

Introduction to the Study of Language

Part 3

Today

- Finishing Syntax
- Phonology
- Historical Lx
- Misc...

Gluing tests

- The girl found the puppy
- Replacement (e.g. with a pronoun)
 - Where did you find the puppy? I found *it* in the garden.
 - *What* did the girl find?
- Coordination
 - The girl found *the puppy and the doll*.
- Movement
 - *The puppy* was found in the garden
- Answer to a question
 - What did the girl find? She found *the puppy*.

Gluing tests

- But *found the puppy* also seems to make sense in *The girl found the puppy*.
- Try to apply the gluing tests on it
- And now what about *found the*, would the gluing tests work?
- Finally, consider *the puppy and the boy* in this pair
 - *The girl found the puppy and the boy.*
 - *The girl found the puppy and the boy found the kitten.*

How does gluing help us?

- Recall some of the puzzles from the previous classes
 - Question formation: How do kids know which verb to move in front of the sentence?
 - Pinker's example of the induction problem:

a.	John is in the garden next to someone who is asleep.	
b.	Is John ___ in the garden next to someone who is asleep?	(Move the first <i>is</i>)
c.	*Is John is in the garden right next to someone who ___ asleep?	(Move the second <i>is</i>)

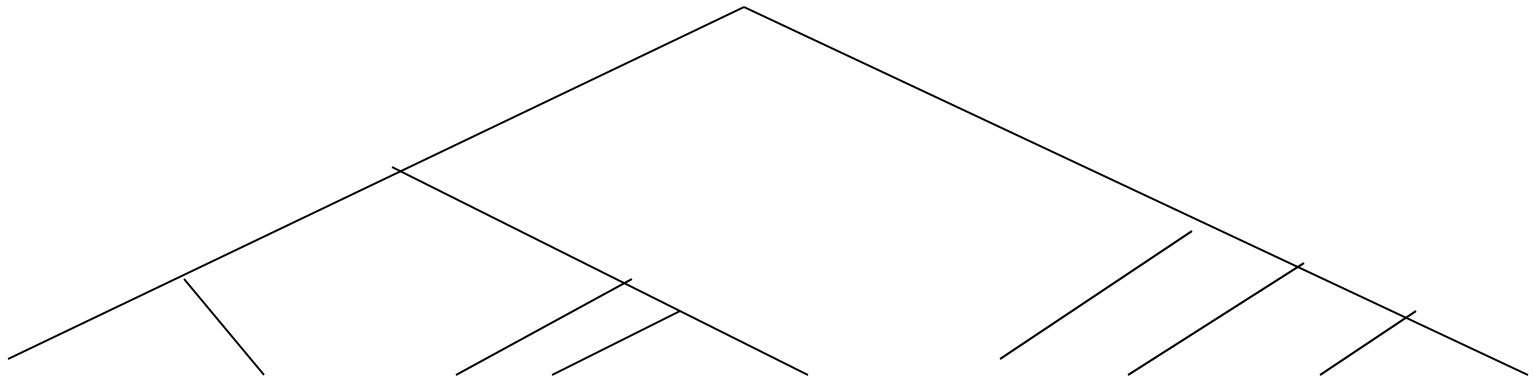
a.	A unicorn that is eating a flower is in the garden	
b.	*Is a unicorn that ___ eating a flower is in the garden?	(Move the first <i>is</i>)
c.	Is a unicorn that is eating a flower ___ in the garden?	(Move the second <i>is</i>)

How does gluing help us?

- Ambiguity
 - I saw a man with the telescope.

Exercise

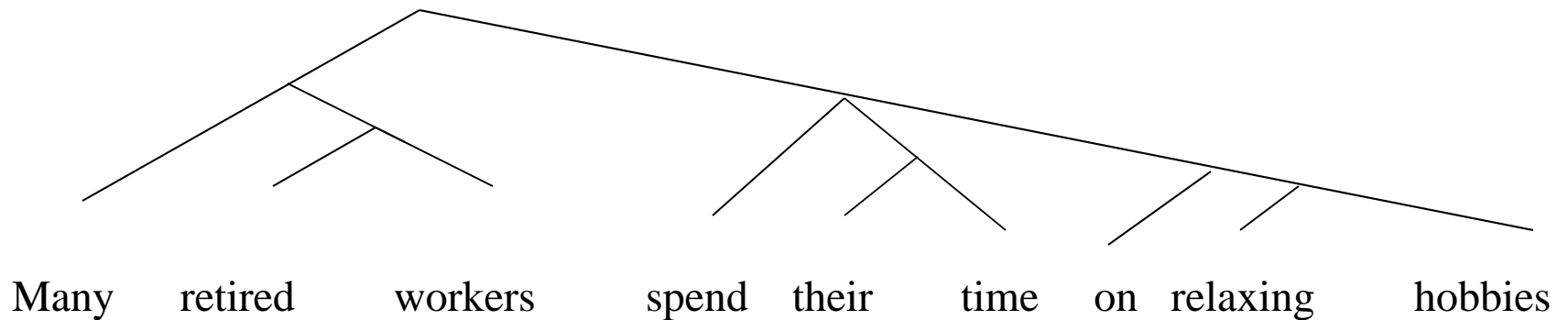
- The relatives of my husband live in Chicago city



- The relatives of my husband live in Chicago city

Exercise

- Many retired workers spend their time on relaxing hobbies.
 - Find all the constituents
 - Try to draw a tree



Gluing is asymmetric

- *grey elk vs. elk grey*
 - If gluings were symmetric, they should have the same meanings but they don't
 - One of them is the boss, it decides what kind of element the whole phrase is.
 - Heads select their complements
 - Observe vs. look
 - Observe something *Observe at something
 - *Look something Look at something

Summary of syntax

- Last time
 - Creativity
 - independence of semantics (meaning)
 - Hierarchical structure (ambiguity)
- Today
 - Compositionality
 - Constituents and tests for them
 - Pronoun replacement
 - Movement
 - Stand alone
 - Sentence trees

Phonology

- Sound system
- Two fundamental questions
 - What are the basic elements that make up the sound system
 - What are the rules for combining these elements
- Note the similarity with the way we characterized morphology and syntax

Outline

- Contrast
 - Phonemes vs. allophones
 - Minimal pairs
 - Complementary distribution
- Natural classes
- Data practice

Phonetics review

- ???

Phonetics & Phonology

reminder

Phoneticians study what speakers are doing when they are producing an utterance.

Phonologists study what speakers know, and how that knowledge is organized as part of a system of rules.

Contrast & predictability

- Switching the magnifier glass for difference spotting
 - Phonetically measurable vs. psychologically real
 - Praat example
- Sounds can be
 - Different phonetically but same phonologically
 - Same phonetically but different phonologically

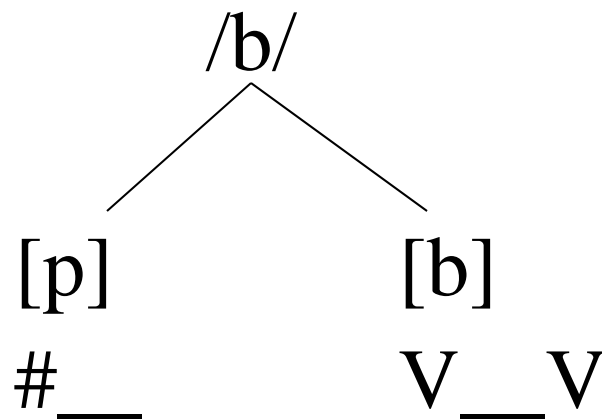
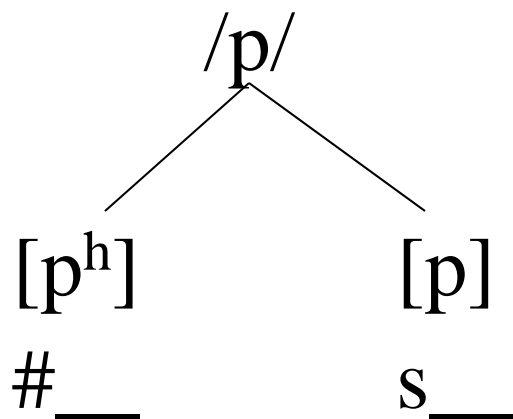
Abstract vs. concrete level

- /p/ and /b/ are contrastive

- Minimal pair test

- pit bit pet bet park bark
- rip rib lap lab cop cob
- ebay e-pay

- [p^h], [p], [b] are predictable



Predictability \approx complementary distribution

- Two sounds are in complementary distribution if one sound never occurs in the environments in which the other occurs.
- v vs. \check{v} (v = any vowel): *nap* vs. *nab*
 - v only if followed by [+voice] consonant
 - \check{v} only if followed by [–voice] consonant
- Vocalic length predicts consonantal voicing and voicing predicts length

How do phonetic differences function in speech?

- Some data

- English

- [p^hɑ:(ɪ)k] *park*
 - [spɑ:(ɪ)k] *spark*
 - [bɑ:(ɪ)k] *bark*

- Slovak

- [pot] *under/sweat*
 - [spot] *from under*
 - [bot] *point*
 - [dup] *oak*
 - [dubi] *oaks*

- Hindi

- [p^həɪ] *fruit*
 - [pəɪ] *moment*
 - [bəɪ] *strength*

Division into phonemes & allophones is language specific

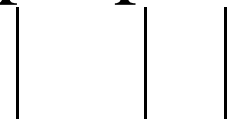
Hindi

English

Slovak

Mind

/p^h//p//b/



/p/ /b/



/p/ /b/



Mouth

[p^h][p][b]

[p^h] [p] [b]

[p] [b]

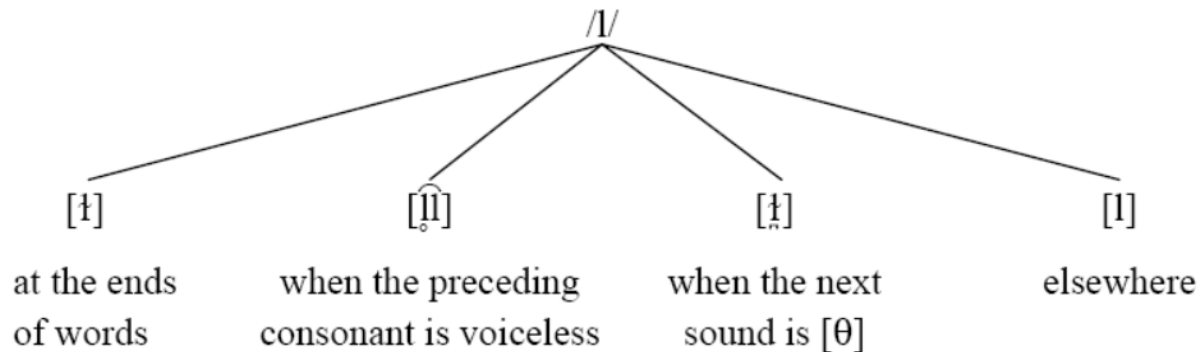
Determining phonemes & allophones from data

- List local environments in search for complementary distributions
- Determine the allophones and their environments
- Choose the elsewhere (underlying representation) allophone

Allophones of /l/ in English (Hayes)

Words with [ɫ]	Words with [l̥]	Words with [ɫ̥]	Words with [l]
file [ˈfaɪɫ]	slight [sɫ̥aɪt]	wealth [ˈweɪɫ̥θ]	listen [ˈlɪsən]
fool [ˈfuɫ]	flight [ˈfl̥aɪt]	health [ˈheɪɫ̥θ]	lose [ˈluːz]
all [ˈɔɫ]	plow [ˈploʊ]	filthy [ˈfɪɫ̥θi]	allow [əˈlaʊ]
ball [ˈbɔɫ]	cling [ˈkɪŋ]	tilth [ˈtɪɫ̥θ]	aglow [əˈɡloʊ]
fell [ˈfɛɫ]	discipline [ˈdɪsəpl̥ɪn]	stealth [ˈsteɪɫ̥θ]	blend [ˈblend]
feel [ˈfiɫ]			

The pattern turns out to be as follows:



Natural classes

- Sound processes tend to affect groups of sounds, not just individual sounds
 - Palatalization in Slovak
 - Aspiration in English

<u>American</u>	<u>British</u>
am[<u>yu</u>]se	am[<u>yu</u>]se
b[<u>yu</u>]ty (beauty)	b[<u>yu</u>]ty
c[<u>yu</u>]be	c[<u>yu</u>]be
d[<u>u</u>]pe	d[<u>yu</u>]pe
f[<u>yu</u>]me	f[<u>yu</u>]me
l[<u>u</u>]rid	l[<u>yu</u>]rid
n[<u>u</u>]ws (news)	n[<u>yu</u>]ws
p[<u>yu</u>]ny (puny)	p[<u>yu</u>]ny
pre[<u>zu</u>]me (presume)	pre[<u>zyu</u>]me
st[<u>u</u>]pid	st[<u>yu</u>]pid
s[<u>u</u>]t (suit)	s[<u>yu</u>]t

What if there are more processes?

- Sometimes, the order in which these processes apply is crucial.
 - In American English *writer* and *rider* are almost homophones, but the quality and the length of the stressed vowel is slightly different: it is a bit longer and the tongue is lower in *rider*.
 - Two processes apply
 1. Flapping: t,d → [ɾ] in unstressed syllables
 2. Vowel shortening: ɪ → ɪ̃ if followed by unstressed consonant in the same syllable
- The processes must apply in this order: #2, #1. The other order does not produce the observed difference between *writer* and *rider*.

Some more Turkish 😊

- First, look at the Turkish vowel inventory. What is the most economical way to describe it with features?
 - i e a o u ü([y]) ö([ø]) ʉ

	[-back]		[+back]	
[+high]	i	ü	ʉ	u
[-high]	e	ö	a	o
	[-rnd]	[+rnd]	[-rnd]	[+rnd]

Turkish nouns

<u>Stem</u>	<u>Accusative</u>	<u>Gloss</u>	<u>Stem</u>	<u>Genitive</u>	<u>Gloss</u>
yel	yel-i	‘wind’	ip	ip-in	‘rope’
göl	göl-ü	‘sea’	sap	sap-un	‘stalk’
gül	gül-ü	‘rose’	pul	pul-un	‘stamp’
kuuz	kuuz-u	‘daughter’	son	son-un	‘end’
kol	kol-u	‘arm’	göl	göl-ün	‘sea’

- The vowels of the accusative and genitive suffixes have more variants: -i/-ü/-u/-u.
- These are all _____ vowels that assimilate to the features of _____ and _____ of the stem vowel.

More Turkish nouns

<u>Stem</u>	<u>Plural</u>	<u>Gloss</u>
ip	ip-ler	'rope'
yüz	yüz-ler	'face'
kız	kız-lar	'daughter'
pul	pul-lar	'stamp'

- How is the plural formed?
- The pattern: the suffix vowel assimilates to the feature [back] of the stem vowel, with the height of the suffix fixed to low ([-high]).

Language changes !

- All living languages change in time
 - We can observe this change in real time or in apparent time
 - Real time
 - Study the language differences between two time periods
 - For old times, we have to rely on written records
 - Apparent time
 - Study the language of two age groups
 - E.g. Slovak immigrants in NY
 - Study related dialects

English

- English has been written for over 1000 years
 - Old English is really very different from present English, totally incomprehensible (Beowulf, 8th century).
 - *Wolde guman findan þone þe him on sweofote sare geteode.*
 - He wanted to find the man who harmed him while he slept.
 - Middle English (Chaucer, 1387)
 - What that Aprille with his shoures soote, the droght of March hath perced to the roote
 - When April with its sweat showers, the drought of March has pierced to the root

How does change happen?

- Lexical change is easy, some words are added to the mental lexicon, and some are deleted
- Grammatical change occurs gradually when a new generation of children acquire a language in a slightly different form than the parent generation.
 - For example, some optional/variable processes in adult grammar may become fixed in child grammars and vice versa.
 - Slovak: [l] vs. [l'], *aká* as intensifier
 - English: ??

Types of change

- Phonological (sound) change
 - The most common, typically regular. Sometimes across the board, sometimes only in particular context
 - Historical
 - Complete loss of [x]
 - [f] vs. [ff] → [v] vs. [f]
 - [z] and [ð] at the end of words from *house*, *bathe*
 - Present
 - Loss of [l]
 - Intrusive [r]
 - ...

Types of change (cont'd)

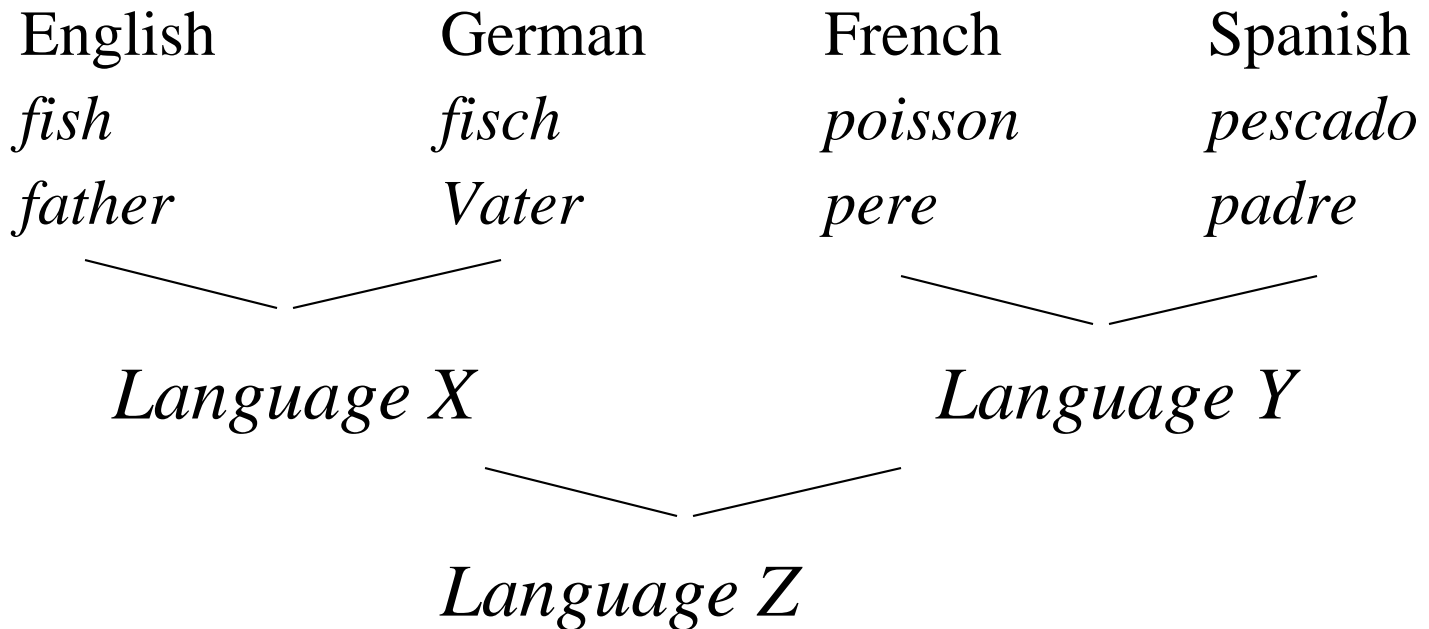
- Morphological
 - Loss of case marking
 - Retained in possessive 's and pronouns
 - Replaced by prepositions
 - Hungarian??
- Syntactic
 - Stricter word order (Old English was SVO and SOV)
 - Negation
 - Evolution of single negative, do-support

Types of change (cont'd)

- Lexical change
 - Borrowings, acronyms, compounds,...
 - Adjusted by phonological rules
- Semantic change
 - Broadening, narrowing, meaning shifts

Historical reconstruction

- Answers the question: How are languages related?
- Consider these cognates from Germanic and Romance languages

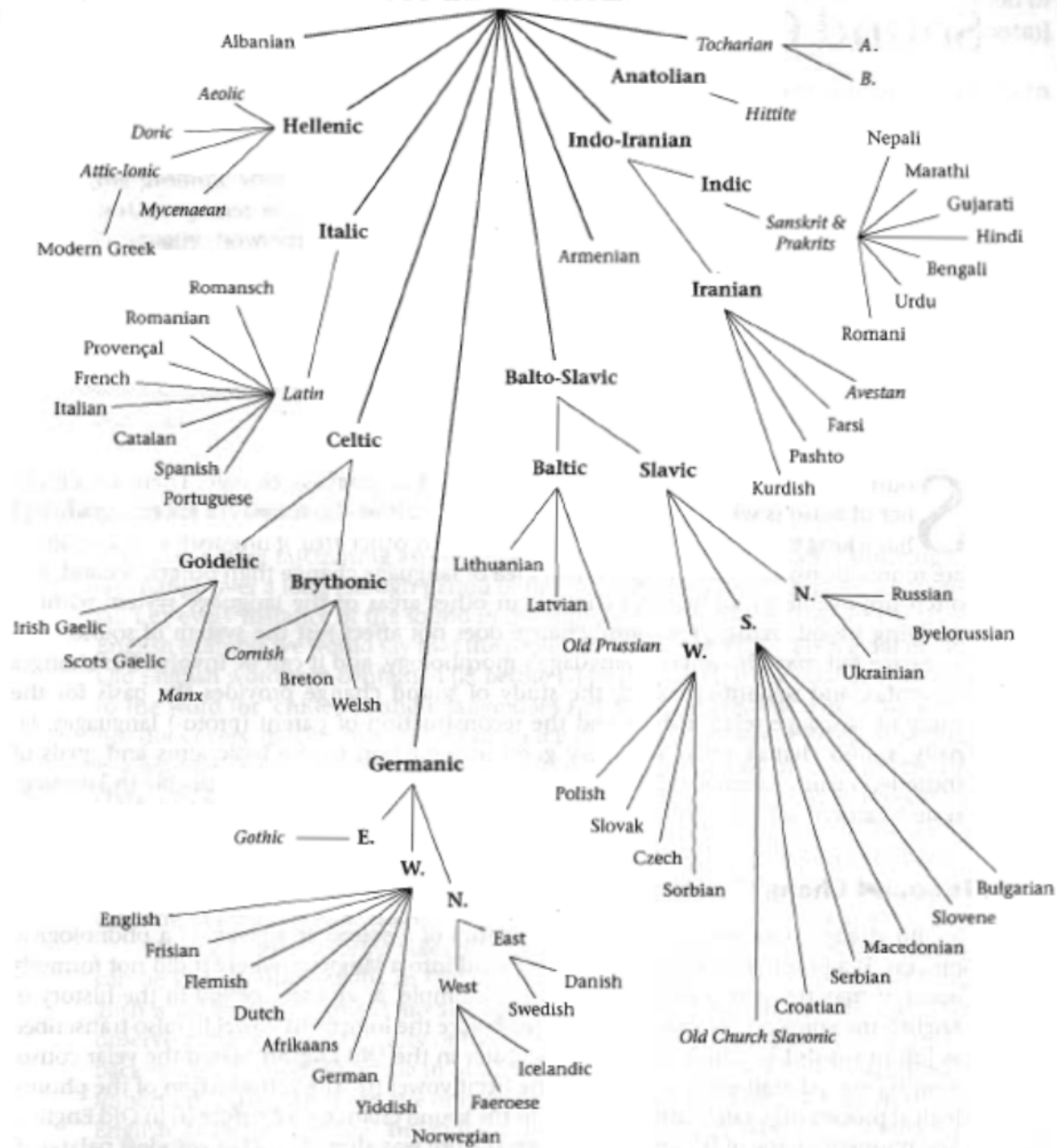


Exercise

- Six of these 12 languages are related (they are Indo-European languages). Which ones?

	L1	L2	L3	L4	L5	L6
1	en	jedyn	i	eka	ichi	echad
2	twene	dwaj	liang	dvau	ni	shnayim
3	thria	tři	san	trayas	san	shlosha
4	fiuwar	štyri	ssu	catur	shi	arbaʔa
5	fif	pječ	wu	pañca	go	chamishsha
	L7	L8	L9	L10	L11	L12
1	mot	ün	hana	yaw	uno	nigen
2	hai	duos	tul	daw	dos	khoyar
3	ba	trais	set	dree	tres	ghorban
4	bon	quatter	net	tsaloor	cuatro	durben
5	nam	tschinch	tasöt	pindze	cinco	tabon

PROTO-INDO-EUROPEAN



Languages that are no longer spoken are italicized (*Cornish*), and significant subbranches are in boldface (**Baltic**).

But what about spoken language?

- In the 1st lecture we said that spoken language is primary and written language is secondary.
- But in historical reconstruction we don't know how languages were pronounced.
 - Sound-spelling correspondence could be established from minimally different words
 -

Language vs. Dialects

- Any language was first a dialect
- A language is a dialect with an army and a navy (Max Weinreich)
- All dialects are equal (for a linguist)

Dialects

- Labov's interview
 - <http://www.npr.org/templates/story/story.php?storyId=5220090>
- AAVE
 - Example from Pinker
 - Excerpt from Crash

You know, like some people say if you're good an' shit, your spirit goin' t'heaven . . . 'n' if you bad, your spirit goin' to hell. Well, bullshit! Your spirit goin' to hell anyway, good or bad.

[Why?]

Why? I'll tell you why. 'Cause, you see, doesn't nobody really know that it's a God, y'know, 'cause I mean I have seen black gods, white gods, all color gods, and don't nobody know it's really a God. An' when they be sayin' if you good, you goin' t'heaven, tha's bullshit, 'cause you ain't goin' to no heaven, 'cause it ain't no heaven for you to go to.

[. . . jus' suppose that there is a God, would he be white or black?]

He'd be white, man.

[Why?]

Why? I'll tell you why. 'Cause the average whitey out here got everything, you dig? And the nigger ain't got shit, y'know? Y'understan'? So—um—for—in order for *that* to happen, you know it ain't no black God that's doin' that bullshit.

Other socio-linguistic categories

- Age
- Gender
- Socio-economical class
- Race and/or ethnicity
- Geographical affiliation
- Sexual orientation
- Power relationship
- ...

Language acquisition

- How kids acquire language?
 - Imitation?
 - Not really, recall our examples from the 1st lecture
 - One more:
 - Child: Nobody don't like me
 - Mom: NO, say "Nobody likes me"
 - Child: Nobody don't like me
(dialogue repeated 8 times)
 - Mom: Now, listen carefully, say "Nobody likes me"
 - Child: Oh, Nobody don't likes me
 - Common examples of children speech 2 and 3 years of age
 - A my pencil, two foot, what the boy hit?, other one pant

Analogy?

- Not really.
 - Recall our discussion of houses:
 - All houses are red. Three houses are red
 - The houses are all red *The houses are three red
- In short, the idea that language is a kind of verbal behavior that can be learnt by imitation or analogy is not likely. Language acquisition is a **creative process**.
 - Famous debate between Skinner and Chomsky in late 50s and the crushing defeat of Skinner

Stages in acquisition

- Babbling
 - Also in sign language!
- Perfect perception and learning by forgetting
 - Head-turn procedure, sucking procedure for sound discrimination
- First words: sounds and meanings
 - Phonology
 - Reduplications and simplifications

Many anecdotal reports also show the disparity between the child's production and perception at this stage. An example is the exchange between the linguist Neil Smith and his two-year-old son Amahl. (At this age Amahl's pronunciation of "mouth" is [maws].)

NS: What does [maws] mean?

A: Like a cat.

NS: Yes, what else?

A: Nothing else.

NS: It's part of your head.

A: [fascinated]

NS: [touching A's mouth] What's this?

A: [maws]

According to Smith, it took Amahl a few seconds to realize his word for "mouse" and for "mouth" were the same. It is not that Amahl and other children do not hear the correct adult pronunciation. They do, but they are unable in these early years to produce it themselves. Another linguist's child (yes, linguists love to experiment on their own children) pronounced the word *light* as *yight* [jajt] but would become very angry if someone said to him, "Oh, you want me to turn on the yight." "No no," he would reply, "not yight — yight!"

Exercise

- Are the ‘mistakes’ hap-hazzard? (Michael, 21-24 months)

[pun]	“spoon”	[majtl]	“Michael”
[peyn]	“plane”	[dajtər]	“diaper”
[tɪs]	“kiss”	[pati]	“Papi”
[taw]	“cow”	[mani]	“Mommy”
[tɪn]	“clean”	[bɔrt]	“Bert”
[pɒlər]	“stroller”	[bɔrt]	“(big) Bird”

Meaning

- Mom: Look at the dog!
 - What does she mean?
- Average speed of 14 words/day (roughly 5000 words a year)
- Principles
 - whole > parts
 - size/shape > color
- Syntactic bootstrapping
 - Describing a cartoon: it's blicking, or it's a blick

Morphology & Syntax

- Overgeneralization is very typical and revealing
 - Phase 1 Phase 2 Phase 3
 - broke* *breaked* *broke*
 - brought* *bringed* *brought*
- Wug test
- Derivational rules
 - He's keying the door.
- Word-order acquired very quickly, even before two-word stage production
 - Head-turn procedure, mismatched audio and video, children (18mo) look longer at the for matched cases

Second Language Acquisition

- SLA vs. FLA: same or different?
- Critical period
- Native language interference