Distributional Typology

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The quest for absolute universals

«[W]elcher Gewinn wäre es auch, wenn wir einer Sprache auf den Kopf zusagen dürften: Du hast das und das Einzelmerkmal, folglich hast du die und die weiteren Eigenschaften und den und den Gesamtcharakter! - wenn wir, wie es kühne Botaniker wohl versucht haben, aus dem Lindenblatte den Lindenbaum konstruieren könnten. Dürfte man ein ungeborenes Kind taufen, ich würde den Namen **Typologie** wählen.» (Hans Georg Conon von der Gabelentz 1891:481)

"But what an achievement it would be were we able to confront a language and say to it: 'you have such and such a specific property and hence, also such and such further properties and such and such an overall character' – were we able, as daring botanists have indeed tried, to construct the entire lime tree from its leaf. If one were allowed to baptize an unborn child, I would choose the name **typology**."

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But when is a universal really 'absolute'?

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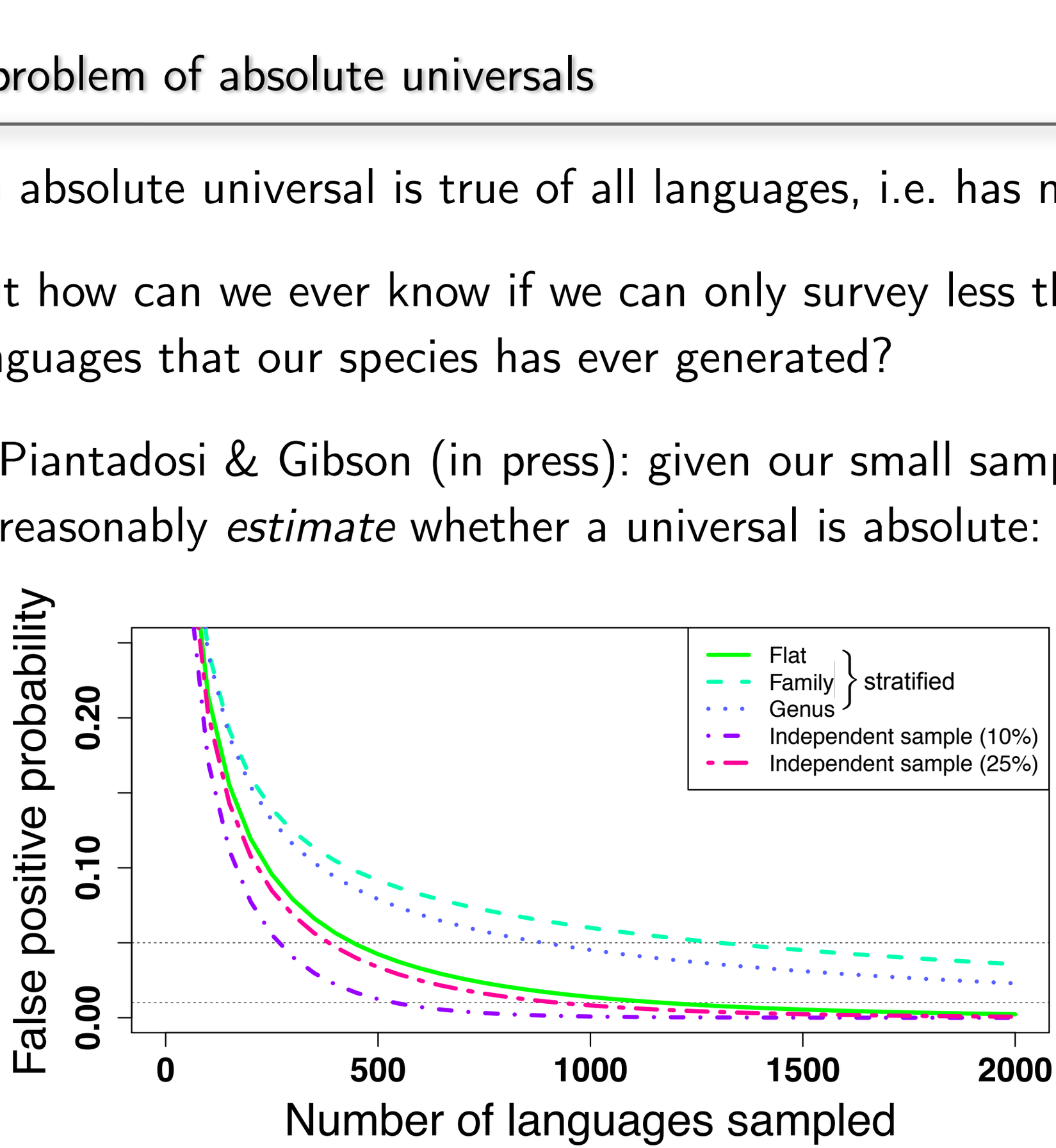

"Independent" means genealogically unrelated.

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  - Synchrony: Rule 1: All English sentences have a subject: **saw her*
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    Rule 2: Delete a coreferential subject in coordination

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- Solution: explain away the counterexamples by restricting the claim:

  *[PP [NP **N** [NP]] **P$_N$**] vs. ✓[PP [NP **N** [NP]] **P$_V$**] and argue that counterexamples don't have nominal but verbal postpositions, or don't have 'real' postpositions anyway (Biberauer et al 2008)

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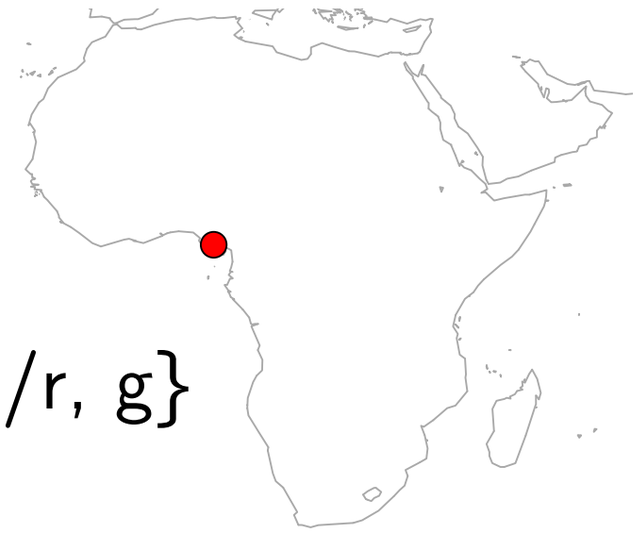

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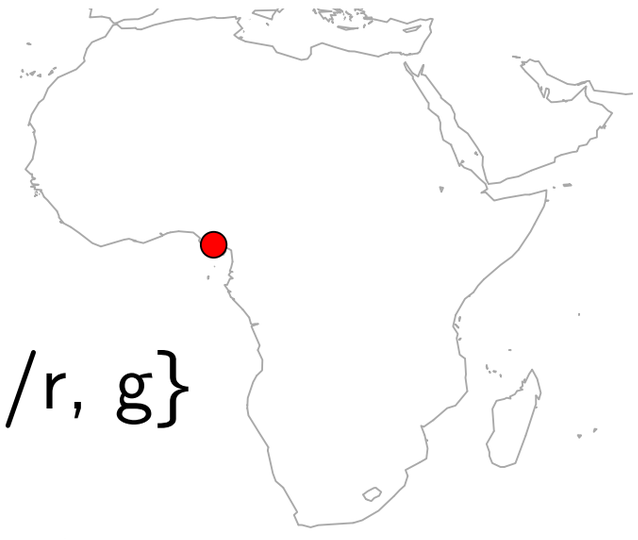

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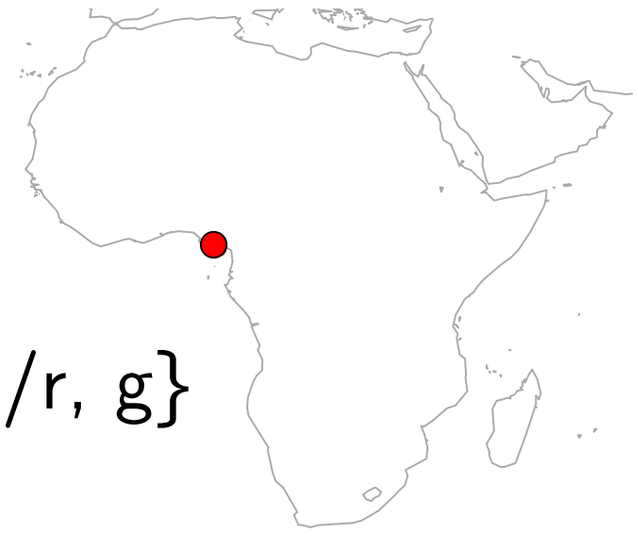

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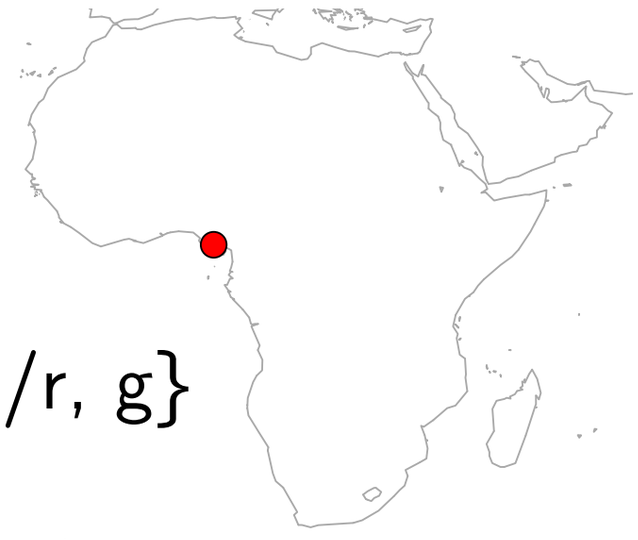

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Analysis with syllables:

(1) σ: CV(C), (C)V(V)

(2) $C)_\sigma$ only in mono-syllabic words

(3) ϕ: (σ_s σ_w), C_1 in σ_s, C_2 in σ_w

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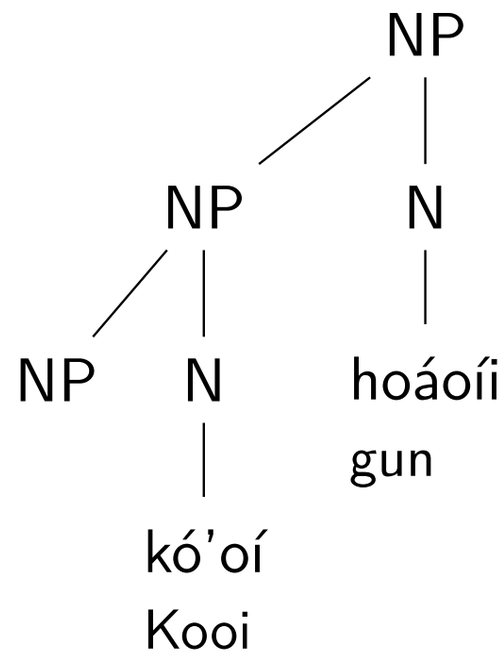

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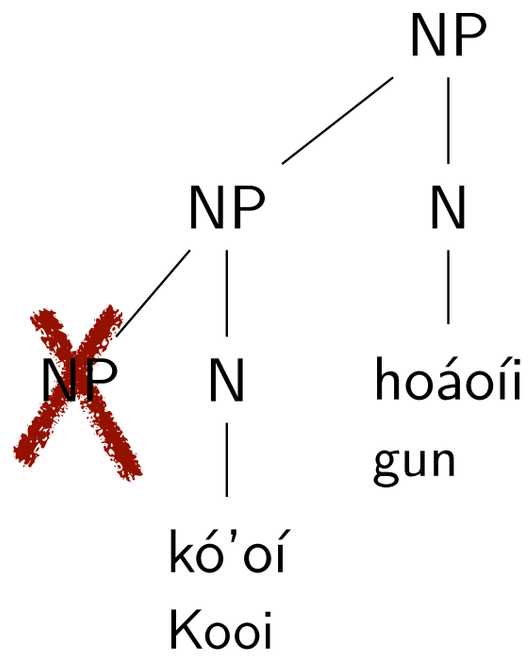

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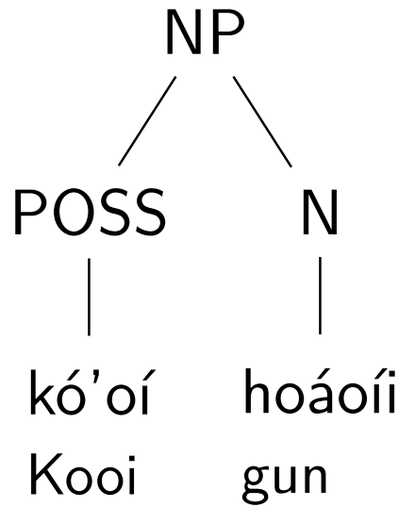

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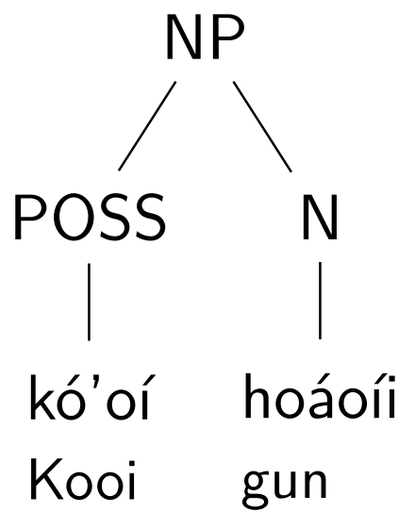

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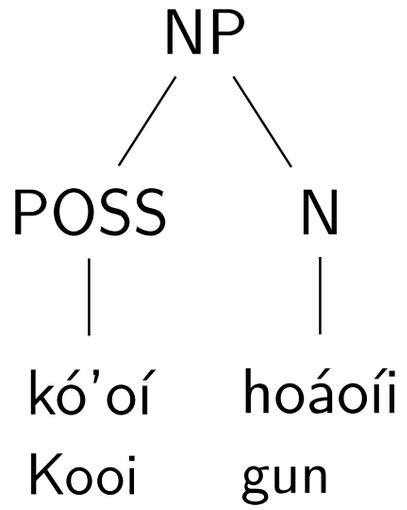

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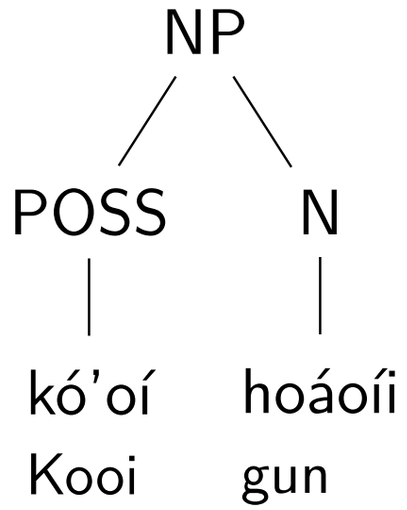

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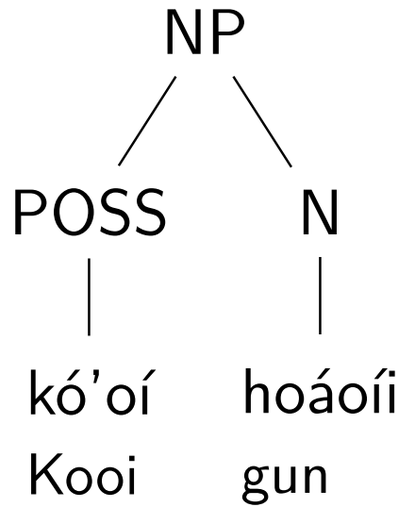

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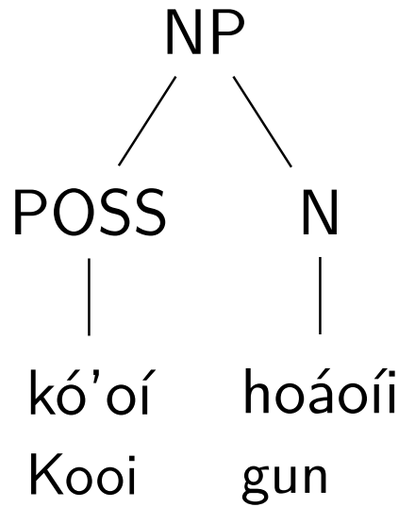

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- Back to square 1!

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  - Show that this turns typology from a Pāṇinian into a normal science

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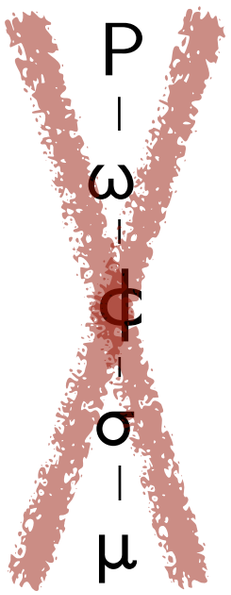

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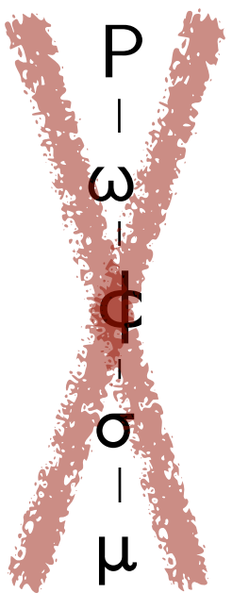
hoa hồng ‘rose; pink flower’

WHAT

- Given the choice, assume variables not universals
- *Example:* do not assume the Prosodic Hierarchy as an absolute universal (Vogel 2009), but take its nodes as variables



Alternative (Schiering, Hildebrandt & Bickel 2010):

Each phonological pattern targets a sequence of

- phonological units, creating μ, σ, ϕ
- morphological units, creating w-domains (ω, P)

Some variables per language:

1. number of phonological patterns targeting w-domains
2. size of w-domains
3. number of non-isomorphic w-domains

etc.

WHAT: Case study on words

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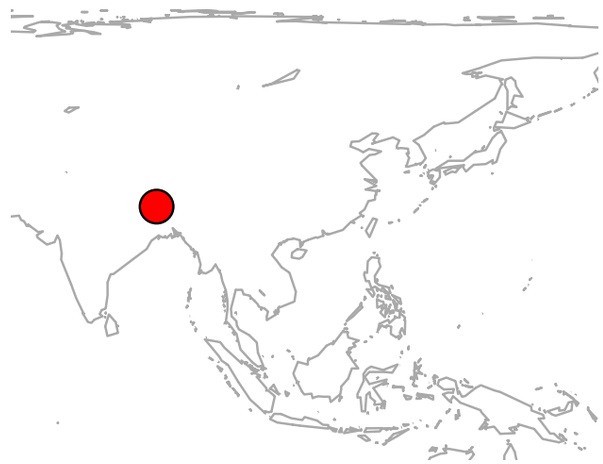

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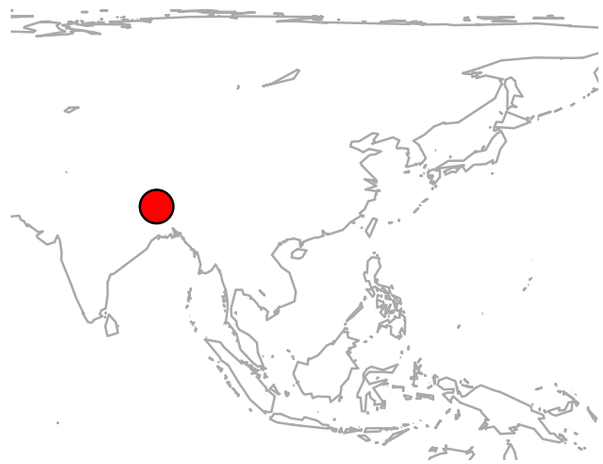

Liquid Alternation etc

gm-[**stem-gm-ptcl**]

kɛ-[**L**i'-**L**e-**L**oː] > kɛ[**l**i'**r**e**r**oː]

2sPOSS-bow-GEN-PTCL

'of your bow'

mɛ-[**L**uːg-ɛ-**L**oː] > mɛ[**l**uːgɛ**r**oː]

[3]nsS-fall-PST-PTCL

'they fell down'

Coronal Assimilation etc.

[**gm-stem-gm-ptcl**]

[kɛ-**n**-pa] > [kɛ**m**ba]

2sPOSS-KIN-father

'your father'

[mɛ-**n**-mɛ**t**-paŋ] > [mɛ**m**mɛ**p**paŋ]

[1]nsA-NEG-tell-1>3[s].PST

'we did not tell him'

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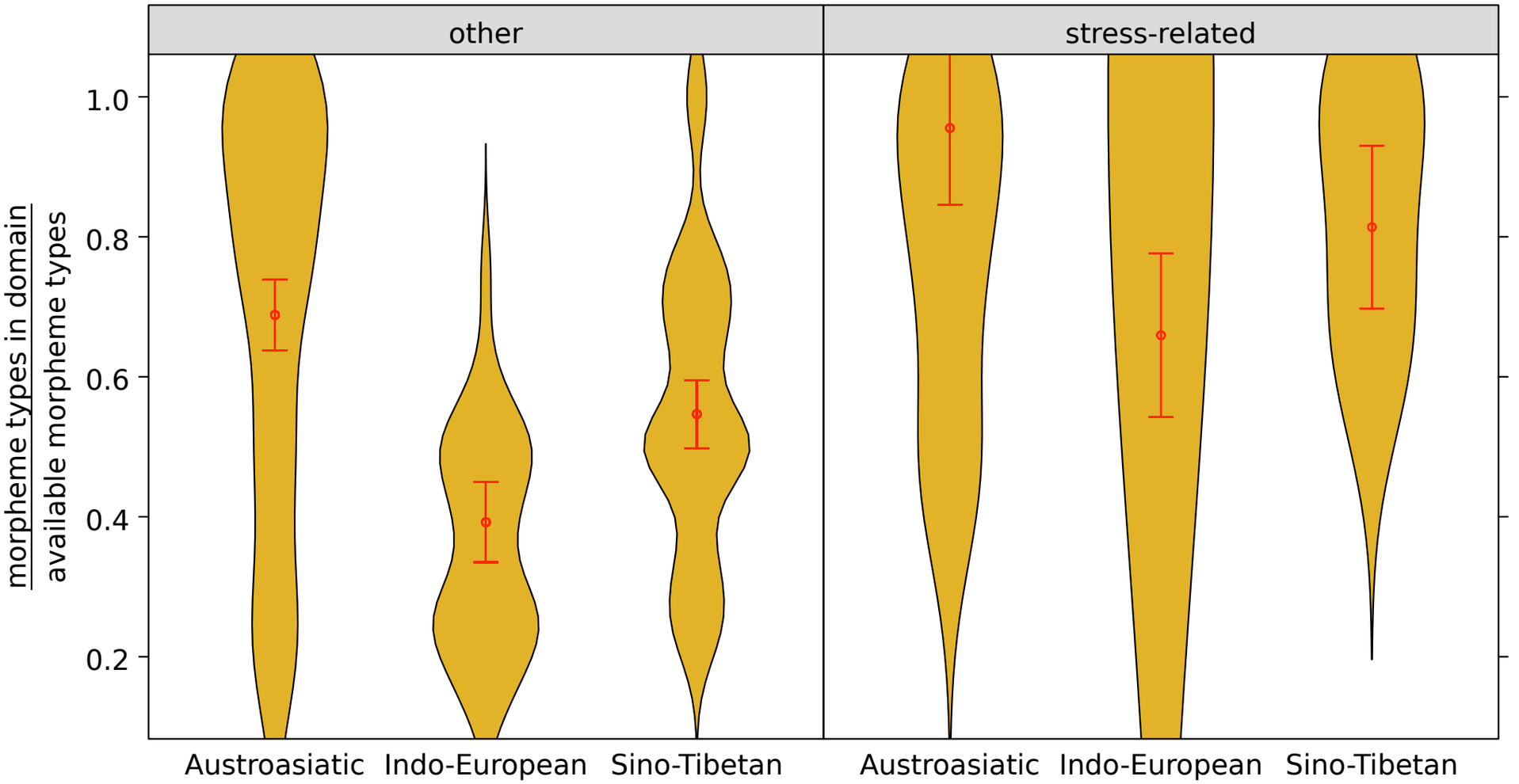
Survey of 40 languages from three families:



Stress-related:
e.g. Czech
['*do=Prah-y*]

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ISO639.3	ID	Role	PoS	co.Role	co.PoS	PredCat	Clause	Predicate Class
ctn	1327	A_d	non-excl	ANY	ANY	ANY	ANY	Primary object verbs: some verbs denoting covering events, events of destructive impact like throwing, kicking, hitting, or cutting
ctn	1327	A_d	N	ANY	ANY	ANY	ANY	Primary object verbs ...
ctn	1327	A_d	non-excl	ANY	ANY	ANY	ANY	Double object verbs: physical and mental transfer events (translated as 'send, bring, take, move to, give, pass to, infect, feed, tell, ask for, show' etc.), also verbs like *yukt-* 'to keep for someone', which represent a kind of 'intended transfer'; verbs of covering ('cover, bury, pour, throw, spray at, soil, stain,' etc.)
ctn	1327	A_d	N	ANY	ANY	ANY	ANY	Double object verbs ...
ctn	1327	A_d	non-excl	ANY	ANY	ANY	ANY	the default ditransitive predicate class
ctn	1327	A_d	N	ANY	ANY	ANY	ANY	the default ditransitive predicate class
ctn	1327	A	non-excl	ANY	ANY	ANY	ANY	the default transitive predicate class
ctn	1327	A	N	ANY	ANY	ANY	ANY	the default transitive predicate class
ctn	1327	T	non-excl	ANY	ANY	ANY	ANY	Primary object verbs ...
ctn	1327	T	N	ANY	ANY	ANY	ANY	Primary object verbs ...
hin	92	A_d	ANY	ANY	ANY	ANY	PP-`hin`	main	the default ditransitive predicate class
hin	92	A	ANY	ANY	ANY	ANY	PP-`hin`	main	predicates with ERG depending on 'conscious choice' or volitioANYlity (alterANYtion possible only in perfective): *samajh* 'understand, suppose', *bhul* 'forget', *jan* 'give birth (to)', *phãd* 'leap over', *bak* 'to talk nonsense', *har* 'lose, be defeated' (Butt 2001: 127)
hin	92	A	ANY	ANY	ANY	ANY	PP-`hin`	main	the default transitive predicate class
hin	92	S	ANY	ANY	ANY	ANY	PP-`hin`	main	predicates with ERG/NOM-Sintr/Atr depending on 'conscious choice' or volitioANYlity (alterANYtion possible only in perfective): intr. verbs: *bhõk* 'bark', *jhãk* 'peep, look into/ through', *khãs* 'cough', *chĩk* 'sneeze', *muskara* 'smile', *thuk* 'spit', *mut* 'uriANYte', *hag* 'defecate', *naha* 'bathe', *ro* 'cry', *hãs* 'laugh', *so* 'sleep' (Butt 2001: 127)

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- Illustrate by way of a case study

Causal theories

1. A functional theory: presence of A≠P case is driven by V-final word order (Greenberg 1963, Siewierska 1996, Dryer 2002, Hawkins 2004 etc.)

   [NP V] : [$Ø_A$ NP_P V] or [NP_A $Ø_P$ V]

   [NP-x_P V]: [$Ø_A$ NP_P V]

Causal theories

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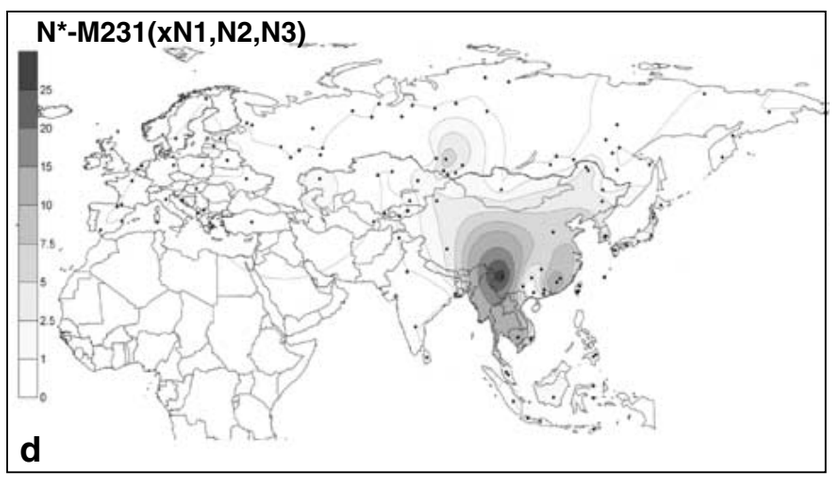
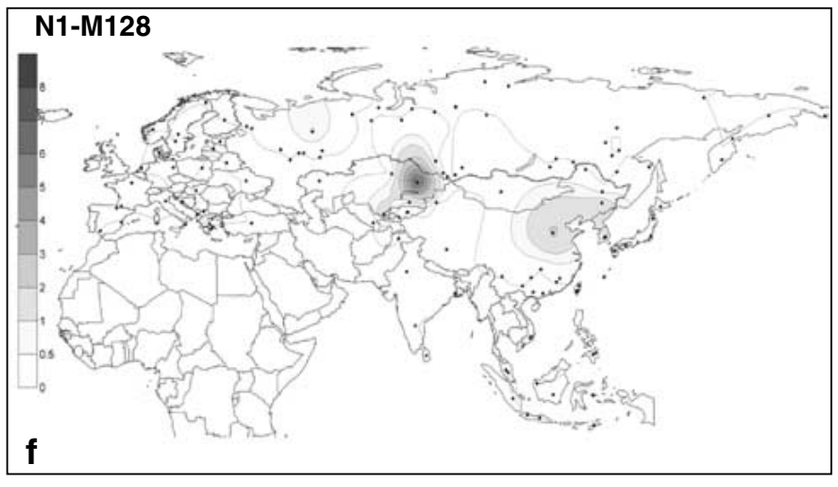
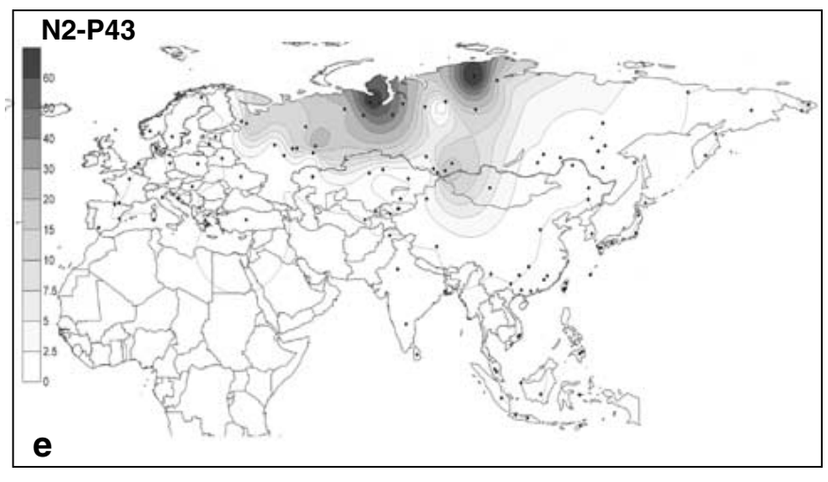
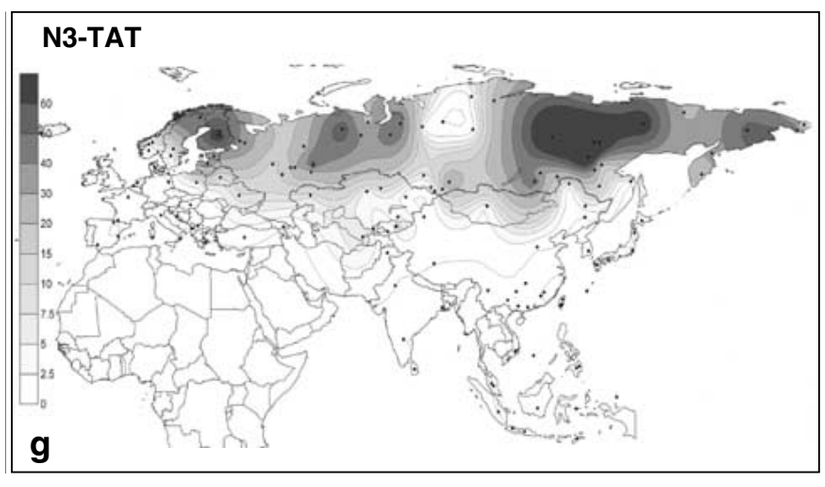
14 ±4 ky





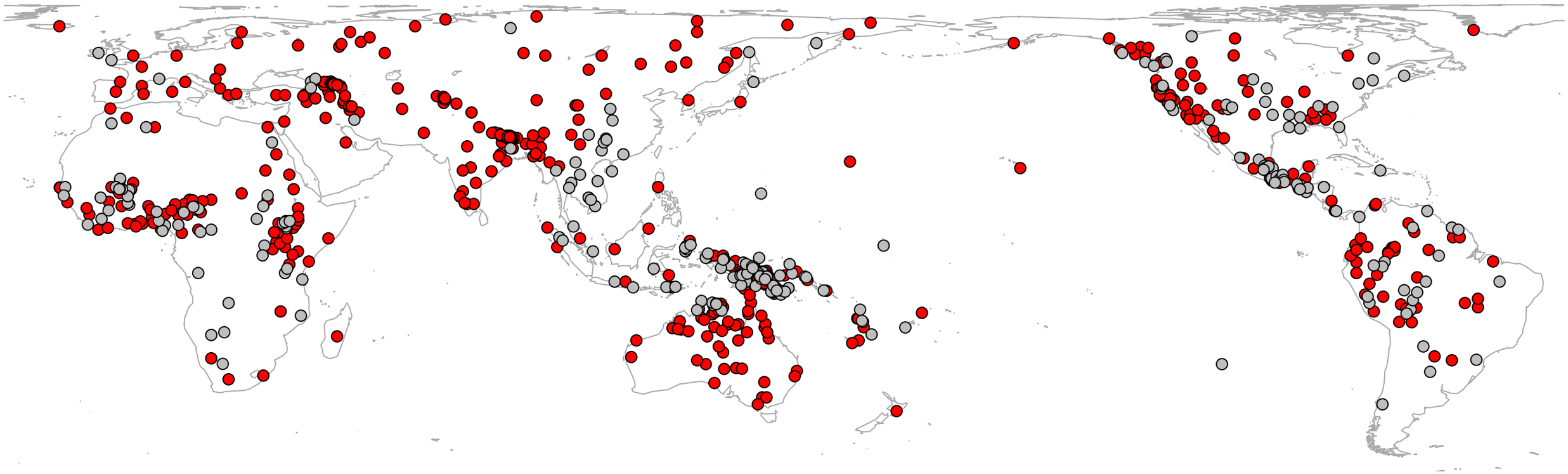


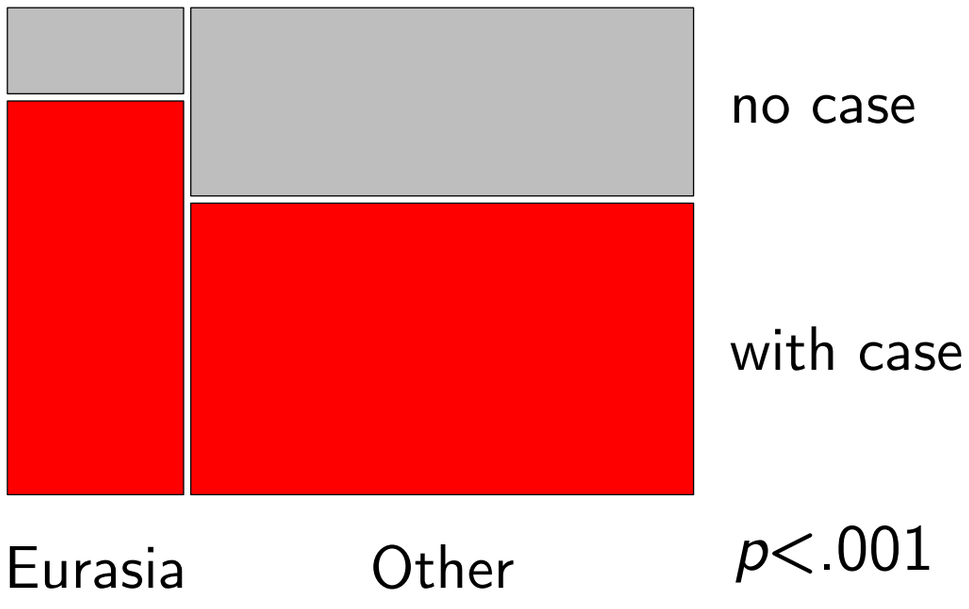


Rootsi et al. 2007 in *Europ. J. Hum. Gen.*

Causal theories

Data from AUTOTYP (Witzlack-Makarevich et al. 2011+) on case and WALS (Dryer 2005) on word order: $\boldsymbol{N = 489}$





'with case' = marking that differentiates between two argumental NPs of at least one kind (e.g. only first and second person pronouns) in at least some bivalent predicates (e.g. perhaps only in some experiencer predicates with an oblique experiencer).

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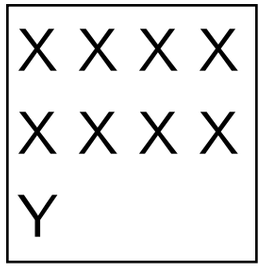
  $\rightarrow$ Family Bias Method

The Family Bias Method

Synchronic observations
on *demonstrably related*
languages:



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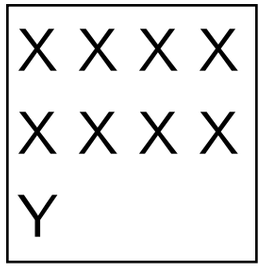

Possible diachronic interpretations:

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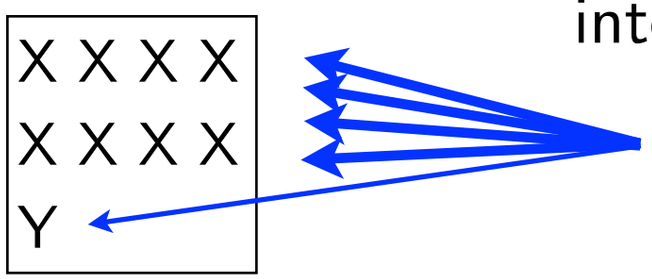

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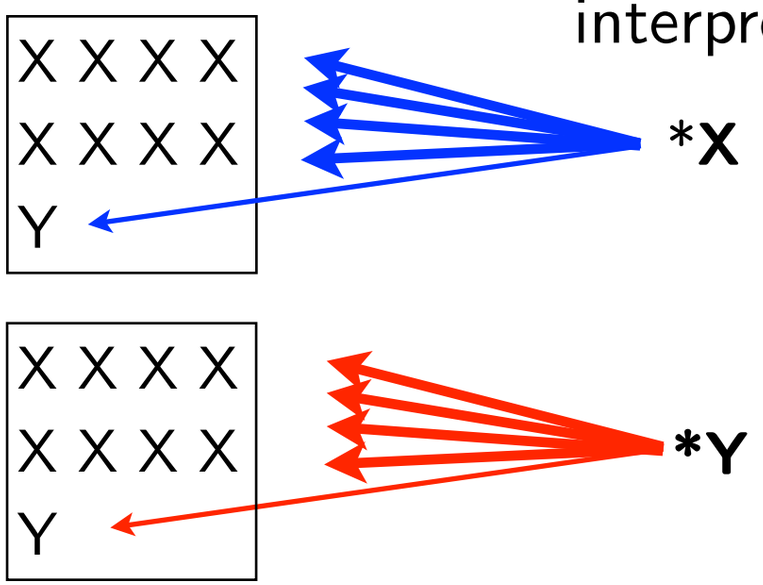

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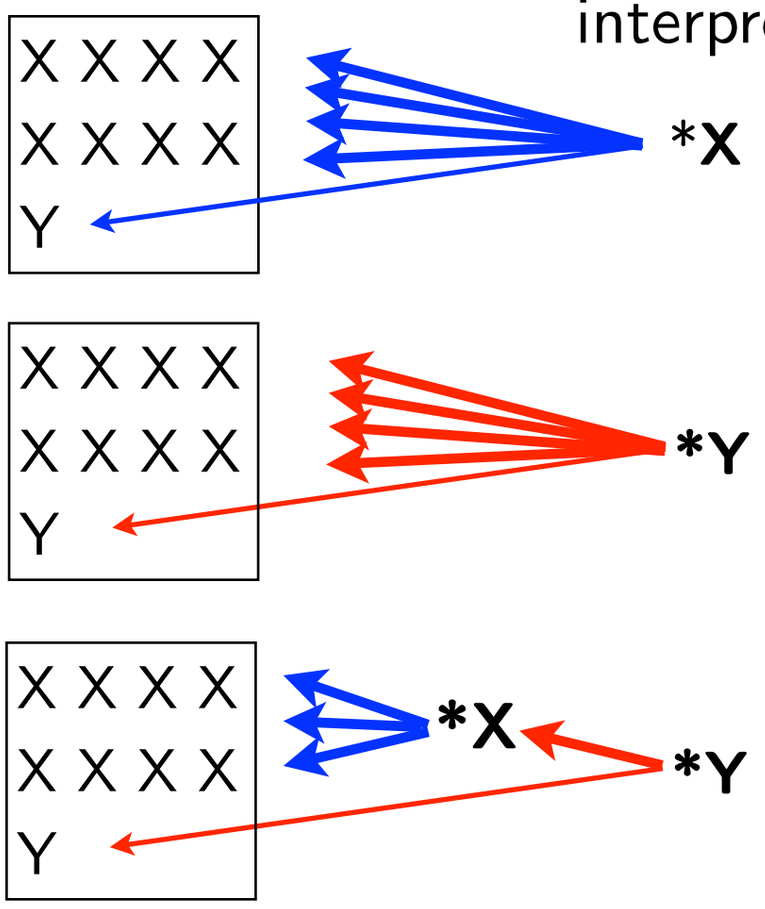

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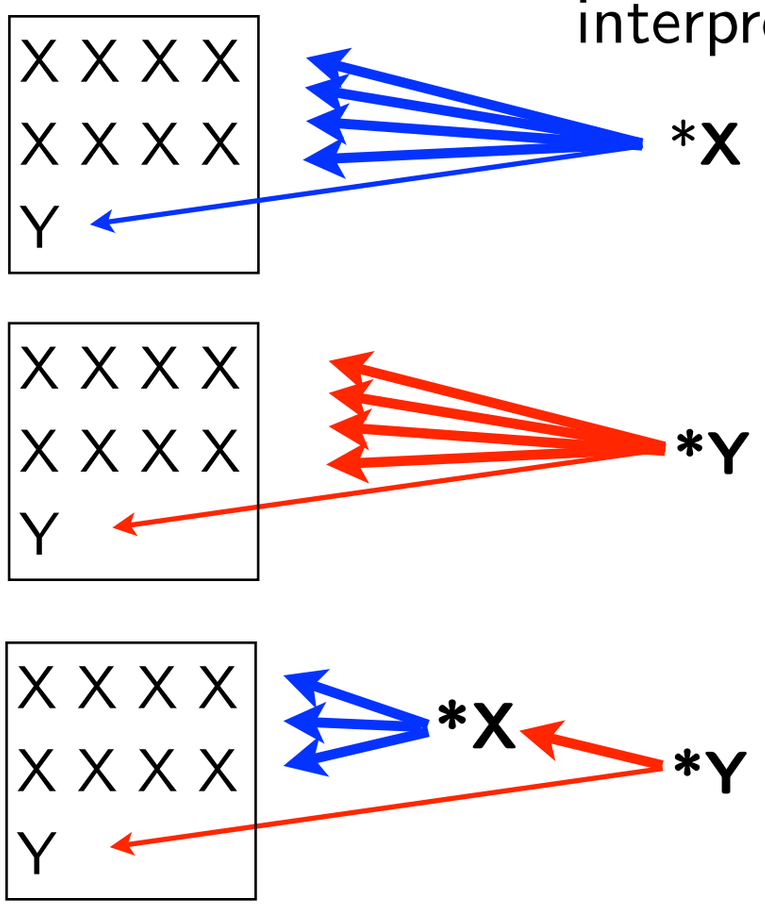

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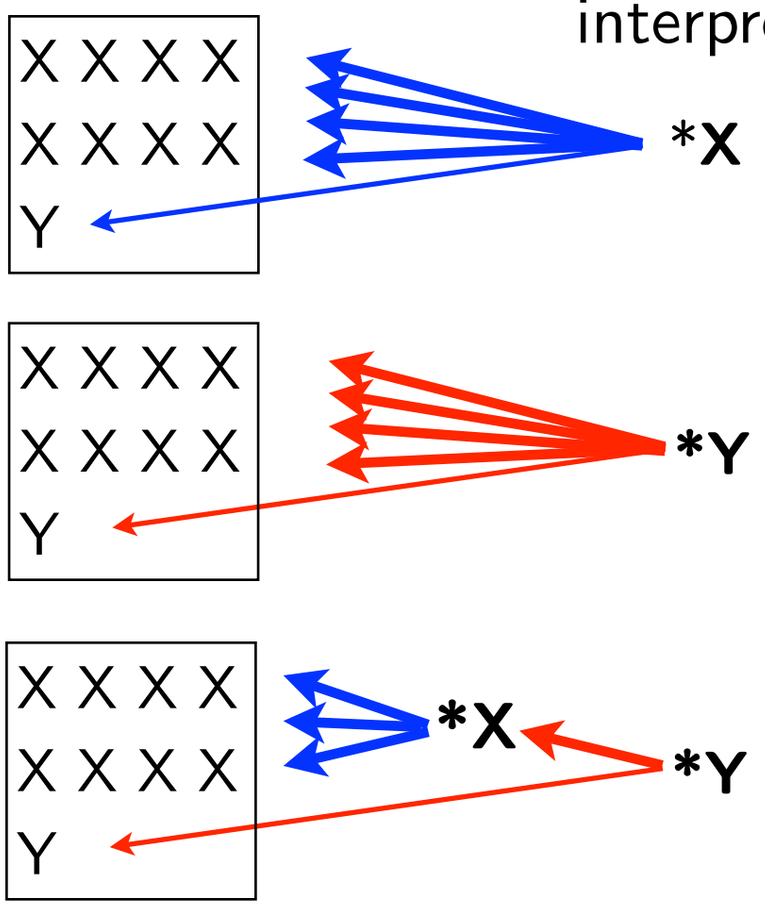

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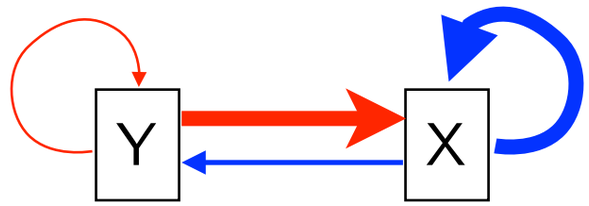

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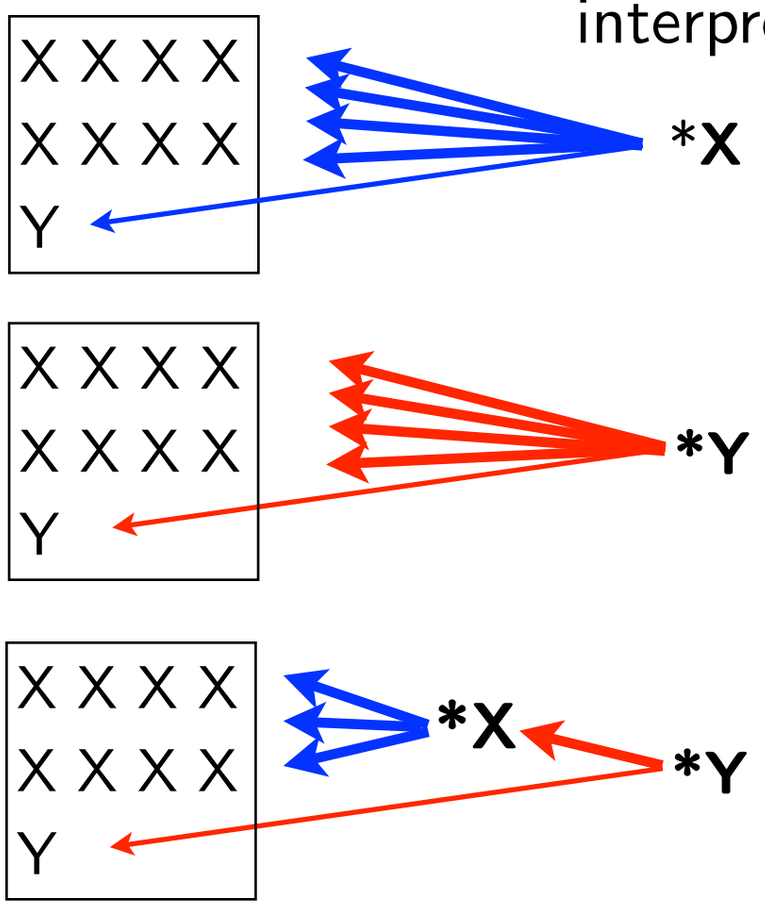

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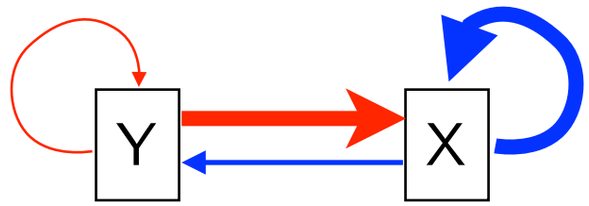

$Pr(Y{>}X) > Pr(X{>}Y)$

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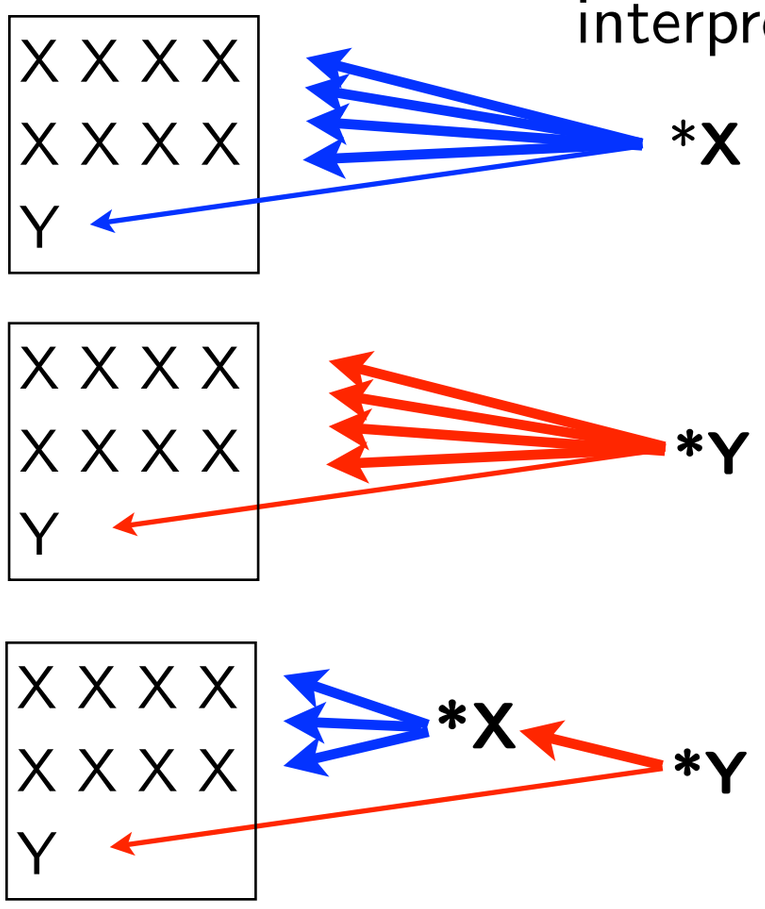

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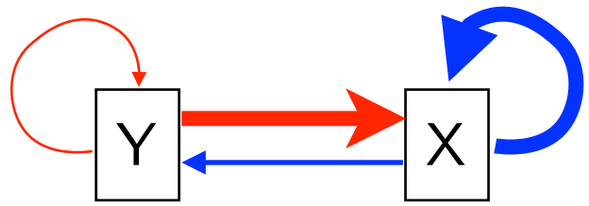

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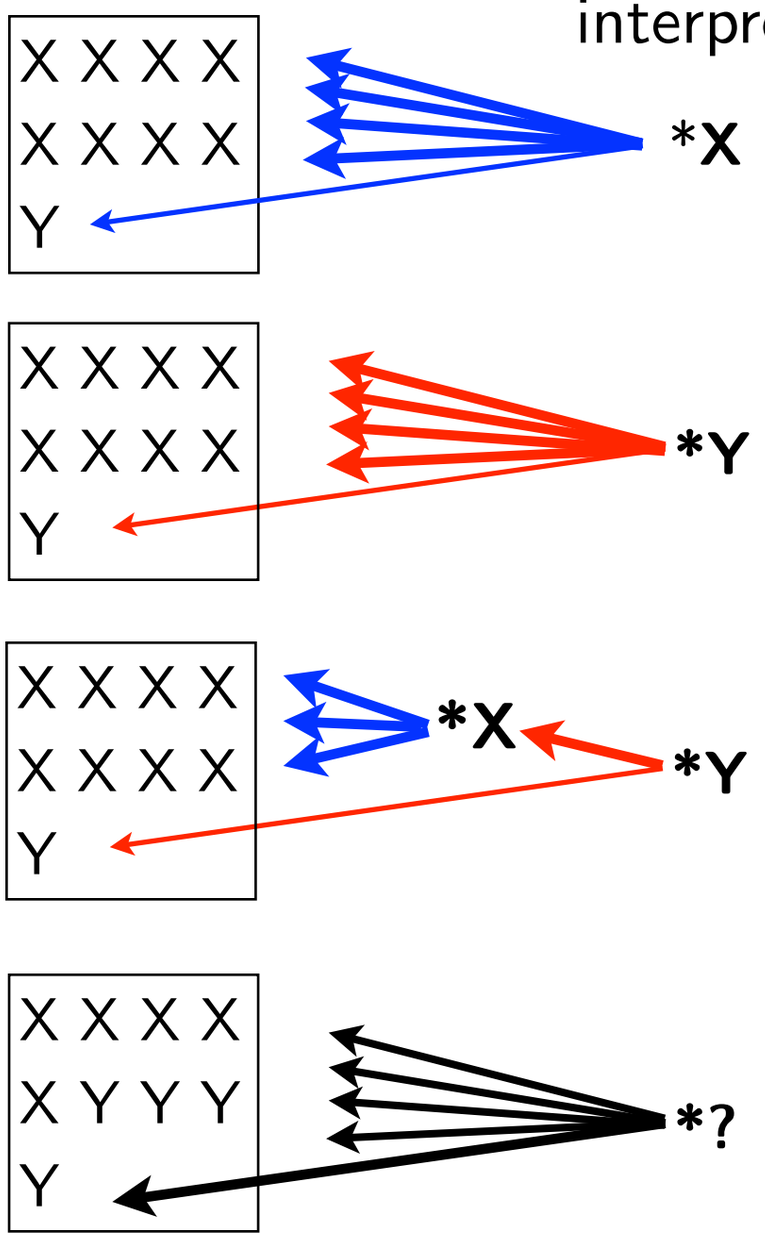

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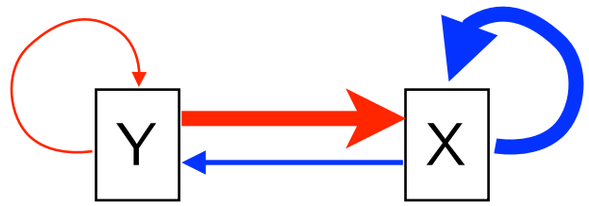

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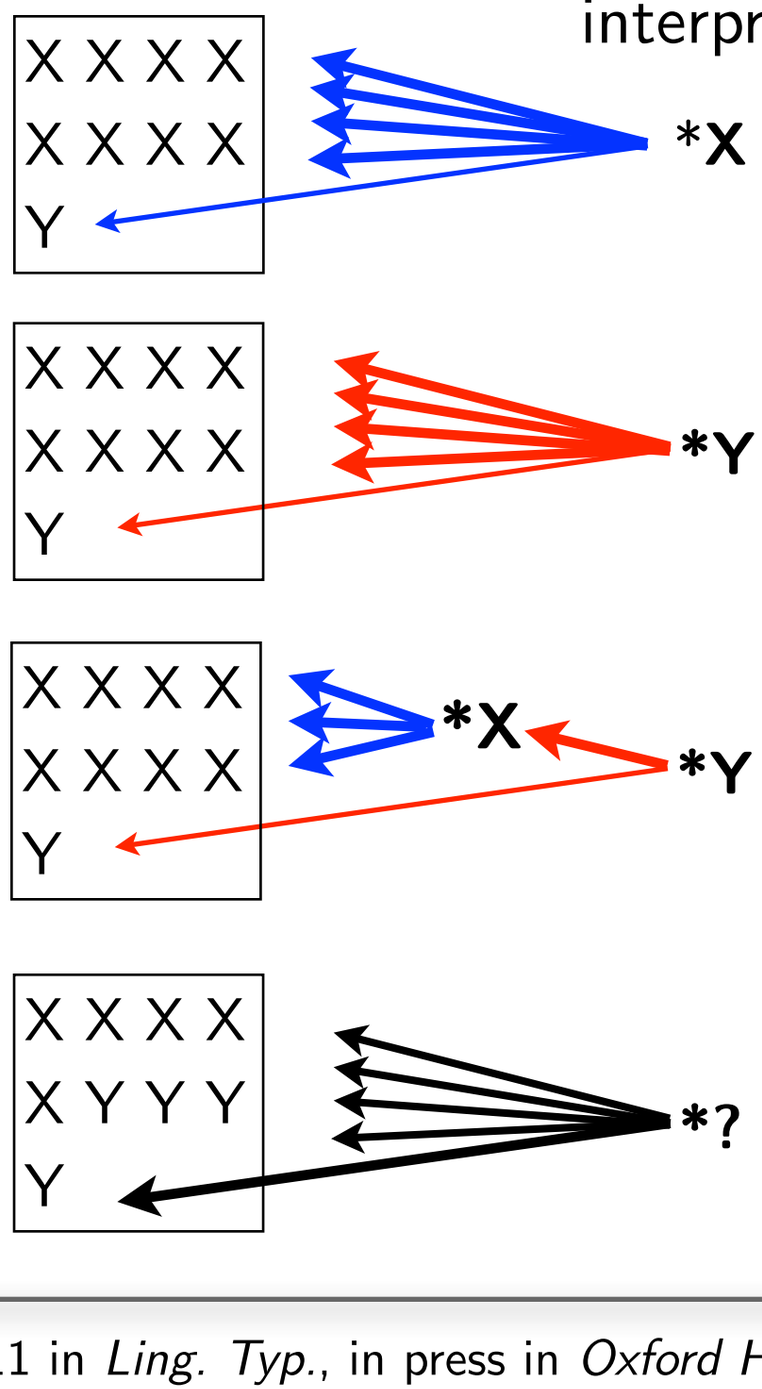

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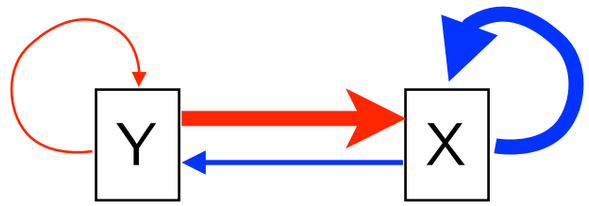

$Pr(Y{>}X) > Pr(X{>}Y)$

(“**Family Bias**”)

$Pr(Y{>}X) \approx Pr(X{>}Y)$

(“no bias”, “diverse”)

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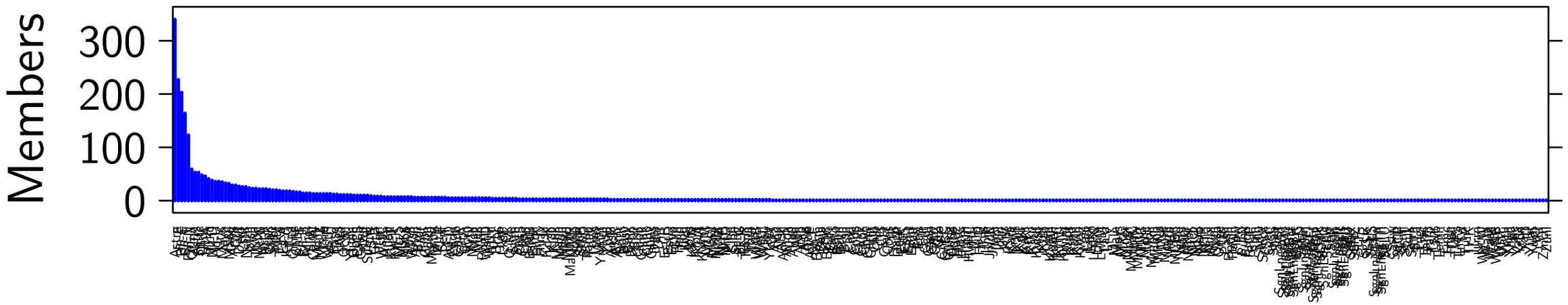
- Extrapolate to small families based on bias probabilities of large families and the data in small families, including single-member families (isolates, or families represented only by one member in a given database)

because, after all, this is where the data are:



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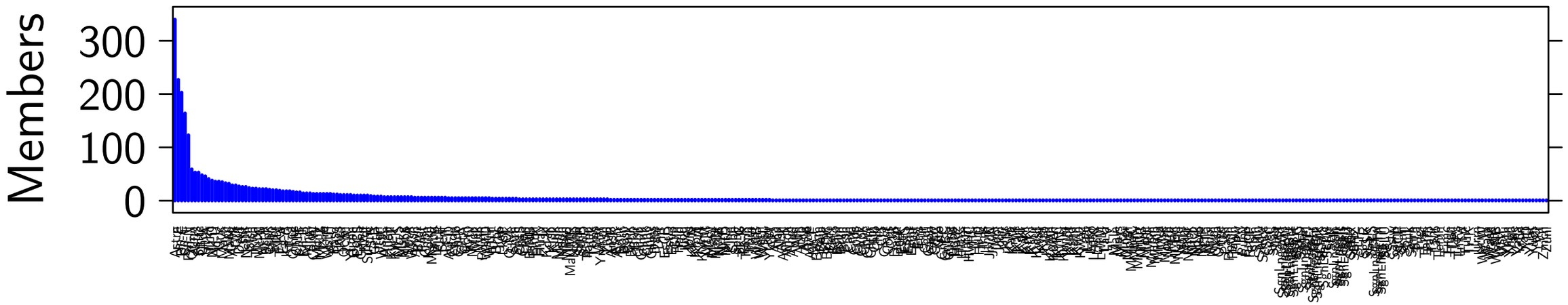

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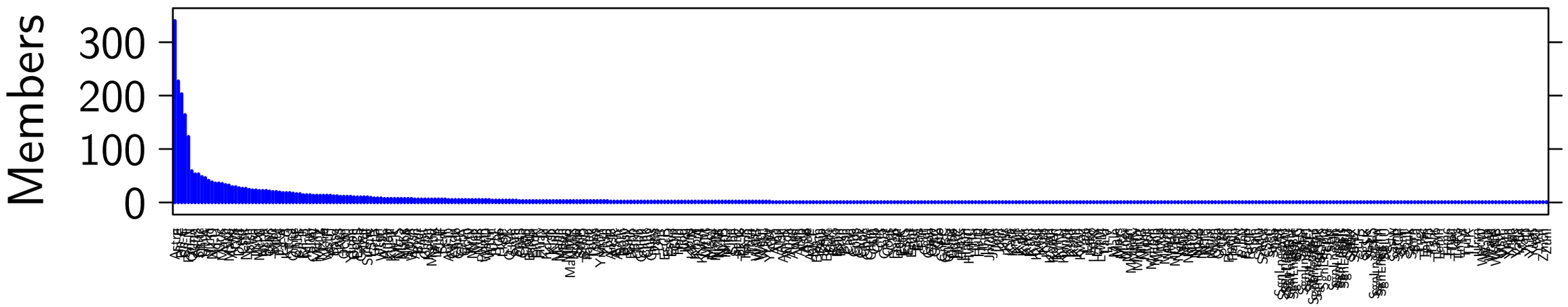

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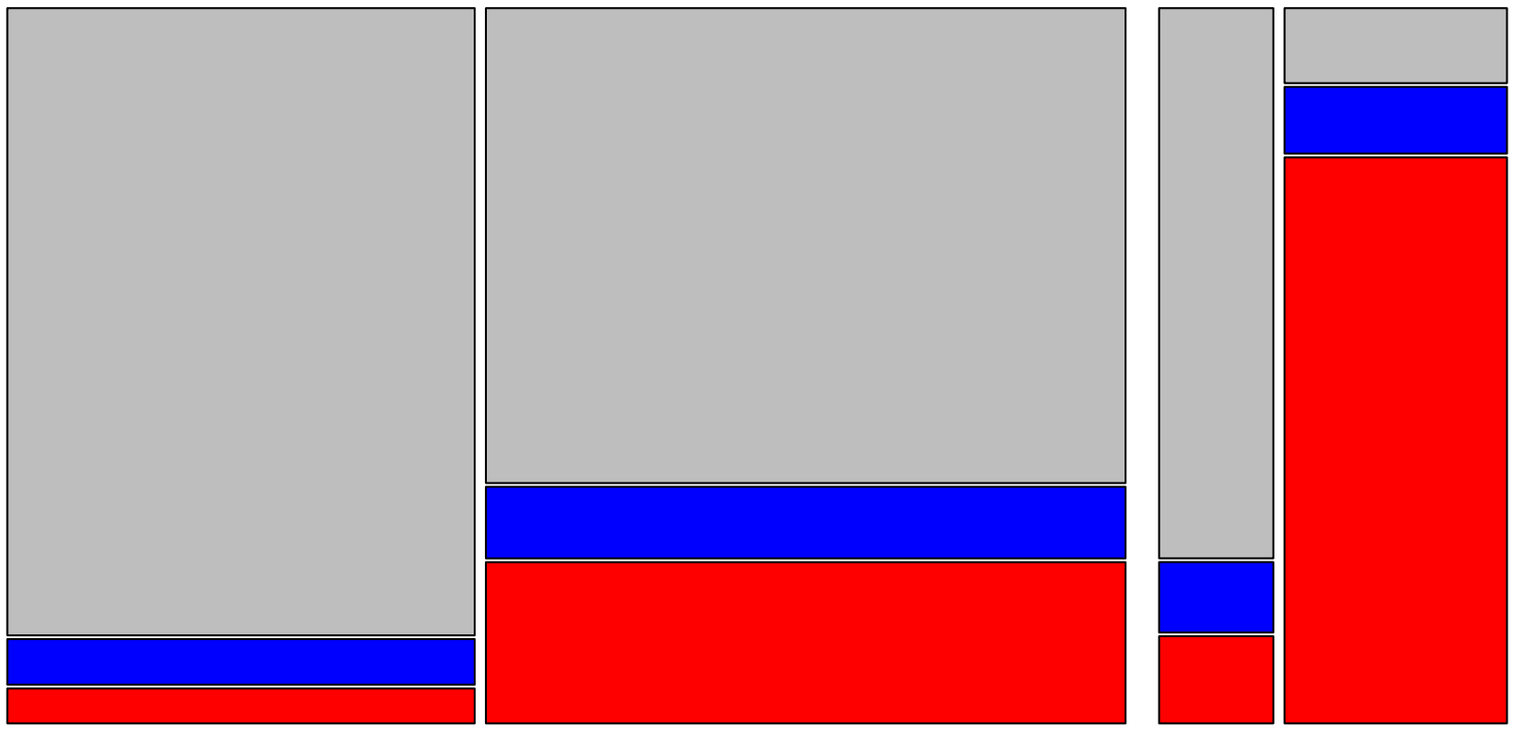
- Software available at `http://www.uzh.ch/spw/software`

Testing the effects



V...] ...V] V...] ...V]

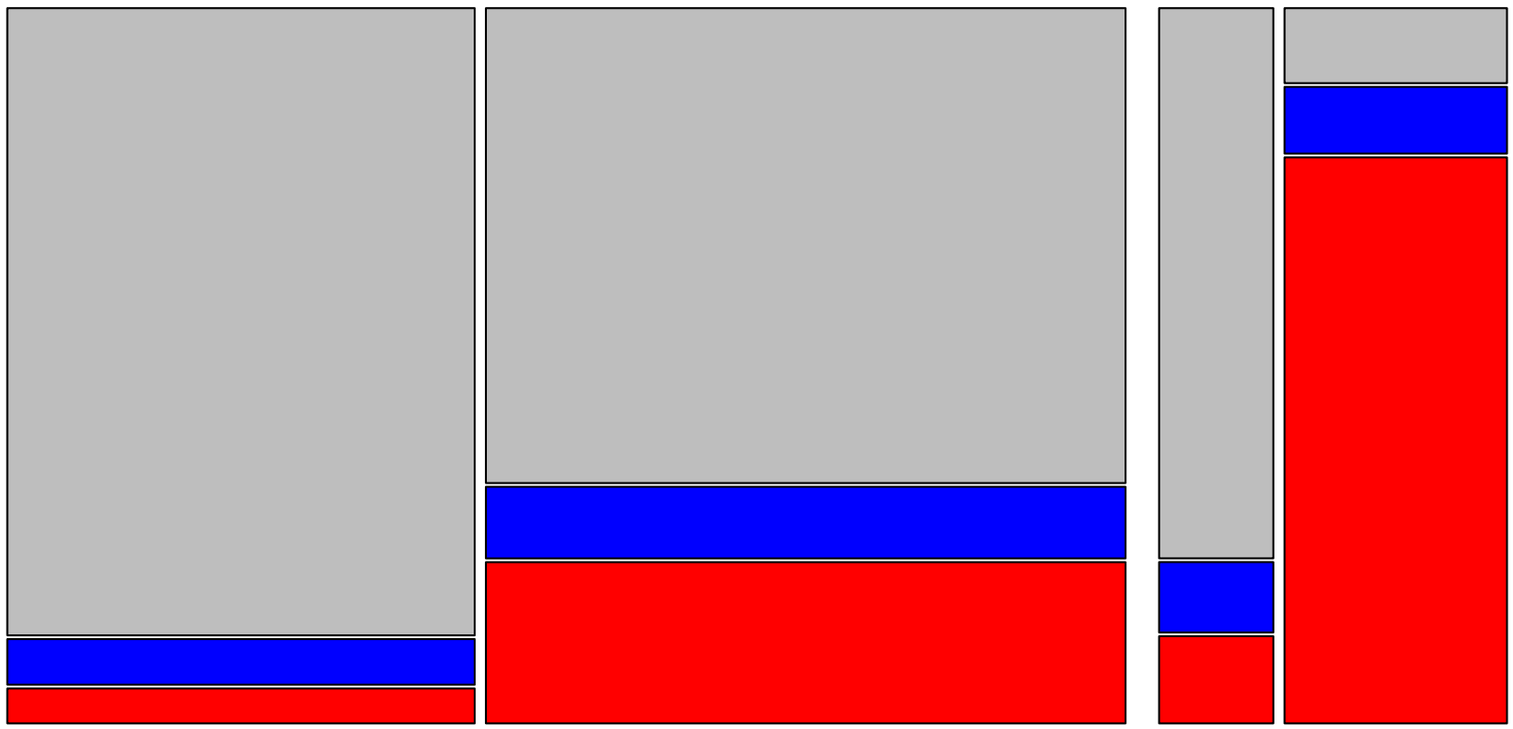
Other Eurasia

Bias for case vs. against case is determined both

- by the contact history of Eurasia: case tends to be better preserved or (re-)created in Eurasia (AREA × BIAS TYPE**,** p=.034)
- by processing principles: case tends to be better preserved or (re-)created in v-final families (ORDER × BIAS TYPE, p=.027)

These effects are independent of each other (three-way interaction is *n.s.*)

Testing the effects



Diversification vs. stability is determined both

- by the contact history of Eurasia, but only in v-final groups (three-way interaction, p=.011): v-final groups diversify less in Eurasia than elsewhere (AREA × DIVERSITY, p<.001), no such effect in non-final groups
- by processing principles: v-final languages diversify less than non-v-final languages (factorial analysis across areas, both p<.001)

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- Distributional Typology fits with the old insight that **nothing in linguistics makes sense expect in the light of history** (cf. Dobzhansky re biology),

  .... as linguists knew all along!