Subgrouping in a `dialect continuum': Exploring Mixtec language history

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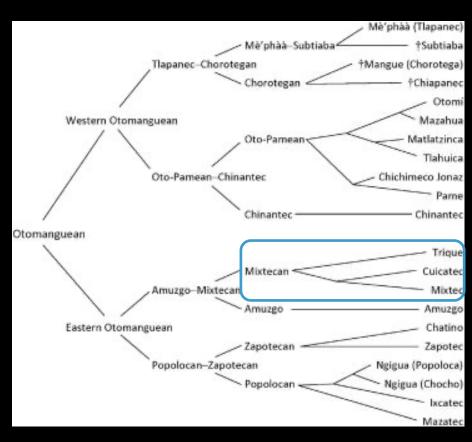
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The Mixtecan language family in Mesoamerica

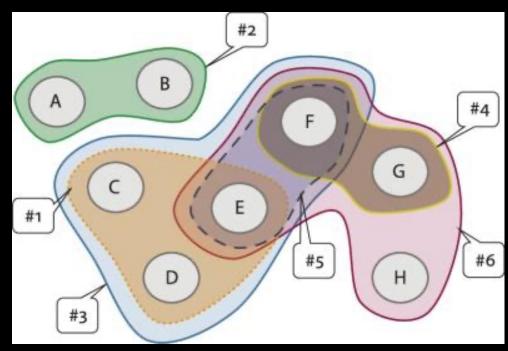




Source left: http://commons.wikimedia.org/wiki/File:Mapa_de_lenguas_de_M%C3%A9xico_%2B_100_000.png

Source right: Campbell 2017 based on Kaufman 1988

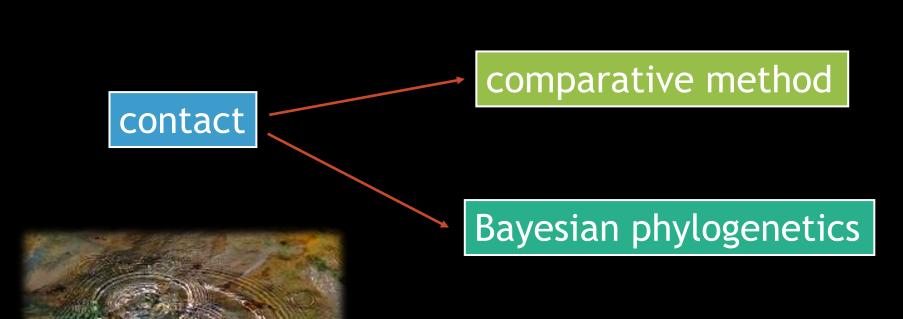
How many Mixtec languages are there?



Source: Kalyan et al. 2019. Problems with, and alternatives to, the tree model in historical linguistics. Journal of Historical Linguistics 9(1)

Resource	No.	Levels
Okura 2015	12/22	language/dialect
Suarez 1983	29	language/dialect (not counted)
Ethnologue	52	language/dialect (not counted)
Glottolog	53	language/dialect (not counted)
INALI	81	variety
Josserand 1983	120	variety (=village)

Subgrouping in a dialect continuum?

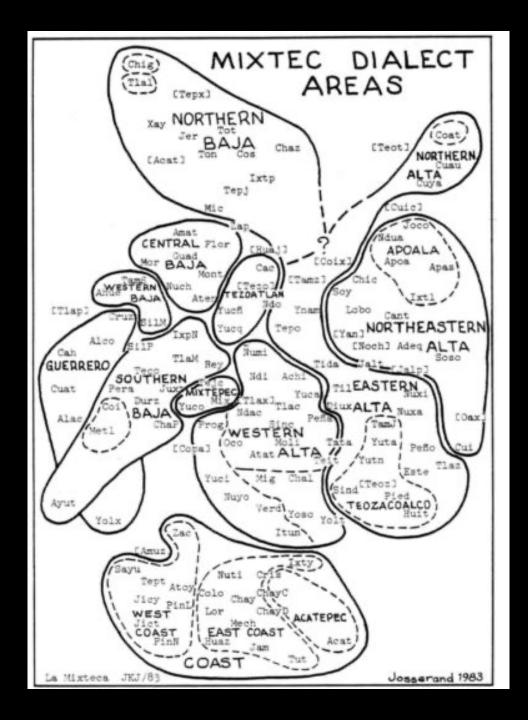




Subgrouping in a dialect continuum?

"El problema es la aparente violación o infracción de las expectativas ideales del método comparativo en la linguística histórica (...). Pero este modelo presupone una efectiva separación de los grupos, después de un cambio que los divide. En contraste, en la Mixteca (...) vemos una situación más dinámica en el desarrollo de las familias lingüísticas." Bradley & Josserand 1982:303

English: The problem is the apparent violation or infringement of the expectations and ideals of the comparative method in historical linguistics (...). But this model assumes an actual separation of the groups, once a change has divided them. In contrast, in the Mixteca, we see a more dynamic situation concerning the development of the language families.



The internal structure of Mixtec

Josserand 1983:

- based on large-scale language survey
- 120 Mixtec-speaking towns
- 188 cognate sets
- classification based on isoglosses of vowel correspondences

Why do we need an updated classification?



- community resources
- history
- archaeology
- anthropology





Picture sources:

https://www.khanacademy.org/humanities/art-americas/early-cultures/mixtec/a/mixtec-codex-zouche-nuttallhttps://commons.wikimedia.org/wiki/File:Mixtec_Carved_Stone.jpg

Collaborators

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Juvenal Solano S.Sebastian del Monte Mixtec JN Martín El Jicaral Mixtec

Data collection and analysis



'basic' vocabulary list of 209 items tailored to the Mesoamerican cultural area, excluding verbs



from published (dictionaries, grammars, grammar sketches) and unpublished sources (ongoing documentation efforts)



110 varieties with lists filled in to different degrees (> 18,000 entries total)

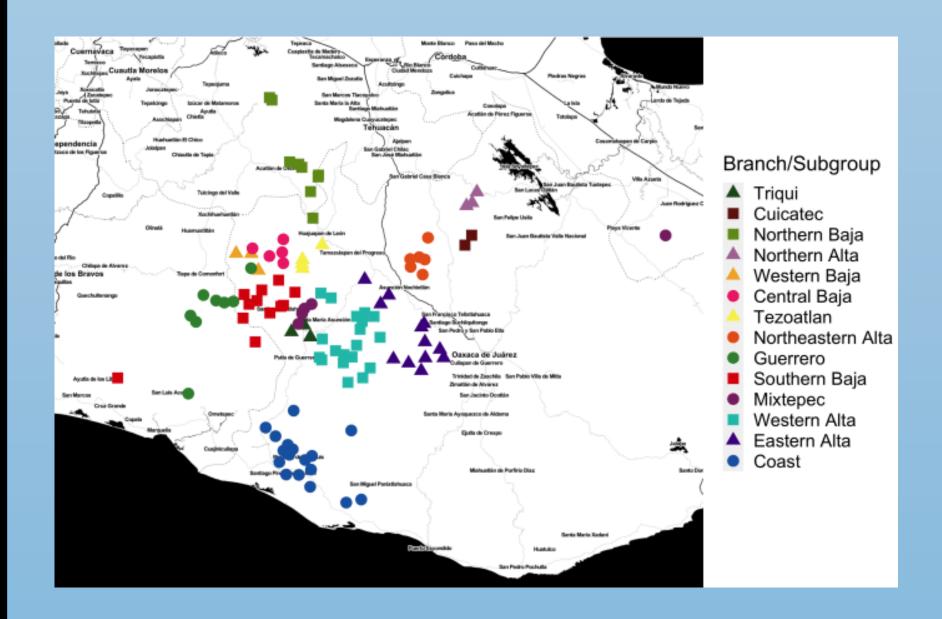


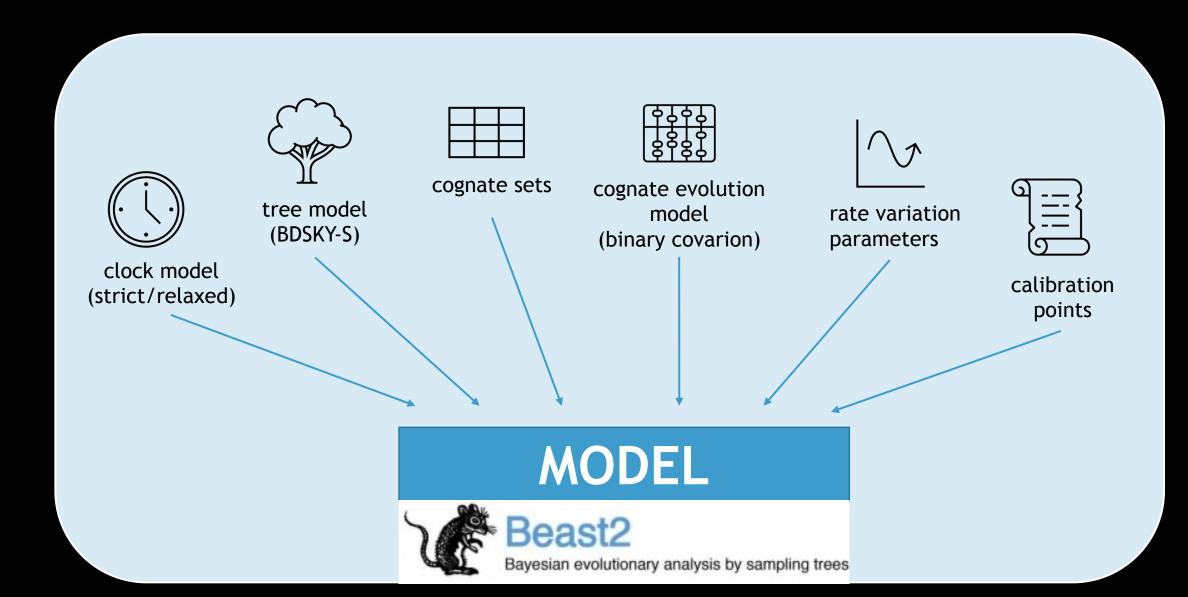
annotated for partial cognates, taking into account tone



manually coding cognates based on comparative methods

Sample

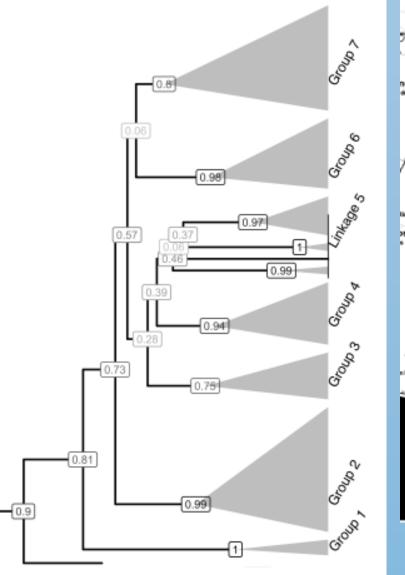


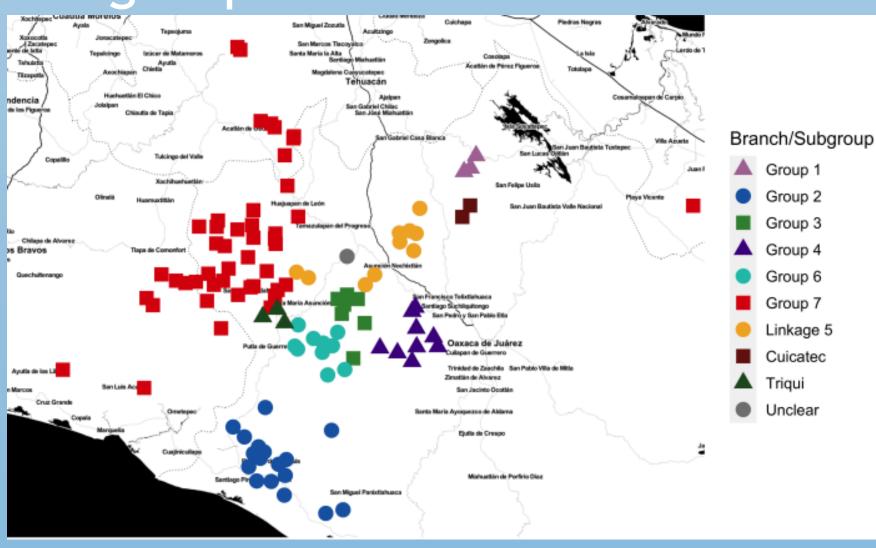


SanMiguelAhuehuetitlanMixtec SanMartinEstadoMixtec SantiagoTamazolaMixtec SanLuisMoreliaMixtec SanJorgeNuchitaMixtec SanSebastianMonteMixtec GuadalupeVillahermosaMixtec YucuquimiOcampoMixtec SanAndresYutatioMixtec SanAgustinAtenangoMixtec YucunutiBenitoJuarezMixtec SantiagoCacaloxtenecMixtec ■ZapotitlanPalmasMixtec SantiagoChazumbaMixtec ---TepeiilloMixtec - CosoltepecMixtec XayacatlanBravoMixtec SantoDomingoTonahuixtlaMixtec SantaMariaChigmecatitlanMixtec SantaCatarinaTialtempanMixtec SanJeronimoXavacatlanMixtec - SantaCruzBravoMixtec CuatzoquitengoMixtec AlacatlatzalaMixtec CahuatacheMixtec XochapaMixtec YoloxochitlMixtec TepangoMixtec AlcozaucaGuerreroMixtec -■SanMarcoslaFlorMixtec —■ PiedraAzulMixtec TlahuapaMixtec SanJeronimoProgresoMixtec SanMartinPerasMixtec Fl.licaralMixtec CoicoyanlasFloresMixted SanSebastianTecomaxtlahuacaMixt SanMartinDuraznosMixtec IxpantepecNievesMixtec ●YucunaniMixtec AbasoloValleMixtec LaBateaMixtec SantiagoJuxtlahuacaMixtec SanJuanMixtepecMixtec SantaMariaYucunicocoMixtec SantosReyesTepejilloMixtec SantaLuciaMonteverdeMixtec SanMiguelEIGrandeMixtec ■ SantaCruzItundujiaMixtec SantiagoYosonduaMixtec SanPedroMolinosMixtec SanEstebanAtatlahucaMixtec ChalcatongoHidalgoMixtec SantiagoNuyooMixtec SantaMariaYucuhitiMixtec SantoTomasOcotepecMixtec SanMiguelChicahuaMixtec SanBartoloSovaltepecMixtec SantiagolxtaltepecMixtec Santiagorkiancecomixtec SantiagoApoalaMixtec SantaMariaApazcoMixtec SanPedro JocotinacMixtec SanPedroYosonamaMixted SanJuanNumiMixtec ▲SanPedroTidaaMixted SantiagoTilantongoMixtec -▲SanJuanDiuxiMixtec ▲SanMiguelPiedrasMixtec ▲SanMateoSindihuiMixtec SanAntonioHuitepecMixted SanJuanTamazolaMixtec ▲SantiagoTlazovaltepecMixtec ▲SantaCatarinaEstetlaMixtec ◆SantoDomingoNuvaaMixtec ▲SanAndresNuxinoMixtec SantaMariaYolotepecMixtec SanAgustinTlacotepecMixtec SantoDomingoHuendioMixtec ■ MagdalenaPenascoMixtec SanMiguelAchiutlaMixtec SanJuanTeitaMixtec SanBartolomeYucuaneMixtec SantaMariaAcatepecMixtec SanPedroTututenecMixtec SantaMariaHuazolotitlanMixtec SantiagoJamiltepecMixtec SantaCatarinaMechoacanMixted SanLorenzoMixtec SantiagoPinotepaNacionalMixted SanFranciscoSayultepecMixtec SanAntonioTepetlapaMixtec SanPedroAtovacMixtec SantaMariaJicaltepecMixtec SanPedroJicayanMixtec San JuanColoradoMixtec PinotepaDonLuisMixtec SantiagolxtayutlaMixtec SantaAnaCuauhtemocMixtec CuvamecalcoVillaZaragozaMixtec SanJuanCoatzospamMixtec SanPedroySanPabloTeposcolula160 ▲SanJuanCopalaTriqui ▲SanAndresChicahuaxtlaTriqui ▲SanMartinItunyosoTriqui SanAndresChicahuaxtla1890Triqui SantaMariaPapaloCuicatec SanJuanTepeuxila1900Cuicatec

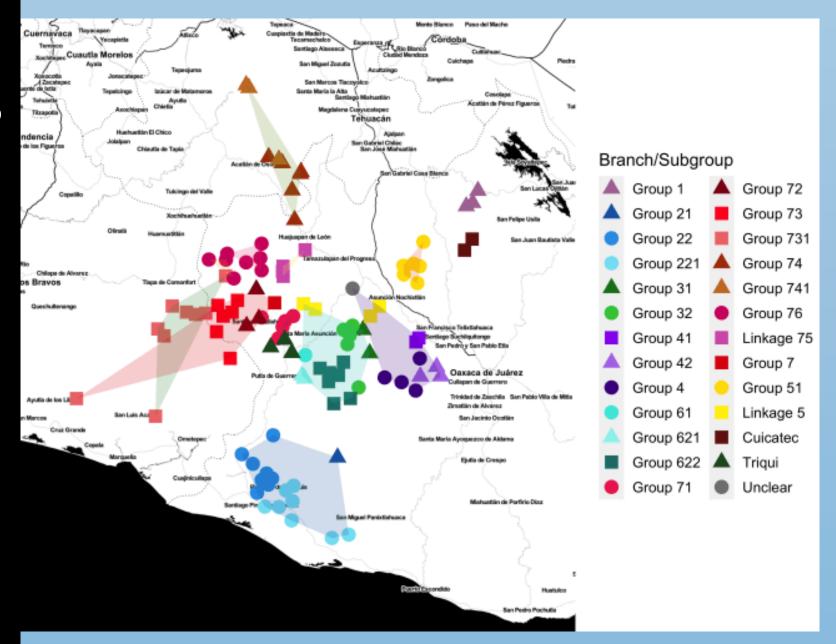
MCC Tree - full

New high-level groups



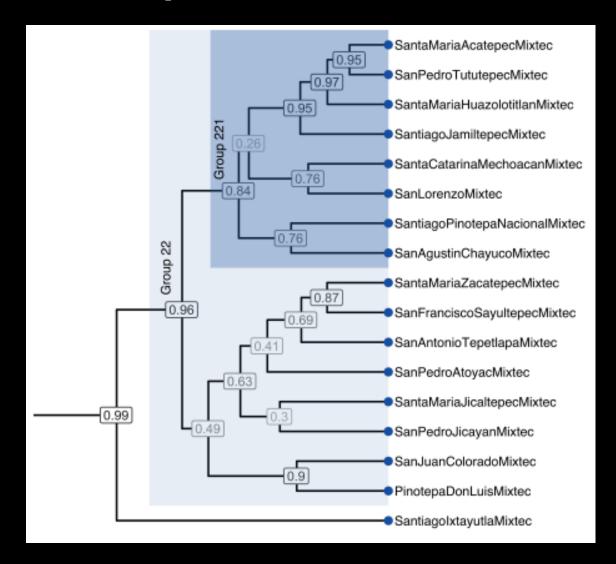


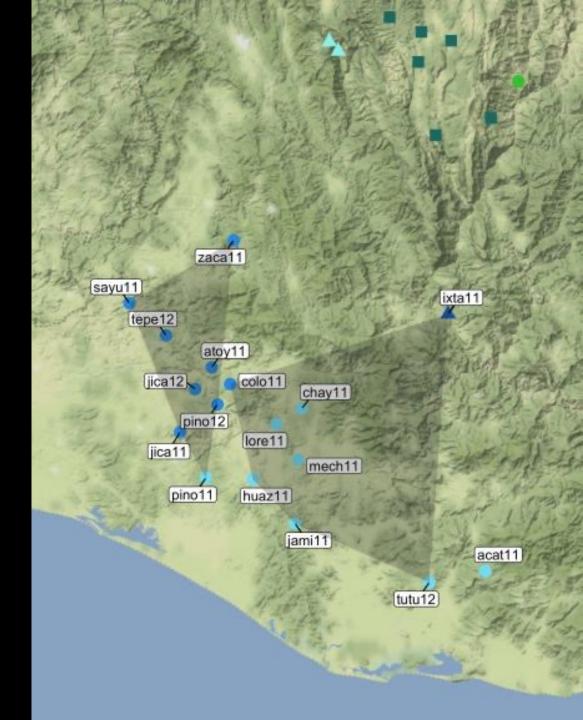
New lowerlevel groups



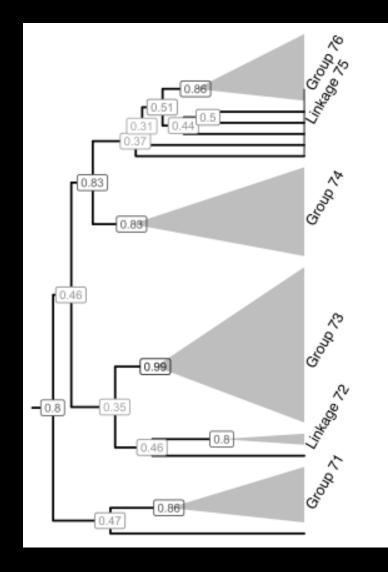
shaded polygons =
Josserand's dialect areas

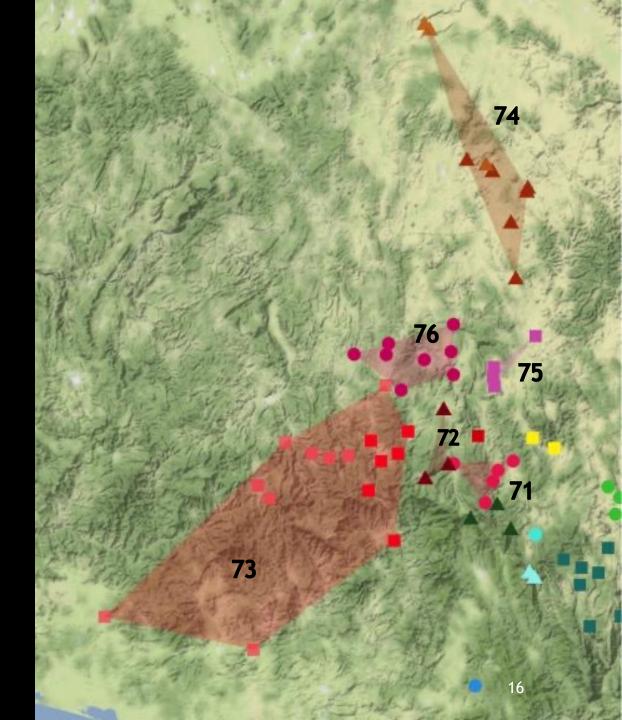
Group 2



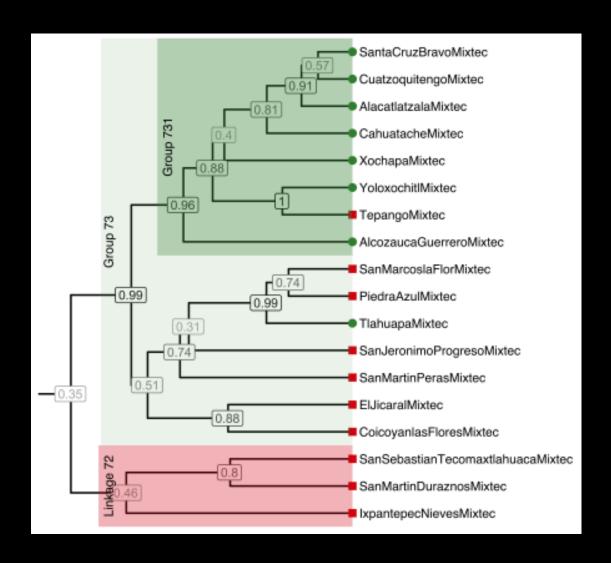


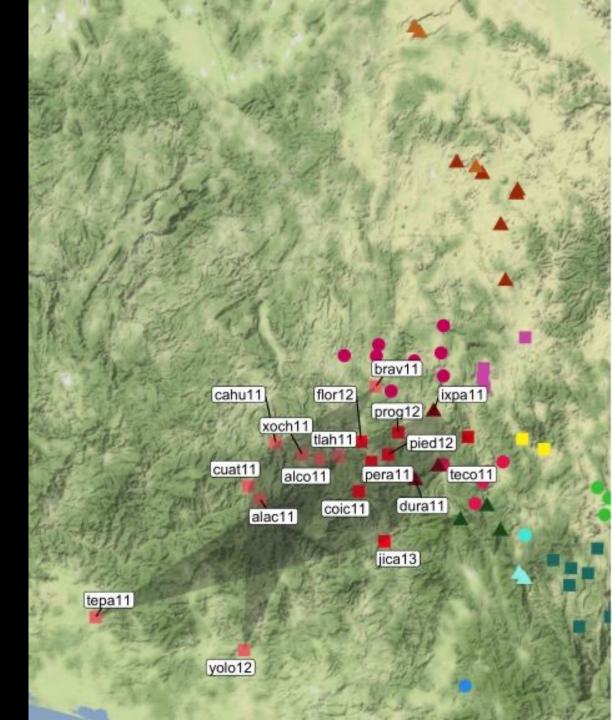
Group 7





7.2 and 7.3





Where to go from here

Mixtec

- integrate verbs
- tone reconstruction/tone change
- language survey
- tailored community materials

historical linguistics & phylogenetics

- go beyond large, well-established, well researched language families
- more diversity = better models & interpretation
- critically depends on good documentation

collaboration with archaeology & anthropology

- population movements
- trade networks
- subsistence patterns/diets
- kinship/family relation
- · community organization
- not everything in Mesoamerica is Aztecan or Mayan

Extra slides for Q&A

Calibration points

- documents by Jesuits from the colonial period
 - Antonio de los Reyes: Arte en lengua mixteca (1593)
 - Francisco de Alvarado: Vocabulario en lengua misteca (1593)
- documents from around the 19th century
 - Francisco Belmar: Ensayo sobre la lengua trike (1897)
 - Francisco Belmar: El cuicateco (1902)



Cognate Coding

- broad vs. fine-grained
- binarized cognate matrix

Variety	5	125	644	878
Α	1	1	0	?
В	1	1	1	0
С	0	?	0	1
D	1	1	1	0

BIRD

VARIETY	FORM	BROAD	FINE
AbasoloValleMixtec	sa³a³	49	49
AlacatlatzalaMixtec	sa³a³	49	49
ChalcatongoHidalgoMixtec	sa³a¹	49	49
ElJicaralMixtec	sa³a³	49	49
GuadalupeVillahermosaMixtec	laa	49	49L
IxpantepecNievesMixtec	laa	49	49L
SanMartinDuraznosMixtec	la³a³	49	49L
SantiagoApoalaMixtec	ti+ðaa	9 49	9 49
SantiagoCacaloxtepecMixtec	ti¹+la³a¹	9 49	9 49L
SanMiguelElGrandeMixtec	t i 3 + s a 3 a 1	9 49	9 49

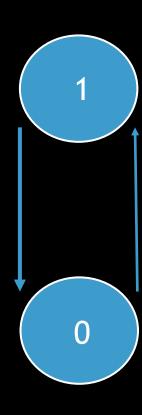
PUS

VARIETY	FORM	BROAD	FINE
CoicoyanlasFloresMixtec	"da³k"a¹	574	574
ElJicaralMixtec	"da 3 k" a 5	574	574
MagdalenaPenascoMixtec	nd a 3 kw a 3	574	574
PiedraAzulMixtec	"da" h k" a 1	574	574
AlcozaucaGuerreroMixtec	lak ^w a	574	574L
SanMiguelElGrandeMixtec	la³kwa³	574	574L
SanCristobalJamiltepecMixtec	lak ^w a	574	574L
SanMartinDuraznosMixtec	la³kwã¹	574	574L

Model of cognate evolution

Binary Covarion:

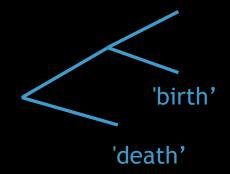
- controls the rate of transition between 0 and 1
- 'fast' vs. 'slow' state
- estimates two parameters:
 - switching factor = frequency of switching between 'fast' and 'slow'
 - α = difference in speed between `fast' and `slow' state



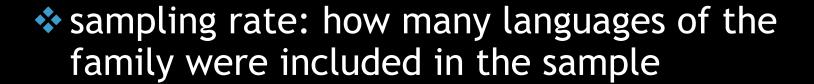
Tree model

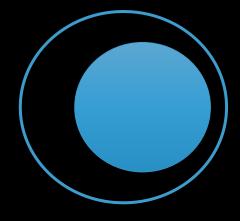
Birth-death Skyline with Serial Sample (BDSKY-S)

birth rate: rate at which languages become distinct



death rate: rate at which languages fall out of use





Clock models



strict clock

- single evolutionary rate
- every branch of the tree evolves with the same rate



relaxed clock

- rates can vary across branches
- rates are drawn from a distribution (with parameters estimated from the data)