Decomposing hierarchical alignment: participant scenarios as conditions on alignment

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Introduction

- Referential effects on argument marking:
  - plain differential marking (DOM, DSM)
  - two more complex constellations:
    1. **hierarchical** agreement/case marking:
       a competition for a particular slot/marking,
       the argument higher on a language-specific hierarchy is marked
       → frequent assumption: to provide an account for the distribution of agreement or case markers in these languages it is necessary to assume **a referential hierarchy** of a certain form

    2. argument marking depends on the referential properties of its **co-arguments** (e.g. P is marked in one way if A is *x*, P is marked in another way if A is *y*)

Hierarchical agreement: Plains Cree

- **Plains Cree** verb
  Zúñiga (2006: 71) adapted from Dahlstrom (1986: 25f.) and Bickel (1994: 85f.)

-1	0	1	2	3	4	5	6	7	8
prefix	stem	strong direct	theme	obviative	(TAM)	person, number	(TAM)	number, obviation	(TAM)

Hierarchical agreement: Plains Cree

- **Plains Cree** prefix:

(a)

S_2	**S_1**
Ki-pimipahtā-n_5.	*Ni-pimipahtā-n_5.*
2-run-sSAP	**1-**run-sSAP
‘You(sg) run.’	‘I run.’

(b)

A_{2s}→P_{1s}	A_{1s}→**P_{2s}**
Ki-pēhtaw-i_2-n_5.	*Ki-pēhtaw-iti$_2$-n_5.*
2-hear-2→1-sSAP	**2-**hear-1→2-sSAP
‘You(sg) hear me.’	‘I hear you(sg).’

(c)

A_{1s}→P_{3s}	A_{3s}→**P_{1s}**
Ni-wāpaht-$ē_2$-n_5.	*Ni-pakamahw-ikw$_2$-w_5.*
1-see-TR-sSAP	**1-**hit-INV-3
‘I see it.‘	‘He hits me.’

- Prefixal agreement with {$ARG_{highest}$} on **2>1>3***

*more precisely 2s/2p/12>1>3

Co-argument conditioned agreement: Plains Cree

- **Plains Cree** suffix 5 (conjunct order):

(a) *ee–pimipahtaa**–aan***
CONJ-run**-1s**
'I run.'

(b) *ee-waapam-it**–aan***
CONJ-see-1→2**-1s**
'I see you.'

(c) *ee-waapam**-ak**-ik*
CONJ-see**-1sA**-3p
'I see them.'

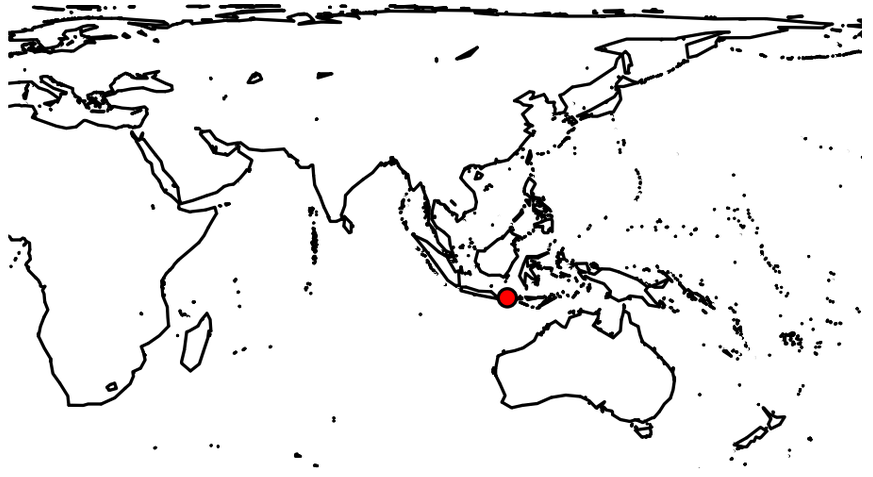
marker	argument	conditioning co-argument
-ak	A_{1s}	**only when →P_3**

Hierarchical case marking: Meno-Mené Sasak

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

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

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

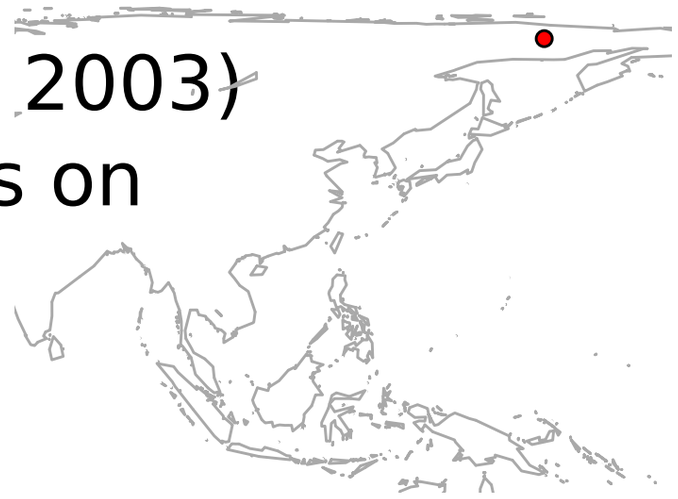


- **NOM** {$ARG_{highest}$} in discourse (topicality)

  topical > non-topical

Co-argument conditioned case marking: Kolyma Yukaghir

- **Kolyma Yukaghir** (isolate, Siberia, Maslova 2003) the case marking of the P argument depends on the nature of the A co-argument



(a) met es'ie tet pulut-kele kudede-m.
my father.NOM your husband**-ACC** kill-TR.3s
'My father has killed your husband.'

(b) met tolow kudede.
I.NOM deer.**NOM** kill.TR.1s
'I killed a deer.'

Co-argument conditioned case marking: Kolyma Yukaghir

- **Kolyma Yukaghir** (isolate, Siberia, Maslova 2003) the case marking of the P argument depends on the nature of the A co-argument

Scenario **3** → 3 = **P_{ACC}**

(a) met es'ie tet pulut-kele kudede-m.
my father.NOM your husband**-ACC** kill-TR.3s
'My father has killed your husband.'

Scenario **1/2** → 3 = **P_{NOM}**

(b) met tolow kudede.
I.NOM deer.**NOM** kill.TR.1s
'I killed a deer.'

Co-argument conditioned case marking: Kolyma Yukaghir

- impossible to account for the distribution of NOM vs. ACC on P in terms of a hierarchy,

- instead, one must make reference both to the referential nature of arguments and their co-arguments (i.e. consider whole **scenarios**):

marker	marked argument	co-argument
NOM	A_1	any
NOM	**P_3**	**A_1**
NOM	**P_3**	**A_2**
ACC	P_1	A_1
ACC	P_1	A_3
ACC	P_2	A_1
ACC	P_2	A_3
ACC	**P_3**	**A_3**

Taking stock

- reference to co-arguments is unavoidable sometimes
- and is relatively straightforward:
  - we need referential features and roles anyway (e.g. for DOM)
  - what's extra is only a notion of "in the context of", but it's impossible to do without it
- BUT: do we also sometimes need reference to referential hierarchies?
- Our claim: **we don't need referential hierarchies** as part of the description of any language,
  i.e. it is not part of any grammatical representation (while playing important roles in cognition and processing)
- We show that **hierarchical systems** can be also represented **as co-argument conditioned** argument marking (not the other way round!)

Do we need “hierarchical” argument marking?

- Plains Cree prefix I hierarchy **2>1>3*** represented as co-argument conditioned argument marking

marker	marked argument	co-argument
ki-	A_2	P_1
ki-	A_2	P_3
ki-	P_2	A_1
ki-	P_2	A_3
ni-	A_1	P_3
ni-	P_1	A_3

*more precisely 2s/2p/12>1>3

Do we need “hierarchical” argument marking?

- Plains Cree prefix I hierarchy **2>1>3*** represented as co-argument conditioned argument marking

marker	marked argument	co-argument
ki-	A_2	P_1
ki-	A_2	P_3
ki-	P_2	A_1
ki-	P_2	A_3
ni-	A_1	P_3
ni-	P_1	A_3

- **Any advantages?** Don’t we lose some important generalizations (2>1>3) and make the picture more complex?
- NO, because….

*more precisely 2s/2p/12>1>3

Advantages of a unified approach

- **avoid expensive analysis** with multiple and conflicting hierarchies
  e.g. in Plains Cree (Zúñiga 2006: 84ff.)

Plains Cree hierarchy I

2/12 > 1 > 3

Plains Cree hierarchy II

1p > 12/2p > 3 animate > sSAP > 3 inanimate

Plains Cree Hierarchy III

SAP > 3 proximate > 3 obviative (>3f.obv)

Advantages of a unified approach

- analysis **without language-specific notions**, i.e. without idiosyncratic hierarchies, such as e.g. in **Aguaruna** (Jivaroan; Peru; Overall 2007, 2009) **1sg > 2sg > 1pl/2pl > 3**

  → maximal comparability across the languages of the world

Advantages of a unified approach

- children need to learn referential properties of arguments and complete argument scenarios,

  BUT there is no evidence that they also learn language-specific hierarchies

Advantages of a unified approach

- **no need for a special type of “hierarchical alignment”** in addition to all other well-established (basic) alignments

  Good because positing “hierarchical alignment” ...

  ✓ results in an inconsistent definition of alignment: comparison of S, A, and P marking vs. relative ranking of A and P (Creissels 2009; Zúñiga 2006, 2007)

  ✓ conceals the fact that individual grammatical subsystems show traces of basic alignment types (ergative, accusative, etc.)

- How do we account for these traces of basic alignment types in case of co-argument conditioned argument marking?

Co-argument conditioned case marking: Kolyma Yukaghir

- **Kolyma Yukaghir** (isolate, Siberia, Maslova 2003)
  the case marking of the P argument depends on
  the nature of the A co-argument

Scenario **3** → 3 = **P_{ACC}**

(a) met es'ie tet pulut-kele kudede-m.
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'My father has killed your husband.'

Scenario **1/2** → 3 = **P_{NOM}**

(b) met tolow kudede.
I.NOM deer.**NOM** kill.TR.1s
'I killed a deer.'

Dealing with co-arguments

- What is the alignment of Kolyma Yukaghir case marking? e.g. for **3rd person**
- P argument marking is conditioned by co-arguments
- A argument also has co-arguments
- S-argument has no co-arguments → simple split is impossible, as it requires identical conditions for all 3 roles (i.e. same co-arguments)

- solution: **exhaustive alignment!**

A_3

S_3

P_3 (<A_1)	**nominative**
P_3 (<A_2)	**nominative**
P_3 (<A_3)	**accusative**

and so on for other persons...

Dealing with co-arguments

A↔P	1<2	1<3	2<1	2<3	3<1	3<2	3<3
1>2	{S, A} vs {P}	{S, A} vs {P}					
1>3	{S, A} vs {P}	{S, A} vs {P}					
2>1			{S, A} vs {P}	{S, A} vs {P}			
2>3			{S, A} vs {P}	{S, A} vs {P}			
3>1					{S, A, P}	{S, A, P}	{S, A} vs {P}
3>2					{S, A, P}	{S, A, P}	{S, A} vs {P}
3>3					{S, A, P}	{S, A, P}	{S, A} vs {P}

- **quantified representation** of the alignment diversity:

1st person: 100% {S, A} vs {P}

2nd person: 100% {S, A} vs {P}

3rd person: **66% {S, A, P}, 33% {S, A} vs {P}**

Interim summary

- No need for referential hierarchies as part of the grammatical representation of any single language (let alone UG, pace Kiparsky 2008)
- No “hierarchical agreement”
- All case marking and agreement rules
  - can be fully represented in terms of arguments and co-arguments
  - can be explored for the extent to which they align argument roles with each other ({S, A}, {S} vs. {A}, etc.)
  - generalizing alignment typology to so-called “hierarchical systems”

Hierarchy effects in a new light

- BUT: really nothing behind “hierarchies”?
- Perhaps not:
  while they are **not part of grammatical representations**,
  - hierarchies play a role in processing (Bornkessel-Schlesewsky & Schlesewsky 2006)
  - and are likely to play a role in language change (motivating the formation of “subjects” etc.)
- Explore hierarchy effects as probabilistic principles underlying the formation of paradigms over time

Method:

1. Represent all markers and their slots in terms of **arguments and co-arguments**
2. Use computational methods for detecting hierarchical orderings of **person types** (1st, 2nd, 3rd) within each marker slot*
3. Mine the data for whether there is statistical support for **recurrent rankings** within a language, for each person pair (1&2, 1&3, 2&3)

*Hierarchical co-dependencies across slots cannot be captured with this algorithm

Case study on Kiranti and Algonquian agreement systems

- consider which referential types can occur in a slot

markers in slot *z*	slot 1	
	argument	co-argument
x-	1	→2
x-	1	←2
x-	1	→3
x-	1	←3
y-	2	→3
y-	2	←3

only 1 and 2 can occur in Slot 1

Case study on Kiranti and Algonquian agreement systems

- consider which referential types can occur in a slot
- ignore statements with other referential types than the competing ones: they provide no evidence for the ordering

marker	slot 1	
	argument	co-argument
x-	1	→2
x-	1	←2
x-	1	→3
x-	1	←3
y-	2	→3
y-	2	←3

no evidence for ranking

Case study on Kiranti and Algonquian agreement systems

- consider which referential types can occur in a slot
- ignore statements with other referential types than the competing ones: they provide no evidence for the ordering
- consider what is marked in the remaining statements

marker	slot 1	
	argument	co-argument
x-	1	→2
x-	1	←2
x-	1	→3
x-	1	←3
y-	2	→3
y-	2	←3

no evidence for ranking

→ **1>2**

Case study on Kiranti and Algonquian agreement systems

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- ignore statements with other referential types than the competing ones, they provide no evidence for the ordering
- consider what is marked in the remaining statements

marker	slot 1	
	argument	co-argument
x-	1	→2
x-	1	←2
x-	1	→3
x-	1	←3
y-	2	→3
y-	2	←3

no evidence for ranking

→ 1>2

- **aggregate** the information for a each pair of referential types over all relevant slots

Case study on Kiranti and Algonquian agreement systems

- Some of the results

language	Slot	1 vs. 2	1 vs. 3	2 vs. 3
Cree (Plains)	-1	2>1	none	none
Ojibwa (Eastern)	-1	2>1	1>3	2>3

- Why is there ‘none’ in Plains Cree scenarios with 3?

Plains Cree

waapam-ee-w
see-DIR-3
'He$_{PROX}$ sees him$_{OBV}$.'

Eastern Ojibwa

w-*waabm-aa-an*
3↔3-see-DIR-OBV
'He$_{PROX}$ sees him$_{OBV}$.'

Plains Cree

waapam-ee-w
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marker	marked argument	co-argument
ki-	A_2	P_1
ki-	A_2	P_3
ki-	P_2	A_1
ki-	P_2	A_3
ni-	A_1	P_3
ni-	P_1	A_3

Eastern Ojibwa

w-*waabm-aa-an*
3↔3-see-DIR-OBV
'He$_{PROX}$ sees him$_{OBV}$.'

marker	marked argument	co-argument
g-	A_2	P_1
g-	A_2	P_3
g-	P_2	A_1
g-	P_2	A_3
n-	A_1	P_3
n-	P_1	A_3
w-	A_3	P_3
w-	P_3	A_3

Dahlstrom (1986: 52), Valentine (2001)

Plains Cree

waapam-ee-w
see-DIR-3
'He$_{PROX}$ sees him$_{OBV}$.'

marker	marked argument	co-argument
ki-	A_2	P_1
ki-	A_2	P_3
ki-	P_2	A_1
ki-	P_2	A_3
ni-	A_1	P_3
ni-	P_1	A_3

Eastern Ojibwa

w-*waabm-aa-an*
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'He$_{PROX}$ sees him$_{OBV}$.'

marker	marked argument	co-argument
g-	A_2	P_1
g-	A_2	P_3
g-	P_2	A_1
g-	P_2	A_3
n-	A_1	P_3
n-	P_1	A_3
w-	A_3	P_3
w-	P_3	A_3

- 3rd is never marked in Plains Cree:
- the fact that it doesn't show up if there is 1st or 2nd co-argument is a side-effect of the fact it never shows up at all!

Dahlstrom (1986: 52), Valentine (2001)

Plains Cree

marker	marked argument	co-argument
ki-	A_2	P_1
ki-	A_2	P_3
ki-	P_2	A_1
ki-	P_2	A_3
ni-	A_1	P_3
ni-	P_1	A_3

The markers competing for the slot:

ni- 1

ki- 2

no (overt) marker for 3 →

no evidence for its ranking wrt to 1 and 2

Eastern Ojibwa

marker	marked argument	co-argument
g-	A_2	P_1
g-	A_2	P_3
g-	P_2	A_1
g-	P_2	A_3
n-	A_1	P_3
n-	P_1	A_3
w-	A_3	P_3
w-	P_3	A_3

n- 1

g- 2

***w-* 3↔3**

Case study on Kiranti and Algonquian agreement systems

- Some of the results

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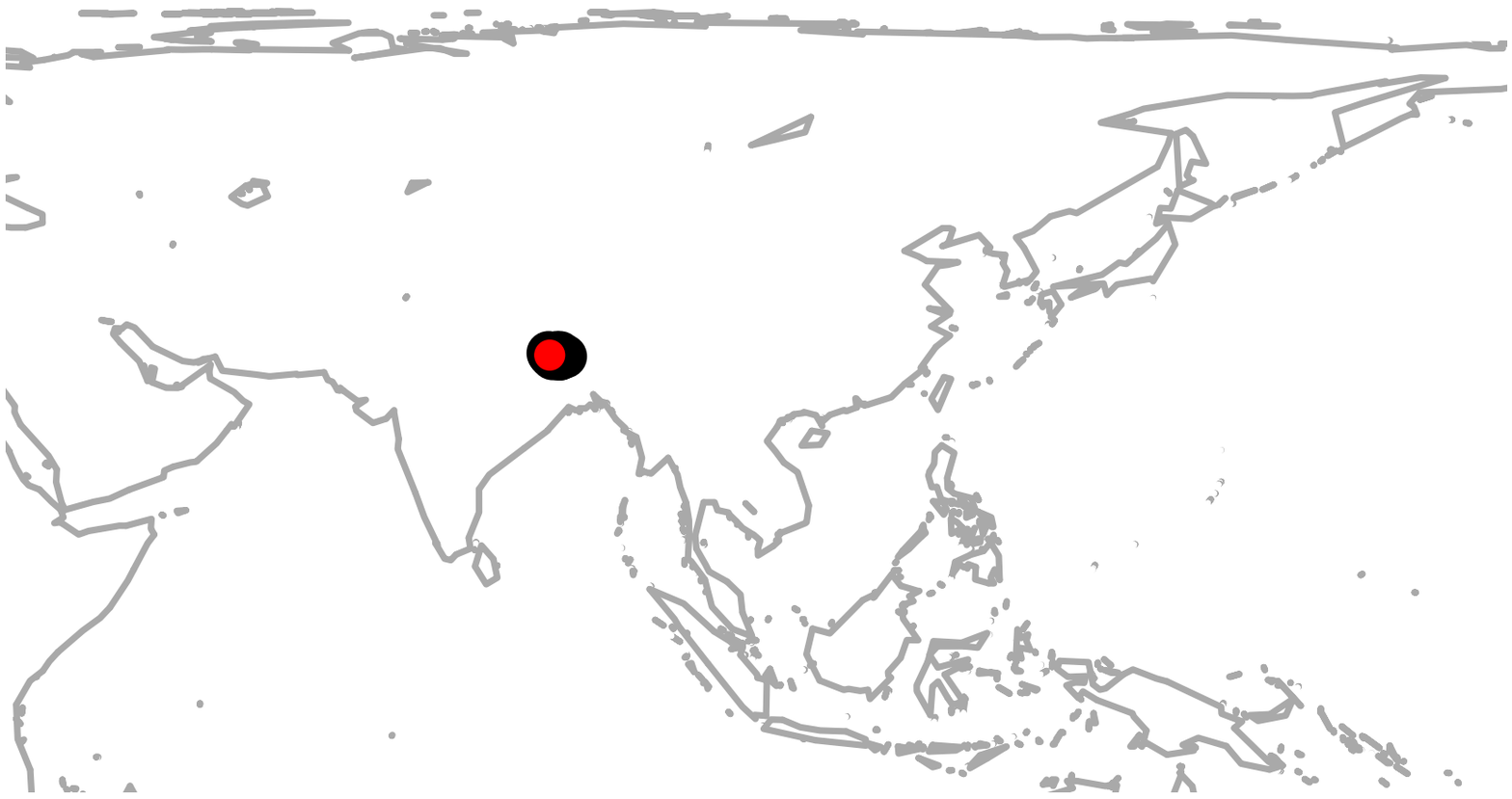
Ojibwa (Eastern)	-1	2>1	1>3	2>3

- Why is there ‘none’ in Plains Cree scenarios with 3?

Results: Kiranti

language	TAM
Bahing	NPST/PST
Bantawa	NPST/PST
Belhare	NPST/PST
Camling	NPST/PST
Chintang	NPST/PST
Dumi	PST
Jero	NPST/PST
Kõic	NPST
	PST
Koyi	NPST/PST
Kulung	NPST
	PST
Limbu	NPST/PST
Wambule	NPST/PST
Yakkha	NPST/PST
Yamphu	NPST/PST



Results: Kiranti

language	TAM	1 vs. 2
Bahing	NPST/PST	1>2
Bantawa	NPST/PST	none
Belhare	NPST/PST	none
Camling	NPST/PST	1>2
Chintang	NPST/PST	none
Dumi	PST	diverse
Jero	NPST/PST	diverse
Kõic	NPST	none
	PST	none
Koyi	NPST/PST	1>2
Kulung	NPST	none
	PST	none
Limbu	NPST/PST	2>1
Wambule	NPST/PST	diverse
Yakkha	NPST/PST	none
Yamphu	NPST/PST	2>1

Results: Kiranti

language	TAM	1 vs. 2	1 vs. 3
Bahing	NPST/PST	1>2	1>3
Bantawa	NPST/PST	none	1>3
Belhare	NPST/PST	none	3>1
Camling	NPST/PST	1>2	1>3
Chintang	NPST/PST	none	1>3
Dumi	PST	diverse	none
Jero	NPST/PST	diverse	3>1
Kõic	NPST	none	none
	PST	none	1>3
Koyi	NPST/PST	1>2	1>3
Kulung	NPST	none	1>3
	PST	none	1>3
Limbu	NPST/PST	2>1	1>3
Wambule	NPST/PST	diverse	1>3
Yakkha	NPST/PST	none	1>3
Yamphu	NPST/PST	2>1	3>1

Results: Kiranti

language	TAM	1 vs. 2	1 vs. 3	2 vs. 3
Bahing	NPST/PST	1>2	1>3	2>3
Bantawa	NPST/PST	none	1>3	2>3
Belhare	NPST/PST	none	3>1	none
Camling	NPST/PST	1>2	1>3	2>3
Chintang	NPST/PST	none	1>3	2>3
Dumi	PST	diverse	none	2>3
Jero	NPST/PST	diverse	3>1	2>3
Kõic	NPST	none	none	none
	PST	none	1>3	none
Koyi	NPST/PST	1>2	1>3	diverse
Kulung	NPST	none	1>3	3>2
	PST	none	1>3	2>3
Limbu	NPST/PST	2>1	1>3	2>3
Wambule	NPST/PST	diverse	1>3	2>3
Yakkha	NPST/PST	none	1>3	none
Yamphu	NPST/PST	2>1	3>1	diverse

Results: Algonquian

language	1 vs. 2
Arapaho	2>1
Atikamekw	diverse
Blackfoot	2>1
Cheyenne	2>1
Cree (Plains)	diverse
Micmac	diverse
Munsee	2>1
Ojibwa (Eastern)	2>1
Passamquoddy	2>1

Results: Algonquian

language	1 vs. 2	1 vs. 3
Arapaho	2>1	diverse
Atikamekw	diverse	diverse
Blackfoot	2>1	1>3
Cheyenne	2>1	diverse
Cree (Plains)	diverse	diverse
Micmac	diverse	diverse
Munsee	2>1	diverse
Ojibwa (Eastern)	2>1	1>3
Passamquoddy	2>1	diverse

Results: Algonquian

language	1 vs. 2	1 vs. 3	2 vs. 3
Arapaho	2>1	diverse	2>3
Atikamekw	diverse	diverse	3>2
Blackfoot	2>1	1>3	diverse
Cheyenne	2>1	diverse	diverse
Cree (Plains)	diverse	diverse	diverse
Micmac	diverse	diverse	2>3
Munsee	2>1	diverse	diverse
Ojibwa (Eastern)	2>1	1>3	2>3
Passamquoddy	2>1	diverse	2>3

Kiranti and Algonquian agreement: Conclusions

- Appreciable trend towards 1>3 and 2>3 in Kiranti
- Some trend towards 2>1 in Algonquian,
  but much diversity beyond
- Many languages have inconsistent, conflicting hierarchies
- Perhaps hierarchies do not even play a probabilistic universal role in the development of agreement systems (cf. Bickel 2008)
- Perhaps more evidence in case systems,
  but Witzlack-Makarevich et al. (2009) find no evidence either (too few areally and genealogically independent cases of DOM and DSM!)

General conclusions

- ✓ any hierarchical systems can be analyzed as plain alignment systems,
- ✓ alignment is maximally general, no need for special “alignment” types, such as hierarchical
- ✓ no language-specific hierarchies,
- ✓ in principle, we could still detect universal hierarchy trends (“as functional principles”), without accepting them a priori (pace Kiparsky 2008)
- ✓ BUT we didn’t find them!
- ✓ so perhaps it wasn’t a good idea...

Thank you!