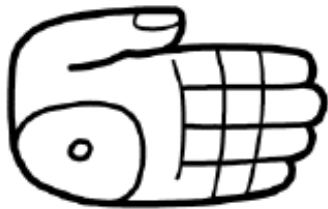




# Lexico-semantic Stability of the Anatomical Domain in the Mayan Language Family



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# Objectives

1. Test David Wilkins' (1996) model for natural tendencies of semantic change in the domain of parts of the body
2. Evaluate the distinction between basic and stable vocabulary, with their various implications for comparative and historical research, raised by Martha Ratliff (2006) and further discussed by James Matisoff (2009)
3. Assess the utility of overt marking (nominal compounds, adnominal possession) à la Witkowski and Brown (1985) and Urban (2011) to establish directionality of semantic change
4. Apply a novel metric to objectively evaluate degrees of semantic change

# The problem

- ‘there seem to be no natural constraints on the directions and results of semantic change. Given enough imagination—and daring—it is possible to claim semantic relationship for almost any two words under the sun.’ (Hock 1986:308)
- ‘There is...little in semantic change which bears any relationship to regularity in phonological change.’ (Fox 1995:111)

# The problem

In general, the criteria of formal reconstruction can be strict because they stem from precise rules that cannot be set aside unless one is in a position to substitute more exact rules for them. The whole apparatus of phonetics and morphology enters in to sustain or refute these endeavours. But when it is a matter of meaning, one has as a guide only a certain probability based on 'common sense, on the personal evaluation of the linguist, and on the parallels that he can cite. The problem is always, at all levels of analysis, within just one language or at different stages of a comparative reconstruction, to determine if and how two morphemes which are formally identical or similar can be shown to coincide in meaning. (Benveniste 1971: 249)

# The need

- Wilkins (1996:266):

As far as the comparative method is concerned, this is the crux of the problem; the **ability to classify** a sound change as an assimilation, dissimilation, or metathesis **is not what helps** in identifying correspondences and reconstructing forms; it is the knowledge of what constitutes crosslinguistically typical and atypical associations of classes of sounds and what constitute crosslinguistically natural, sporadic, and unnatural pathways of change under given environmental conditions. **Merely classifying semantic changes is not sufficient for the purposes of comparative reconstruction:** We must identify crosslinguistically regular tendencies of semantic association, where they exist, and then use these natural tendencies to justify and/or to search for plausible cognates. (emphasis added)

# Semantic change

- Involves **polysemy** (through metaphorical or metonymic extensions/associations) and **shift**
- Change in the meaning of lexemes and their constituent morphemes
- Change in the structure of lexico-semantic domains too
- Now known to be characterized by patterns and tendencies
- However, cross-cultural variation can often obscure such patterns and tendencies

# Processes

- Metaphor
- Metonymy
- Synecdoche
- (Generalization)
- (Narrowing)

# Examples

	Metaphor	Metonymy	Synecdoche
Intrafield	Neck of hand/arm > wrist Neck of foot/leg > ankle Elbow <—> knee Anus <—> mouth	Chest <—> belly Chest <—> heart	Finger nail > Finger > hand Hand > arm
Interfield	Noodle > brain Boiled rice > brain Hoof > foot (of person) Cave > belly Hollow > belly Spear > penis Beak > face (of a person) Snout > nose (of a person)	To slap > palm of hand To walk > legs To hold > hand Earring > ear	



# Polysemy and shift

- Wilkins' (1996:269) illustration

Time (T)	:	T1		T2		T3
Form (F)	:	F1		F1		F1
Meaning (M)	:	M1	→	M1 & M2	→	M2
Features	:	p,q,r		p,q,r q,r,s		q,r,s

**Figure 10-2.** The “polysemous” view of semantic change

# Lexico-semantic stability

- How stable are specific terms? Within a language family? Across language families? Not only in phonological form but also in meaning?
- Martha Ratliff (2006)
  - Basic vs. stable vocabulary
    - [-basic, -stable], [-basic, +stable], [+basic, -stable], [+basic, +stable]
      - **[+basic, +stable]** is “of greatest value in evaluating competing *claims for distant relationship*”
- James Matisoff (2009) (also 1978:231-232)
  - **[+basic, -stable]** “is especially useful for establishing *isoglosses among subgroups* of a language family.”

# Need for metric

- James Matisoff (1978; 2001; 2009)
- David Wilkins (1996:297)
- Croft, Beckner, Sutton, Wilkins, Bhattacharya, and Hruschka (2009)

# Matisoff (1978:104-105)

Item #	English	German	Score
1	Louse	Laus 'louse'	10
2	Sheath	Scheide 'sheath'	10
3	Flesh	Fleisch 'meat'	9
4	Bone	Bein 'leg'	7
5	Dish	Tisch 'table'	7
6	Beam (of wood)	Baum 'tree'	4
7	Nimble	Nehmen 'to take'	2
8	Tree	—	0

# Wilkins

For instance, phonologically similar forms for ‘lip’ and ‘bone marrow’ might receive a semantic distance score of 6 because it would normally take 6 natural semantic shifts to bridge these notions: ‘lip’ → ‘mouth’ → ‘face’ → ‘head’ → ‘skull’ → ‘brain’ → ‘bone marrow’. The distance here might be weighted even more heavily due to the fact that the strictly unidirectional changes of ‘mouth’ → ‘face’ → ‘head’ mean that ‘lip’ and ‘bone marrow’ are not equally plausible starting points for the association; ‘lip’ had to be the starting point. So, while ‘lip’ and ‘bone marrow’ are semantically very divergent, they are not so divergent that phonologically similar forms for these two notions can be summarily dismissed as unrelated.

# Our metric

Score	Language 1	Language 2	
3 Very stable	A <sub>1</sub> 'x < *x'	A <sub>2</sub> 'x < *x'	Cognates (A <sub>1</sub> , A <sub>2</sub> ) with same meaning ('x'), retained from proto-meaning *x
2 Stable	A <sub>1</sub> 'x < *x'	A <sub>2</sub> 'x < *x; y < *x'	Cognates, at least one language/mesolanguage/subgroup exhibits <i>both</i> the original meaning *x and a derived meaning (y < *x)
1 Unstable	A <sub>1</sub> 'x < *x'	A <sub>2</sub> 'y < *x'	Cognates, at least one language/mesolanguage/subgroup exhibits complete shift (no direct attestation of original meaning *x)
0 Very unstable	A <sub>1</sub> 'x < *x' (or 'x < *x; y < *x'...)	— (i.e. B)	Lack of lexico-semantic cognate (full lexical replacement) in at least one language/mesolanguage/subgroup within the family

# Anatomical/POTB terms

- One of the most thoroughly studied semantic domains from a diachronic perspective
- Several seminal studies dealing with variational semantics with direct or indirect historical linguistic applications
  - Brown (1976), “General Principles of Human Anatomical Partonomy and Speculations on the Growth of Partonomic Nomenclature.”
  - Matisoff (1978), “Variational Semantics in Tibeto-Burman: The ‘Organic’ Approach to Linguistic Comparison.”
  - Wilkins (1996), “Natural Tendencies of Semantic Change and the Search for Cognates.”
  - More recent: crosslinguistic metonymies in “human limb nomenclature” (Patillo 2014) and work on Athapaskan subgrouping (Snoek 2015)

# Wilkins 1996

- 41 POTB terms

person, soul, corpse, body, belly, chest, breast, head, face, eye, ear, nose, mouth, lip, tooth, jaw, cheek, chin, leg, foot, toe, toenail, thigh, knee, arm, hand, finger, fingernail, elbow, penis, testicle, skin, bone, skull, brain, intestines, heart, liver, kidney, lungs, blood



# Wilkins' approach

- Compared semantic polysemies and shifts in several language families:
  - Dr = Dravidian
  - IE = Indo-European
  - B = Bantu
  - AN = Austronesian
  - TB = Tibeto-Burman
  - Plus a few isolated languages from other parts of the world
- Total of 225 changes
- 61/225 found in 2+ families
- However, many types of changes exhibit parallels across language families
- 70% of changes “patterned into crosslinguistic natural tendencies”
- 30% were culture-specific

# Parallels

- Dravidian: ‘nest’ > ‘belly’
- Tibeto-Burman: ‘cave’ > ‘belly’
- Indo-European: ‘hollow’ > ‘belly’
- Bantu: ‘bag’ > ‘belly’
- Papuan: ‘basket’ > ‘belly’
- According to Wilkins, all five examples point to an interfield metaphor of the following type: ‘hemispherical, container-like’ > ‘belly’

# Wilkins' hypotheses

- i. It is a natural tendency for a term for a visible person-part to shift to refer to the visible whole of which it is a part, but the reverse change is not natural (e.g. 'navel' → 'belly' → 'trunk' → 'body' → 'person').
- ii. It is natural tendency for a person-part term to shift to refer to a spatially contiguous person part within the same whole (e.g. 'belly' ⇔ 'chest'; 'skull' ⇔ 'brain').
- iii. Where the waist provides a midline, it is a natural tendency for terms referring to parts of the upper body to shift to refer to parts of the lower body and vice versa (e.g. 'elbow' ⇔ 'knee'; 'uvula' → 'clitoris'; 'anus' → 'mouth').
- iv. It is a natural tendency for the term for an animal part to shift to refer to a person part (e.g. 'snout' → 'nose'; 'beak' → 'face').
- v. It is a natural tendency for a term for a verbal action involving the use of a particular person part to shift to refer to that person part (e.g. 'walk' → 'leg'; 'hold' → 'hand').

# Wilkins' hypotheses

Intrafield Metonymic Changes	>	Interfield Metonymic Changes	>	Interfield Metaphoric Changes	>	Intrafield Metaphoric Changes
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(e.g. 'skin' -> 'body' ) (e.g. 'smell' -> 'nose' ) (e.g. 'a spear' -> 'penis' ) (e.g. 'anus' -> 'mouth' )

# Overt marking

- The directionality of semantic extension (metaphor, metonymy) can sometimes be ascertained from the morphological or phrasal composition of a term
- Witkowski and Brown (1985)
- Urban (2011)

# Symmetrical/bidirectional

- Urban (2011:7)
  - VAPOR > SMOKE
    - Tetun (Austronesian): *ahi=suar* (fire=vapor) ‘smoke’
  - SMOKE > VAPOR
    - Piro (Arawakan): *jimlekle=gipgya* (boiling=smoke) ‘vapor’

# Asymmetrical/Unidirectional

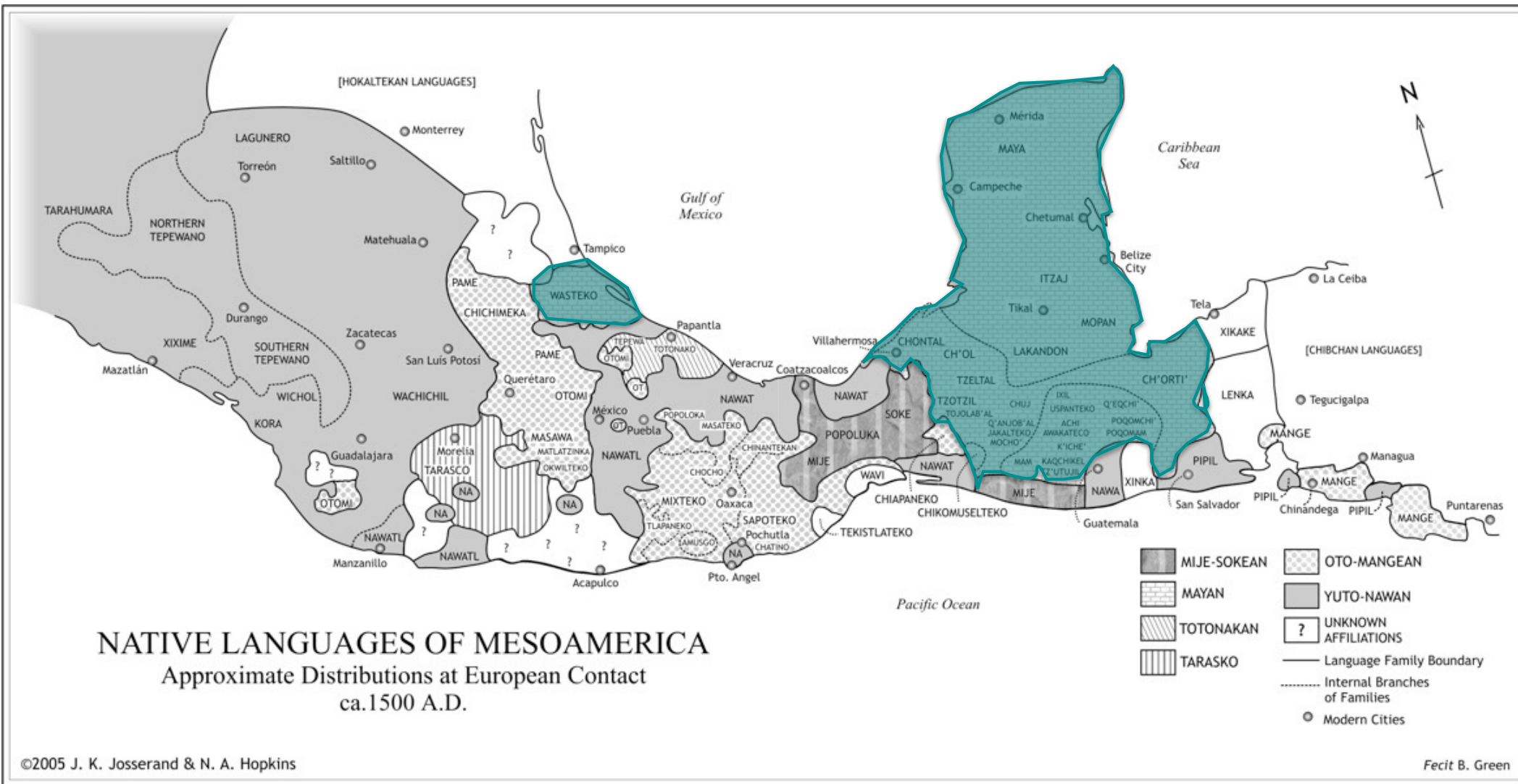
- Urban (2011:6)
  - SKIN > BARK
    - Yuki ?ol=fil (tree=skin) 'bark' points to SKIN > BARK directionality

# Methods

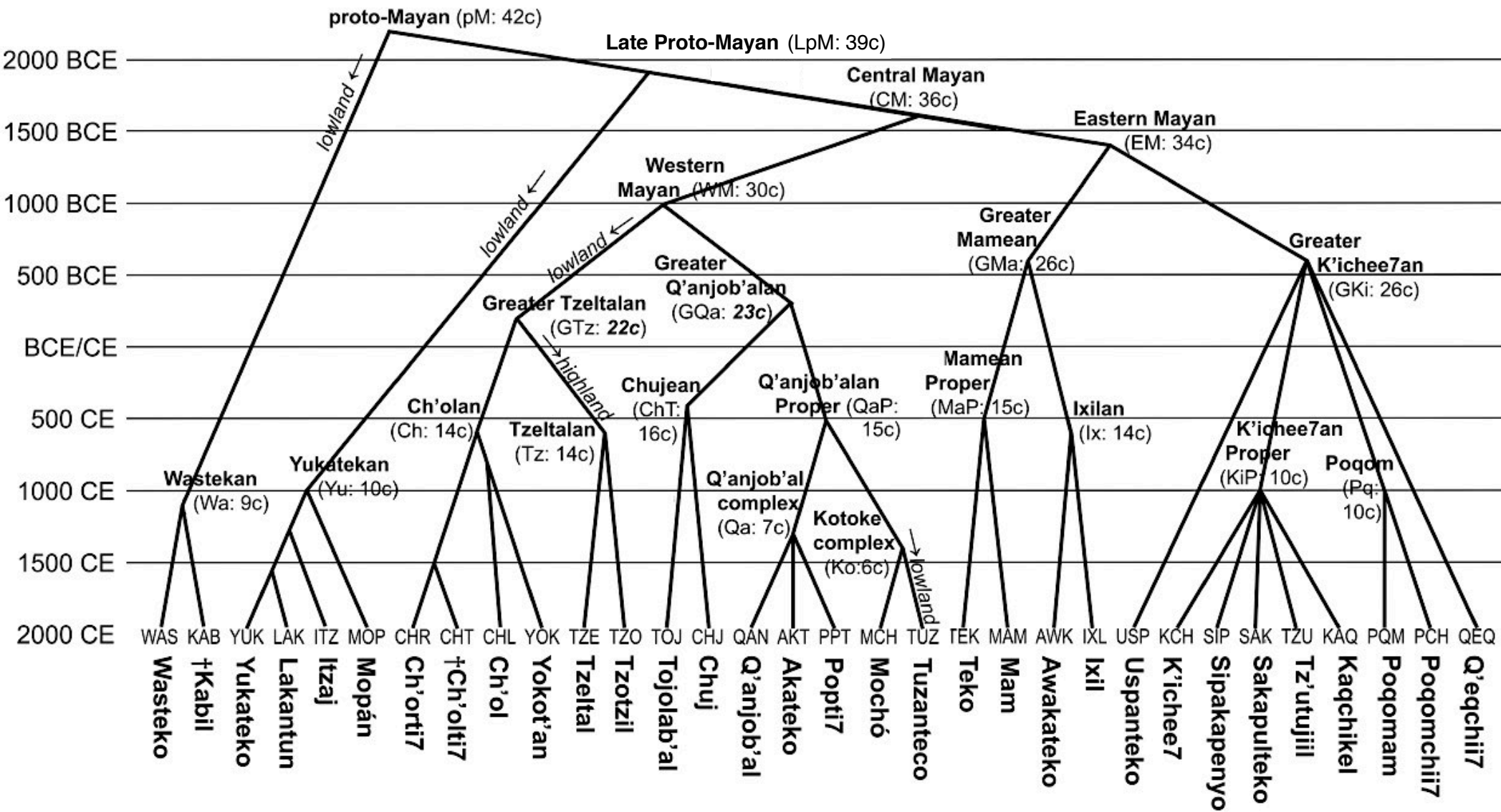
- Mayan languages etymological dataset
- Comparative method
- Semantic change assignments
- Metric for lexico-semantic stability
- Overt marking



# Mayan languages



# Mayan languages



# PMED

- Kaufman, Terrence, with John Justeson. 2003. ***Preliminary Mayan Etymological Dictionary***. <http://www.famsi.org/reports/01051/pmed.pdf>. (Also read <http://www.famsi.org/reports/01051/>)
  - Approximately 644 pM reconstructions
    - Many of these do not include Wastekan, hence they are technically LpM
  - Approximately 221 CM reconstructions
  - 3,000 or so etymologies in total

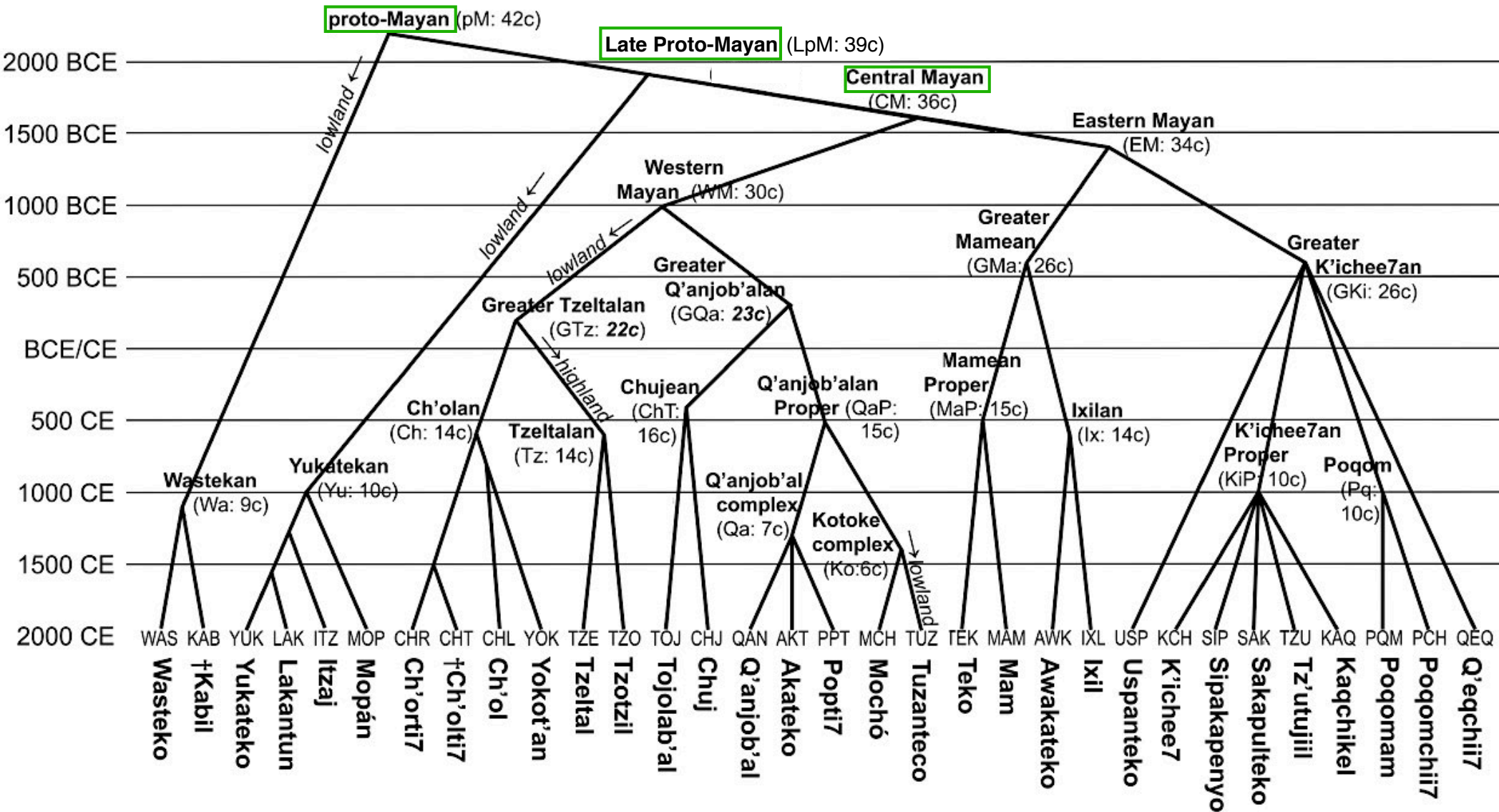
pM	*7ism, *r-ism-aal	`fuzz' [+ TK 1978 7b]		
WASw	7ithim ~ 7ithm-		s	barba //
TZO	isim		s	barba //
TZE	isim		s	barba //
TOJ	isim		s	barba //
TUZ	7esem		s1	// mustache, beard [ETR]
TEK	stzamal			vellos (pelitos)
TEK	stzam-al			pelo de animal
TEK	stzam-al			pluma
MAMt	sam-aal			pelo de animal
MAMo	tzm-aal			pluma
MAMc	tsm-aal			pluma
USP	iis			lana
USP	r-sm-al			pelo
USP	rsmal			vellos (pelitos)
USP	r-sm-al			pelo de animal
KCH*	ism		s	pelo //
KCH	ism-aal		sY	pelo //
KCHn	ismaal			vellos (pelitos)
KCHn	ism-aal			pelo de animal
KCHn	ism-aal			pluma
KCHq	ismaal			vellos (pelitos)
KCHq	r-ism-aal			pelo de animal
KCHq	ism-aal			pluma
KCHc	is			pelo
KCHc	ismaal			vellos (pelitos)
KCHc	r-ism-aal			pelo de animal
KCHk	rismaal			vellos (pelitos)
SIP	smal			vellos (pelitos)
SIP	sm-al			pluma
SAK	iis			vellos (pelitos)
TZU	sam-aal			pelo

pM \*palanh

QAN	palan-ej		frente
AKA	palan		frente
POP	palanh-e		frente
MCH	palanh	s3	frente //
TUZ	palanh	s1	frente [ERH]
MAMo	t-plaj		frente
MAMc	plaj-b'aj		frente
AWA	plaj		frente
IXL	tzi7 palaj		frente
KCHn	palajaaaj		cara
KCHq	palaj-aaaj		cara
KCHc	palaj		frente
KCHc	palaj		cara
TZU	palaj		frente
TZU	palaj		cara
KAQp	pala"j		cara
KAQc	pala"j		cara
KAQi	palaj-aj		cara

pM *kooh				
WASw	txooj.ool		s	diente molar //
YUK	ko		s	diente //
LAK	koj		s	diente //
ITZ	koj			diente
ITZ	koj			colmillo
ITZ	na7 ukoj			muela
ITZ	koj			pico
MOP	koj		s	diente //
MOP	koj			diente
MOP	u-koj			su filo
pCh	*choh		s	// cheek
CHR	ko(j)		s	from Yuc?          diente //
CHL	choj		s	cachete, mejilla //
TZO	cho		s	cachete, mejilla //
TZE	cho		s	cachete, mejilla //
TOJ	choj		s	cachete, mejilla //
MCH	ko:j	cachete [tk]		
TUZ	ko:h		s1	mejilla [ERH] // cheek [ETR]
QEQw	koh		s	cachete, mejilla //
QEQc&l	ko:h			cachete //

# Mayan languages



# Comparative Method

- PMED: phonological reconstructions of all lexemes; some were not assigned semantic reconstructions
- We carried out semantic reconstructions when necessary using the distribution of the various meanings for the etymon within the family as a major criterion (out of several)



# Semantic processes

## 8. \*nhii7 ~ \*nhuu7 'nose'

		PMED	Glosses	Processes of Change	Stability Score	Avg. Subgroup Stability Score
<u>pM</u>	<u>Huastecan</u>	WAS	Mouth	<u>intrafield metonymy</u>	1	1
		KAB				
<u>LpM</u>	Yucatecan	YUK	nose	--	3	2.3
		ITZ	point, nose	<u>interfield metaphor</u>	2	
		LAK	nose, tip	<u>interfield metaphor</u>	2	
		MOP	nose, beak, tip/point	<u>interfield metaphor</u>	2	
	CM	EM	GM	TEK		2

8. \*nhii7 ~ \*nhuu7 'nose'

				PMED	Glosses	Processes of Change	Stability Score	Avg. Subgroup Stability Score		
pM	Huastecan			WAS	Mouth	<u>intrafield metonymy</u>	1	1		
				KAB						
	LpM	Yucatecan			YUK	nose	--	3	2.3	
					ITZ	point, nose	<u>interfield metaphor</u>	2		
					LAK	nose, tip	<u>interfield metaphor</u>	2		
					MOP	nose, beak, tip/point	<u>interfield metaphor</u>	2		
	CM	EM	GM	TEK			2	2		
				MAM	mucus, nose	<u>intrafield metonymy</u>	2			
				AWA	mucus, nose, tip/point	<u>intrafield metonymy</u>	2			
				IXL	mucus, nose, point,	<u>intrafield metonymy</u> , <u>interfield metaphor</u>	2			
				GK'	SIP	mucus, nose	<u>intrafield metonymy</u>		2	2.1
					SAK	point, mucus	<u>intrafield metonymy</u> , <u>interfield metaphor</u>		1	
					KCH					
					TZU	nose, point	<u>interfield metaphor</u>		2	
					KAQ	nose	--		3	
					USP	mucus, point, nose	<u>intrafield metonymy</u> , <u>interfield metaphor</u>		2	
	PCH	nose, beak, tip/point	<u>interfield metaphor</u>		2					
	PQM	Nose, beak, tip/point	<u>interfield metaphor</u>		2					
	QEQ	nose	--	3						
	WM	GQ'	TOJ	Nose		3	2.3			
			CHU	Nose, point		2				
					AKA	nose	--	3	2.7	
					POP	nose, mucus	<u>intrafield metonymy</u>	2		
					QAN					
					MCH	mucus, nose	<u>intrafield metonymy</u>	2		
					TUZ	nose, cold	<u>intrafield metonymy</u>	2		
				GT	CHL					
YOK										
CHT										
CHR					nose, point, beak	<u>interfield metaphor</u>	2			
TZE					nose	--	3			
TZO					nose	--	3			

Average Stability Score for whole family: 2.1  
Average Stability Score for whole family minus Huastecan: 2.3  
Checked and revised by DMM on 1/27/19

# Results

- See *handout*
- 50 etyma for parts of the body (e.g. head, hand/arm, eyebrow), bodily secretions/fluids (e.g. blood, excrement), bodily functions (e.g. hiccup, sneeze, cough)
- Stability rankings
  - Semantic stability (among subgroups that retain the term)
  - Lexico-semantic stability (overall stability within family, counting subgroups/languages exhibiting loss of lexeme)

	Etyma	Stage	Page #	Gloss	Stability S	Stability LS
1	*b'aaq	pM	357	bone	2.4	2.4
2	*b'ah	pM/pCM	276	head	1.1	1.1
3	*hat'is ~ *hat'if ~ *hatʃ'if	pM	332	sneeze	3	3
4	*Hat <sup>y</sup> (weak h)	pM	324	face	1.92	1.6
5	*k'u.. / *k'uʔx	pCM	306	stomach/belly/chest	2	1
6	*kiis ~ *tsiis ~ *tiis	pM	319	fart	2.9	2.83
7	*kik'	pM	322	blood	2.96	2.96
8	*kooh	pM	260	molar tooth	2.2	1.83
9	*matsaab'	pM	283	eyelash	2.4	2
10	*meʔts	LpM	283	eyebrow	1.8	0.9
11	*nuuq'	pM	299	neck	2.33	1.6
12	*ŋeeh	pM	312	tail	3	
13	*ŋiiʔ ~ *ŋuuʔ	pM	314	nose	2.3	2.1
14	*paam	pM	309	belly	2.5	0.82
15	*palaan	pM	332	forehead	2.73	1.4
16	*q'ab'	pM	335	hand, arm	2.71	2.8
17	*q'an, *q'an-al	pM	356	fat	3	1
18	*q'oʔts	pCM	261	cheek	3	1.5
19	*qeeb'	pM	321	belch, burp	3	3
20	*sahm ~ *sihm	pM	297	mucus	2.9	2.6
21	*ʃaʔ ~ *ʃaʔw ~ *ʃab'	pM	251	vomit	3	2
22	*ʃiik'	pM	272	wing	2.6	2.2
23	*ʃikin	LpM	270	ear	2.9	2.4
24	*ʃiʔ	pM	284	hair	2.3	1.14
25	*ʃuhk	pM	342	<sup>36</sup> corner	1.7	1.42

26	*toʔp	pCM	268	arse	2.01	1.02
27	*ts'eet	pCM	242	left hand	3	1
28	*ts'uhuum	pCM	373	skin, hide	3	2
29	*tsaaʔ ~ *taaʔ, *tsaaʔ	pM	293	poop	2.83	1.9
30	*tsel ~ *tsal	LpM	243	sideways	2.8	1.9
31	*tsuk	pCM	291	facial hair	2.5	1.64
32	*tʃihn	pM	250	brains	2.6	1.33
33	*tʃu(u)ʔ	LpM	377	women's breast	2.6	1.72
34	*tʃuq'ub'	pCM	249	hiccup	2.92	2.43
35	*tʰiiʔ	LpM	262	mouth	2.33	1.93
36	*tʰuhb'	LpM	254	spit(tle)	3	3
37	*wiʔ	LpM	280	hair	1.3	1.1
38	*xool-oom	LpM	274	head	2.6	2.2
39	*ʔaab'	pCM	355	urine	3	1
40	*ʔaaq'/*ʔaaʔq'	LpM	386	tongue	3	2.5
41	*ʔaatʰ	pM	385	penis	2.7	1.8
42	*ʔaaʔ	pCM	345	thigh	1.23	0.82
43	*ʔaqan	pM	346	foot, leg	2.41	2.01
44	*ʔeeh	LpM	257	tooth	2.6	2.13
45	*ʔiim	pM	379	women's breast/bosom	2.7	1.8
46	*ʔiit	LpM	268	arse	1.7	1.13
47	*ʔiSk'aq	pM	364	nail/claw/hoof (keratin-covered things)	3	3
48	*ʔism	pM	285	fuzz (non-head hair)	2.5	2.1
49	*ʔooq	LpM	349	foot, leg	2.04	1.7
50	*ʔuuk'aaʔ	pM	363	horn	2.4	2

# Most stable

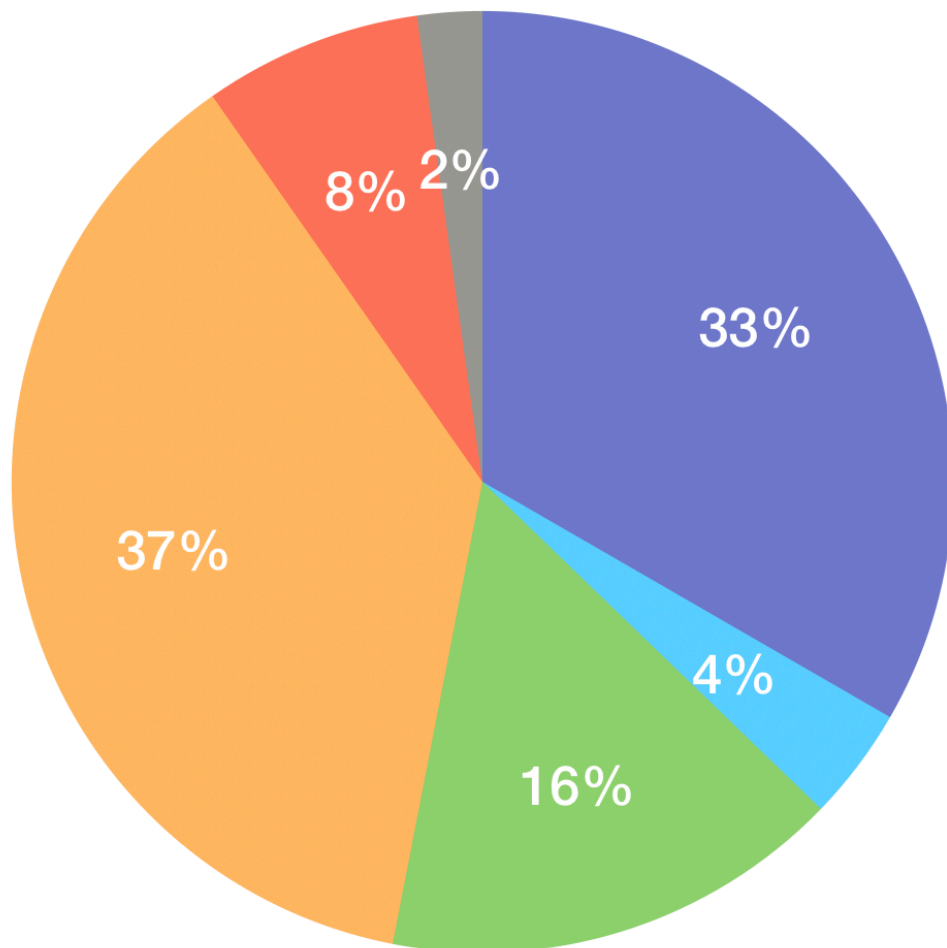
23	*fikin	LpM	270	ear	2.9	2.4
20	*sahm ~ *sihm	pM	297	mucus	2.9	2.6
6	*kiis ~ *tsiis ~ *tiis	pM	319	fart	2.9	2.83
34	*tʃuq'ub'	pCM	249	hiccup	2.92	2.43
7	*kik'	pM	322	blood	2.96	2.96
40	*ʔaaq'/*ʔaaʔq'	LpM	386	tongue	3	2.5
12	*ŋeeh	pM	312	tail	3	3
3	*hat'is ~ *hat'if ~ *hatʃ'if	pM	332	sneeze	3	3
19	*qeeb'	pM	321	belch, burp	3	3
36	*tʰuhb'	LpM	254	spit(tle)	3	3
47	*ʔiSk'aq	pM	364	nail/claw/hoof (keratin-coverings on digits)	3	3

# Least stable

	Etyma	Stage	Page #	Gloss	Stability S	Stability L
2	*b'ah	pM/pCM	276	Head, reflexive pronoun	1.1	1.1
42	*ʔaaʔ	pCM	345	thigh	1.23	0.82
37	*wiʔ	LpM	280	hair	1.3	1.1
46	*ʔiit	LpM	268	arse	1.7	1.13
25	*ʃuhk	pM	342	corner	1.7	1.42
10	*meʔts	LpM	283	eyebrow	1.8	0.9
4	*Hat <sup>y</sup> (weak h)	pM	324	face	1.92	1.6
5	*k'u.. / *k'uʔx	pCM	306	stomach/belly/chest	2	1
26	*toʔp	pCM	268	arse	2.01	1.02
49	*ʔooq	LpM	349	foot, leg	2.04	1.7
8	*koooh	pM	260	molar tooth	2.2	1.83
24	*ʃiʔ	pM	284	hair	2.3	1.14
13	*ŋiiʔ ~ *ŋuuʔ	pM	314	nose	2.3	2.1
11	*nuuq'	pM	299	neck	2.33	1.6
35	*tʔiiʔ	LpM	262	mouth	2.33	1.93

# Semantic changes

## Polysemies and shifts



CHANGE	#
Interfield metaphor	120
Intrafield metaphor	14
Interfield metonymy	57
Intrafield metonymy	134
Synecdoche	27
Others	8



# Overt marking

- There are several examples of overt marking reconstructed to pM, LpM, CM according to the PMED

pM \*u-tyii?      ŋaah

its-mouth      house

‘entrance to the house (lit. the house’s mouth)’

Interfield metaphor: MOUTH > ENTRANCE/DOOR

- More are probably reconstructible to pM stage

# CH'OL (Aulie et al. 1999:78)

- **-ni?** 'nose' (<-> indicates that it has to be possessed, implies human possessor)
- **-ni? mut** (e.g. i-ni? mut (its-nose bird), lit. 'its-nose bird')
- **-ni? wits** (e.g. i-ni? wits 'mountain's peak', lit. 'its-nose mountain')
- Thus, NOSE > BEAK  
NOSE > PEAK

# Discussion

- Wilkins' hypotheses
- Ratliff's basic vs. stable vocabulary
  - Swadesh's core vocabulary (100)
  - Leipzig-Jakarta list (100)
  - ASJP list (40)
- Matisoff [+basic, -stable] vocabulary and subgrouping

# Wilkins' hypotheses

- Some of the tendencies documented by Wilkins (**i** and **ii**) were attested among the Mayan examples
- The Mayan data did not attest to two others (**iii** and **v**)
- The Mayan data is either unclear on **iv**, or it contradicts it when overt marking is considered
- The Mayan data calls for a slightly different hierarchy of semantic processes/mechanisms

# Wilkins' hypotheses

- i. It is a natural tendency for a term for a visible person-part to shift to refer to the visible whole of which it is a part, but the reverse change is not natural (e.g. 'navel' → 'belly' → 'trunk' → 'body' → 'person').
- ii. It is natural tendency for a person-part term to shift to refer to a spatially contiguous person part within the same whole (e.g. 'belly' ⇔ 'chest'; 'skull' ⇔ 'brain').
- iii. Where the waist provides a midline, it is a natural tendency for terms referring to parts of the upper body to shift to refer to parts of the lower body and vice versa (e.g. 'elbow' ⇔ 'knee'; 'uvula' → 'clitoris'; 'anus' → 'mouth').
- iv. It is a natural tendency for the term for an animal part to shift to refer to a person part (e.g. 'snout' → 'nose'; 'beak' → 'face').
- v. It is a natural tendency for a term for a verbal action involving the use of a particular person part to shift to refer to that person part (e.g. 'walk' → 'leg'; 'hold' → 'hand').

The reverse in Mayan?

Not found in Mayan

# Hierarchy

Wilkins 1996:274

Intrafield Metonymic Changes	>	Interfield Metonymic Changes	>	Interfield Metaphoric Changes	>	Intrafield Metaphoric Changes
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(e.g. 'skin' –> 'body' ) (e.g. 'smell' –> 'nose' ) (e.g. 'a spear' –> 'penis' ) (e.g. 'anus' –> 'mouth' )

Mayan:

Intrafield Metonymy > **Interfield Metaphor** > **Interfield Metonymy** > Synecdoche > Intrafield Metaphor

134 (38%) > 120 (34%) > 57 (16%) > 27 (8%) > 14 (4%)

# Ratliff's basic vs. stable

- From Ratliff's perspective, there is an interesting result:
  - If we consider the **Swadesh** or **Leipzig-Jakarta** basic/core vocabulary lists, many of the POBT are attested in the early stages of Mayan
  - **LJ** list ranks vocabulary on the basis of ***borrowability***; there is general agreement with stability scores in Mayan; one exception is the term for 'tail'
  - Absent from either list: bodily secretion/fluid and bodily function terms — *the most stable* for Mayan

Swadesh 100-word list anatomical concept	Mayan equivalent	Stability Score
skin (1952: person's)	*ts'uhuum	3/2
flesh (1952: meat, flesh)	—	
blood	*kik'	2.96/2.96
bone	*b'aaq	2.4/2.4
grease (1952: fat, organic substance)	*q'an	3/1
egg	—	
horn (of bull etc., not 1952)	*ʔuuk'aaʔ	2.4/2
tail	*ŋeeh	3/3
feather (large, not down)	—	
hair (on head of humans)	*wiʔ	1.3/1.1
	*ʃiʔ	2.3/1.14
head (anatomic)	*xool-oom	2.6/2.2
	*b'ah	1.1/1.1
ear	*ʃikin	2.9/2.4
eye	—/*Hat <sup>y</sup>	
nose	*ŋiiʔ ~ *ŋuuʔ	2.3/2.1
mouth	*tʔiiʔ	2.33/1.93
tooth (front, rather than molar)	*ʔeeh	2.6/2.13
tongue (anatomical)	*ʔaaq'/*ʔaaʔq'	3/2.5
claw (not in 1952)	*ʔiSk'aq	3/3
foot (not leg)	*ʔooq	2.04/1.7
	*ʔaqan	2.41/2.01
knee (not 1952)	—	
hand	*q'ab'	2.7/2.6
belly (lower part of body, abdomen)	*paam	2.5/0.82
neck (not nape)	*nuuq'	2.33/1.6
breasts (female; 1955 still breast)	*tʃu(u)ʔ	2.6/1.72
	*ʔiim	2.7/1.8
heart	—	
liver	48—	



LJ Rank	LJ Anatomical Terms	Mayan	Stability S	Stability L
2	nose	*ŋiiʔ ~ *ŋuuʔ	2.3	2.1
5	mouth	*tʰiiʔ	2.33	1.93
6	tongue	*ʔaaqʔ/*ʔaaʔqʔ	3	2.5
7	bone	*bʔaaq	2.4	2.4
7	blood	*kikʔ	2.96	2.96
9	root			
12	breast	*tʃu(u)ʔ *ʔiim	2.6 2.7	1.72 1.8
17	wing	*ʃiikʔ	2.6	2.2
18	flesh/meat			
19	arm/hand	*qʔabʔ	2.71	2.8
22	ear	*ʃikin	2.9	2.4
23	neck	*nuuqʔ	2.33	1.6
28	tooth	*ʔeeh	2.6	2.13
31	hair	*wiʔ *ʃiʔ	1.3 2.3	1.1 1.14
37	leg/foot	*ʔooq *ʔaaqan	2.04 2.41	1.7 2.01
38	horn	*ʔuukʔaaʔ	2.4	2
42	navel			
46	back			
52	egg			
59	knee			
64	leaf			
66	liver			
67	skin/hide	*tsʔuhuum	3	2
76	thigh	*ʔaaʔ	1.23	0.82
80	wood			
83	eye	*hatʰ ‘face/eye’	1.92	1.6
84	tail	*ŋeeh <sup>49</sup>	3	3

# Athapaskan

- Snoek, Conor. 2015. The Lexical Semantics of Athapaskan Anatomical Terms: A Historical-Comparative Study. PhD Dissertation, Department of Linguistics, University of Alberta.
- Concludes that effluvia constitute the most conservative POTB terms in Athapaskan
- Though not aware of Matisoff (2009), Snoek essentially operationalizes Matisoff's insight regarding the [+basic, -stable] vocabulary in establishing internal isoglosses within Athapaskan
- We should do this with Mayan next

# Conclusions

- The most stable POTB terms in Mayan are **bodily secretions/fluids** and **bodily functions**, which do not figure prominently or at all in any of the standardized core/basic vocabulary lists (e.g. Swadesh, LJ, ASJP)
- Wilkins' **hierarchy** of mechanisms of semantic change in the POTB requires qualification given the Mayan data
- Some of Wilkins' **natural tendencies** of change are supported by the Mayan data; however, two are not
- We contributed with a novel, and easily implemented metric for ranking lexico-semantic stability

# Prospects

- Subgrouping and Matisoff's [+basic, -stable] vocabulary
- Comparison with other language families (e.g. Mixe-Zoquean)
  - Existing comparative etymological database by Søren Wichmann (1995)
  - Cf. Mora-Marín (2014, 2016) proposal for a genealogical relationship between Mayan and Mixe-Zoquean

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# Anticipated question 1

- Bodily functions/products
  - Some of these are verbal nouns, a grammatical category in Mayan languages
  - They function as a noun or as an intransitive verb without need of any derivational morphology

# Anticipated question 2

- We considered distribution of meanings across the subgroups of the language family
- Other criteria:
  - semantic features overlap
  - likelihood of contact (three major contact areas within Maya region)

# Anticipated question 3

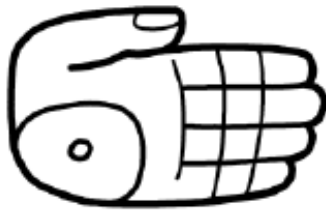
- Wilkins (1996) applies his proposed natural tendencies and hierarchy to the task of searching for plausible cognates among the languages of Australia, as well as the task of finding shared innovations on the basis of shared directionalities of polysemy and shift



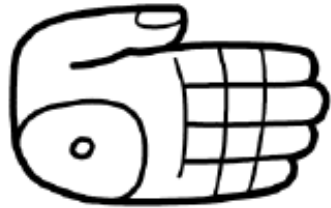
**TABLE 10-2**

<b>Group</b>	<b>Language</b>	<b>'fingernail'</b>	<b>→</b>	<b>('finger')/ 'hand'</b>
ARANDIC	E. Aranda	tywepmwere		<b>iltye</b>
	W. Aranda	tjipmarra		<b>iltya</b>
	L. Aranda	irkilthele		<b>iltye</b>
	Anmajirra	jupmara		<b>ilja</b>
	Alyawarra	ingkilthelh		<b>eltye, etep</b>
	Antekerrepenh	ingkalthel		<b>iltye</b>
	Kaytej	ngkelthel		<b>elja</b>
NGARRKA	Warlpiri	<b>miljarnpa,</b> <b>yiljirli</b>		rdaka
	Warlmanpa	lippi		taka
	Ngari	<b>miljarn</b>		marumpu
WESTERN DESERT	Pitjantjatjara	<b>miltji</b>		mara, manyirka
	Kukatja	milpinpa		marumpu
	Yankunytjatjara	<b>milytji</b>		mara
	Ngaanyatjarra	<b>miltji</b>		mara
NGUMPIN	Mudbura	<b>milyarna</b>		wartun, nungkuru
	Gurindji	lipi		wartan
	Jaru	<b>miljan</b>		marla
	Nyininy	<b>milyjarn</b>		pingka
	Malngin	<b>mujin</b>		marla
	Ngarinman	lipi		malamurri, marla, wartan
	Walmartjari	<b>miljarn</b>		taka, kurrapa, ngarrpi

# Anticipated question 4



# Mayan hieroglyphs



**k'ab'** 'hand, arm'



**?ihtj'ak** 'fingernail, claw, hoof'



<cho> (based on **chooh** '(molar) tooth')

# Matisoff (1978:231-232)

“The shifting patterns of semantic association within a language or a language family are at least as interesting as phonological changes through time, and may prove to be equally criterial for establishing degrees of genetic relationship.”