Historical Linguistics

One of the morals of this class:

- language is complicated.

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wh-movement,
the Projection Principle,
binary branching.....

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how do we figure stuff like this out?

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wh-movement,
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how do we figure stuff like this out?

-->claim: in many cases, it's innate.

Innateness Hypothesis:

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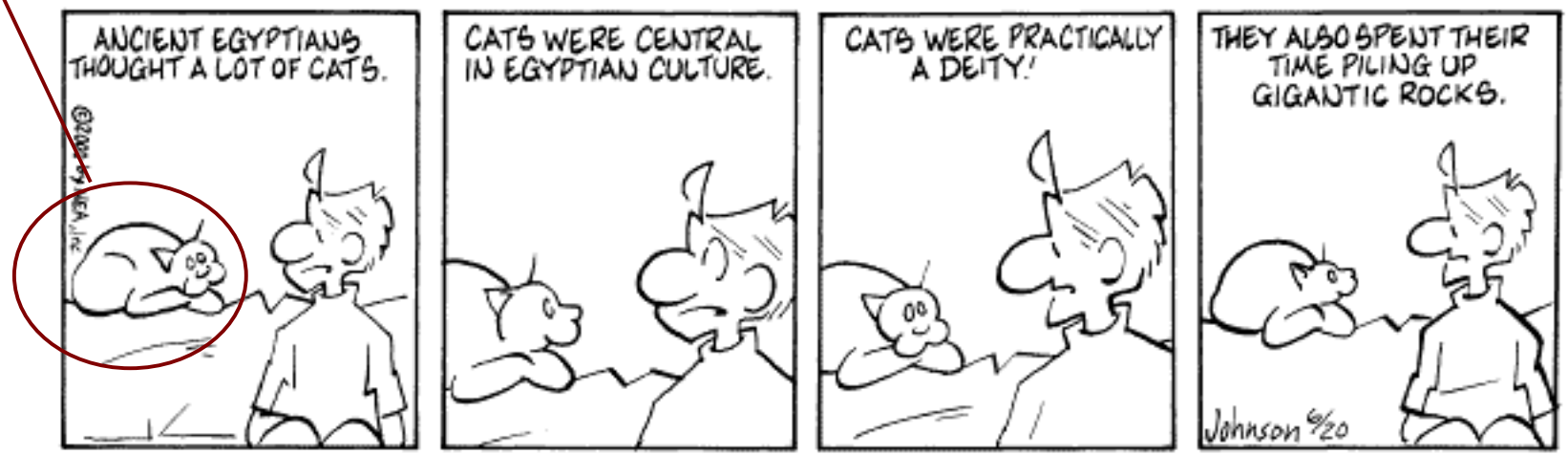
we don't start with a blank slate, but rather with a rich body of linguistic knowledge.

as a result, we don't have to figure some things out...and for things that we do, we have help.

on the other hand...

...clearly, not everything is innate.

/k^{h}æt/



...and, in fact, kids do make mistakes about things like this.

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- what does 'livid' mean?

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- the verb 'misle': I used to believe in this verb...

...and, in fact, kids do make mistakes about things like this.

- what does 'livid' mean?

  white? red? angry?

- the verb 'misle': I used to believe in this verb...but I'd been **misle**d.

Sometimes these 'mistakes' catch on, in the form of:

- various kinds of semantic drift

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  OE *(ge)bed* 'prayer'

  (cf. German *beten* 'pray')

  > ModE *bead*

("I'm counting my *beads* on this rosary")

Sometimes these 'mistakes' catch on, in the form of:

- various kinds of semantic drift

  OE *(ge)bed* 'prayer' > ModE *bead*

  OE *steorfan* 'die'
  (cf. German *sterben*)
  > ModE *starve*

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  - OE *(ge)bed* 'prayer' > ModE *bead*
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Fr. *nègre* 'black man' >
Haitian Creole *nèg* 'man'

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  OE *steorfan* 'die' > ModE *starve*
  Fr. *nègre* 'black man' >HC *nèg* 'man'

OE *cniht* 'boy, servant'
(German *Knecht*) > ModE *knight*

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> ModE *hussy*

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  PAN **wada* 'there is'

  > Tagalog *wala* 'there isn't'

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PAN **wada* 'there is'

reconstructed > Tagalog *wala* 'there isn't'

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- recuttings (like *misled* > *misle-d*)

ME a**n e**kename >
ModE a **ni**ckname

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ME a**n e**kename >

ModE a **ni**ckname

ME pease (mass noun) >

ModE pea-s (plural count noun)

Sometimes these 'mistakes' catch on, in the form of:

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OE neah 'near'
OE nearra 'nearer'
OE neahsta 'nearest'

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OE neah 'near' > ModE nigh
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in the form of:

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OE neah 'near' > ModE nigh
OE nearra 'nearer' > ModE near
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doesn't look much like a comparative...

in the form of:

- various kinds of semantic drift
- recuttings (like *misled* > *misle-d*)

OE neah 'near' > ModE nigh
OE nearra 'nearer' > ModE near
OE neahsta 'nearest' > ModE next

reanalysis: **near**, **near-er**, **near-est**

Sometimes these 'mistakes' catch on, in the form of:

- various kinds of semantic drift
- recuttings (like *misled* > *misle-d*)
- sound changes!

some numbers:

	Skt.	*Greek*	*Latin*	*Gthc.*	*O.Ir*	*Lith.*	*OCS**	*Bsque*	*Tkish*
1.	ékas	hei:s	u:nus	ains	oín	víenas	jedinŭ	bat	bir
2.	dvaú	dúo:	duo	twai	da	dù	dŭva	bi	iki
3.	tráyas	trei:s	tre:s	θreis	tri	try:s	trĭje	hiru	üç

*Old Church Slavonic

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cognates

in fact, we can be more systematic than this:

Grimm's Law (Rasmus Rask, Jakob Grimm)

	Latin	**Greek**	**English**
d-t	**d**uo	**d**úo	**t**wo
	e**d**-o	é**d**-o	ea**t**
	decem	**d**éka	**t**en
g-k	**g**enus	**g**enos	**k**in
	a**g**er	a**g**rós	a**c**re
b-p	la**b**ium	--	li**p**
	canna**b**is	kánna**b**is	hem**p**
	lu**b**ricus	--	sli**pp**ery

Once we've figured out all the sound laws we need for a bunch of related languages, we can posit the 'underlying forms' that underwent the sound changes: protolanguage

Sanskrit	ad-
Latin	ed-
English	eat

....

Sanskrit	a**d**-
Latin	e**d**-
English	ea**t**

….

Sanskrit	a**d**-
Latin	e**d**-
English	ea**t**

Grimm's Law (Germanic):

d->t (also, b->p, and g->k)

Sanskrit	**a**d-
Latin	**e**d-
English	eat

Sanskrit	**a**d-
Latin	**e**d-
English	eat

Sanskrit	Latin	
ad-	**e**d-	'eat'
d**a**nta	d**e**nt-	'tooth'
avi-	**o**vi-	'sheep'
dv**a**-	du**o**	'two'
ajr**a**	**a**g**e**r	'field'

Proto-Indo-European: *ed- 'eat'

Sanskrit	(*e>a)	ad-
Latin		ed-
English	(G.L...)	eat

Proto-Indo-European: *ed- 'eat'

Sanskrit	(*e>a)	ad-
Latin		ed-
English	(G.L...)	eat

careful! The proto-form doesn't have to be the same as any daughter form.

w-->gw in Chamorro:

Tagalog	**Chamorro**
asa**w**a	asa**gw**a 'spouse'
dala**w**a	hu**gw**a 'two'
wala 'there isn't'	**gw**aha 'there is'

...

w-->gw in Chamorro, and...

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asa**w**a	asa**gw**a 'spouse'
dala**w**a	hu**gw**a 'two'
wala 'there isn't'	**gw**aha 'there is'

PIE	**Welsh**
*__w__ir	**gw**ir 'man'

Proto-Germ.	**Late Latin**
*__w__erra	***gw**erra 'war'
*__w__ard-	***gw**ard- 'guard'

big discovery:

sound change is regular.

(Neogrammarian Hypothesis)

big discovery:

sound change is regular.

-->shifts emphasis away from looking for lists of words that 'look similar'; now what we're looking for is lists of words that can be related by regular sound laws.

"looking similar" is not **necessary** to prove relationship:

	A	**B**	**C**
'two'	er	erku	duo

"looking similar" is not **necessary** to prove relationship:

	Mandarin	**Armenian**	**Greek**
'two'	er	erku	duo

"looking similar" is not **necessary** to prove relationship:

	Mandarin	**Armenian**	**Greek**
'two'	er	erku	duo
'fear'		erki-	dwi-
'long'		erkar	dwa:ron

"looking similar" is not **sufficient** to prove relationship:

Mbabaram **English**

"looking similar" is not **sufficient** to prove relationship:

Mbabaram	**English**
	dog

"looking similar" is not **sufficient** to prove relationship:

Mbabaram	**English**
dog	dog

"looking similar" is not **sufficient** to prove relationship:

Mbabaram	**English**
dog (<**gudaga*: Yidiny *gudaga*, Dyirbal *guda*)	dog (<OE *docga* 'mastiff')

"looking similar" is not **sufficient** to prove relationship:

Mbabaram	**English**
dog	dog
Persian	**English**
bad	bad
Malay	**Greek**
mata 'eye'	mati 'eye'

"looking similar" is not **sufficient** to prove relationship:

English	**Kaqchikel**
mess	mes

"looking similar" is not **sufficient** to prove relationship:

English	**Kaqchikel**
mess	mes
man	ači
mouse	č'oy
moon	qatiʔt

Hawaiian	Maori	Tongan	Samoan	
kalo	taro	talo	talo	'taro'
piko	pito	pito	pito	'navel'
moko	moto	moto	moto	'punch'
aka	ata	ata	ata	'dawn'
kai	tai	tahi	tai	'sea'
nuku	ŋutu	ŋutu	ŋutu	'beak'

Hawaiian	Maori	Tongan	Samoan	
kalo	**t**aro	**t**alo	**t**alo	'taro'
pi**k**o	pi**t**o	pi**t**o	pi**t**o	'navel'
mo**k**o	mo**t**o	mo**t**o	mo**t**o	'punch'
a**k**a	a**t**a	a**t**a	a**t**a	'dawn'
kai	**t**ai	**t**ahi	**t**ai	'sea'
nu**k**u	ŋu**t**u	ŋu**t**u	ŋu**t**u	'beak'

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Hawaiian:

t→k

Hawaiian	Maori	Tongan	Samoan	P-Pol	
kalo	**t**aro	**t**alo	**t**alo	*talo	'taro'
pi**k**o	pi**t**o	pi**t**o	pi**t**o	*pito	'navel'
mo**k**o	mo**t**o	mo**t**o	mo**t**o	*moto	'punch'
a**k**a	a**t**a	a**t**a	a**t**a	*ata	'dawn'
kai	**t**ai	**t**ahi	**t**ai	*tahi	'sea'
nu**k**u	ŋu**t**u	ŋu**t**u	ŋu**t**u	*ŋutu	'beak'

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ʔele	**k**ere	**k**ele	**ʔ**ele		'black'
ʔula	**k**ura	**k**ula	**ʔ**ula		'red'
a**ʔ**e	a**k**e	ha**k**e	a**ʔ**e		'up'
ʔapo	**k**apo	--	**ʔ**apo		'grasp'

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kalo	taro	talo	talo	*talo 'taro'
piko	pito	pito	pito	*pito 'navel'
ʔele	**k**ere	**k**ele	**ʔ**ele	*kele 'black'
ʔula	**k**ura	**k**ula	**ʔ**ula	*kula 'red'
a**ʔ**e	a**k**e	ha**k**e	a**ʔ**e	*hake 'up'
ʔapo	**k**apo	--	**ʔ**apo	*kapo 'grasp'

Hawaiian:

t→k

k→ʔ

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Hawaiian:

k→ʔ

t→k

Hawaiian	Maori	Tongan	Samoan	P-Pol	
kalo	taro	talo	talo	*talo	'taro'
ʔele	kere	kele	ʔele	*kele	'black'
aka	ata	ata	ata		'dawn'
ihu	ihu	ihu	isu		'nose'
ao	ao	ʔaho	ao		'day'
aloha	aroha	ʔaloʔofa	alofa		'love'
wae	wae	vaʔe	vae		'leg'
leo	reo	leʔo	leo		'voice'
hau	hau	hau	sau		'dew'
wai	wai	vai	vai		'water'

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aka	ata	ata	ata	*ata	'dawn'
ao	ao	**ʔ**aho	ao	*ʔaho	'day'

Hawaiian:

k→ʔ (‘black’)

t→k (‘taro’)

ʔ→Ø (‘day’)

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kalo	taro	talo	talo	*talo	'taro'
ʔele	kere	kele	ʔele	*kele	'black'
aka	ata	ata	ata	*ata	'dawn'
ao	ao	**ʔ**aho	ao	*ʔaho	'day'

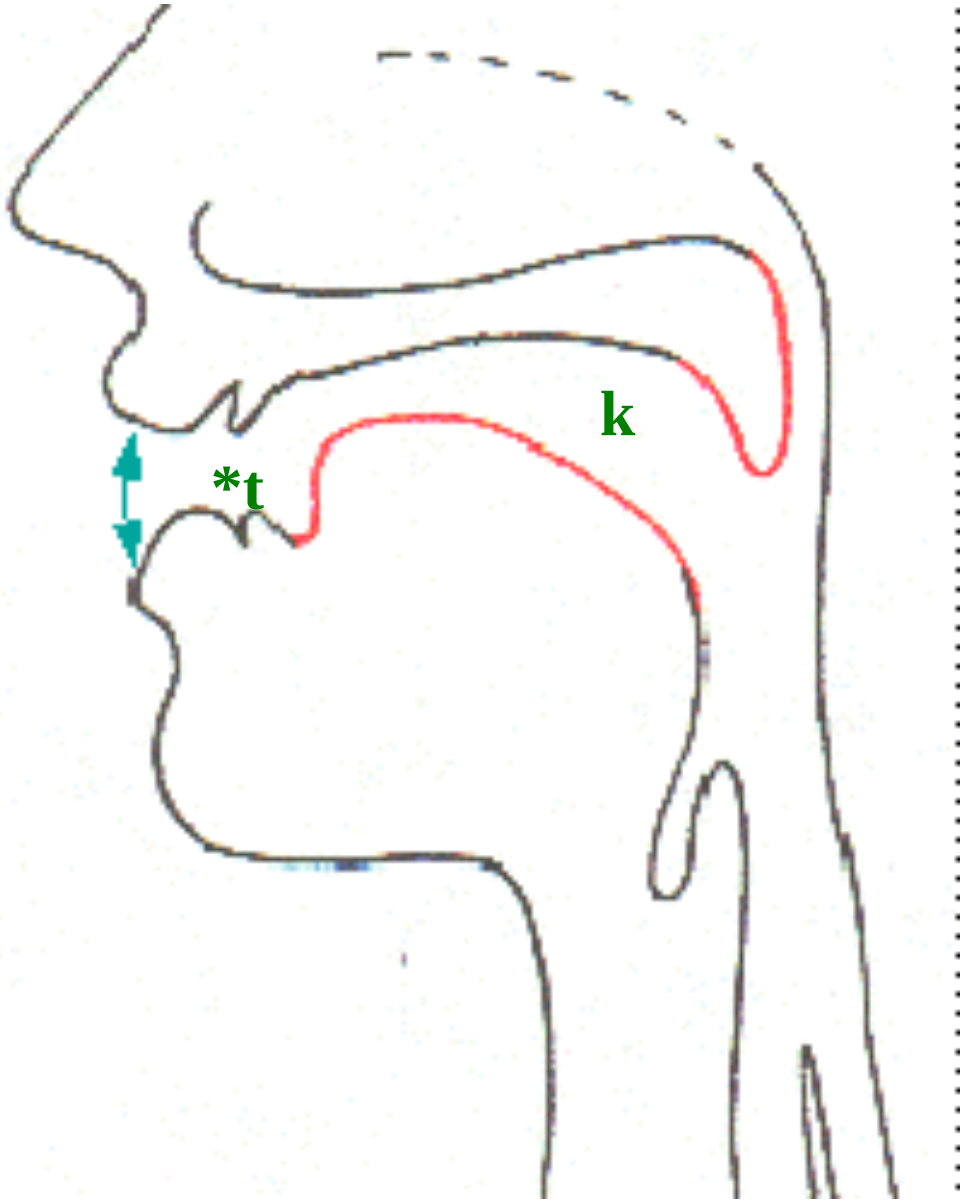
Hawaiian:

ʔ→Ø (‘day’)
k→ʔ (‘black’)
t→k (‘taro’)

Hawaiian

*a**t**a 'dawn'

a**k**a



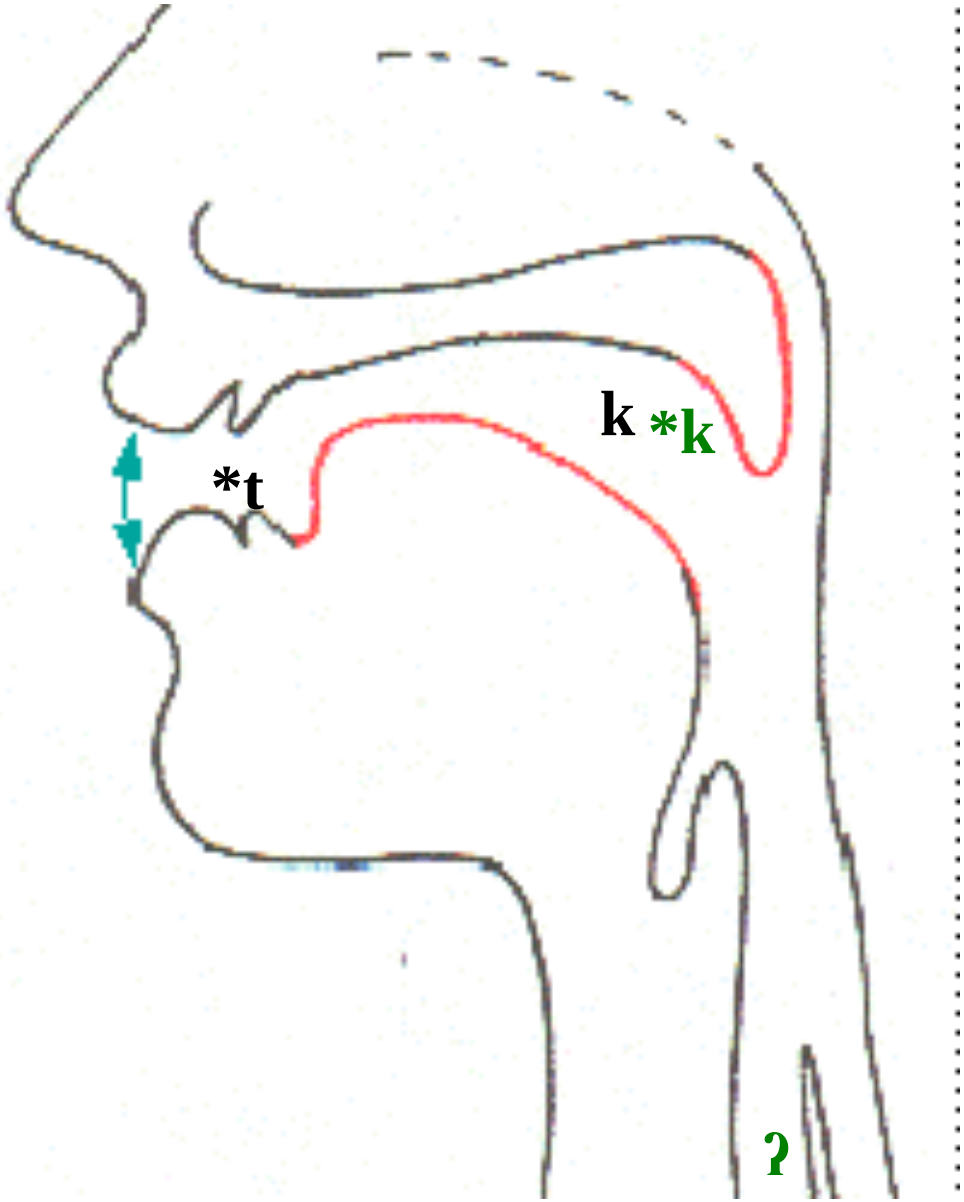
Hawaiian

*a**t**a 'dawn'

a**k**a

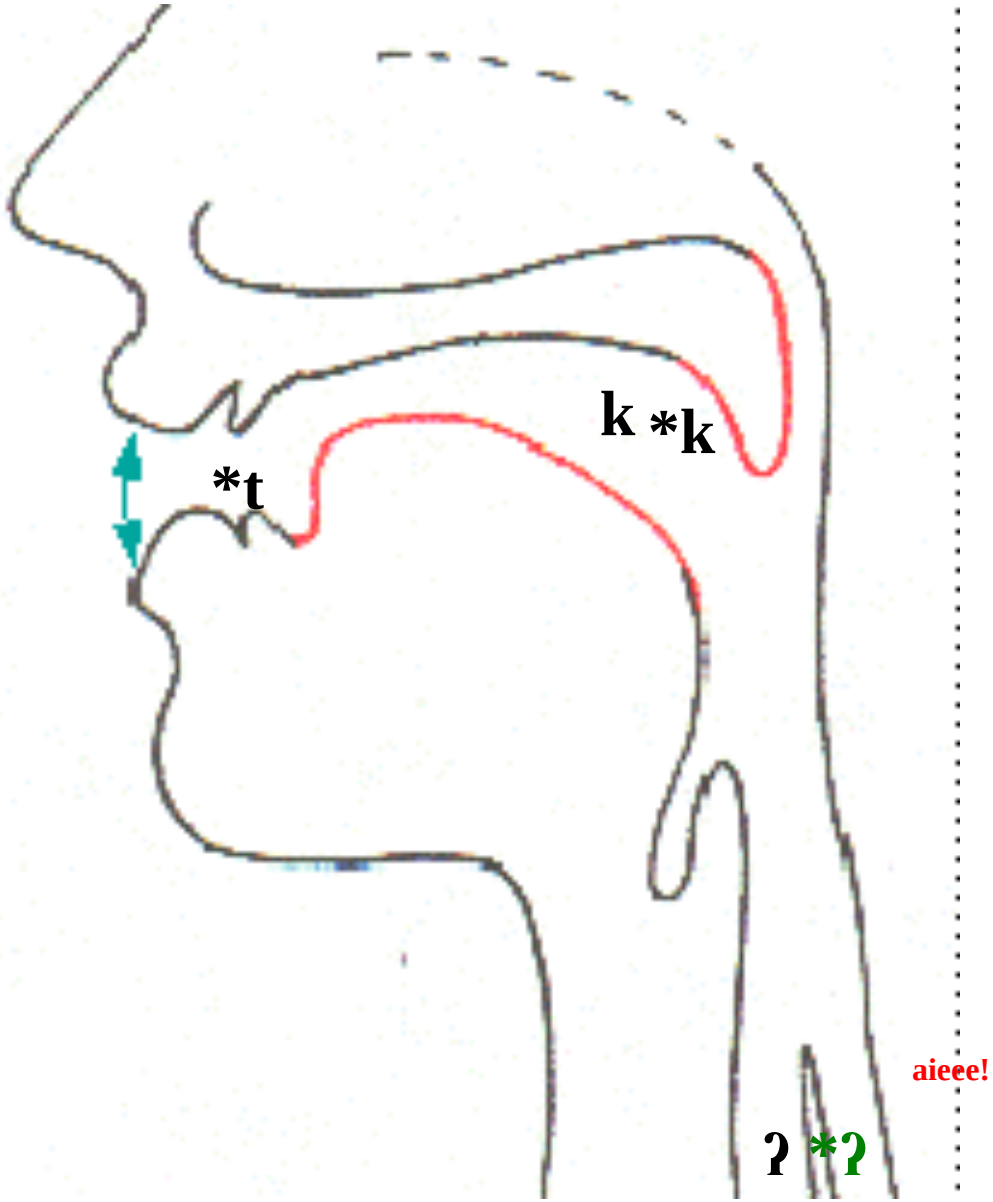
***k**ula 'red'

ʔula



Hawaiian

*a**t**a 'dawn'
a**k**a
*__k__ula 'red'
__ʔ__ula
*le__ʔ__o 'voice'
leo



Hawaiian

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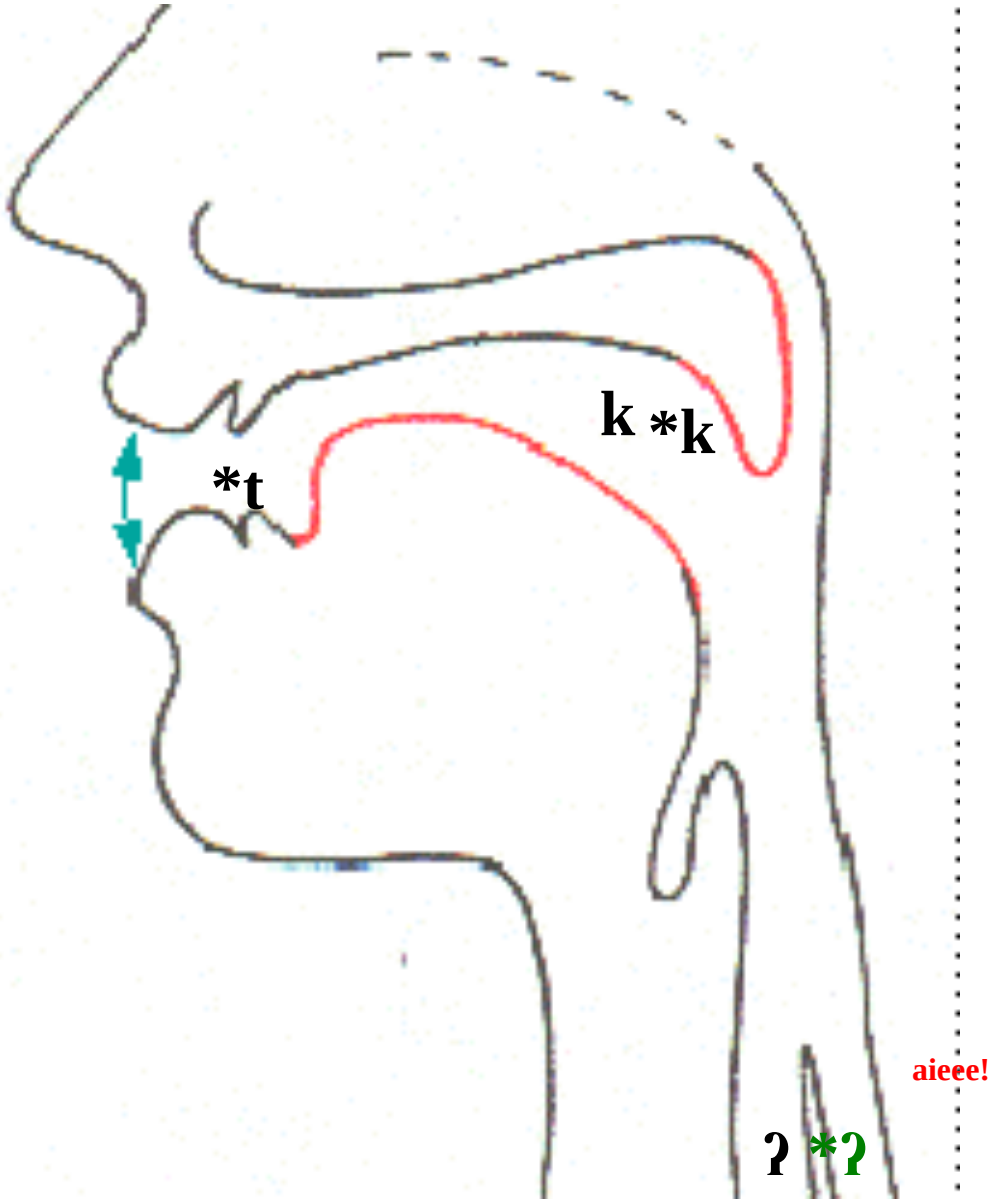
Chain Shift



Another famous chain shift:
The English Great Vowel Shift

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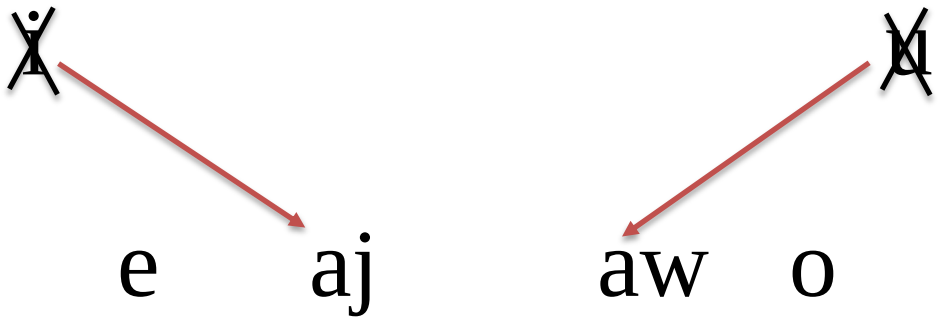
English long vowels, circa 14th century:

i u

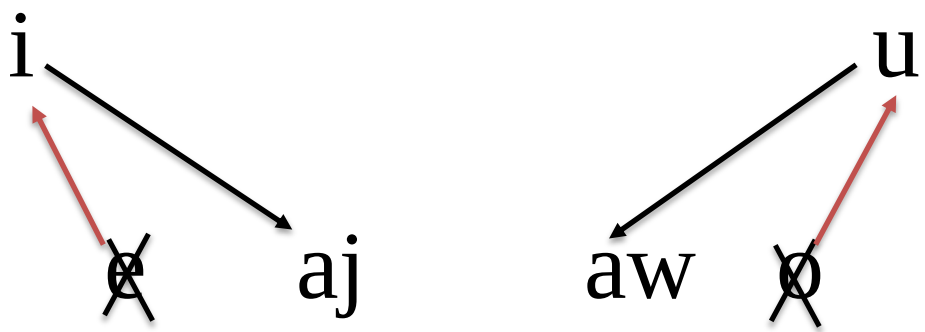
e o

æ a ɔ

The Great English Vowel Shift



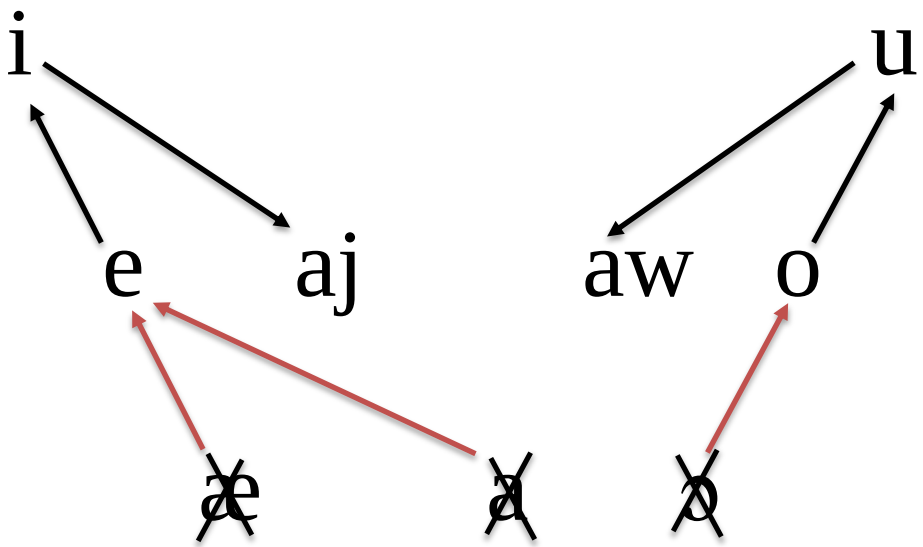
The Great English Vowel Shift



æ a ɔ

The Great English Vowel Shift

English long vowels, circa 18th century:



Sound changes are a common source of ‘irregularity’ in inflectional systems.

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Latin	rex ‘king’	nox ‘night’	vox ‘voice’

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Latin	rex ‘king’	nox ‘night’	vox ‘voice’
	reg-is (GEN)	noct-is (GEN)	voc-is (GEN)
	reg-em (ACC)	noct-em (ACC)	voc-em (ACC)

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Latin	~~rex ‘king’~~	~~nox ‘night’~~	~~vox ‘voice’~~
	*reg-s ‘king’	*noct-s ‘night’	*voc-s ‘voice’
	reg-is (GEN)	noct-is (GEN)	voc-is (GEN)
	reg-em (ACC)	noct-em (ACC)	voc-em (ACC)

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Latin	~~rex ‘king’~~	~~nox ‘night’~~	~~vox ‘voice’~~
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	reg-em (ACC)	noct-em (ACC)	voc-em (ACC)

→ plus sound changes that turn final *gs and *cts to x (ks).

Sound changes are a common source of ‘irregularity’ in inflectional systems.

Proto-Eskimo

iglu ‘house’	iglu-t ‘houses’
tumə ‘footprint’	tumə-t ‘footprints’
tavsi ‘belt’	tavsi-t ‘belts’

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Proto-Eskimo→ Iñupiaq

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•. t became tʃ after i

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iglu ‘house’	iglu-t ‘houses’	
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tavsi ‘belt’	tavsi-**tʃ** ‘belts’	(→ tavsi-**t** ‘belts’)

•. t became tʃ after i
•. ə became i
• (in some dialects, tʃ then changed back to t…)

The Iñupiaq case is a good example of another consequence of a history of sound changes: *opacity*.

Remember Lardil?

final *u* → *a* (*kandu* → *kanda* ‘blood’)
final *k* drops (*wangalk* → *wangal* ‘boomerang’)

Remember Lardil?

final *u* → *a* (*kandu* → *kanda* ‘blood’)
final *k* drops (*wangalk* → *wangal* ‘boomerang’)

…crucially, in that order:
ngaluk → *ngalu* ‘story’

(which doesn’t become *ngala*,
because the first rule applies first
and the second rule applies second)

Passamaquoddy underwent a sound change that deleted odd-numbered short vowels, depending on the consonants around them (*syncope*).

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nə-pətihik ‘I hook a fish’

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nə-pətihik → nə-pətihik

(npəthik ‘I hook a fish’)

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nə-pətihik → nə-pətihik

(npəthik ‘I hook a fish’)

pətihik-e ‘he/she hooks a fish’

Passamaquoddy underwent a sound change that deleted odd-numbered short vowels, depending on the consonants around them.

nə-pətihik → ~~nə~~-p~~ə~~tihik

(npəthik ‘I hook a fish’)

pətihik-e → p~~ə~~tihik-e

(ptihike ‘he/she hooks a fish’)

Passamaquoddy underwent a sound change that deleted odd-numbered short vowels, depending on the consonants around them.

nə-məsahkey-in ‘I’m sorry about it’

Passamaquoddy underwent a sound change that deleted odd-numbered short vowels, depending on the consonants around them.

nə-məsahkey-in → nə-məsahkey-in

(nməskeyin ‘I’m sorry about it’)

Passamaquoddy underwent a sound change that deleted odd-numbered short vowels, depending on the consonants around them.

nə-məsahkey-in → ~~nə~~-m~~ə~~sahkey-in

(nməskeyin ‘I’m sorry about it’)

məsahkey-u ‘he/she’s sorry’

Passamaquoddy underwent a sound change that deleted odd-numbered short vowels, depending on the consonants around them.

nə-məsahkey-in → ~~nə~~-m~~ə~~sahkey-in
(nməskeyin ‘I’m sorry about it’)

məsahkey-u → m~~ə~~sahkey-u
(psahkeyu ‘he/she’s sorry’)

(here there’s another sound change:
m becomes p before s)

Opacity again!

The Passamaquoddy syncope rule sure *looks* like the result of a stress system:

Passamaquoddy underwent a sound change that deleted odd-numbered short vowels, depending on the consonants around them.

nə-pə́tihí**k** → nə-pətihik

(npəthik ‘I hook a fish’)

pətihik-**é** → pətihik-e

(ptihike ‘he/she hooks a fish’)

The Passamaquoddy syncope rule sure *looks* like the result of a stress system…

…which would be fine, except that Passamaquoddy's stress system is not "stress the even-numbered vowels":

léwéstu	's/he talks like that'
wíkewéstu	's/he likes talking'
séhtáyewéstu	's/he talks while walking backwards'
kwíkéwestúpon	'you and I like talking'

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…it's "stress the first syllable, and every other syllable counting backwards from the end" (more or less)

The Passamaquoddy syncope rule sure *looks* like the result of a stress system…

…which would be fine, except that Passamaquoddy's stress system is not "stress the even-numbered vowels".

Plausible conclusion:

Passamaquoddy *used* to have a different stress system, during which the syncope rule applied…

…and then its stress system changed
to what it is now.

two bad ideas:

- glottochronology
- megalocomparison

glottochronology (Swadesh, 1950s):
"carbon dating" of language splits.

take a list of 'basic vocabulary':

I	fish
you	kill
we	swim
this	hot
that	good
man	name
.....	

figure out how many cognates the two languages share on the list

(e.g., English and Danish share 59%,
English and Albanian share 13%)

Assume that 'cognate loss' happens at a constant rate.

(14% every 1000 years)

Do some math.

$$t = \log C / 2 \log r$$

t=time depth in millennia
C=percentage of cognates
r=constant (.86)

problem:

- 'cognate loss' does not in fact happen at a constant rate.

(Icelandic's retention rate: 97%,
English's retention rate: 68%)

problem:

- 'cognate loss' does not in fact happen at a constant rate.

    - language contact
    - taboos (PIE bears...)

a bad idea:

megalocomparison (Greenberg, Ruhlen)

megalocomparison (Greenberg)
Proto-World *maliq'a* 'swallow'

Arabic	m-l-j 'suck a breast'	(Afro-Asiatic)
English	milk	(Indo-European)
Saami	mielga 'breast'	(Finno-Ugric)
Tamil	melku 'chew'	(Dravidian)
Yupik	melug- 'suck'	(Eskimo-Aleut)
Kutenai	u'mqolh 'swallow'	(Almosan)
Tfaltik	milq 'swallow'	(Penutian)
Akwa'ala	milqi 'neck'	(Hokan)
Cuna	murki 'swallow'	(Chibchan)
Quechua	malq'a 'throat'	(Andean)

This method is guaranteed to give you false positives:

English *have* Latin *habere* 'have'
(German *haben*)

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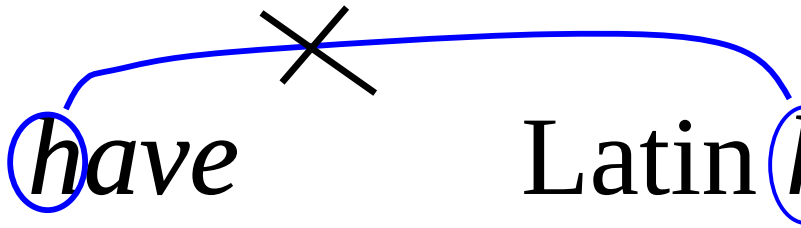
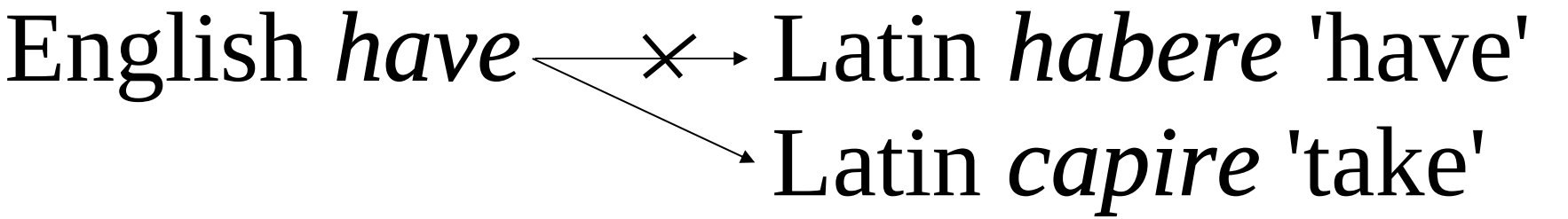


English *have* Latin *habere* 'have'

***h**orn*	***c**ornu*
***h**eart*	***c**ord-e*
***h**emp*	***c**annabis*
***h**undred*	***c**entum*

This method is guaranteed to give you false positives:



...and false negatives:

Armenian *erku*, English *two*

Hindi *panch*, English *five*

- failure to avoid onomatopoeia, "nursery words"
- semantic variation ('excrement/night/grass')
- loose criteria for phonological relatedness

- bad data...

'Amerind hypothesis'

Tzotzil	*tiʔil* 'hole'
Lake Miwok	*talok^{h}* 'hole'
Atakapa	*tol* 'anus'
Totonac	*tan* 'buttocks'
Takelma	*telkan* 'buttocks'

- bad data...

'Amerind hypothesis'

Tzotzil	*tiʔil* 'hole'	*tiʔ*	*-il*
Lake Miwok	*talok^{h}* 'hole'	mouth	one's
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of course, the comparative method has its problems, too:

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- reanalysis

English	German	Gothic	O.Norse	
adder	Natter	nadr-	naðra	'adder, snake'

English n-->Ø / # __?

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English	German	Gothic	O.Norse	
adder	Natter	nadr-	naðra	'adder, snake'

no: a nadder --> an adder

of course, the comparative method has its problems, too:

- reanalysis
- analogy

	'to choose'	'chose'	'chosen'
OE	ceo**s**an	cea**s**	geco**r**en
OHG	kio**s**an	kau**s**	giko**r**an

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	'to choose'	'chose'	'chosen'
OE	ceo**s**an	cea**s**	geco**r**en
OHG	kio**s**an	kau**s**	giko**r**an
ModE	choo**s**e	cho**s**e	cho**s**en
ModG	kü**r**en	ko**r**	geko**r**en

of course, the comparative method has its problems, too:

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PIE *kwetwer-, *penkwe-:

of course, the comparative method has its problems, too:

- reanalysis
- analogy

PIE *kwetwer-, *penkwe-:

>English ~~wh~~f our, five

of course, the comparative method has its problems, too:

- reanalysis
- analogy

PIE *newn, *dekm '9, 10'

> Russian n^{y}ev^{y}at^{y}, d^{y}es^{y}at^{y}

d

of course, the comparative method has its problems, too:

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Algonquian ‘2, 3, 4’:
Wampanoag: nees, nuhshw, yâw

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Algonquian ‘2, 3, 4’:
Wampanoag: nees, nuhshw, **y**âw
Abenaki: niz, nas, **y**aw
Passamaquoddy-Maliseet: nis, nihi, **n**ew

of course, the comparative method has its problems, too:

- reanalysis
- analogy

ME male, fem**e**lle--> male, fem**a**le

of course, the comparative method has its problems, too:

- reanalysis
- analogy
- language contact

Language contact

Eng. *lampshade* > Tagalog *lamsyed* 'lamp'

Tag. *bundok* 'mountain' > English *boondocks*

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Somerset *vox*, *vixen* → standard E *vixen*

We've now seen some examples of historical linguistics done badly (megalocomparison, glottochronology), along with some examples of it being done well. Let's end with two other stories of triumph: the story of the PIE laryngeals, and the connection between Yeniseic and Athabaskan.

Laryngeals

1879:

Ferdinand de Saussure (1857-1913)

makes a proposal...

Laryngeals

ablaut: s**i**ng-s**a**ng-s**u**ng

(vowel alternations as morphology)

Laryngeals

Proto-Indo-European ablaut:

_e_-grade: *_bh**e**r-ō_, Skt. _bharāmi_, Gk. _pherō_ ‘I carry’

_o_-grade: *_bh**o**r-eyō_, Gk. _phoreō_ ‘I carry repeatedly’

extended _e_-grd: *_e-bh**ē**r-st_, Skt. _a-bhār_ ‘has carried’

extended _o_-grade: *_bh**ō**r-s_, Gk. _phōr_ ‘thief’

Ø-grade: *_bhṛ-ti_, Skt. _bhṛti_ ‘a carrying’

Laryngeals

"grades":

e	***o***	***ē***	***ō***	***Ø***	
bhe**r-*	**bh**o**r-*	**bh**ē**r-*	**bh**ō**r-*	**bhr̥-*	'carry'

Laryngeals

"grades":

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bhe**r-*	**bh**o**r-*	**bh**ē**r-*	**bh**ō**r-*	**bh**r̥**-*	'carry'
dhē**-*	**dh**ō**-*	**dh**ē**-*	**dh**ō**-*	**dh**ə**-*	'put'

Laryngeals

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dhē**-*	**dh**ō**-*	**dh**ē**-*	**dh**ō**-*	**dh**ə**-*	'put'
te**rə-*	**t**o**rə-*	**t**ē**rə-*	**t**ō**rə-*	**tr̄-*	'cross'

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"grades":

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Saussure: in the 'put'/ 'cross'-type verbs, length and ə are in complementary distribution...

Laryngeals

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te**rə-*	**t**o**rə-*	**t**ē**rə-*	**t**ō**rə-*	**tr̄-*	'cross'

Saussure: in the 'put'/ 'cross'-type verbs, length and ə are in complementary distribution...so let's give them a common origin.

Laryngeals

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bhe**r-*	**bh**o**r-*	**bh**ē**r-*	**bh**ō**r-*	**bhr̥-*	‘carry’
dhe**H-*	**dh**o**H-*	**dh**ē**H-*	**dh**ō**H-*	**dhH-*	‘put’
te**rH-*	**t**o**rH-*	**t**ē**rH-*	**t**ō**rH-*	**tr̥H-*	‘cross’

all verbs have the same ‘grades’, but:

- VH-> V
- CH-> Cə

Laryngeals

e	***o***	***ē***	***ō***	***Ø***	
**bher-*	**bhor-*	**bhēr-*	**bhōr-*	**bhr̥-*	‘carry’
**dheH-*	**dhoH-*	**dhēH-*	**dhōH-*	**dhH-*	
**dhē-*	**dhō-*	**dhē-*	**dhō-*	**dhə-*	‘put’
**terH-*	**torH-*	**tērH-*	**tōrH-*	**tr̥H-*	
**terə-*	**torə-*	**tērə-*	**tōrə-*	**tr̄-*	‘cross’

all verbs have the same ‘grades’, but:

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Laryngeals

Everyone laughs at Saussure.

Laryngeals

Everyone laughs at Saussure.
1913: Saussure dies.

Laryngeals

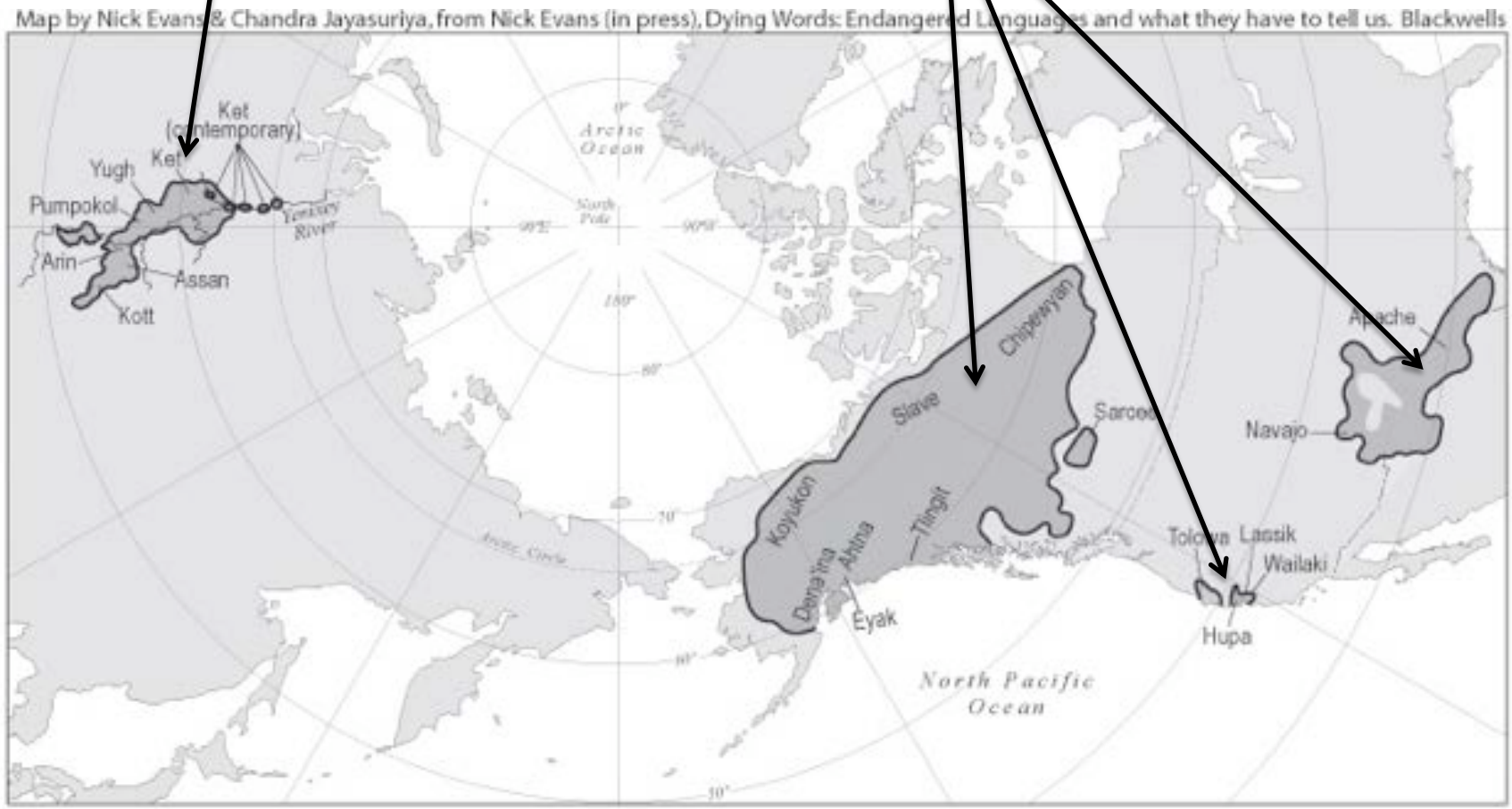
Everyone laughs at Saussure.
1913: Saussure dies.
1927: Kuryłowicz demonstrates that Hittite has overt reflexes of H.

Laryngeals

e	***o***	***ē***	***ō***	***Ø***	
**terH-*	**torH-*	**tērH-*	**tōrH-*	**tr̥H-*	
**terə-*	**torə-*	**tērə-*	**tōrə-*	**tr̄-*	‘cross’

...Hittite *tarh-* ‘cross’

2008: Edward Vajda demonstrates that Yeniseic is related to Athabaskan.



Dene-Yeniseic

Athabaskan	Yeniseic (Ket)
**tsiʾ*	*tuʾ* ‘head’
**tse*	*təʾs* ‘stone’
**tsəx*	*teɣ* ‘poke’
**tsʾəq*	*təʾq* ‘finger’
**tsʾu*	*təɣa* ‘breast’

Dene-Yeniseic

Athabaskan	Yeniseic (Ket)
**ts, *ts'*	*t*
**k^{y}o*	*-qo* 'die'
**k^{y}on*	*qan* 'hem'
**k^{y}ox*	*qoj* 'become dry'
**k^{y}itɬ*	*qol-an* 'ashes'

Dene-Yeniseic

Athabaskan	Yeniseic (Ket)
**ts*, **ts'*	*t*
**k^{y}*	*q*
**q'əx* 'birch'	*qu'j* 'birch bark'
**q'an* 'burn'	*-qan* 'boil'
**q'a'* 'edge'	*qo* 'edge of mouth'
**qaw*	*qa-de* 'hair'

Dene-Yeniseic

Athabaskan	Yeniseic (Ket)
*ts, *ts'	t
*k^y, *q, *q'	q

....and many others...