

Referential Effects on Grammatical Relations

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Goals of this talk

1. Survey referential effects: what types are there?
2. Show that referential effects correspond to specific processing patterns in the brain, i.e. they are “psychologically real”.
3. But all these processing effects are closely tied to language-specific marking patterns. There are no universal effects!
4. Contrast this to theories by Silverstein (1976) and Comrie (1981), which predict referential effects to follow universal principles.
5. Show that the Silverstein/Comrie theory has no empirical support.
6. Conclude that referential effects are local and areal, but not universally-driven phenomena.

Two kinds of effects

1. **Local effects:** arguments are treated according to their **own** referential properties
2. **Relational effects:** arguments are treated according to how their referential properties **relate** to those of another argument.

Local effects

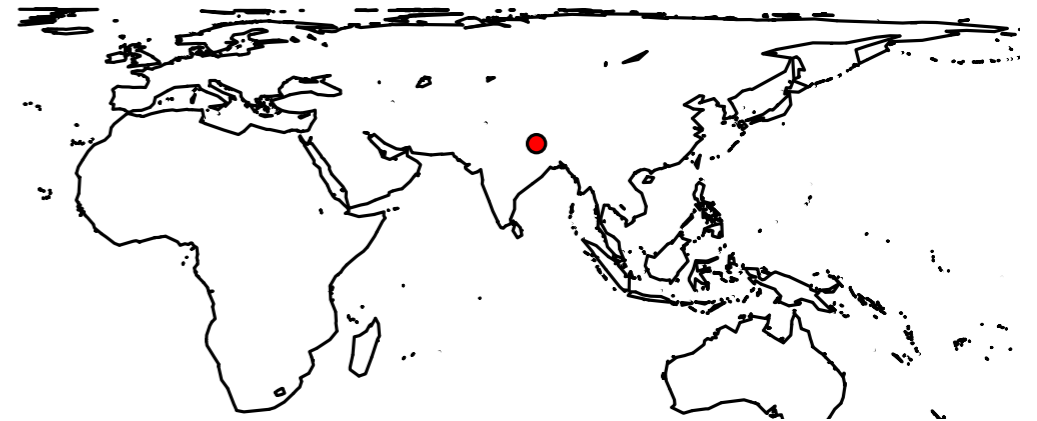
- Differential A and differential O treatment by case

(1) Nepali (Indo-European)

a. *ma sāthi-lāi dekh-chu.*
1s[NOM] friend-**DAT** see-1sPST
'I see the/a friend.'

b. *ma ghar dekh-chu.*
1s[NOM] house**[NOM]** see-1sPST
'I see the/a house'

c. *gāi-le sāthi-lāi dekh-cha.*
cow-**ERG** friend[NOM] see-3sNPST
'The cow sees the/a friend.'

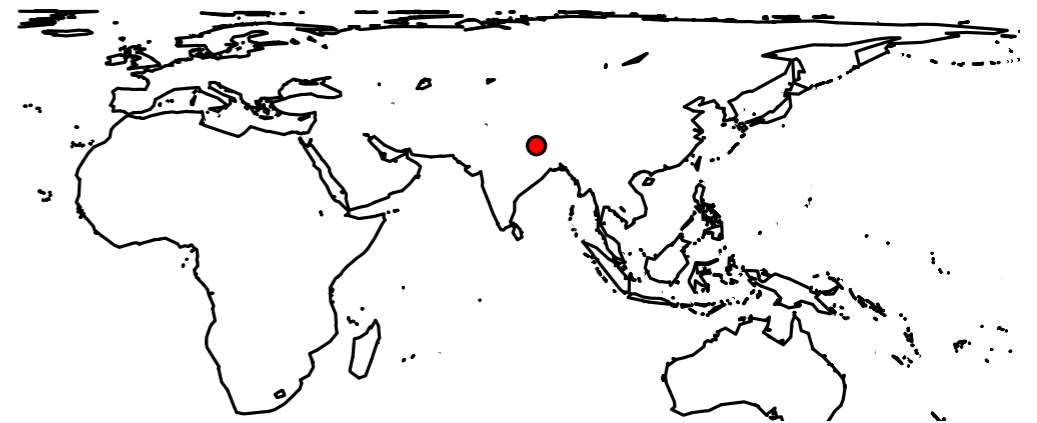


Local effects

- Differential O treatment by agreement

(2) Chintang (Sino-Tibetan)

- a. *huĩsa-ŋa maʔmi* ***copt-o-k-o.***
DEM-ERG person[-NOM] [3sA-]look-3sP-NPST-3sP
'He looks at the people.'
- b. *hungo* *maʔmi* ***cop-no.***
DEM[-NOM] person[-NOM] [3sS-]look-NPST
'He/she looks at people.' (in general)



Local effects

- Differential O treatment by agreement

(3) Chintang ditransitives with NOM-NOM case frame

a. *huĩsa-ŋa Joge citthi hakt-o-ko.*
DEMs-ERG J.[-NOM] letter[-NOM] [3sA-]send-3sP-NPST
'He sends the letter to Joge.'

b. *hungo kam citthi hak-no.*
DEMs[-NOM] 3sPOSS-friend[-NOM] letter[-NOM] [3sS-]send-NPST
'He sends letters to friends.' (in general)

c. * *hungo Joge/u-kam citthi hak-no.*
DEMs=NMLZ[-NOM] J.[-NOM]/3sPOSS-friend[-NOM] letter[-NOM] [3sS-]send-NPST
Intended: 'He sends letters to Joge/his friend.' (in general)

(4) Chintang ditransitives with NOM-LOC case frame

a. *(a-)kam (a-)khim-be paŋs-u-hẽ.*
(1sPOSS-)friend[-NOM] (1sPOSS-)house-LOC send-3sP-1sA.PST
'I sent (a/my) friend to (a/the/my) house.'

b. *(*a-)kam (*a-)khim-be paŋs-e-hẽ.*
(1sPOSS-)friend[-NOM] (1sPOSS-)house-LOC send-PST-1sS.PST
'I sent friends home.' (in general)

Local effects

- Differential A treatment by agreement

(5) Kiowa (Kiowa-Tanoan; Watkins & McKenzie 1984)

a. * *té:-gyà é-thêm.*

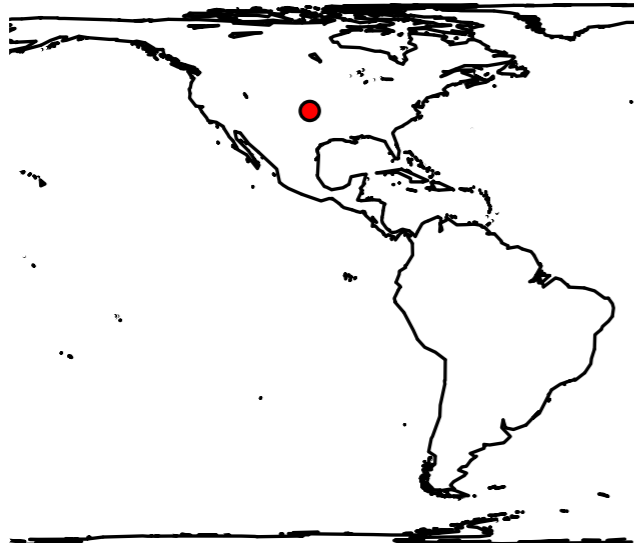
ice-NML **3sA>3cP**-break.PFV

Intended: 'The ice broke it.'

b. *té:-gyà phí: nò jóyhò-dè è-thém-gyá.*

ice-NML [3sS]-heavy and.DS there-DIR **3cS**-break-**DETRANSITIVE**.PFV

'The ice_i is heavy, and therefore it_{*i,j} got broken.'



Relational effects

- Differential marking of A according to the referential relationship between A and P (Givón 1994):

A » P: Active, A = NOM

A « P: Passive, A = oblique

- cf. DeLancey 1981; Bresnan et al. 2001:

	Active	Passive	
1/2 > 3	100%	0%	<i>I saw a car</i> <i>?A car was seen by me</i>
3 > 1/2	97%	3%	<i>A car hit me</i> <i>I was hit by a car</i>

Switchboard Corpus, N=6732, Voice x Scenario: Fisher Exact Test, $p < .0001$ (two-sided)

Relational effects

- Direct/inverse-marking (like active/passive but keeping transitivity constant)

(7) Central Ojibwa (Algonic; Rhodes 1976)

a. *aw aniniw w-gii-waabam-aa-n niw kweew-an.*
DEM[-**PROX**] man 3-PST-see-**DIR**-3OBV DEM.OBV woman-**OBV**
'The **man** saw the woman.'

b. *aw kweew w-gii-waabam-igw-an niw aniniw-an.*
DEM[-**PROX**] woman 3-PST-see-**INV**-3OBV DEM.OBV man-**OBV**
'The man saw the **woman**.'



Relational effects

- Choice is fixed (“semantic”) with inanimates and 1/2 person:

(8) Central Ojibwa (Algic; Rhodes 1976)

- a. *w-gii-miigshkaa-go-on mtigo-on nJohn.*
3-PST-hit.the.mark-**INV**-3OBV tree-**OBV** John[-**PROX**]
- b. * *w-gii-miigshkaw-aa-n nJohn-an mtig.*
3-PST-hit.the.mark-**DIR**-3OBV John-**OBV** tree[-**PROX**]
'The tree hit John.'
- c. *n-waabam-aa-∅.*
1-see-**DIR**-3
'I see him.'
- d. *n-wābam-igw-∅.*
1-see-**INV**-3
'He sees me.'

Relational effects

- Fixed choice can also affect passives:

(6) Picurís (Kiowa-Tanoan; Zaharlick 1982)

a. *ta-mɔn-mia-ʔan sənene-pa.*

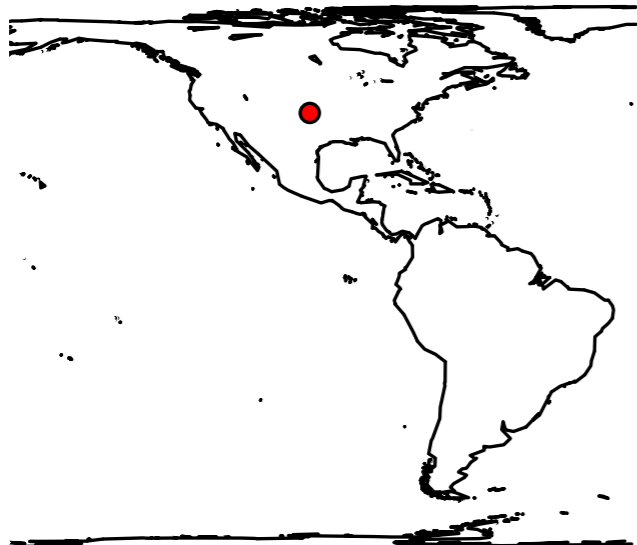
1s-see-**PASS**-PST man-OBL

‘The man saw me.’

b. *mɔn-mia-ʔan (sənene-pa).*

see-**PASS**-PST man-OBL

‘S/he was seen (by the man).’



Relational effects

- Relational effects without marking the relation on the verb:
Case on O in 3>1/2

(9) Yurok (Algic; Robins 1958:21)

a. *keʔl nek ki newoh-paʔ.*

2sNOM 1s[**NOM**] FUT see-2>1s

‘You will see me.’

b. *yoʔ nek-ac ki newoh-peʔn.*

3sNOM 1s-**ACC** FUT see-3s>1s

‘He will see me.’



Relational effects

- Relational effects without marking the relation on the verb:
case on A in 3>1/2

(10) Umatilla Sahaptin (Plateau; Rigsby & Rude 1996)

a. *iwínš i-tu.xnana yáamaš-na.*
man[-**NOM**] 3sSBJ-shot mule.deer-OBJ
'The man shot a mule deer.'

b. *iwínš-nim=nam i-q'ínu-ša.*
man-**ERG**=2s 3sSBJ-see-IPFV
'The man sees you.'



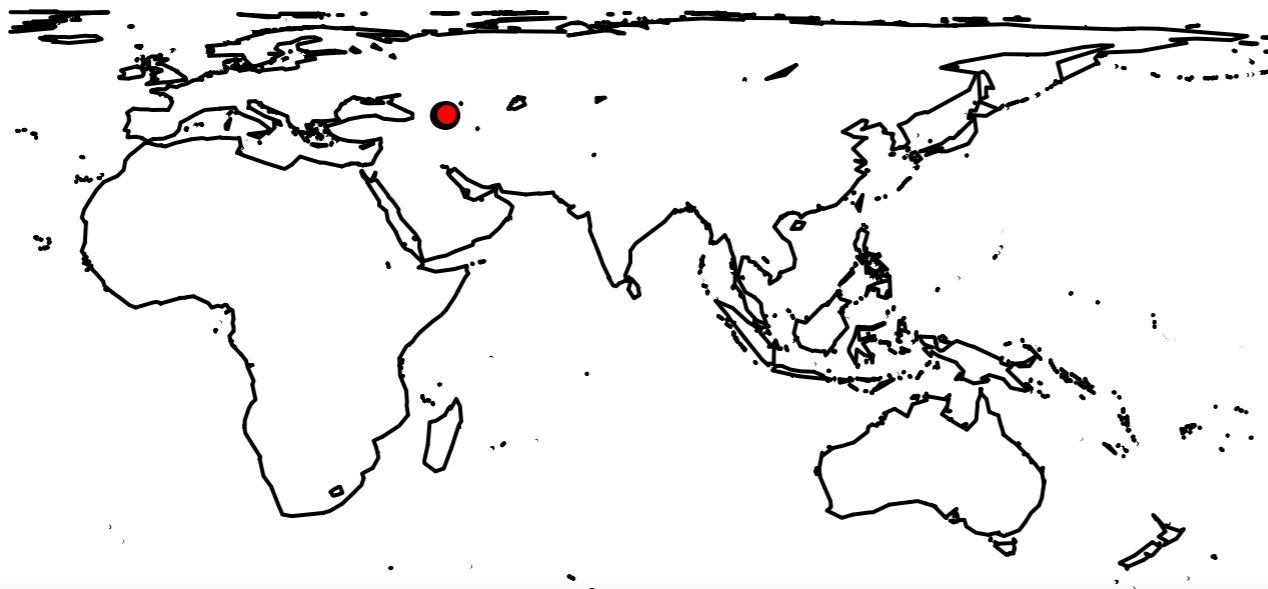
Relational effects

- Relational effects without marking the relation on the verb: agreement (with whatever is higher)

(11) Icarl Dargwa (Nakh-Daghestanian; Sumbatova & Mulatov 2003)

a. *du-l Murad uc-ib=da.*
1s-ERG M.[NOM] catch.m.PFV-PST=**1s**
'I caught Murat.'

b. *Murad du uc-ib=da.*
M.[NOM] 1s[NOM] catch.m.PFV-PST=**1s**
'Murad caught me.'



Relational effects

- Generalization to all arguments and even adjuncts:
Austronesian voice systems

(12) Tagalog (Austronesian; Schachter & Otanes 1972)

a. *b**um**ili **ang**=**lalake** ng=*isda* sa=*tindahan*.*

PFV.**A**.buy **NOM**=man OBL=fish LOC=store

'The **man** bought fish at the/a store.'

b. ***bin**ili ng=*lalake* **ang**=**isda** sa=*tindahan*.*

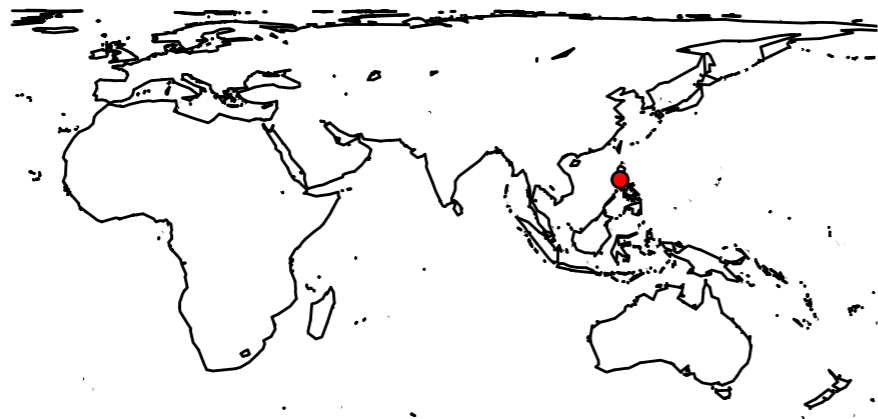
PFV.**P**.buy OBL=man **NOM**=fish LOC=store

'The/a man bought the **fish** at the/a store.'

c. ***binilhan** ng=*lalake* ng=*isda* **ang**=**tindahan***

PFV.**L**.buy OBL=man OBL=fish **NOM**=store

'The/a man bought fish at the **store**.'



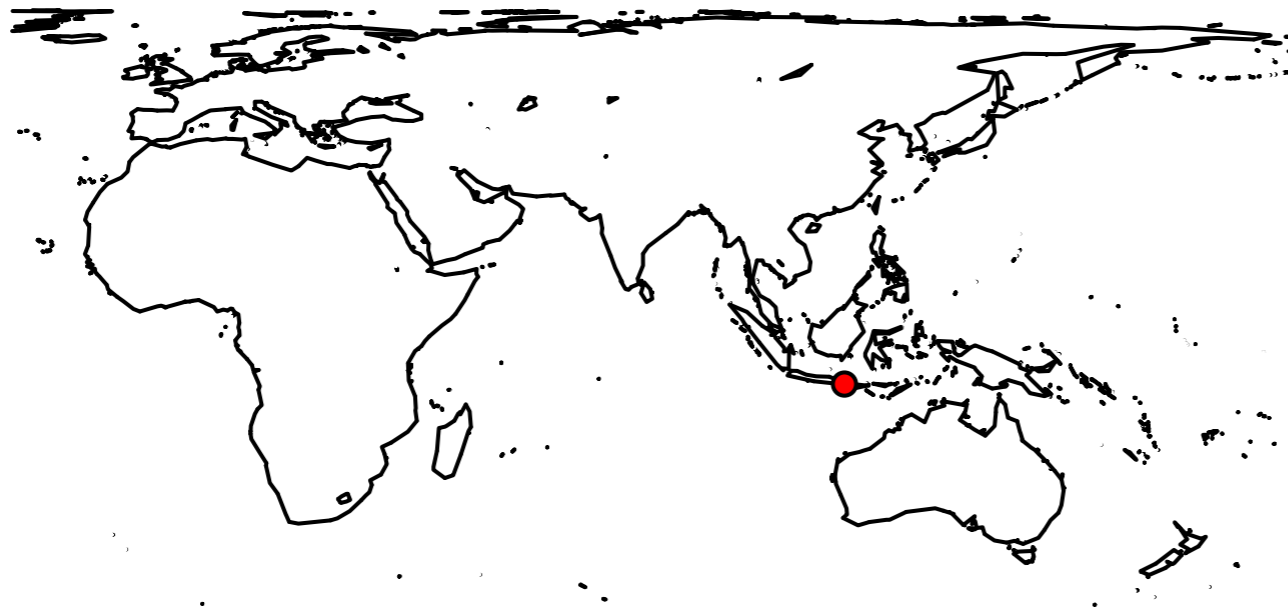
Relational effects

- Austronesian effects without marking the relation on the verb

(13) Meno-Mené Sasak, Puyung variety (Austronesian; Shibatani 2008, 2009)

a. **Alii** *wah=en kirim-an aku surat*
Ali[-**PROX**] PERF=**3** send-APPL I[-**ABS**] letter
'**Ali** sent me a letter.'

b. **Aku** *wah=en kirim-an surat isiq Alii*
I[-**PROX**] PERF=**3** send-APPL letter **ERG** Ali
'Ali sent **me** a letter.' ('I was sent a letter by a Ali.')

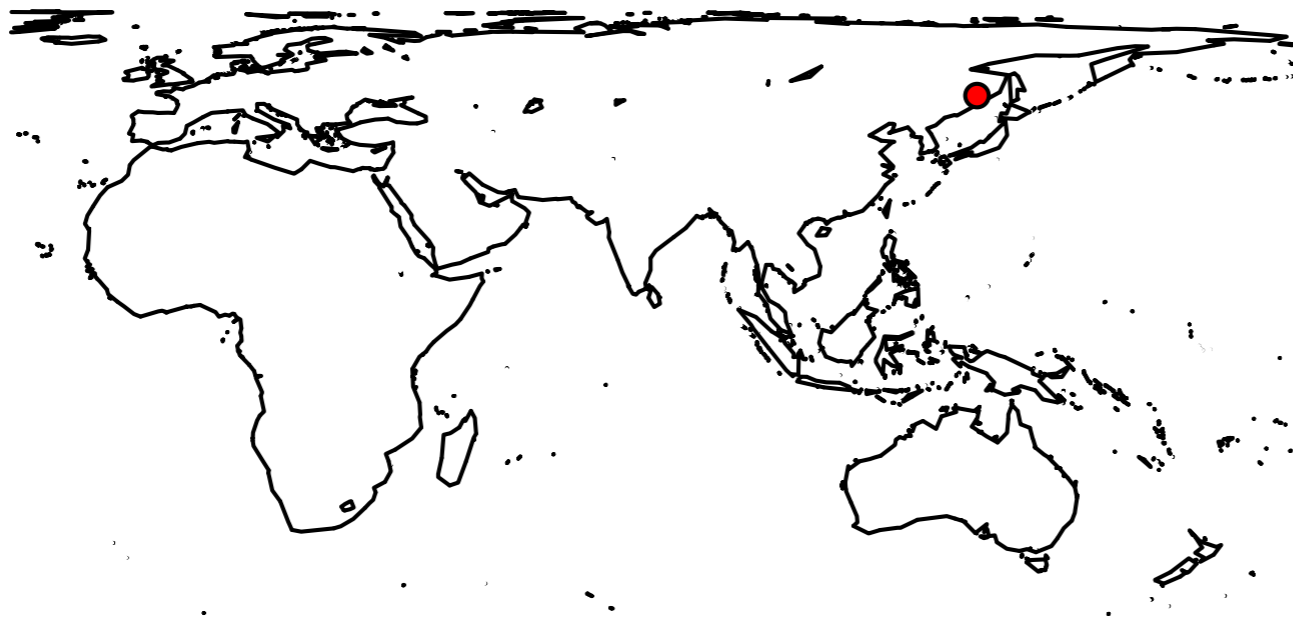


Relational effects

- Between active/passive and direct/inverse: Eurasian languages where A_{passive} is in a core case

(14) Udihe (Tungusic; Nikolaeva & Tolskaya 2001)

- a. *bi sin-du xeleba-wa bu-o:-mi.*
1sNOM 2s-DAT bread-**ACC** give-PST-1s
'I gave (you) some bread.'
- b. *si min-du gida-si-u-zeŋe-i.*
2sNOM 1s-**DAT** spear-V-**PASS**-FUT-2s
'You will be killed by me.'



Interim summary: variables of referential effects

- Scope: local vs. relational
 - Direction: marked vs. not marked
 - Type of direction: general (“>”) vs. specific (e.g. “ $3 > 1/2$ ”)
- Locus: dependent-marking (case, adpositions) vs. head-marking (agreement)
- Role sets: which roles are affected? (S, A, P, Adjuncts?)
- Categories:
 - fixed (“semantic”): person, animacy, number, cardinality etc.
 - flexible (“pragmatic”): topicality, definiteness, focus etc.

Diversity

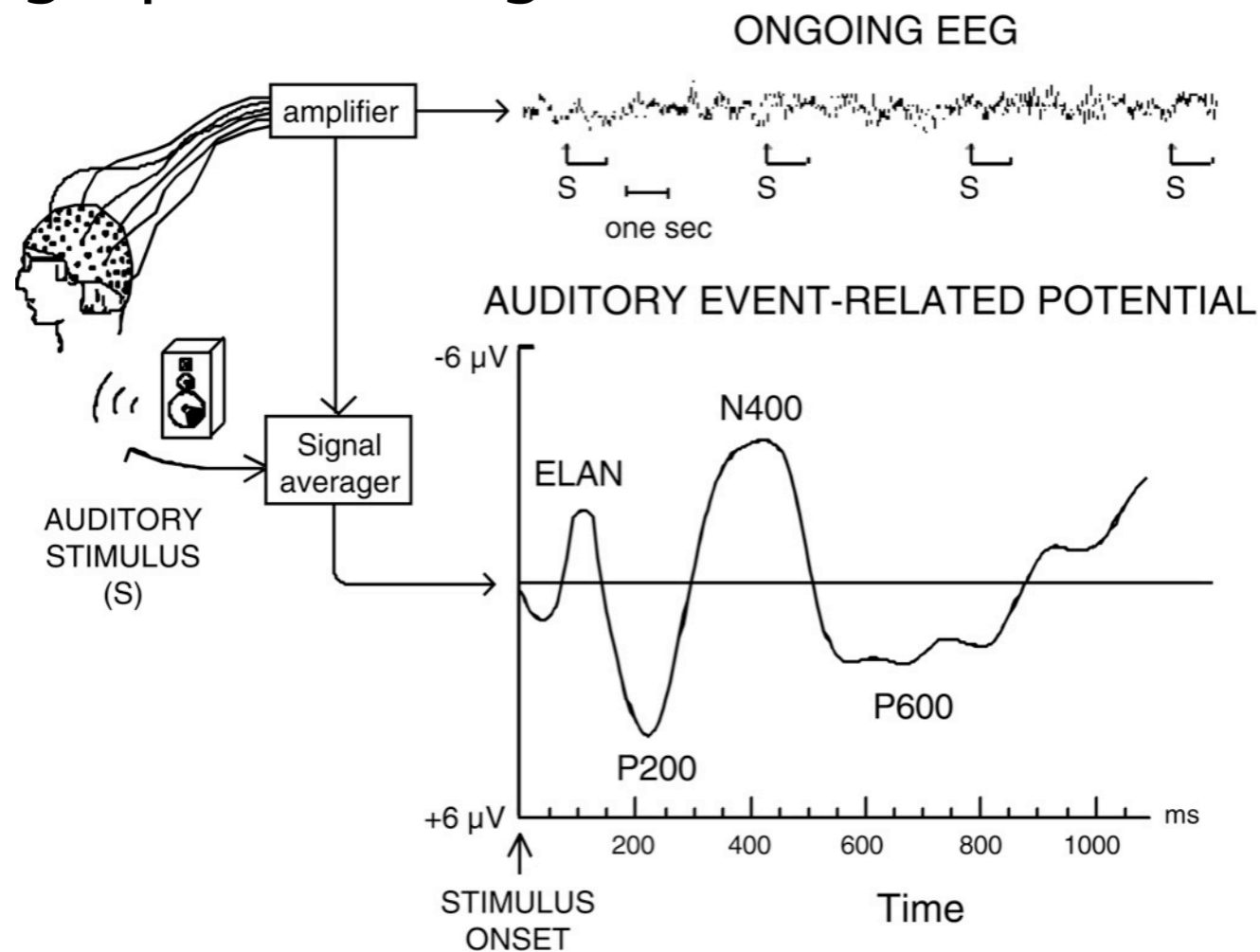
- Given all these variables, it makes no sense to debate
 - what is a “real” passive or a “real” inverse
 - what is “true” differential object marking and what isn’t
- Instead, we need a **Multivariate Typology** (Bickel 2007, in press)

A first attempt at a Multivariate Typology of ref. effects

Alternation:	Scope	Locus	Flexibility	Direction Marking	Direction Type	Alternating Role Sets	Categories
Nepali ERG-NPST	local	dependent	mixed	NA	NA	{A}	focus, animacy
Nepali DAT	local	dependent	mixed	NA	NA	{P}	definiteness, animacy
Chintang P-AGR	local	head	flexible	NA	NA	{P,T,G}	genericity, expectedness (
Kiowa A-AGR	local	head	fixed	NA	NA	{A}	animacy
English PASS	relational	double	flexible	on head	>	{S,A,P}; {A}; {P}	topicality, person
Ojibwe INV	relational	double	mixed	on head	>	{S,A,P}; {S,A,P}	topicality, person
Udihe PASS	relational	double	flexible	on head	>	{S,A,P}; {A,G}; {P}	topicality (?), person
Picurís PASS	relational	double	mixed	on head	>	{S,A,P}; {A}; {P}	topicality, person
Yurok ACC/NOM	relational	dependent	fixed	none	1/2>3	{P}	person
Umatilla ERG/NOM	relational	dependent	fixed	none	1/2>3	{A}	person
Icari AGR	relational	head	fixed	none	1/2>3	{A}; {P}	person
Tagalog	relational	double	flexible	on head	>	{S,A,P,X}; {S,A,P,X}	topicality
MM-Sasak	relational	dependent	flexible	none	>	{S,A,P,X}; {S,A,P,X}	topicality

Taking stock

- in many languages, the definition of grammatical relations (rules of case marking, agreement and other kinds of syntactic behavior) is sensitive to local or relational effects of referential properties
- when this happens, it is “psychologically real“, leaving traces in language processing



Evidence from incremental language comprehension

- Local effects in some languages:

- English (Weckerly & Kutas 1999):

The [poet] vs. The [poem] ... N400

- Hindi (Choudhary 2010):

[Saroj-ne] vs. [tāṅga-ne] ... N400

Saroj-ERG

horse.carriage-ERG



Evidence from incremental language comprehension

- But no such effects in other languages
 - German (Bornkessel & Schlesewsky 2006)

Der [Mann].... vs. Der [Stein]
the.NOM man the.NOM stone
 - Turkish (Demiral et al. 2008)

dün [adam].... vs. dün [taş]....
yesterday man.NOM yesterday stone.NOM
- Suggests that the effects are caused by language-specific associations:
 - English initial NP, Hindi ERG expects [+ANIM]
 - Turkish, German NOM don't

Theories

- The effects may not be universal but depend on language-specific associations of reference (animacy) and markers (i.e. ultimately, it is an issue of the semantics of these markers)
 - Hypothesis: referential effects are not uniform across languages
 - This is the Null Hypothesis ('Anything goes!')

Theories

- Counter-hypothesis (Silverstein 1976, Comrie 1981): referential effects result from a universal “ideal”:
 - **A=ANIMATE P=INANIMATE**
 - Therefore, the odds for special marking (“highlighting”) should
 - increase for P
 - decrease for A
 - on a universal scale $1/2 > 3 > \text{animate} > \text{inanimate}$ (or something like that)

First doubt on the Silverstein/Comrie theory:

While some languages have made passives obligatory for A « P, other languages use **antipassives** for this!

(17) Puma (Sino-Tibetan; Bickel et al. 2007)

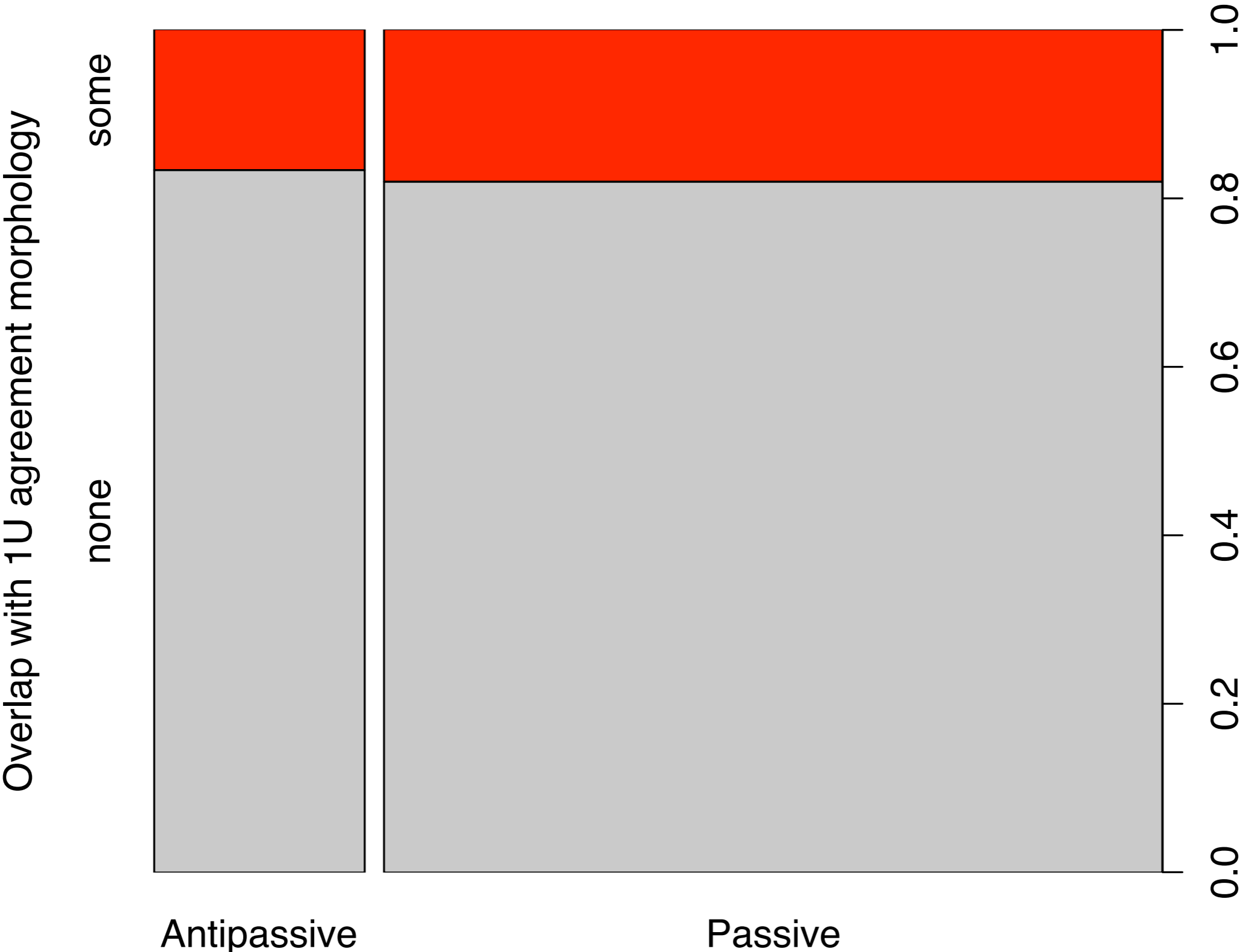
a. *khokku-a ke kha-en-a.*
 3s-ERG 1pi[NOM] **1pP**-[3sA-]hear-PST
 'S/he heard us'

b. *khokku kha-en-a.*
 3s[NOM] **ANTIP**-[3sS-]hear-PST
 'S/he heard someone/people.' or 'S/he listened so as to find out whether or not there are people.' (does not entail existence of a specific undergoer referent)



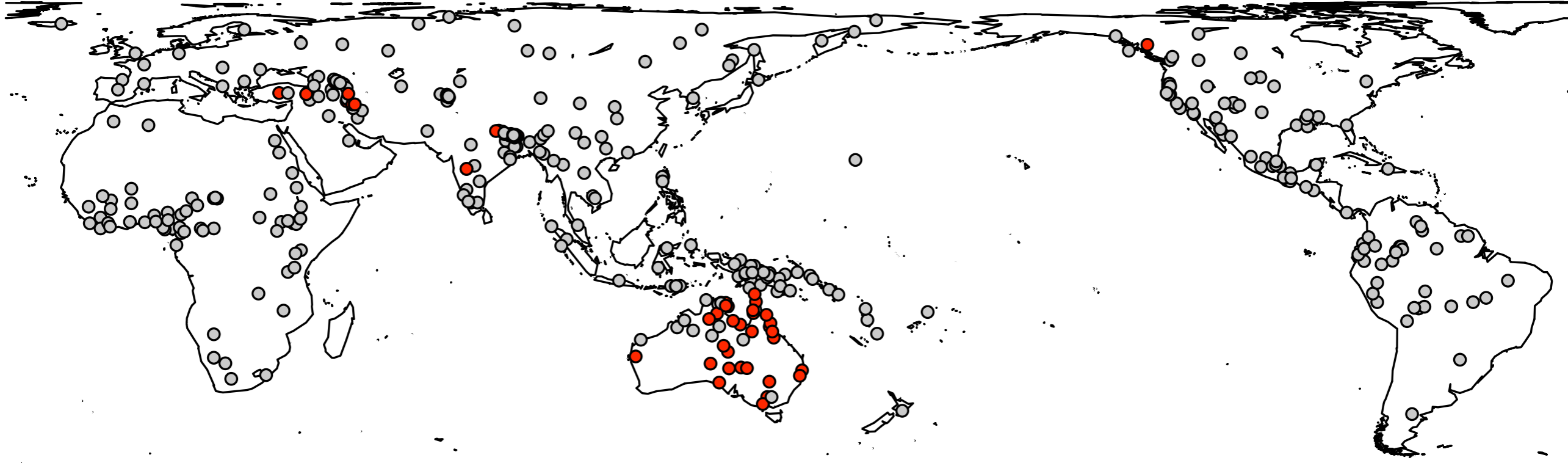
	1sP	1nsiP	1deP	1peP	Antipassive/Intransitive
2sA	<i>tʌenoŋ</i>		<i>khatʌena</i>		<i>khatʌena</i>
2dA	<i>tʌenoŋsʌŋ</i>		<i>khatʌenci</i>		<i>khatʌenci</i>
2pA	<i>tʌenoŋnʌŋ</i>		<i>khatʌennin</i>		<i>khatʌennin</i>
3sA	<i>ɾʌenoŋ</i>	<i>khaena</i>	<i>ɾʌencika</i>	<i>ɾʌenninka</i>	<i>khaena</i>
3dA	<i>ɾʌenoŋsʌŋ</i>	<i>khaɾʌenci</i>	<i>nɪɾʌencika</i>		<i>khaɾʌenci</i>
3pA	<i>nɪɾʌenoŋ</i>	<i>khamʌena</i>	<i>nɪɾʌenninka</i>		<i>khamʌena</i>

A rough survey of 197 languages with passives or antipassives:

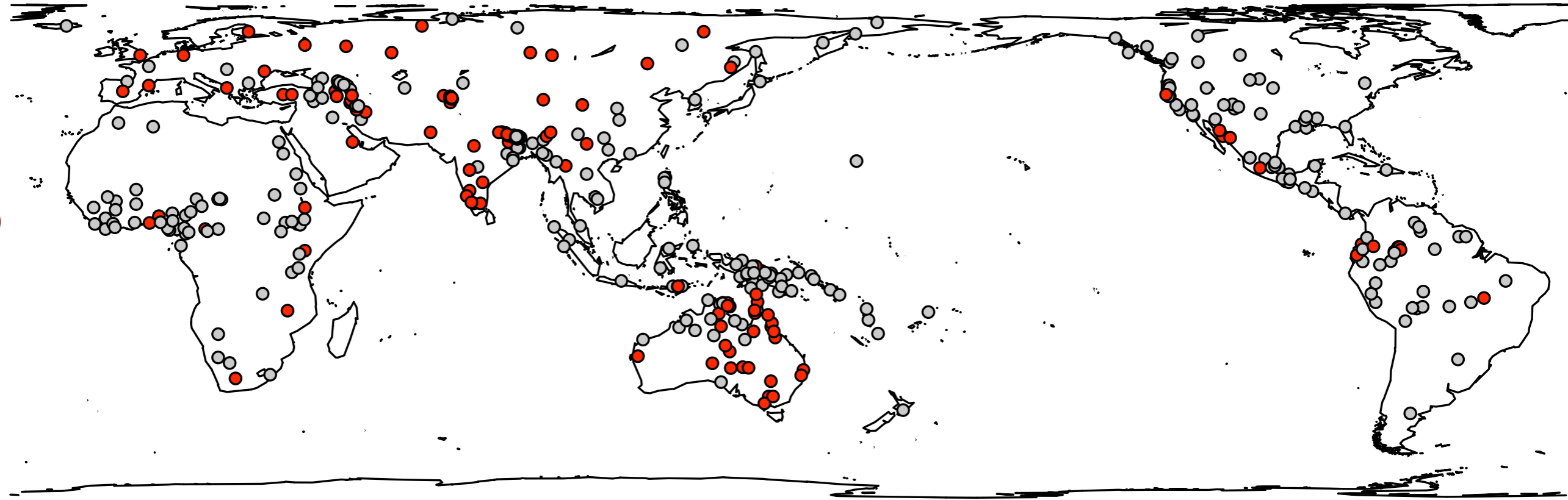


Second doubt on the Silverstein/Comrie theory

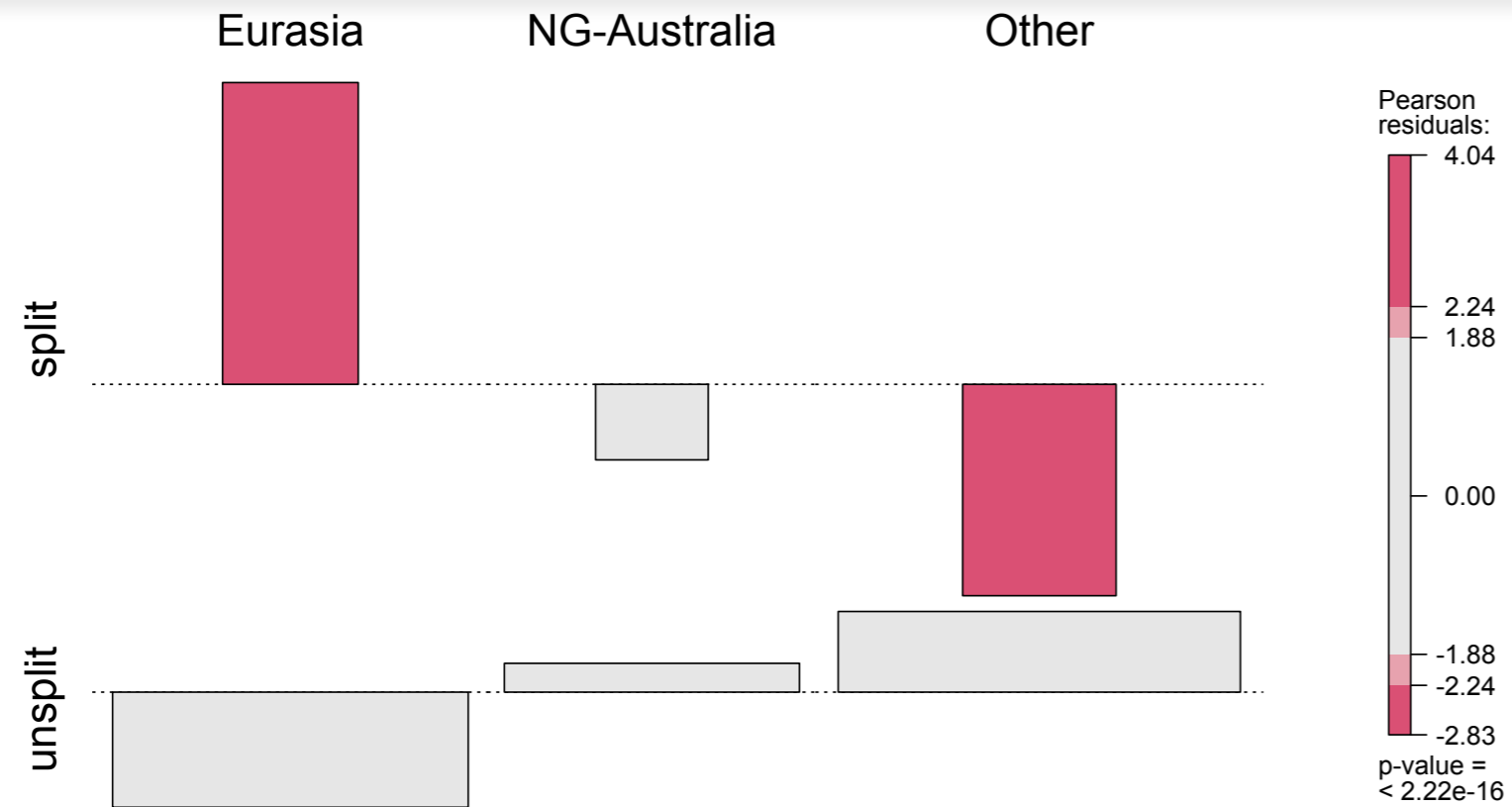
A



O



Areal patterns



A splits
g-sampled $N = 181$
Fisher Exact, $p < .001$



O splits
g-sampled $N = 202$
Fisher Exact, *ns*
Collapsing NG-Australia
and other, $p = .0516$

Referential scales as ordered predictors

- Odds for markedness \sim rank on scale, as a regression model:

a. For A: $\log\left(\frac{\pi(\text{marked})}{\pi(\text{unmarked})}\right) = \alpha - \beta_1 \Xi + \beta_j O \dots + \beta_k \Omega$

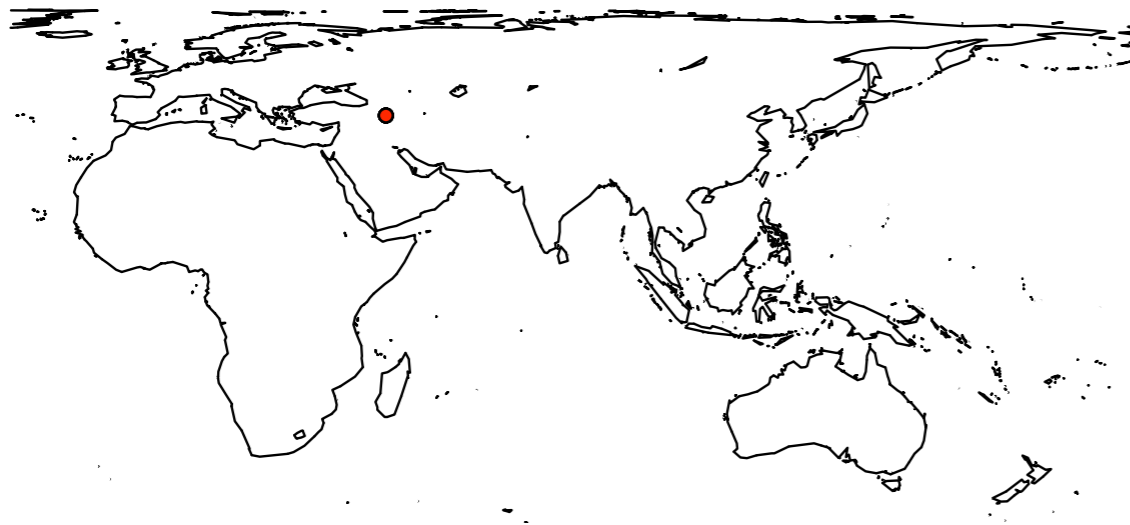
b. For O: $\log\left(\frac{\pi(\text{marked})}{\pi(\text{unmarked})}\right) = \alpha + \beta_1 \Xi + \beta_j O \dots + \beta_k \Omega$

An example: Khufi (Indo-Iranian, Sokolova 1959)

(18) Khufi (Indo-European; Sokolova 1959)

- a. **mo** zœnat.
1sOBL kill.PRS
 ‘Kill me!’
- b. atā **waz** bōwár na kum.
 but **1sDIR** trust NEG do.1sPRS
 ‘But I don’t believe (it).’
- c. **máš**=am Arpamíšk na talæpt.
1pDIR=1pPST Arpamishk NEG look.for.PST
 ‘We did not look for Arpamishk.’
- d. dāð **máš** na wín-an.
 3pMIDDLE.DIR **1pDIR** NEG see.PRS-3p
 ‘They don’t see us.’

PoS	SG > NSG scale rank	O.marked
1sgPro	1	marked
2sgPro	1	unmarked
3sgPro	1	marked
1plPro	2	unmarked
2plPro	2	unmarked
3plPro	2	marked
N-def	NA	marked
N-indef	NA	unmarked



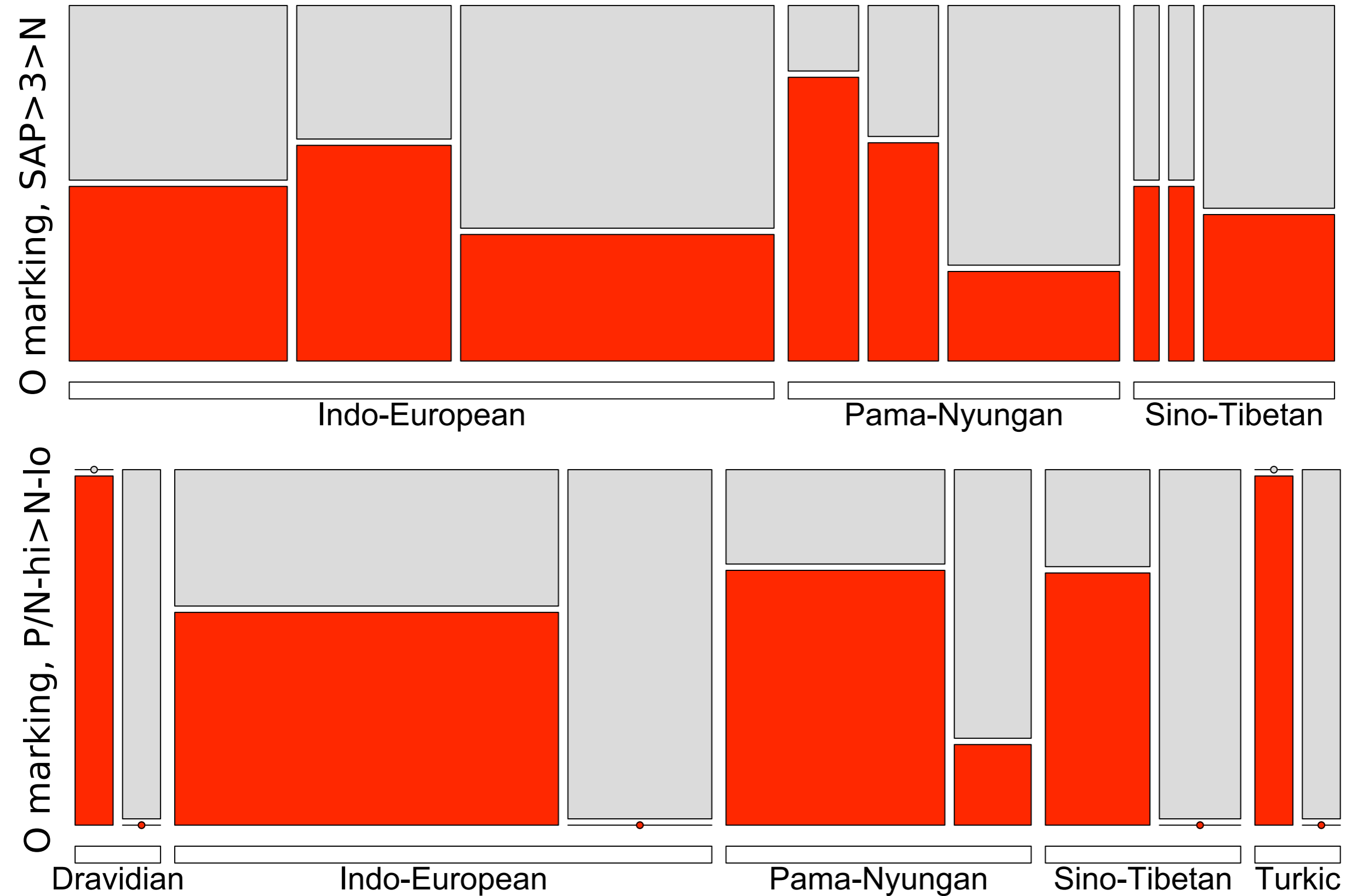
Referential scales as ordered predictors

- Data: split systems from families with at least 5 members
- Control areas: Eurasia vs. the rest of the world (as suggested by the geography plots)

Referential scales as ordered predictors: results

	Scale Ξ	Best fitting model	LR	p
A	1>2>3>N	$\Xi+F+A+\Xi \cdot F$	14.37	0.004
	SAP>3/N	$\Xi+F+A+\Xi \cdot F$	6.06	0.007
	SAP>3>N	$\Xi+F+A+\Xi \cdot F$	12.71	0.005
	SAP>3>N-high>N-low	$\Xi+F+A+\Xi \cdot F$	18.18	0.001
	P>N	$\Xi+F+A+\Xi \cdot F$	12.51	0.003
	P/N-high>N-low	$\Xi+F+A+\Xi \cdot F$	15.91	0.001
	nsg>sg	F	3.15	0.039
	sg>nsg	F	5.51	0.033
	Empirical scale	$\Xi+F+A+\Xi \cdot F$	10.52	0.002
O	1>2>3>N	$\Xi+F+A+\Xi \cdot A$	10.2	0.006
	SAP>3/N	$\Xi+F+A+\Xi \cdot A$	2.90	0.028
	SAP>3>N	$\Xi+F+A+\Xi \cdot A$	6.00	0.005
	SAP>3>N-high>N-low	$\Xi+F+A+\Xi \cdot F$	33.93	0.001
	P>N	$\Xi+F+A+\Xi \cdot A$	2.13	0.037
	P/N-high>N-low	$\Xi+F+A+\Xi \cdot A$	12.43	0.001
	nsg>sg	α		ns
	sg>nsg	α		ns
	Empirical scale	$\Xi+F+A+\Xi \cdot F$	34.76	0.001

Referential scales as ordered predictors: two examples



Discussion: why does the Silverstein/Comrie hypothesis fail?

- Not enough data.
 - We systematically searched for split systems. That's it.
 - If there are only so few instances, how should that ever reflect a universal?
- Substantial differences of splits between families and areas point to local, not universal developments:
 - once in Eurasia
 - once in Australia
 - a few times elsewhere

Conclusions from the test

1. Not enough evidence to reject the null hypothesis.
2. Strong evidence for areality and family signatures suggests that languages have specific splits because they
 - copy them from their neighbors
 - inherit them from their ancestors
 - ▶ Splits are local, not universal phenomena.

General conclusions

- For most languages, the exact mechanisms of referential effects are not well understood.
- More detailed empirical groundwork needed on more languages = key goal of the EuroBABEL RHIM project (www.rhim.uni-koeln.de, coordinated by Katharina Haude, CNRS Paris)