

Reconstructing Sources for Hierarchical Alignment in Main Clause Grammar  
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**1 Introduction**

**1.1 Definitions**

Hierarchical (Inverse) Alignment

- Core Direct/Inverse: 1/2 (SAP) > 3
- Local: 1 > 2 or 2 > 1
- Non-Local<sub>1</sub>: 3Human > 3Animate > 3Inanimate
- Non-Local<sub>2</sub>: Pronoun > Proper N > Definite N > Indefinite N
- Number: Can cut across all these categories

Inverse Voice

- Non-Local<sub>3</sub>: 3 Proximate (more topical/salient) > 3 Obviative (less topical/salient)

**1.2 The Cariban and Tupí-Guaraní Families**

Cariban: Northern South America (Derbyshire 1999, Gildea 1998, In Press; Proto-Cariban forms from Meira, Gildea & Hoff in press).

Tupí-Guaraní: Central South America (Jensen 1998; Schleicher 1998; Gildea 2003; Proto-Tupí-Guaraní forms from Jensen 1998)

**2 Cariban Hierarchical Alignment**

In the Cariban family, the most characteristic main clause type is characterized by the absence of case-marking, hierarchical verb agreement, and generally consistent OV order. Also, SAP > 3, there is no non-local (3>3) hierarchy, and local hierarchies vary (mostly 1=2, for some, 1>2 and for others, 2>1).

	1O	2O	1 + 2O	3O	S <sub>A</sub>
1A		<i>mən-</i>		<i>w-</i>	<i>w-</i>
2A	<i>kə-</i>			<i>m-</i>	<i>m-</i>
1 + 2A				<i>k-</i>	<i>k-</i>
3A	<i>Ø(j)-</i>	<i>ə(d)-</i>	<i>k(i)-</i>	<i>n-/kin-</i> <i>Ø-</i>	<i>n-</i>
S <sub>o</sub>	<i>Ø(j)-</i>	<i>ə(d)-</i>	<i>k(i)-</i>	<i>*n-</i>	

Table 1. The De'kwana person-marking prefixes (Hall 1988)

	1O	2O	1 + 2O	3O	S <sub>A</sub>
1A		<i>kuw-/k(u)-</i>		<i>w-</i>	<i>w-</i>
2A	<i>k(u)-</i>			<i>m-</i>	<i>m-</i>
1 + 2A				<i>kuh-, kut-, k(u)-</i>	<i>(ku)h-, k(ut)-</i>
3A	<i>i-/j-</i>	<i>ə(w)-</i>	<i>k(u)-</i>	<i>n-/mən-/kun-</i> <i>Ø-</i>	<i>n-/mən-/kun-</i>
S <sub>o</sub>	<i>i-/j-</i>	<i>ə(w)-</i>	<i>(ku)h-/k(ut)-</i>	<i>n-/mən-/kun-</i>	

Table 2. The Wayana person-marking prefixes (Tavares 2005)

Tables 1 & 2 are useful for describing distribution of forms, but contain redundancy and empty spaces (all reflexive forms). Tables 3 & 4 avoid redundancy and empty spaces, but require that distribution be characterized externally. The efficiencies are created as follows:

- In both languages, the 3O and S<sub>A</sub> columns combine into a single DIRECT/S<sub>A</sub> column; that is, when SAP A acts on 3O, the same forms are used as when an SAP S<sub>A</sub> is the sole argument. Note that the 1+2 forms do not collapse perfectly in Wayana.
- In both languages, the 3A and S<sub>O</sub> rows combine into a single INVERSE/S<sub>O</sub> column; i.e., when 3A acts on SAP O, the same forms are used as when an SAP S<sub>O</sub> is the sole argument.
- In both languages, the 1A2O and 2A1O forms are distinct, but neither privileges either first or second person; these are separated into a LOCAL column of Table 3.
- In both languages, the three third person forms are the same, and so they collapse into a single NONLOCAL column in Table 3.

	DIRECT/S <sub>A</sub>	INVERSE/S <sub>O</sub>	LOCAL	NONLOCAL
1	w-	∅(j)-	1A2O	
2	m-	ə(d)-	kə-	
1+2	k-	k(i)-	2A1O	
3			mən-	n-/kin-

Table 3. Re-organizing the De'kwana person-markers

	DIRECT/S <sub>A</sub>	INVERSE/S <sub>O</sub>	LOCAL	NONLOCAL
1	w-	i-/j-	1A2O	
2	m-	ə(w)-	kuw-/k(u)-	
1+2	kuh-, kut-, k(u)-	k(u)- 'S <sub>O</sub> ' (ku)h-/k(ut)- 'INVERSE'	2A1O	
3			k(u)-	n-/mən-kun-

Table 4. Re-organizing the Wayana person-markers

The distribution of affixes can be captured with reference to the hierarchy SAP > 3:

- When SAP interacts with third person, choose the SAP prefix from the appropriate column (DIRECT or INVERSE).
- When 1 and 2 interact, choose the appropriate LOCAL prefix.
- When only third persons are involved (3S<sub>A</sub>, 3S<sub>O</sub>, 3A3O), choose the NONLOCAL prefix.

### Additional Local Patterns

	1A2O	2A1O	
Ranking			
Hixkaryana	k(i)-	DIRECT (2A)	2 > 1
Panare	k(i)-/INVERSE (2O)	DIRECT (2A)	2 > 1
Waimiri-Atr.	k(i)-	k(i)-/DIRECT (2A)/INVERSE (1O)	1 = 2
Yukpa	INVERSE (2O)	Inverse (1O)	1 = 2

### The Problem

How is such a system created, where the verb bears a single prefix, which must always refer to the SAP participant in preference to the third person, and sometimes to the second person in preference to the first person?

### The Answer

- SAP > 3 comes from two different sources: originally both arguments were marked on the verb, but 3A was a  $\emptyset$ - prefix and *i*- ‘3O’ has eroded to nothing in most modern languages, leaving only the SAP prefix on the verb.
- The LOCAL prefixes were both originally simply the 1+2S<sub>0</sub> form; later extensions of other forms into one or the other slot included some where second person direct filled the 2A1O slot, adding the component of 2 > 1 to the hierarchy in those languages.

### 3. Reconstructing the Pre-Proto-Cariban prefixes

	1O	2O	1 + 2O	3O	S <sub>A</sub>
1A		*k(i)-		*t(i)-	*w(i)-
2A	*k(i)-			*m(i)-	*m(i)-
1 + 2A				*kit(i)-	*kit(i)-
3A	*u(j)-	*ô(j)-	*k(i)-	*n(i)-/*i- *Ø(j)-	*n(i)-/*Ø-
S <sub>0</sub>	*u(j)-	*ô(j)-	*k(i)-	*n(i)-/*i-	

Table 5. Proto-Cariban verbal person-marking (traditional presentation)

	DIRECT/S <sub>A</sub>	INVERSE/S <sub>0</sub>	LOCAL	Nonlocal
1	*t-	*w-		3O
2	*m-	*ô = (j)-		*i-
1 + 2	*kit-	*k-	*k-	
3				*n-

Table 6. Re-organizing the Proto-Cariban verbal person-markers

Note some new issues that arise in the comparative reconstruction, which unifies data from 19 Cariban languages (cf. Gildea 1998; Meira, Gildea, and Hoff in press; Gildea in press):

- DIRECT and LOCAL prefixes have an allomorph with (i), which is phonologically predictable and thus dispensed with in Table 6.
- Instead of the predictable (i), 3O and 3S<sub>0</sub> forms have an allomorph in (i), which is one of the pieces of evidence (alongside elision of preceding stops and fronting of following \*ô) that Meira, Gildea and Hoff in press use to reconstruct a pre-Proto-Cariban prefix \*i- ‘3O’ between the DIRECT prefixes and the root. This is added to the Inverse/
- The INVERSE forms for first and second person actually reconstruct as cliticized preverbal personal pronouns; instead of a personal prefix, the ‘Relational Prefix’ \*j- occurs whenever a dependent noun precedes a head ([O j-V]<sub>VP</sub>, [N j-P]<sub>PP</sub>, [N j-N]). In the context of the VP, this pattern is restricted to clauses with 3A (Gildea 1998, ch. 5).
- Some conjugations in some languages (and all in Ikpéng) present *i*- 3S<sub>0</sub> and  $\emptyset$ - ‘3S<sub>A</sub>’ without the element *n*- ‘3’. This will be significant later.

#### 4. Building the hierarchy

##### 4.1 The oldest layer: A-O-V

- The DIRECT prefixes actually reconstruct to a sequence, A-O-V:

1A3O	*t-i-
2A3O	*m-i-
1+2A3O	*kit-i-

The *\*i-* is lost preceding vowels already by Proto-Carib, leaving behind as its only trace in this environment the systematic fronting of  $*\hat{o} > e$  (Meira, Gildea and Hoff in press). Preceding consonants, this *\*i-* is preserved in a few conjugations in a few languages, but in the rest, it has been replaced with the epenthetic vowel *i*, leaving only the SAP form in a single prefix slot.

- The INVERSE prefixes are heterogeneous, but could also reflect a sequence, A-O-V

3A1O	* <i>u</i> = ( <i>j-</i> )	< *NP $\emptyset(j)$ -
3A2O	* $\hat{o}$ = ( <i>j-</i> )	< *NP $\emptyset(j)$ -
3A1 + 2O	* <i>k(i)</i> -	< * $\emptyset$ - <i>k-</i>

First, consider the 3A1+2O form: the prefix *\*k-* ‘1+2O’ is probably as ancient as *\*i-* ‘3O’: the two occur together in multiple paradigms, and apparent cognates are found in multiple Amazonian families (especially Tupían and Jê). Second, consider the 3A component of these forms: the Relational prefix is  $\emptyset$ - when followed by a consonant and *j-* when followed by a vowel. In finite verbs, this form is attested only when A is third person and O is realized as a preverbal NP.

- It seems relatively straightforward to posit that 3 > Relational Prefix (Ribeiro pc), in which case we reconstruct the Pre-Proto-Cariban third person prefixes as:

	<u>      </u> C	<u>      </u> V
3A	$\emptyset$ -	<i>j-</i>
3O	<i>i-</i>	$\emptyset$ -

- We would then reconstruct two complementary syntagmatic patterns:

[O A-V]      ~      A-O-V

- These two patterns give rise to the two different types of INVERSE prefixes:

[O A-V]	~	A-O-V
* <i>u j</i> -V		* $\emptyset$ - <i>k</i> -V
* $\hat{o} j$ -V		

- We cannot reconstruct the Pre-Proto-Cariban 1O or 2O prefixes, as they are no longer attested in any conjugation found in any modern language.

## 4.2 The LOCAL Prefixes: Multiple layers

The comparative reconstruction already gives a single unreducible form for both 1A2O and 2A1O: the 3A1+2O form, \**k*-. Presumably this is a result of analogical extension of this form prior to Proto-Cariban, replacing whatever A-O-V forms might have existed.

Later developments:

- 2 > 1
  - Second-person DIRECT forms extend to 2A1O (Hixkaryana, Panare, Waimiri-Atroari)
  - Second Person Inverse forms extend to 1A2O (Panare, Yukpa)
- 1 > 2
  - First person INVERSE forms extend to 2A1O (Waimiri-Atroari, Yukpa)
- 1 = 2
  - Combinations of 2 > 1, 1 > 2
  - innovative forms that come from other, non-hierarchical, sources

Overall, this change is not profoundly directional.

## 4.3 The NONLOCAL prefixes

The major change is the accretion of additional elements onto the left of the third person prefix(es):

- |  |                 |                 |                 |
|--|-----------------|-----------------|-----------------|
|  | 3S <sub>A</sub> | 3S <sub>O</sub> | 3A-3O           |
| • Some conjugations (all in Ikpéng) add nothing:                       | ∅-              | <i>i</i> -      | ∅- <i>i</i> -   |
| • All others add * <i>n</i> - (cf. Gildea 1994, in press)              | <i>n(i)</i> -   | <i>n(i)</i> -   | <i>n(i)</i> -   |
| • Next, additional elements * <i>ki</i> -, * <i>mə</i> - (Gildea 1998) | <i>kin(i)</i> - | <i>kin(i)</i> - | <i>kin(i)</i> - |
|  | <i>mən(i)</i> - | <i>mən(i)</i> - | <i>mən(i)</i> - |

Each of these prefixes continues to alternate with a preverbal O NP, which is thus a modern reflex of the pre-Proto-Cariban pattern of [O A-V].

### Summary:

- The A-O-V sequence of prefixes becomes SAP-V because both the 3A and the 3O forms become ∅ (through phonological erosion).
- The unranked LOCAL prefixes become ranked through extension of SAP-V prefixes
- Additional forms are added, reinforcing the eroded 3A3O form.

### Conclusion:

The synchronic hierarchy does not represent a formal response to functional pressures.

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Appendix: Parallel developments in Tupí-Guaraní

	1SGO	1 + 3O	1 + 2O	2SGO	2PLO	3O	S <sub>A</sub>
1SGA				<i>*oro-</i>	<i>*opo-</i>	<i>*a-i-</i> <i>*a-tf-</i>	<i>*a-</i>
1 + 3A				<i>*oro-</i>	<i>*opo-</i>	<i>*oro-i-</i> <i>*oro-tf-</i>	<i>*oro-</i>
1 + 2A						<i>*ja-i</i> <i>*ja-tf-</i>	<i>*ja</i>
2SGA	<i>*tfe (r-)</i>	<i>*ore (r-)</i>				<i>*ere-i-</i> <i>*ere-tf-</i>	<i>*ere-</i>
2PLA	<i>*tfe (r-)</i>	<i>*ore (r-)</i>				<i>*pe-i-</i> <i>*pe-tf-</i>	<i>*pe-</i>
3A	<i>*tfe (r-)</i>	<i>*ore (r-)</i>	<i>*jane (r-)</i>	<i>*ne (r-)</i>	<i>*pe (r-)</i>	<i>*o-i-</i> <i>*o-tf-</i>	<i>*o-</i>
S <sub>o</sub>	<i>*tfe (r-)</i>	<i>*ore (r-)</i>	<i>*jane (r-)</i>	<i>*ne (r-)</i>	<i>*pe (r-)</i>	<i>*i-/tf-</i>	

Table 7. Reconstructed person-marking on the Proto-Tupí-Guaraní main verb

	DIRECT/S <sub>A</sub>	INVERSE/S <sub>o</sub>	LOCAL	3A3O
1SG	<i>*a-</i>	<i>*tfe (r-)</i>	1A2SGO	3A
2SG	<i>*ere-</i>	<i>*ne (r-)</i>	<i>*oro-</i>	<i>*o-</i>
1 + 2	<i>*ja-</i>	<i>*jane (r-)</i>		
1 + 3	<i>*oro-</i>	<i>*ore (r-)</i>	1A2PLO	3O
2PL	<i>*pe-</i>	<i>*pe (r-)</i>	<i>*opo-</i>	<i>*i-/tf-</i>

Table 8. Re-organizing the Proto-Tupí-Guaraní verbal person-markers

- The sequence A-O-V is explicit in all combinations involving 3O
- The INVERSE/S<sub>o</sub> forms are all free pronouns (later clitics), all followed by the relational prefix *\*r-*. Like Cariban *\*j-*, the relational prefix *r-* only occurs preceding vowel-initial verbs. Could this be the old 3A? If so, then these are instances of a pattern parallel to Cariban: [O (*r-*)V].
- The innovative form *o-* ‘3A’ occurs only in combination with 3O, and never with SAP O; later development?
- The 2A1O situation is coded by simple 1INVERSE forms, whereas 2A1O forms are unique, and therefore have their own column in Table 4.

The distribution of affixes can be captured with reference to the hierarchy 1 > 2 > 3: Always choose the first person form, regardless of role; always choose the second person form in preference to the third person form; and for 3A3O, combine the 3A and 3O forms.