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CHAPTER 8

Are the Tupi-Guarani hierarchical indexing systems really motivated by the person hierarchy?

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Tupi-Guarani languages are supposedly perfect examples of hierarchical indexing systems, where the relative ranking of A and P on the $1 > 2 > 3$ person hierarchy determines the selection of the person markers. This chapter questions the relevance of the person hierarchy as a synchronic and diachronic explanation for such systems, with data from 28 languages. First, only $SAP > 3$ can really be posited in the actual languages, and second, it explains only part of the facts that it is supposed to account for in Proto-Tupi-Guarani. The chapter ends by suggesting that these systems do not result from the person hierarchy as a functional motivation. Instead, they may result from grammaticalization of pronominal paradigms lacking third-person forms.

1. Introduction

The Tupi-Guarani branch of the Tupi family is the best-known language group of South America. It comprises around forty languages that are morphosyntactically very similar (Jensen 1999). Their typologically most remarkable feature is their person indexing, which is supposedly a perfect example of a hierarchical system, where the relative ranking of A and P on the $1 > 2 > 3^1$ person hierarchy determines the selection of the person markers. The person hierarchy is systematically used as an explanation of their indexing system in comparative studies (Monserrat & Soares 1983, Jensen 1998a), reconstruction work (Jensen 1990), and grammars

1. In this paper, as in the literature on hierarchical indexing systems in general, $X > Y$ is used to schematize the privileged treatment of some element (X) as opposed to another (Y), rather than to refer to an implicational scale, as is often the case with typological hierarchies.

of individual languages, as well as in typological studies (such as Payne 1994). The person hierarchy is also seen as an explanation for the supposed development of the Proto-Tupi-Guarani hierarchical system out of an ergative system by Jensen (1998a).

The present chapter questions the relevance of the person hierarchy as an explanation, both synchronic as well as diachronic, for the Tupi-Guarani indexing systems. Apparently valid functional explanations for synchronic facts may in reality be far from the actual diachronic motivation for the origin of these facts (Bybee 1988, Cristofaro 2013, Cristofaro and Zúñiga this volume). The patterns described by typological hierarchies, e.g. alignment of core arguments, or number marking patterns, stem in many individual languages from processes independent of the suggested explanations (Mithun 1996, this volume, Gildea 1998, DeLancey n.d., among others). In other words, this chapter questions the claim that the person hierarchy accounts for the synchronic Tupi-Guarani indexing systems, but also for the Proto-Tupi-Guarani indexing system and its diachronic development. It provides a new perspective on synchronic and diachronic data from the Tupi-Guarani group, based on a recent cross-linguistic survey and existing reconstructions (Jensen 1998a, Gildea 2002).

This chapter first argues that only the SAP > 3 stretch of the 1 > 2 > 3 person hierarchy can actually be confidently posited synchronically (this argument is developed in more details in Rose 2015). It then shows that this limited SAP > 3 hierarchy explains only part of the facts that it is supposed to account for in the historical stage reconstructed as Proto-Tupi-Guarani. The chapter ends by suggesting that the Tupi-Guarani indexing systems are not the product of such a hierarchy but result from various morphological processes involving the absence of a third-person pronoun at a previous historical stage. In brief, even though the person hierarchy has been used as a tool for describing the Tupi-Guarani hierarchical systems for quite a long time, it cannot be considered a good functional explanation for these systems in synchrony, nor the functional motivation for these systems in diachrony.

2. The person hierarchy and hierarchical indexing systems

Since Silverstein's (1976) pioneering work, it has been known that hierarchies of features can play a major role in argument-encoding systems.² This author highlighted the role of semantic properties of nominals on case-marking and agreement, more specifically in the domain of ergative or split-ergative systems. The different versions of this hierarchy, called 'empathy hierarchy' (Kuno & Kaburaki 1977, DeLancey 1981), 'animacy hierarchy' (Comrie 1981), 'saliency hierarchy' (Klaiman

2. See Haude & Witzlack-Makarevich (2016) for a short overview of the role of referential hierarchies in alignment.

1991), ‘referential or inherent topicality hierarchy’ (Givón 1994), ‘nominal hierarchy’ (Dixon 1994) or ‘indexability hierarchy’ (Bickel & Nichols 2007), all imply that the more referential/topical/animate or semantically salient a participant is, the more likely it will be to have access to morphosyntactic slots. This hierarchy is usually explained by an economy principle, by which speakers use overt marking only for those conceptual situations that are less frequent and therefore more difficult to identify (Cristofaro & Zúñiga this volume). The different versions of this typological hierarchy all posit a person hierarchy that has been applied for decades to the description of Tupi-Guarani languages (at least since Monserrat & Soares 1983).

Most typological studies on person indexing postulate a universal hierarchy $1 > 2 > 3$ (Dixon 1994, Givón 2001 for instance). The basis for this hierarchy is that speakers are optimally likely to encode a reference to themselves, then to their interlocutors, and then to any other person or object. Nevertheless, the $1 > 2 > 3$ hierarchy appears to work reasonably well with mixed configurations ($3 \leftrightarrow 1, 2$) but less so for local configurations, when the two speech act participants (SAPs) are involved ($1 \leftrightarrow 2$) (Zúñiga 2006). As a consequence, the hierarchy between the SAPs and third person is universally accepted ($SAP > 3$) while the hierarchy between the two SAPs is debatable. Some authors say that first and second persons are not universally hierarchized, their relative order fluctuating from one language to the other (Silverstein 1976, DeLancey 1981). More rarely, other authors claim that the universal hierarchy is $2 > 1$ (Junker 2011). From a functional perspective, the ranking of the SAPs on the hierarchy is far from obvious. Local configurations constitute a domain where pragmatic conventions play a major role. It is well-known that, in many languages, pragmatics constrains the use of transparent 1SG or 2SG pronominals (which are then replaced by impersonal, third-person or plural forms, such as French *vous*, Spanish *usted* or German *Sie*, instead of transparent 2SG pronominal *tu/tú/du*). In a study focusing on Native American languages, Heath (1998) notes that transparent indexing combinations with both first and second persons are avoided in many languages. His conclusion is that “ $1 \leftrightarrow 2$ agreement combinations delight in messiness. Structures that make the most sense cognitively or formally are actually avoided when they denote pragmatically sensitive pronominal combinations.” (Heath 1998: 102) The Tupi-Guarani data perfectly support these claims (Rose 2015).

A remarkable application of the person hierarchy in descriptive linguistics lies precisely in the explanation of hierarchical and inverse indexing systems (Nichols 1992, Zúñiga 2006). A first explicit definition of indexing systems entirely based on such hierarchies is found in Nichols (1992: 66): “Access to inflectional slots for subject and/or object is based on person, number, and/or animacy rather than (or no less than) on syntactic relations.” In practice, this means that the participant that is higher on the hierarchy is favored over the one that ranks lower. Inverse systems (a special case of hierarchical systems) indicate specifically whether the direction of the action respects the hierarchy or not. They mark the difference between a situation

where the agent is higher than the patient in the hierarchy, and one where the patient is higher. For Nichols, hierarchical systems are on a par with neutral, accusative, ergative, stative-active and three-way systems. Languages identified as displaying a hierarchical system are Cree, Tepehua, Mixe, Nunggbuyu, Kiowa (Nichols 1992), Tangut and some Tibeto-Burman languages (DeLancey 2001, n.d.), as well as Carib and Tupi-Guarani languages (Siewierska 2004: 55–56). The hierarchy that is generally postulated is $1 > 2 > 3$, except for Algonquian languages, where $2 > 1 > 3$ can be posited (Junker 2011), and for some Cariban languages, where $SAP > 3$ is posited (Siewierska 2004: 151). Most importantly, Tupi-Guarani languages are cited as perfect examples of a hierarchical indexing system, where the relative ranking of A and P on the $1 > 2 > 3$ hierarchy determines the selection of the person markers (see e.g. Payne 1997). The inverse systems with a direction marker found in Algonquian languages are regarded as perfect examples of hierarchical systems.

With respect to diachrony, recent studies have shown that hierarchical systems may have various sources unrelated to a person hierarchy per se (Cristofaro 2013, Gildea & Zúñiga 2016). These sources can be the reanalysis of deictic verbal morphology, the reanalysis of third-person forms, a shift from passive to inverse, a shift from cleft constructions to hierarchical alignment, or a change in word order.

3. The Tupi-Guarani indexing systems in synchrony

This section is aimed at showing that actual Tupi-Guarani languages are not perfect examples of hierarchical indexing systems. If they were, the relative ranking of A and P on a $1 > 2 > 3$ hierarchy would be sufficient to determine the selection of the person markers. Each indexing pattern would transparently refer to a particular combination of participants. A recent survey of 28 Tupi-Guarani indexing systems (Rose 2015) shows that this is far from being the case. This section summarizes the results of the survey, focusing on the 24 languages with some hierarchical indexing.

First, surprisingly, the survey shows that only two of the Tupi-Guarani languages (Ava-Canoeiro and Kayabí) can be said to follow perfectly the “model” of a hierarchical indexing system based on a $1 > 2 > 3$ hierarchy as outlined above. The central point of these systems is that the participant that is higher on the $1 > 2 > 3$ person hierarchy is the one that systematically gets access to the unique (obligatorily filled) index slot on the verb. There are two sets of person markers that qualify for this slot, called Set I and Set II after Jensen’s work on comparative Tupi-Guarani.³ When the A argument is the highest on the hierarchy, it is indexed

3. The person value of Set I and Set II forms on transitive verbs is unambiguously determined because of their use with intransitive and non-verbal roots.

on the verb with Set I. This is illustrated in Example (1) for $1 \rightarrow 3$, Example (2) for $2 \rightarrow 3$, and Example (3) for $1 \rightarrow 2$. When the P argument is highest on the hierarchy, it is indexed on the verb with Set II. This is illustrated in Example (4) for $3 \rightarrow 1$, Example (5) for $3 \rightarrow 2$, and Example (6) for $2 \rightarrow 1$. Since this chapter deals with transitive verbs only, this intra-family terminology can be replaced by A for Set I and P for Set II in the glosses. The only configuration not taken into account by the hierarchy is when two third persons interact. Then only the third-person A argument is indexed on the verb (7). The pronominal forms (as reconstructed by Jensen (1998a)) are given in Table 1. The indexing system is summarized in Table 2, and the hierarchy on which it is based in Table 3.

Ava-Canoeiro (Borges 2006: 158–160)

- (1) $1 \rightarrow 3$
a-pitim
 1SG.A-pinch
 ‘I pinched him.’
- (2) $2 \rightarrow 3$
ni=tō jawaʒa-∅ e-kʷaʒ
 PRO2=PART dog-CN 2SG.A-hit
 ‘You hit the dog’
- (3) $1 \rightarrow 2$
tʃi=tō ni=tō a-kutuk
 PRO1=PART PRO2=PART 1SG.A-pierce
 ‘I pierced you.’
- (4) $3 \rightarrow 1$
juati-∅ tʃi=kutuk
 thorn-CN 1SG.P=pierce
 ‘The thorn pierced me.’
- (5) $3 \rightarrow 2$
ni = juka awatu-a
 2SG.P=kill thunder-CN
 ‘The thunder will kill you!’
- (6) $2 \rightarrow 1$
ni=tō tʃi=kutuk
 PRO2=PART 1SG.P=pierce
 ‘You pierced me.’
- (7) $3 \rightarrow 3$
o-apik
 3.A-braid
 ‘(S)he braided (her hair).’

Table 1. Suggested reconstructions of some Proto-Tupi-Guarani pronominals (Jensen 1998a: 498)

	A Set	P Set	Portmanteau (with A1)	Free pronouns
1SG	<i>a-</i>	<i>čé</i>		<i>ičé</i>
1EXCL	<i>oro-</i>	<i>oré</i>		<i>oré</i>
1INCL	<i>ja-</i>	<i>jané</i>		<i>jané</i>
2SG	<i>ere-</i>	<i>né</i>	<i>oro-</i>	<i>eré</i>
2PL	<i>pe-</i>	<i>pé</i>	<i>opo-</i>	<i>pe...ē</i>
3	<i>o-</i>	<i>i-, c-, t-</i>		

Table 2. The indexing system of Ava-Canoeiro and Kayabí

	1P	2P	3P
1A		1A-	1A-
2A	1P-		2A-
3A	1P-	2P-	3A-

Table 3. The hierarchy in the indexing system of Ava-Canoeiro and Kayabí

	1P	2P	3P
1A	1 > 2 > 3	1 > 2 > 3	1 > 2 > 3
2A	1 > 2 > 3	1 > 2 > 3	1 > 2 > 3
3A	1 > 2 > 3	1 > 2 > 3	A > P

Second, the survey shows that, among the other hierarchical Tupi-Guarani systems, the great majority show a clear SAP > 3 hierarchy, as in Ava-Canoeiro and Kayabí, but with a more complex encoding of local configurations (SAP → SAP). The variation is considerable: there are five types of 2 → 1 encoding, and eight types of 1 → 2 encoding. Even considering this variation alone, it seems very speculative to reconstruct an indexing system based on a clear 1 > 2 > 3 hierarchy. In most of these languages, the hierarchy could be said to hold when 2 → 1, because the first-person P argument is then generally indexed on the verb, as in Ava-Canoeiro and Kayabí. But then the encoding of 1 → 2 does not match the hierarchy. In this chapter, three major cases are considered.

- a. Most languages are described as having an opaque marking of the 1 → 2 configuration. It is said that a special set of markers is then used, consisting of portmanteau forms indexing the person value of both A and P. They are reconstructed as **oro-* ‘first person acting on a second person singular’ (8), and **opo-* ‘first person acting on a second person plural’ (9) as presented in Table 1.

Kamaiurá (Seki 2000: 137–140)

- (8) 1 → 2SG
oro-etsak
 1→2SG-see
 ‘I/we see you (SG).’
- (9) 1 → 2PL
opo-pyhyk
 1→2PL-catch
 ‘I/we catch you all.’

It is completely unclear why the hierarchy between the speech act participants should be $1 > 2$ in this type of system. In the $2 \rightarrow 1$ configuration, the first-person patient is in most languages marked on the verb, in line with the hierarchy $1 > 2$. In the $1 \rightarrow 2$ configuration, it is hard to understand how the analysis of the person markers as portmanteaus fits any hierarchy. The fundamental idea behind a portmanteau analysis is that the form encodes a whole configuration (two arguments at the same time) and not one argument over the other. Consequently, portmanteau forms do not support any particular hierarchy that could determine the accessibility to a morphosyntactic slot. It can at best be stated that there is a partial preference for $1 > 2$ in most languages of the family on the basis of the $2 \rightarrow 1$ configuration. I doubt whether positing a synchronic hierarchy is useful if its explanatory power is limited to only one configuration. This issue is independent from whether this hierarchy has been a diachronic functional motivation for the origin of the construction (this will be examined in Section 4). The value of using hierarchies as synchronic functional explanations is the role they may play in stating generalizations about the behavior of different types of semantic referents in different morphosyntactic environments. A hierarchy has no generalizing power if it applies to only one configuration out of two.

- b. In other languages, P is the only argument that is systematically indexed in all local configurations. This can be described as following a $P > A$ hierarchy. In four languages, this is straightforward: the P Set is used for P in both configurations, as in the Guajá Examples (10) and (11). In one of the sub-groups of the family (sub-group I), short forms of the aforementioned “portmanteau” forms used for $1 \rightarrow 2$ are analyzed as P markers. P markers are thus favored in both local configurations, as in the Jopara Examples (12) and (13).

Guajá (Magalhães 2007: 194–195)

- (10) 1SG → 2SG
jahá ni=n-ixá
 PRO.1SG 2SG.P=REL-see
 ‘I saw you (SG).’

- (11) 2SG → 1SG
nijā ha=r-ixá
 PRO.2SG 1SG.P=REL-see
 ‘You saw me.’

Jopara (Kallfell 2010: 100)

- (12) 1 → 2SG
che /ore ro-hecha
 PRO.1SG/PL 2SG.P-see
 ‘I/we see you (SG).’

- (13) 1 → 2PL
che /ore po-hecha
 PRO.1SG/PL 2PL.P-see
 ‘I/we see you all.’

- c. Finally, in two northern languages (Emérillon and Wayampi), the A argument is indexed in all local configurations. These configurations thus follow an A > P hierarchy, clearly contradicting the 1 > 2 hierarchy when 2 → 1 (see Rose 2009 for more details).

Emérillon

- (14) 2 → 1
ere-nūpā orone-kom
 2SG.A-hit 1EXCL-PL
 ‘You (SG) hit us’

Furthermore, some variation is also attested in mixed configurations (SAP ↔ 3). Some languages show indexes for both A and P when SAP/3 → 3 as in (15). No person hierarchy is then needed for determining which argument is indexed on the verb.

Tupinambá (Rose 2009: 68)

- (15) 1 → 3
a-i-potár
 1SG.A-3.P-like
 ‘I like it.’

Table 4 summarizes the indexing system of the Tupi-Guarani languages that follow the portmanteau analysis for the 1 → 2 configuration, which is the analysis most commonly found in the literature. This table minimizes variation by omitting divergent systems, such as those presented above in ii) and iii). The phenomena described in ii) and iii) are evidence against applying the hierarchy to such indexing systems. Table 4 repeats the most widespread presentation of the Tupi-Guarani indexing systems (Montserrat & Soares 1983, Jensen 1990, Payne 1994, Jensen 1998a), but actually accounts for only 12 languages out of the 28 languages of the survey.

Table 4. The indexing systems of some Tupi-Guarani languages (under the portmanteau analysis)

	1SGP	1PLP	2SGP	2PLP	3P
1SGA			portmanteau	portmanteau	1SGA-(3P)-
1PLA			portmanteau	portmanteau	1PLA-(3P)-
2SGA	1SGP-	1PLP-			2SGA-(3P)-
2PLA	1SGP-	1PLP-			2PLA-(3P)-
3A	1SGP-	1PLP-	2SGP-	2PLP-	3A-(3P)-

Table 5 summarizes the possible hierarchies accounting for the indexing systems of some Tupi-Guarani languages under the portmanteau analysis. In this table, no hierarchy is considered to play a role whenever the two arguments are encoded (either with two indexes, or within a portmanteau), because the effect of hierarchies is commonly described as determining the selection of the argument to be indexed in the unique index slot. The possible explanation of parts of the systems in terms of a hierarchy of grammatical roles (like $A > P$ or $P > A$) is indicated in the table but not discussed any further in this chapter, which focuses on the person hierarchy $1 > 2 > 3$ as a usual explanation of Tupi-Guarani indexing systems. The conclusion of the survey is that most Tupi-Guarani languages can be said to follow a clear $SAP > 3$ hierarchy, but that most languages support the $1 > 2$ hierarchy only in one of the local configurations. When taking all Tupi-Guarani languages into account, there are a few exceptions to $1 > 2$ when $2 \rightarrow 1$ and many exceptions to it when $1 \rightarrow 2$. In the end, only the hierarchy $SAP > 3$ can be confidently posited for the Tupi-Guarani hierarchical systems in general. It is active in a straightforward way: the participant that is ranked higher is the one to be indexed on the verb. A close examination of Algonquian data led some authors (like Macaulay 2009) to the same conclusion, and an alternative explanation of the system was offered by Zúñiga (2008).

Table 5. Possible hierarchies accounting for the indexing systems of the majority of the Tupi-Guarani languages (under the portmanteau analysis)

	1SGP	1PLP	2SGP	2PLP	3P
1SGA			no hierarchy	no hierarchy	SAP > 3 or no hierarchy
1PLA					
2SGA	1 > 2 (or P > A)				
2PLA					
3A	SAP > 3	SAP > 3	SAP > 3	SAP > 3	A > P

It was mentioned in Section 1 that the opacity of local configurations can be explained as avoidance of pragmatically sensitive combinations (resembling the common pragmatic restrictions on the use of transparent 2SG pronominals), the expression of which is interpretable as face-threatening acts (Brown & Levinson 1987, quoted in Siewierska 2004). Heath (1998) suggests that linguists have ‘denying’ reactions when faced with this opacity, for instance imposing hierarchies with artificial segmentation and labeling of surface morphemes.

One way to defeat the messiness is [...] to impose order on the $1 \leftrightarrow 2$ subsystem by elaborating $\{1, 2\} > 3 \dots$ hierarchies [...] often at the cost of artificial segmentation and labeling of surface morphemes in opaque $1 \leftrightarrow 2$ combinations, and at considerable risk of missing the general point. (Heath 1998)

This may explain why most authors of Tupi-Guarani grammars use the artifact of a $1 > 2 > 3$ person hierarchy, though the data do not support the hierarchy in a transparent fashion (especially regarding the presumed “portmanteau” forms).

To conclude, the person hierarchy does not provide a systematic explanation for the various person indexing patterns found in Tupi-Guarani languages (in synchrony). The relative ranking of A and P on a $1 > 2 > 3$ hierarchy is not sufficient to determine the selection of the person markers in all configurations, except for Ava-Canoeiro and Kayabí.

4. The Tupi-Guarani indexing systems in diachrony

The person hierarchy has also been used as a functional explanation for the reconstructed hierarchical indexing system of Proto-Tupi-Guarani, and as a motivation for its origins. According to Jensen (1998a: 565), the hierarchical system would have developed from an ergative-absolutive system by the “redefinition of the extent of usage of first and second-person P prefixes in a person hierarchy rule in which hierarchically superior P is marked”.⁴ This section questions whether the person hierarchy has played a role in the development of Tupi-Guarani indexing systems. It first presents the Proto-Tupi-Guarani indexing system (4.1) and then discusses its genesis (4.2).

4. Another scenario also starts with an ergative-absolutive system, at the Proto-Tupi stage, with some branches (among which the Tupi-Guarani branch) later shifting to an accusative pattern and then to a hierarchical pattern (Birchall 2015).

4.1 The Proto-Tupi-Guarani system

While the reconstructed system displays only few differences with respect to the present systems, these differences make it even more distant from the idealized hierarchical indexing system.

The greatest difference is that three configurations are actually reconstructed with two person index slots, undermining the supposed need for a hierarchy to select the argument to be indexed. Ever since Jensen (1998a), two person slots have been reconstructed for configurations with a third-person P: a slot for A, followed by a slot for P before the verb root. Both arguments are thus indexed when a speech act participant acts on a third person (16), or when a third person acts on another third person (17) in reconstructed Proto-Tupi-Guarani. The P marker has disappeared from these configurations in most of the daughter languages, but is still found in some.⁵ More recently, one of the local configurations (i.e. $1 \rightarrow 2_{PL}$) has also been reconstructed as initially involving two slots, in the same A-P order (Cabral 2001, see Rose (2015) for more information). The construction in (18) is the source for the great variability of some of the supposed “portmanteau” forms. No hierarchy can be invoked for the three configurations with two slots; they all offer an $_{A-P} V$ pattern.

Proto-Tupi-Guarani (Jensen 1998a: 518)

- (16) $SAP \rightarrow 3$
 **a-i-potár*
 1SG.A-3.P-like
 ‘I like him/her/them/it.’
- (17) $3 \rightarrow 3$
 **o-i-potár*
 3A-3.P-like
 ‘He/she/they/it like(s) him/her/them/it.’

Proto-Tupi-Guarani (Cabral 2001: 131)

- (18) $1 \rightarrow 2_{PL}$
 *(*icé*) *a-poro-nupā*
 PRO1 1.A-generic.human.P-hit
 ‘I hit people.’ Extended use: ‘I hit you all.’

The reconstruction of the other three configurations ($3 \rightarrow SAP$, $2 \rightarrow 1$, $1 \rightarrow 2_{SG}$) does not differ much from their encoding in the majority of the daughter languages. In the configurations where P is the highest ranked argument (with either a third (19)

5. It is explicitly analyzed as a P marker only in Tupinambá and Mbyá. In the other languages it is described either as fused with the root, resulting in an allomorphic variant of the verb root, or as fused with the A markers.

or a second-person A (20)), P is indexed. A suppletive pronoun is added after the verb for a second-person A, reconstructed by Jensen as **jepe* for 2 SG and **pejepe* for 2 PL.⁶ This indexing of P is usually explained by the SAP > 3 and 1 > 2 hierarchies. For the configuration 1 → 2 SG (21), a recent comparative survey (Rose 2015) shows that the supposed portmanteau form **oro-* can be analyzed as the first-person exclusive A marker, since both markers are formally identical in the Proto-Tupi-Guarani reconstruction and in all languages making use of it. The encoding of this local configuration could be said to follow the 1 > 2 hierarchy, but is nevertheless a very opaque encoding (see Rose 2015 for more discussion on this non-transparent marking).

Proto-Tupi-Guarani (Jensen 1998a: 520)

- (19) 3 → SAP
**če-potár*
 1SG.P-like
 ‘He/she likes me.’

Tupinambá (Jensen 1998a: 521)

- (20) 2 → 1
syé-r-epyak epe
 1SG.P-REL-like PRO.2
 ‘You like me.’

Proto-Tupi-Guarani (Jensen 1998a: 522, my glosses)

- (21) 1 → 2SG
**oro-potár*
 1EXCL.A-like
 ‘I/we like you.’

Table 6 summarizes the encoding of the various configurations in Proto-Tupi-Guarani.

Table 6. The indexing systems of the Proto-Tupi-Guarani languages

	1SGP	1PLP	2SGP	2PLP	3P
1SGA			1PLA-	1SGA-INDET-	1SGA-3P-
1PLA			1PLA-	1SGA-INDET-	1PLA-3P-
2SGA	1SGP-	1PLP-			2SGA-3P-
2PLA	1SGP-	1PLP-			2PLA-3P-
3A	1SGP-	1PLP-	2SGP-	2PLP-	3A-3P-

6. This pattern is quite frequent in the descendant languages, but the various forms of the free pronoun postposed to the verb do not clearly confirm the reconstructed forms.

Table 7 summarizes the possible analysis of these configurations in terms of hierarchies. It is clear that the $SAP > 3$ and $1 > 2$ hierarchies apply only very partially to the various configurations. Even if these hierarchies were considered to be at work, however, one should still explain why they are inactive in half of the configurations they are supposedly relevant for. If the effect of the hierarchies must be limited to specific configurations, the explanation they provide is neither an economic analysis nor a powerful functional explanation for the indexing system. It has even less explanatory value for Proto-Tupi-Guarani than for the descendant languages. In the end, the Proto-Tupi-Guarani system can hardly be described in hierarchical terms.

Table 7. Possible hierarchies accounting for the Proto-Tupi-Guarani indexing system

	1SGP	1PLP	2SGP	2PLP	3P
1SGA			1 > 2 or A > P	no hierarchy	
1PLA					
2SGA	1 > 2 or P > A				no hierarchy
2PLA					
3A	SAP > 3	SAP > 3	SAP > 3	SAP > 3	

Another important point is that the supposed hierarchical system explains the accessibility to the index slot only for transitive verbs. When considering both intransitive and transitive predicates, the overall Proto-Tupi-Guarani morphological alignment has been reconstructed as split-intransitive (or active-inactive system, see Jensen 1998a: 517). The syntactic alignment can be reconstructed as nominative-accusative, using as the main criterion the use of a Set III prefix in case of coreference with the main subject (either A, Sa or Sp, see Jensen 1998b). This means that the indexing on transitive verbs is completely independent from the alignment system (see Rose 2009 for further discussion). This distinction between indexing on the one hand and morphological and syntactic alignment on the other undermines the potentially explanatory power of the hierarchy as a deep functional explanation. It rather suggests that the indexing system is just a morphological phenomenon, probably resulting from historical morphological processes rather than from a strong functional motivation. This is described in the following section.

4.2 The genesis of the Proto-Tupi-Guarani indexing system

Several authors have recently discussed the genesis of hierarchical indexing systems (Cristofaro 2013, Gildea & Zúñiga 2016). In this domain, the genesis of

the Proto-Tupi-Guarani system has not yet been satisfactorily explained (Gildea 2002). This section aims at pointing to one major factor that could have possibly led to the creation of the reconstructed system.

My first suggestion is that indexing systems based on an SAP > 3 hierarchy can logically result from the grammaticalization of pronominal paradigms lacking third-person forms (Figure 1). We know that third-person forms are often missing from paradigms of free pronouns. When such free pronoun paradigms become grammaticalized, the resulting index sets then include only first- and second-person markers. Such a process of pronominalization in a language lacking free third-person pronouns could easily lead to a hierarchical system in mixed configurations (SAP ↔ 3). In fact, only SAPs could be formally indexed, and third persons would have to be inferred. The resulting system is commonly explained, in synchrony, with an SAP > 3 hierarchy selecting access to the index slot.

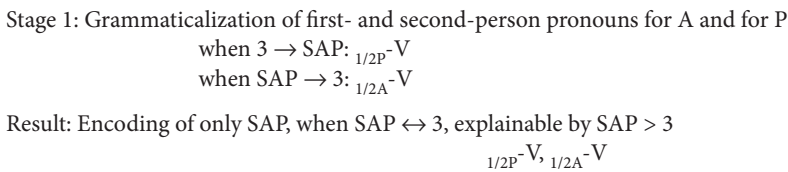


Figure 1. Model of emergence of a hierarchical system from pronominal paradigms lacking third-person forms (arbitrarily starting with grammaticalization of P markers)

Gildea (2002) suggests a comparable scenario leading to the Proto-Tupi-Guarani indexing system (Figure 2). Two different waves of pronominalization, first prefixation of A and then cliticization of first- or second-person P, led to the Proto-Tupi-Guarani hierarchical system. This occurred on the vestige of a Pre-Proto-Tupi-Guarani unknown system visible only in the presence of an older *i*-third-person P prefix.

Pre-Proto-TG	Unknown system	$_{3P}^-V$
	Prefixation of A (NOM/ACC)	$A-(3P) V$
Proto-TG	Cliticization of 1/2P	$_{1/2P} = V$

Figure 2. Development of Proto-TG hierarchical systems according to Gildea (2002)

My second suggestion is to complement Gildea’s scenario by speculating that prefixation of A did not include a third-person form at first, but that the third-person A marker developed later. This left the possibility for grammaticalization of first- and second-person P indexes on roots lacking an A prefix (last stage in Figure 2). This hypothesis is sketched in Figure 3. As presented in the general model of Figure 1,

the grammaticalization of these two sets of markers without third-person forms should lead to a perfect hierarchical system in mixed configurations. The retention of the ancient third-person P marker and the innovation of a third-person A marker in Proto-Tupi-Guarani have actually blurred this potentially perfect hierarchical system. For the actual hierarchical indexing system found in the mixed configurations of the descendant languages, a further step is necessary: the loss of the vestigial third-person P marker.

Stage 0. Pre-Hierarchical	
Remnants of a previous system	${}_{3P}\text{-}V$
Prefixation of 1/2A	${}_{1/2A-(3P)}\text{-}V$
Stage 1. Some hierarchy (Proto-Tupi-Guarani stage)	
Cliticization of 1/2P	${}_{1/2P}\text{-}V$
Rise of 3A prefix	${}_{3A-(3P)}\text{-}V$
Stage 2. Hierarchical in mixed configurations (in most present-day Tupi-Guarani languages)	
Loss of 3P	${}_{A}\text{-}V$

Figure 3. Development of Tupi-Guarani hierarchical systems

The hypothesis of the absence of third-person pronouns having led to the development of a hierarchical indexing system is supported by the fact that no third-person free pronouns have been reconstructed at the Tupi-Guarani level (Jensen 1998a) or even at the Tupi level (Rodrigues & Cabral 2012). Jensen's reconstruction of Proto-Tupi-Guarani free pronouns is limited to first and second persons, and these are obviously the source for the first- and second-person P clitics (see Table 1). Gildea (2002) shows that the *i*- third-person P marker is older than the other P markers: it is phonologically reduced, it is more bound (always analyzed as a prefix, while other P markers are analyzed as clitics in some languages), it does not show phrasal morphology,⁷ and it has no cognate in the free pronouns, that could have been an historical source for it. It also shows lexically-conditioned allomorphic variation (see Table 1). Consequently, the third-person P marker must have grammaticalized before the other P markers. Now regarding the supposed free pronoun paradigm at the source for the A set, it is not attested anymore, so it cannot be said whether this paradigm contained a third-person form. To sum up, there is not one single reconstructed form of a third-person free pronoun that

7. A so-called relational morpheme is found throughout the family on a lexically defined class of roots when preceded by a P index or NP (Cabral 2000). It is never found after *i*-

could have been used as a source for third-person indexes in either set A or P of the Tupi-Guarani hierarchical systems. On this ground, it is difficult to imagine how third-person indexes could have developed. And again, the grammaticalization of two pronominal paradigms lacking third-person forms could have led to the development of the Tupi-Guarani indexing system that are often described as following a hierarchy (Figure 1), even though no hierarchical principle has actually been involved in the development of the system.

5. Conclusion

This chapter has revised the traditional view that Tupi-Guarani and Proto-Tupi-Guarani indexing systems could easily be explained by the $1 > 2 > 3$ person hierarchy. This hierarchy is supposed to determine which of the two arguments of a transitive predicate is to be represented in the unique index slot of the predicate, resulting in what is usually called a ‘hierarchical indexing system’. It was first shown, on the basis of a recent comparative study (Rose 2015), that only two Tupi-Guarani languages perfectly exemplify what a hierarchical indexing system is supposed to be. In the family in general, only the $SAP > 3$ hierarchy can be strongly posited. The $1 > 2$ hierarchy applies only partially, sometimes in an opaque manner, and not in all Tupi-Guarani languages. Secondly, the $SAP > 3$ hierarchy only partially accounts for the reconstructed Proto-Tupi-Guarani indexing system (Jensen 1998a), that can hardly be called ‘hierarchical’. Thirdly, it is argued that the person hierarchy has not been the functional motivation responsible for the creation of the hierarchical systems, but that the latter basically result from historical morphological processes. It is suggested that these systems originate from the indexing of pronominal paradigms lacking third-person forms. Thus, this chapter provides one more argument for clearly distinguishing the use of hierarchies as a tool for describing synchronic stages of languages, and their (much weaker) use as functional motivation of synchronic and diachronic facts.⁸ Mithun (this volume) reaches very similar conclusions:

Ultimately, hierarchies can be useful in organizing data as a first step toward understanding the kinds of processes that recur cross-linguistically. Close examination of individual systems, however, indicates that the hierarchies do not necessarily guide or even constrain the development of grammatical patterns.

8. Witzlack-Makarevich et al. have recently concluded that “hierarchical rankings of person are unlikely to have systematically shaped the evolution of agreement paradigms in Kiranti or Algonquian”, two language families also known for displaying so-called hierarchical indexing systems.

Abbreviations

1.A	first-person marker of the set that encodes A;	PL	plural
CN	nuclear case	PRO	pronoun
EXCL	exclusive	REL	relational
PART	particle	SG	singular

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