction of an "ee." So you went from "ee" to "uee" to "ayee" to "ai." And so "ee" and "oo" became "ai" and "ow."

And then suddenly, English was like, wait. Didn't we have an "ee" and an "oo"? Our "ee" and "oo" are gone. All we have is "ai" and "ow." And so "ay" and "oh" changed. So "ay" became "ee" and "oh" became "oo," filling the gap that the first part of the vowel shift left.

And then long "aa" and "ah" both became "ay." That's why long "a" in a word like "fate" is pronounced "ay." It's because, well, the "ay" was off becoming an "ee," and so now we had a space where there was an "ay." And so our "ah" became an "ay." And our "aw" became an "oh."

So all of our vowels have undergone this dance. And if you look at modern English dialects, you can see a lot of these kinds of sound changes continuing today. So I come from a place where those dipthongs are getting flattened, where "ai" has a tendency to become "aa." And so the vowels are continuing to chase each other around in the vowel space.

I think I talked about this when we were talking about phonetic inventories, that there's work on the kinds of vowel inventories that we find. So there are plenty of languages out there that have three vowels, and the three vowels that you have if you have three vowels are "ee," "oo," and "ah." That is, there's a front high vowel, there's a back high vowel, and there's a low vowel.

That is, you have three vowels that are kind of as far apart from each other as possible. There aren't languages out there that have three vowels, and the three vowels are "ee," "ey," and "eh." That's not a vowel system.

One of my colleagues, Edward Flemming, has done a lot of work on different kinds of vowel systems and reducing them to this idea that you're trying to keep your vowels maximally dispersed from each other in the vocal tract.

And that kind of thinking can be one of the ways to think about why English underwent this vowel shift. It's like, first the high vowels changed into dipthongs, and then you have this sort of unclaimed real estate at the top of the vocal tract, right? So once you no longer have an "ee" or an "oo," once they've changed to "ay" and "ow," there's this desire for dispersion that's pushing you to get some vowels into that space. That first change kind of triggers a second change.

If you study languages, one of the things that you will sometimes be told is here's a regular rule for how you form, say, different forms of a noun, singulars and plurals or different case forms or whatever. And then here are some irregular forms. And sometimes the irregular forms are the consequence of sound changes.

So for example, when I was briefly attempting to learn Latin in high school, we were taught there are certain Latin nouns, so-called third declension nouns, for which you need to memorize both the nominative singular form and another form. We were taught to memorize the genitive singular form because you can't predict from the nominative singular what the other forms will be.

So you get words like "rex," which means "king," and "nox," which means "night," and "vox," which means "voice." But the stems to which you add any other suffix are unpredictable from the nominatives. So king, "rex," the genitive and the accusative and all the other forms are formed off of a stem "reg-" Or for night, it's "noct-," and for a voice, it's "voc-."

Anybody else here study Latin? This is all stuff that you have to learn if you're trying to learn Latin. And what I was taught, at least, was to think of "king," the word for king as "rex, regis." We were supposed to just sort of cite both of those.

So my old high school Latin teacher, Mrs. McNair, that's what she taught us. Mrs. McNair could have taught us-- she probably knew this, but she didn't reveal it to us-- that although you can't predict the genitive from the nominative, you can predict the nominative from the genitive. So what's really happening in Latin is that you've got these stems, which are "reg-," "noct-," "voc-," and that you're forming the nominative by adding an "s" and then doing some sound changes.

So you take "reg-" and you add an "s." That by itself would give you "regs." And then Latin doesn't allow a sequence of a "g" followed by an "s." You make them both voiceless. You change the "g" so that it's "k." and Latin spells the sequence "ks" with an "x."

Or "nox," yeah, that would end in two stops followed by an "s." A "k," a "t"-- a "k" sound, which is spelled in Latin with a "c," and a "t" and then an "s." And then you simplify that by getting rid of the "t" in between. Or "vox," which is, well, basically, just "vocs," just adding "s" to the stem. So Mrs. McNair could have made my life easier if she had been willing to tell me about that.

So there have to be sound changes that if you're willing to think about the third declension nouns this way-- [COUGHING] excuse me. You can think of them as just having a nominative singular form "s" and some sound changes that obscure the fact that the nominative singular is really not so complicated. She would have had to teach us a bunch of sound changes, but these are some of them.

Or here's another example of this kind. We had a problem set earlier on Inupiaq, which is one of a number of languages that are all related to each other. They're all members of what is still, for some reason, called the Eskimo family of languages, where I say "still" because the word "Eskimo" is not well-regarded among the people to whom it refers.

It's a name for them that was come up with by the Cree. There are debates about what it means. But it doesn't matter what it means. They don't like being called Eskimos, so it's unfortunate that linguistics continues to refer to their language family as the Proto-Eskimo family.

Here are some words in this language family. These are proto forms, and so I should really have stars on them. So "iglu," which is a word you may have heard, it's the word for house. So all of us live in igloos. We all grew up in igloos, as far as the language is concerned, or "tuma" or "tavsi." Here are some words.

And there's a very general plural suffix, "t," which gets added. The proto language for this language family had-- let's see now-- four vowels. So there was "a," "i," and "u," and there's also schwa. You can see there's a schwa at the end of the word for "footprint."

And then in the history between the proto language and modern Inupiaq, two sound changes took place. First, "t," like the "t" of the plural, but not just the "t" of the plural. It was a general sound change. Whenever you had a "t" that followed the vowel "i," the "t" underwent what's called palatalization, cross-linguistically a very common sound change where a "t" becomes a "ch" around a front vowel. We had something like this happen in English several times. It's why our word for cheese starts with a "ch" sound. It comes from Latin caseus, which started with a "k" sound.

So T became "ch" after the vowel "i." That's what you're seeing at the end of the word for "belts." Regular sound change. And then another sound change, Inupiaq has a three vowel system. It only has "a," "i," and "u." They got rid of schwa. And in particular, they changed schwa to an "i."

But these sound changes took place in this order with the consequence that if you want to learn Inupiaq now, what you're taught is, well, the plural suffix is a "t," except after some nouns, but not all nouns, that have an "i" at the end of them, where the "t" becomes a "ch."

And you just have to learn which nouns that end in "i" change the "t" to a "ch" and which nouns that end in "i"-- the vowel that's written with the letter "i"-- don't do that. So "belt," you just have to memorize, that's the kind of "i" final noun where the plural suffix is a "ch." "Footprint," that's the kind of "i" final where the plural suffix is still a "t."

This situation, which is, of course, distressing to people who want to learn Inupiaq, is the consequence of these sound changes occurring in this order and creating this kind of opacity. So what's really going on is, well, there used to be another vowel. And we got rid of that vowel, but we were already committed to having "ch" in certain places and not others.

I should say there's now dialect variation within Inupiaq. There are dialects of Inupiaq that said, no, look, this is silly. We're going to change the "ch" in "belts" to a "t." So they still have "t" becoming "ch" in some other places, but specifically the plural has gotten regularized so that it's a "t" everywhere.

Consequence of a history of sound changes is sometimes opacity. It's kind of like the Lardil example that I showed you before. You have a change from A to B, and you have another change from C to D. And the consequence of the change from C to D would create new environments for A to B, but A to B has already happened. It doesn't happen again.

So as you are learning languages, if you encounter facts like this, entertain the possibility that what's going on is opacity because of sound change occurring in a particular order. I don't know whether you'll consider-- whether you'll have-- whether you'll get any comfort from that thought or whether it'll just annoy you, but that's sometimes the consequence.

Yeah, Lardil. We just did Lardil. Oh, yeah. Here's another example of the same kind of thing. Passamaquoddy is an Algonquian language spoken up in Maine. It underwent a sound change that deleted odd-numbered short vowels in words, depending on the consonants around them. It's called syncope.

If you started with a word that meant "I hook a fish," that would have been something like "nuh-puhteeheek." And what you did was to get rid of the first and third vowels in that word. So in modern Passamaquoddy, that's now "npuh-teeg."

So you've gotten rid of the first vowel and the third vowel in the word. The "nuh-" at the beginning of that is a prefix that agrees with the subject, "I." If you get rid of that prefix, like if you want to say he or she hooks a fish, well then you don't have that prefix and that changes the count.

So original "puh-tee-hee-geh," again, you've gotten rid of the first and third vowels in that. So in modern Passamaquoddy, it's "tee-gee-geh." So Passamaquoddy speakers, if they want to learn Passamaquoddy, they have to learn if you add the prefix, you sometimes change which vowels are where. So "I hook a fish" is "npu-tig." But "he or she hooks a fish" is "tee-hee-guh."

There's a vowel between the "p" and the "t" in the "I" form, but not in the "he or she" form. There is a vowel between the "t" and the "h" in the "he or she" form, but not in the "I" form. If you look at the online Passamaquoddy dictionary, you see lots of examples of this kind of thing.

Verbs are listed in their third-person form, but then there will be a listing for each verb. This is what it looks like when you add a prefix. And it's sometimes radically different as a consequence of this sound change.

So for example, here's another instance of the same thing. "I'm sorry about it" was originally "nuh-muh-zah-kay-in." Getting rid of the first and third vowels in that would have given you "nmuh-skey-in," which is the modern way to say "I'm sorry about it."

If you don't add the "nuh" prefix, if you want to say "he or she is sorry," you're going to get rid of the first and third vowels. If nothing else happened, that would give you "sah-key-oo." But in fact, "n" next to "s" tends to become a "p."

So the word for "I'm sorry about it" is "nmuh-skey-in," but "he or she is sorry" is "psah-key-oo" with the consequence that these look so different from each other that when I have pointed out to Passamaquoddy speakers that they are the same word, they're astonished. They're like, oh, yeah, right. I guess they are, even though they don't look all that much like each other anymore.

Now, the Passamaquoddy system looks like the result of a stress system. So again, the rule is get rid of the odd-numbered short vowels in the sequence. And that's the kind of rule that makes sense if you think, yeah, it had a stress system that stressed the even-numbered vowels, right? So "I hook a fish" was "nuh-put-tuh-heek."

And then they got rid of the first and the third vowels because they weren't stressed. And "he or she hooks a fish" was "puh-tee-hee-geh," and you got rid of the schwa in the first one because well, it wasn't stressed. Whether you get rid of vowels or not depends partly on what consonants are around them. That's why you're not actually getting rid of the third vowel in this one. You get "tee-hee-geh."

So if you thought of Passamaquoddy as having stress on its even-numbered short vowels, then you can understand why it's getting rid of its odd-numbered short vowels. It's getting rid of them because they're not stressed.

And Passamaquoddy does have relatives that have stress systems like that, where you stress the even-numbered vowels. But that is not Passamaquoddy stress system anymore. So Passamaquoddy underwent all of these sound changes because of the stress system that they used to have, that they used to share with some of their relatives.

And then they changed their stress system. Their modern stress system goes "Stress the first vowel and stress every other vowel counting backwards from the end." So you get words like [INAUDIBLE], which is "he or she talks like that," where you're stressing the first vowel and the second vowel. First vowel because you always stress the first vowel, and the second vowel because it's two vowels back from the end. So every other vowel, starting from the end.

If you make it one syllable longer, then you're going to stress the first and the third vowel-- "wee-guh-west-too," "He or she talks while walking backwards." "Quiguh-west-too-bin," "You and I like talking." So stress is on the first syllable, and it's on the even-numbered syllables counting backwards from the end of the word. So they've innovated this new stress system after having this older stress system which created all of these alternations in the positions of vowels.

There's a reason that Passamaquoddy is difficult to learn. There are several reasons. This is one. So it used to have a different stress system, during which the syncope rule applied. And now it has the system it has now.

I want to end today because I think we have enough time for me to heap scorn on a couple of things. I want to end today with two bad ideas. So one of the reasons that I'm talking to you about historical linguistics-- there are several. One is that it's fun. It's kind of interesting to try to trace back these sound changes.

But another is that historical linguistics is the kind of thing that is sometimes done badly. So you'll see in popular press people saying things like, hey, this language is related to that language, or this language has borrowed this word from that language. And if you have any skepticism about that, what you want them to do is show you regular sound correspondences or regular rules for how words are related to other words.

So there was a popular book for a while that proposed that the Native American languages were all descended from Chinese, that the Mandarin-- the Chinese had encountered North America first, and that their language had taken over North America, and that all of the modern languages were descended from Chinese.

And the examples were things like in modern Mandarin, there is a greeting, "nihao." And hey, if you watch Hollywood movies, you will hear Native Americans greeting each other with "how." And there, you know, so clearly these are related to each other. "How" actually is a greeting in Lakota. It's a greeting that Lakota men use to greet other men.

It's not related to the Mandarin expression "nihao." And the reason I can say that with so much confidence is that, well, no one has ever found sound correspondences or anything like that relating anything else in Lakota to anything else in Chinese.

There are slightly less silly claims that people have made using what's sometimes called megalocomparison. So let's skip-- so glottochronology-- I'll leave this on the slide, but glottochronology is an attempt to sort of carbon date language splits. So the idea is you take a list of basic vocabulary.

You figure out how many cognates the two languages share on the list, and you start with the assumption that cognate loss happens at a constant rate. This is the figure that has been offered by glottochronologists. And then you do some math.

And this is something that you see people seriously saying. So if you look in-- historical linguistics is usually not done by linguists. It's often being done by biologists. They'll say, we know that these languages are related at a time depth of X. And what they mean is we've done glottochronology, which starts from the assumption that you can do this kind of carbon dating of languages by looking at cognate lists and figuring out the rate at which two languages cease to have cognates with each other.

The problem is that the base assumption-- that cognate loss happens at a constant rate-- is false. And no one has figured out a way around that. There doesn't seem to be any way to correct for it. So if you see people using glottochronology, you should treat them with skepticism.

The other bad idea that's in here is megalocomparison. This is attempts to reconstruct Proto- World, which were very en vogue at a certain time. People thought if we do lots and lots of this cross-linguistic comparison, we'll be able to figure out the ancestor language for all of the languages in the world.

The work has never involved discovering general sound changes that relate languages to each other. It always involves going back to saying, "Hey, look, that word in that language looks kind of like that word in that language! I bet they're related." That's how that work is always gone.

So those are two ideas-- bad ideas that you should be skeptical about. This has been my public service announcement for today. Are there any questions about either of those bad ideas? I put more detail about the bad ideas in the slides. OK, cool. Go forth, and I will see you next week.