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Persons, Interactions, Proximity, and Metaphorical Grammaticalization in Mapudungu

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Abstract
This paper explores grammatical, semantic, and cognitive aspects related to the category of person in Mapudungu, the language of the Mapuche, in southern central Chile. Section 1 presents the morphology of the finite verb, where the basic, 'axis' persons are found. In section 2 the 'interactions' are introduced, where a new set of grammatical persons, the 'satellite' persons, interact with the axis persons. Section 3 models these interactions in branching patterns in an attempt to give an adequate description and productive account of the proximity relations involved. The model allows cross language views and suggests functional correlates to the grammatical patterns under investigation. Section 4 accounts for the emergence of the category of topic and the value polarity benefactive-malefactive in the language in terms of the notion of metaphorical grammaticalization, a process whereby a pattern primarily pertaining to one functional domain shapes another functional domain.

1. BASIC 'AXIS' PERSONS: MINIMAL VERBAL FORMS

The finite verb in Mapudungu can be characterized in its basic form as consisting of a lexical root and a relational ending. This is the most recurrent verbal form, obligatorily present in most expressions, and productive not only in the verbalization of traditional verbal roots, but also of nouns, adjectives, adverbs, pronouns, and even numerals. With the exception of the third person and the first person singular, the categories of mood, person, and number are clearly segmentable (Augusta 1903, Lenz 1944, Salas 1979):

(i)	*aku-n*	'I arrived'
(ii)	*aku-iiu*	'We (dual) arrived'
(iii)	*aku-iiñ*	'We (pl) arrived'
(iv)	*aku-imi*	'You (sg) arrived'
(v)	*aku-imu*	'You (dual) arrived'
(vi)	*aku-imün*	'You (pl) arrived'
(vii)	*aku-i*	'He/she/they arrived'

The paradigm above is in the indicative, and forms like *aku-liu* 'if/when we two arrive' and the like, locate mood in the first segment of these endings. It should be mentioned that tense is not expressed in these forms, this normally

implying the past interpretation for verbs of movement, and the present interpretation for verbs of state (Augusta 1903:25f.; see also Croese 1984). Removing the root for simplification, we are left with a set of endings which can be organized in proportional equations, thus showing the grammatical factors vis-à-vis the segments (Rivano 1988):

(1)	n	:	iiu	: iiñ	::	imi	: imu	: imün	::	iØ	: iØ	: iØ
(2)	n	:	iu	: iñ	::	mi	: mu	: mün	::	Ø	: Ø	: Ø
(3)	n	:	u	: ñ	::	i	: u	: ün	::	–		

The suffixes in line (1) contain mood, person, and number. Simplifying the leftmost *i* for the indicative (when possible) we are left with segments for person and number in (2). The segments marking person are simplified in (3) leaving only number markers. There is complete segmentability in an ending like *imi*, total fusion in *n*, zero expression for person, and no expression for number in the third person. In short, these proportional equations inform us about the polysynthetic and agglutinating nature of these suffixes.

Given the basic and obligatory character of these endings, and for reasons that will become more apparent in coming sections, I will follow Salas 1979 and call the grammatical persons in these minimal forms 'axis persons'. They are basic in their morphological precedence, and serve as an axis in relation to other persons which are organized around them.

2. SECONDARY 'SATELLITE' PERSONS: THE INTERACTIONS

By 'interaction' here is meant the simplest interplay between two grammatical persons and a verb. In Mapudungu interactions, a new set of grammatical persons cooccurs with the axis persons within the verbal construction. These are the 'satellite persons' (Salas 1979):

(i) *fürene-fi-n* 'I helped him/her/them'
HELP-3p Satellite Passive-1p Axis

(ii) *fürene-nge-n* 'someone helped me'
HELP-3p Satellite Active Indef.-1p Axis

(iii) *fürene-e-n-eo* 'he/she/they helped me'
HELP-3p Satellite Active-1p Axis

(iv) *fürene-e-n* 'you sg helped me'
HELP-2p Satellite Active Singular Interaction-1p Axis

(v) *fürene-mu-n* 'you pl helped me'
HELP-2p Satellite Active Plural Interaction-1p Axis

(vi) *fürene-e-iiu* 'I helped you sg'
HELP-2p Satellite Passsive-1p Axis Dual [Interaction number given by the Axis position]

(vii) *fürene-w-iiñ* 'I helped you pl/we helped you pl or sg'
HELP-2p Satellite Passive-1p Axis Plural [Interaction number given by the Axis position]

As can be seen from the examples above, there is a new set of grammatical persons interacting with the set of axis persons. Moreover, it is in this new set that the transitive values of Passive and Active are found. Thus, the axis position acquires its values by implication: if the satellite person is active, then the axis person is passive, and vice versa (Salas 1979). Throughout these examples, the first person axis is kept constant, be it in the singular *n*, dual *iiu*, or plural *iiñ*. In (iii) there is a discontinuous segment *e..eo*. In (iv) and (v) above the complex terms 'singular' and 'plural interaction' are to account for an important distribution factor. This is the fact that the segments *e* and *mu* stand in complementary distribution as far as 'interactional number' is concerned. Thus, *e* occurs only when there is reference to two participants (i.e. singular interaction), and *mu*, when more than two entities are involved (plural interaction). Thus, an expression like:

(vii) *fürene-mu-iiu*
HELP-2p Satellite Active Plural Interaction-1p Axis Dual

can mean either 'you sg helped us dual' or 'you – dual or plural – helped us dual'. Also, an expression like:

(viii) *fürene-mu-iiñ*
HELP-2p Satellite Active Plural Interaction-1p Axis Plural

can mean either 'you sg helped us pl' or 'you – dual or plural – helped us pl'.

It is to be noticed, then, that the number factor in the satellite persons *e* and *mu* is sensitive to the total interaction, and, thus, does not mark number for these satellite persons specifically. Salas (1979:132-144) refers to this in terms of the distinction between 'minimal vs. expanded dialogue' and the notion of 'dialogical composition'.

In (vi) and (vii) above the remark "interaction number given by the axis position" is to account for the fact that the number factor in the axis endings is now the number factor in the interaction as a whole. Thus, the dual axis

ending *iiu* in (vi) above is analyzed as expressing an interaction where two are involved (singular interaction), and the plural axis ending *iiñ* in (vii) expresses an interaction where more than two are involved (plural interaction). The satellite persons in this case lack number reference. Salas (1979:144-148) refers to this complex relation as the 'incorporation of the satellite'.

3. INTERACTIONS AND PROXIMITY RELATIONS

A most remarkable fact about Mapudungu interactions is their fixed and first person centered pattern. Salas noticed how these personal interactions are ruled by a 'hierarchy of focus' which mirrors the deictic field (Salas 1979: 156-163). (Focus in Salas' terminology does not refer to information structure. It stands rather for what is morphologically or grammatically primary.) The hierarchy is expressed as follows:

(A) 1p > 2p > 3p Def. > 3p Indef. (Salas 1979:159)

This hierarchy says that given an interaction between a 1p and a 2p, the 1p will be axis and the 2p satellite (no matter what number is involved or the way the transitive polarity is distributed among the persons). Given an interaction between a 1p and a 3p, then, again, the 1p will be axis and the 3p satellite. Given an interaction between a 2p and a 3p, the 2p will be axis and the 3p satellite. Finally, in an interaction between a 3p Def. and a 3p Indef., the 3p Def. will be axis and the 3p Indef. satellite. In short, (A) is saying that given an interaction between any two grammatical persons the leftmost person in this sequence will be axis and the other satellite.

3.1 Even though scheme (A) above does account for the cooccurrence pattern in these interactions and is revealing of the egocentricity which appears to structure them, (A) fails to show an important fact about third person interactions, and it brings in the feature Definiteness, which is not relevant for the egocentric organization of the pattern as such. In any interaction between two third persons, the feature Definiteness (and, hence, choice as to whether the value definite or the value indefinite is selected) can only apply to the satellite position. Axis is always definite in such an interaction. The two last steps in (A) are misleading because they wrongly identify Definiteness as the free variable controlling what will be axis and what satellite in a purely third person interaction. Also, by its outline, (A) suggests that in an interaction between a 2p and a 3p, the 3p will be definite. That is, of course, not the case, and it is clear from Salas' own analysis that he does not intend to suggest this.

3.2 As stated earlier, 'interaction' refers here to an interplay between two grammatical persons mediated by a verb. Needless to say, these forms encode actions involving at least two entities. In English as well as most other European languages, the canonical interaction patterns the transitive relation, where an entity encoded in a certain grammatical status affects or is affected by another entity in a different grammatical status. By contrast, Mapudungu interactions pattern a proximity relation in which an entity encoded in a certain grammatical status differs on an ego-proximity scale from another entity encoded in a different grammatical status. This grammatical asymmetry between the persons involved in interactions follows from the nature of grammatical structure and is iconic of some aspect of real interactions ('real' here is to help us refer to the situation and not to the grammatical phenomenon under discussion). For most of the European languages, the most typical aspect to be highlighted in interactions is 'flow of energy' (from one entity to another), whereas for Mapudungu it is 'relative proximity' (between entities). Whenever there is an interaction, the relation of the grammatical persons involved toward the verb is bound to be different and mutually exclusive. Having two grammatically identical persons and a verb would simply fail to encode a real interaction. That is, it is by a difference in grammatical status that the intended or perceived asymmetry in the real interaction is encoded. Needless to say, the two sides involved in normal English interactions need not instantiate an AFFECT scheme (as in 'I hit him' or 'you kissed her'). Interactions like 'I saw her' and 'he heard them' instantiate a PERCEIVE scheme; interactions like 'I saluted them' and 'she called you' instantiate a SIGNALIZE scheme; interactions like 'I made them' and 'he constructed it' are instances of a PRODUCE scheme; and so on. Thus, an interaction is not a transitive relation if by that is meant exclusively the AFFECT scheme. Undeniably, however, everyone of these other schemes, in a sense, receive the basic energy flow pattern from the prototypical AFFECT scheme. This point is significant, and the following sections will lead us back to it. We will explore some possible routes for Mapudungu interactions. Instead of 'prototypical scheme', I will refer to the primary semantic correlate of a pattern as its 'basic functional domain' or 'basic functional correlate'.

3.3 Interactions can be modelled by a simple branching device (Rivano 1989). Let us start with three elements (1, 2, and 3) corresponding to the three grammatical persons. Let the connecting line between them stand for 'interacts with' and let us stipulate that an entity higher in the branching construc-

tion also is higher in grammatical status. Thus, an interaction like 'I hit her', where 'I' (in the nominative) ranks higher in grammatical status than 'her' (in the accusative) would be modelled:

(B)

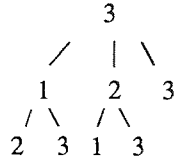
and an interaction like 'she hit me' would be:

(C)

The forms 1 → 3 and 3 → 1 respectively, can also be used to stand for these interactions.

The following is the whole combinatory pattern for English interactions, which is the same pattern for most European languages:

(D)



(D) above is the resulting pattern for the following possible interactions (we are factoring out the reflexive cases, since that applies to all grammatical persons alike):

(E) 3 → 1 (as in 'she rescued me')
3 → 2 (as in 'he likes you')
3 → 3 (as in 'he hates him')
1 → 2 (as in 'I understand you')
1 → 3 (as in 'I got him')
2 → 1 (as in 'you remembered me')
2 → 3 (as in 'you spoil him')

The left side of this paradigm is, then, higher in grammatical status. As is known, this is also the position ascribing the semantic attribute of Active to its referent. There is a perfect match between grammatical status, on the one hand, and relative control or activity, on the other. The whole left side of paradigm (E) above is Active, and its right side Passive. The assignment of these two values, which we might call the transitive function, has undoubtedly found a comfortable morphology in the variation of grammatical status in the interacting persons. (E) above can be reduced to (F) below:

(F) (1) 3 → 1, 2, 3
(2) 1 → 2, 3
(3) 2 → 1, 3

Notice that the only internally motivated arrangement for the rules above is the placement of third person in top position, i.e. that rule (1) precedes the other two. This is in accord with the higher combinatory freedom which the third person enjoys in this pattern.

3.4 The possible combinations in Mapudungu interactions amount to the following:

(G) 1 → 2
1 → 3
2 → 3
3 → 3

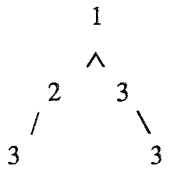
Notice that the dividing line in these schemes stands for grammatical status, not for transitive polarity. The left side of (E) and (G) only means 'higher in grammatical status' and the right side 'lower in grammatical status'. In Mapudungu this does not correlate with the values Active and Passive in any way, but with a scale of relative proximity. As has been stated (section 2 above), the values Active and Passive are controlled by the grammatically lower satellite persons, not by the split in grammatical status. Thus, a form like 1 → 3 covers cases like the following:

(i) *chali-fi-n* 'I saluted him/her/them'
SALUTE-3p Satellite Passive-1p Axis Sg
(ii) *chali-e-n-eo* 'he/she/they saluted me'
SALUTE-3p Satellite Active-1p Axis Sg
(iii) *chali-nge-n* 'someone/they(indef.) saluted me'
SALUTE-3p Satellite Active Indefinite-1p Axis Sg

The transitive value of the 1p axis person *n* is active in (i) but passive in (ii) and (iii), and this is clearly being controlled by the switch of satellite particle, not by the grammatical status of the position.

3.4.1 The combinations in (G) above create the following branching pattern:

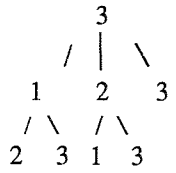
(H)



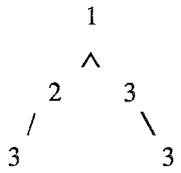
The higher and central position of element 1 in this pattern corresponds to the combinatorily higher status of 1p in the cooccurrence pattern. (H) is also clearly showing the central role of 1p relative to the other two persons, as well as the identity between 2p and 3p in relation to their possibility to combine with a grammatically lower 3p. (H) also contains the deictic logic behind these interactions: in any interaction, 1p is higher in grammatical status; in an interaction between a 2p and a 3p the 2p ranks higher. Thus, (H) above contains the scale 1p > 2p > 3p, which is a basic deictic order to be highlighted in Mapudungu interactions.

3.4.2 We may now contrast (D) and (H), that is, the English pattern with its Mapudungu counterpart:

(D)



(H)



A first striking fact when comparing these two patterns is the combinatory freedom in (D) as opposed to the fixed order in (H). This is consonant with the most obvious functional correlates for these patterns in their respective languages, namely the distribution of the transitive values of active and passive throughout the grammatical persons in English, and the arrangement of the grammatical persons according to relative proximity in Mapudungu. We could rewrite the possible combinations in (E) and (G) above, now with their corresponding basic functional correlates:

(E') ACTIVE–PASSIVE	(G') CLOSER TO EGO–FARTHER FROM EGO
3 → 1	1 → 2
3 → 2	1 → 3
3 → 3	2 → 3
1 → 2	3 → 3
1 → 3	
2 → 1	
2 → 3	

It should be kept in mind that Mapudungu does express 'energy flow' in its interactions. The control of that flow, however, is not dependent upon the variation of grammatical status of the persons involved, but only upon the satellite person in case. Thus, energy flow in Mapudungu is not a functional correlate of the interactional pattern as defined here. The pattern reflects combinatory possibilities vis-à-vis grammatical status. English clearly patterns a transitivity factor; Mapudungu, a proximity one.

3.4.3 Thus, the basic functional domains for these patterns in their respective home languages differ radically from each other. The English pattern organizes energy flow (activity relations), whereas the Mapudungu pattern organizes relative distance (proximity relations). It appears that, by emphasizing movement in terms of energy flow, interactional expressions in English present the character of 'actions', whereas Mapudungu interactions, by emphasizing space in terms of relative proximity, convey a sense of 'events'. The terms 'action' and 'event' are used here to epitomize the contrast between a situation where, on the one hand, activity takes preponderance over orientation, and, on the other, a situation where orientation takes preponderance over activity. Just as a hint in one direction: a paradox that always struck me as a particularly intriguing one in the style and thematics of what we have of Mapuche narrative is resolved by the above insight. Thus, from the tales, myths, legends, accounts and dialogues that have come to us mainly by the ethnolinguistic works of Lenz 1895-97, Moesbach 1930, and now Salas 1983, 1984 the following seemingly contradictory situation emerges: whereas interactions are highly recurrent in the texts, the themes seldom impress us as 'action-like'. The problem revolves around our understanding of 'action'. As far as linguistic form is concerned, whenever two entities are involved, 'action' comes down to 'interaction'. Thus, the basic functional domains for the interactions of each language are confronted each time we compare them.

As we know, the basic functional domain for interactions in a language like English is 'energy flow', whereas it is 'relative proximity' in Mapudungu. 'Actions' are to English interactions what 'events' are to Mapudungu interactions. From the English perspective we could also say 'events are the actions of Mapudungu'; from the Mapudungu perspective 'actions are the events of English'. Each language defines a situation type by the particular configuration of their respective interactions.

3.4.4 A scheme like (H) above for Mapudungu interactions is revealing of its egocentric nature, creates two third persons without bringing in the extraneous feature Definiteness, differentiates 2p and 3p at the point of their relative position in the deictic scale while correctly identifying them in that both interact with another, lower status 3p, and allows cross language views. Nevertheless, we still need to examine the interpretation of an interaction between two third persons. The interaction 3 → 3 is paradigmatically ordered in (G) and consequently interpreted so as to have 3p Axis (higher grammatical status) refer to an entity closer to ego than the referent of 3p Satellite (lower grammatical status). Apart from the morphosemantic basis generated so far, there is some empirical evidence for that interpretation. A few preliminary tests with two informants were carried out. The results show that these informants almost invariably chose the satellite third person to refer to the person farther away from an artificially conceived ego position, and the axis third person to refer to the person closer to ego (see Appendix).

4. METAPHORICAL GRAMMATICALIZATION

In various degrees of explicitness, the notion of topic has appeared in connection with Mapudungu interactions (Lenz 1944; Salas 1979; Grimes 1985; Rivano 1988). Roughly, what one finds is the ascription of a topic value to the axis persons and that of a non-topic value to the satellite persons. Grimes 1985:144 is the most explicit here: "It [the axis position] relates to the topical structure of the discourse rather than to the grammatical relation of subject"; and furthermore "[+topic] applies to a primary referent, [–topic] to a secondary or satellite referent (Salas' term) besides the primary referent" and finally, "One of the conditions for understanding a text is that there be something in the referential field that the addressee can identify; the speaker can go on from it to say other things, but needs to have something identified to go on from. This set of one or more referents that the speaker treats as if the addressee can identify it successfully at any point in a text is the topic at that point in the text" (Grimes 1985:157).

There are a few points to consider in this context. As Lyons (1968:335f.) points out, the notion of topic formulated in terms of new and old information, or, as in this case, in terms of possibility of identification, can fit any portion of the expression, no matter what part of speech it is. Referentially, it need not apply only to entities, as is the case in the interactions, but also to qualities, processes, actions, etc. In brief, topic defined in terms of information structure is a general notion belonging to a functional level beyond the purely grammatical one (e.g. Chafe 1970, chapter 15). The ascription of a topic value to the interactions, then, can only be taken so as to mean that within these complexes where two distinct sets of grammatical persons interact, one of them regularly refers to topical entities, whereas the other set regularly refers to non-topical entities. Again, it would be confusing to speak of one of the grammatical persons in the interaction as 'the topic', but only (of its referent) as topical relative to the other non-topical member of the interaction. Now, if defined in terms of information structure (old vs. new information; identified vs. unidentified referents), the notion cannot possibly apply to (the referents of) either a first or a second person, for these are given, known, or identified from the outset. Thus, a second person cannot refer to a non-topic entity, for the speaker assumes the identity of the hearer as something given and known. Even more so, a first person can impossibly refer to a non-topic entity, for the speaker cannot but assume his/her own identity. Thus, for instance, in (i) below, it would be confusing to say that the referent of *e* is non-topical as opposed to that of *n*, for both referents are given, known, identified, etc. from the outset:

(i) *leli-e-n* 'you looked at me'
LOOK AT-2p Satellite Active-1p Axis Sg

Suffice it to say that *e* is Satellite and *n* Axis. These terms have already been elaborated enough so as to inform us about the morphosyntactic nature of these positions (Salas 1979, Rivano 1987, 1988). If approached in terms of information structure the notion of topic cannot be used to organize this field we are calling 'interactions' as a whole. The values topic and non-topic do not apply to every interaction. Thus, the distinction topic–non-topic does not match that between Axis and Satellite persons. The ascription of a topic value to Mapudungu interactions can only be relevant when dealing with interactions between third persons, for only then can the functional opposition bet-

ween identified and unidentified, or new vs. given referents apply. Given the alternative 'new vs. given referents', the only possible grammatical person sensitive to that variation is third person. Both first and second person necessarily possess a fixed value, namely 'given'.

4.1 By the end of section 3 we were still considering the question of how to interpret an interaction between two third persons. The suggestion in paradigmatic terms was that the axis 3p would be 'closer to ego' than the satellite 3p. There is also empirical evidence in support of that interpretation. On the other hand, as has been pointed out, the only instance where a topic value can be at stake is precisely in interactions between two third persons. Syntactic evidence for the ascription of a topic value to third person interactions can be found in contexts like the following (Rivano 1988:79-81):

(i) *inei kam langüm-e-i-eo Peiro* 'who killed Peiro?'
WHO THEN KILL-3p Satellite Active-3p Axis PEIRO
(ii) *inei kam langüm-fi-i Peiro* 'whom did Peiro kill?'
WHO THEN KILL-3p Satellite Passive-3p Axis PEIRO

A few things should be observed here. We may begin by pointing out the different grammatical functions which the interrogative constituent plays in the English translation. Notice that in terms of the grammatical functions pertinent to the Mapudungu versions, no difference is implied. Thus, both (i) and (ii) above present the same morphosyntactic structure in Mapudungu. The difference in meaning is obtained by a switch of particles with opposed transitive value, but belonging to the same grammatical class, and performing the same grammatical function. Thus, the following 'trace' representation applies to the English versions but not to the Mapudungu examples:

(i') who$_i$ [t_i killed Peiro]
(ii') whom$_i$ [Peiro killed t_i]

The correlation between grammatical function on the one hand and transitive value on the other is, again, plain here: subject codifies an agent, while object codifies a patient. That correlation, as we have seen when patterning interactions, is not present in Mapudungu. The structures of (i') and (ii') above applied to the Mapudungu examples would wrongly identify *inei* in (i) above as coindexical with the subject of the sentence (or its first grammatical argument). That is of course wrong: *inei* is coindexical with *e..eo* in (i) (which is

the second argument of the structure, the satellite person), for the same reason it is coindexical with *fi* in (ii), namely the topicality involved. What happens is that there is only one constituent that can possibly refer to a known entity which is an identifiable person and a topic in these structures, namely *Peiro*. (For our purpose here, this is equivalent to saying that *Peiro* cannot be the new information in these messages.) Thus, *Peiro* is coindexical with the axis person in (i). The only possible coindexicalization for *inei* is with the non-topical referents of the satellite persons. The intrinsic function of *inei* is to look for new information, more specifically, an unknown entity. As far as third person entities in interaction are concerned, the grammar for this in Mapudungu has the satellite position working on that function. It is in contexts like this that a topic category emerges from the satellite–axis distinction.

4.2 We have, then, a basic functional correlate for the interplay between different grammatical persons in the interactions. This basic correlate is ego-proximity. That is also the primary functional correlate for an interaction between two third persons. We see now that a secondary functional correlate of the interplay between two different third persons is topicality. If the first, basic understanding of this interplay is ego-proximity, the notion of a metaphorically coined topic category suggests itself. Thus, relative proximity seems to help shape relative information. The shaping is rather simple: closer to ego is old information; farther from ego is new information. Lakoff and Johnson's (1980, chapter 4) idea of 'orientational metaphors' may be illuminating in this respect. Thus, for instance, expressions like *I am feeling up today* and *I am feeling down* are oriented by the metaphor HAPPY IS UP; SAD IS DOWN, which is the same orientational metaphor behind expressions like *you lifted my spirit, he sank into a depression*, and the like. The formation of a topic category out of a proximity scale is a different matter, but presents some similarities. It is different because Lakoff and Johnson are not dealing with the formation of grammatical categories in terms of metaphorical processes. They are explaining everyday language in terms of metaphorical conceptualizations. But it is similar in that the category of topic can be said to be oriented by proximity, giving rise to the following orientation: KNOWN IS NEAR; UNKNOWN IS DISTANT (or GIVEN IS NEAR; NEW IS DISTANT). Lakoff and Johnson also talk about the experiential or physical basis for these metaphors. By this is meant the kind of normal experiences or physical correlates which would support the metaphorical relation. Thus, for instance, for HAPPY IS UP; SAD IS DOWN, the following physical basis is given:

"Drooping posture typically goes along with sadness and depression, erect posture, with a positive emotional state" (Lakoff & Johnson 1980:15). This seems clear enough in the case of topic. Identity is intimately related to sense experience, and proximity is a condition for sense experience (e.g. *out of sight, out of mind*). Notice that proximity is also a very active parameter in English as well as the other European languages, and presumably universally so. Thus, expressions like *far-fetched, getting closer to a solution, remotely similar,* and many others, are created within the same orientational framework of proximity. The difference between this and what we are saying of Mapudungu, is that the Mapudungu conceptualization is made part of the very mechanism of the language, that is part of its grammar. A grammatical category has emerged out of this process. That makes it an automatic, inescapable way of conceiving of relations when speaking Mapudungu. I refer to these jumps in grammar from one functional domain to another as 'metaphorical grammaticalization'. This is to highlight the shaping process that is taking place, where one domain is structured in terms of another domain.

4.3 Proximity is not only the primary functional domain when shaping topicality in Mapudungu. This appears mostly in instructions, descriptions and desiderative statements, but orients value judgements as well, where the malefactive–benefactive polarity operates. Consider the following examples:

(i) *mütrüm-ñma-nge-n pu pichi wentro* 'someone called the children away from me'
CALL-3p-3p Satellite Active Indefinite-1p Axis Pl LITTLE MAN
(ii) *mütrüm-el-nge-n pu pichi wentro* 'someone called the children toward me'
CALL-3p-3p Satellite Active Indefinite-1p Axis Pl LITTLE MAN

The interaction here is between a first person Axis *n* and a third person Satellite *nge*. This interaction is expanded, for other referents are involved – the Mapudungu verb can contain up to four distinct grammatical persons in its morphology (Lenz 1944:92). The new elements here are *ñma* and *el* in (i) and (ii) respectively. Both are third person markers coindexical with *pu pichi wentro* 'the children', but whereas *ñma* removes its nominal value from the passive entity of the interaction, *el* approximates it (cf. Salas 1979:172-85). This is a basic function for these particles. Consider now the following sentences (remember that *e..eo* is a discontinuous segment, analyzed as the grammatical complex '3p Satellite Active'):

(iii) *küdaw-ñma-e-n ñi mapu* 'you worked my land to my damage (and without me knowing about it)'
WORK-3p-2p Satellite Active-1p Axis Poss LAND
(iv) *küdaw-el-e-n ñi mapu* 'you worked my land to my benefit (for me)'
WORK-3p-2p Satellite Active-1p Axis Poss LAND
(v) *leli-ñma-e-n-eo winka ñi ñawe* 'the winka looked covetously at my daughter'
LOOK AT-3p-3p Satellite Active-1p Axis NON-MAPUCHE Poss DAUGHTER
(vi) *leli-el-e-n-eo winka ñi ñawe* 'the winka watched my daughter for me'
LOOK AT-3p-3p Satellite Active-1p Axis NON-MAPUCHE Poss DAUGHTER

Clearly, examples such as the ones above reveal that malefactive and benefactive values are being oriented by the basic meanings of approximation and removal. Thus, *ñma* is basically '3p away from the Passive of the interaction', but codifies also a malefactive judgement; *el*, on the other hand, is '3p toward the Passive', and serves to codify a benefactive judgement. Another orientation is thus at work here, along the lines: GOOD IS NEAR (approaching); BAD IS DISTANT (distancing). Again, being a metaphorical grammaticalization, this process is an implicit part of the language, automatically patterning reality as expressed in Mapudungu.

4.4 Let us briefly and only tentatively consider what we are calling metaphorical grammaticalization, whereby a functional domain is patterned by the basic form of another functional domain. As we said when discussing English interactions, there is a trace of energy flow in any interaction, no matter what semantic scheme it actually conveys, as if the overall system wore the imprint of the prototypical AFFECT scheme. To take just one example, in an interaction like 'I saw you', even though 'I' might as well be perceived as a passive receiver of visual input, the impression of 'you' being passive, and 'I' being active is automatically forced on us. However, contrary to the actual energy flow, if any, of a given interaction, English patterns energy flow from higher to lower grammatical status. The organization of energy flow in terms of grammatical status becomes a dominant unit in the system, affecting everything in its vicinity. Thus, other contents using grammatical status are affected by the energy flow domain. I am suggesting that something analogous happens in Mapudungu, but here we are faced with the organization of proximity relations in terms of grammatical status rather than that of energy flow. The suggestion is that in any Mapudungu interaction, no matter what the actual

proximity relations are, if any, the impression of there being one in conformity with the egocentric pattern will be conveyed.

The thorough articulation of a functional domain in terms of a given grammatical pattern can be thought of as creating a gravity center attracting other functional domains and imparting on them some trait of the primary function. It is in this sort of gravitation that metaphorical grammaticalization occurs whenever a new category emerges out of a secondary attraction. The study of these gravitational centers defines a metaphorical space in grammar.

APPENDIX

(A) below schematizes the proximity relations among participants in a drawn situation. The drawing was in each of a series of cards presented to two native speakers: Graciela Ñamkuleo (informant 2) and José Ñamkucheo (informant 1), both from the Cautín Province, central Mapuche territory (my field notes: Chile, April-May 1989). The drawing was always the same, only the messages in the cards variated. P_1 and P_2 stand for two persons talking to each other. The message goes from P_2 to P_1. P_3 and P_4 stand for two girls at different distances from the dialogue:

(A)

TEST 1

Below is the series of messages which P_2 conveys to P_1 on each of the cards. The informants were asked to decide among P_3 and P_4 who was María and who Juana:

(i)	*mütrümeyeo Juana María*	'Juana called María'
(ii)	*María mütrümeyeo Juana*	'Juana called María'
(iii)	*Juana mütrümfi María*	'Juana called María'
(iv)	*Juana María mütrümfi*	'Juana called María'
(v)	*María mütrümfi Juana*	'María called Juana'
(vi)	*María Juana mütrümeyeo*	'Juana called María'
(vii)	*Juana María mütrümeyeo*	'María called Juana'
(viii)	*Juana mütrümeyeo María*	'María called Juana'

(ix)	*María Juana mütrümfi*	'María called Juana'
(x)	*mütrümfi María Juana*	'Juana called María'
(xi)	*mütrümeyeo Juana María*	'Juana called María'

Notes: *mütrüm* = 'call'; *e..eo* is the discontinuous segment for 3p Satellite Active; *y* is the intervocalic allomorph of *i* which marks 3p Axis; *fi* is *fi* + *i*, but there is word final vowel reduction; *fi* marks 3p Satellite Passive.

As has already been established (Rivano 1987; 1988), the nominal (extraverbal) positions in this clause type (i.e. two nominals and an interactive verb) can be seen as controlled by a morphosyntactic function that brings morphological content onto syntactic position. The free variable is the Satellite person in the verb. The morphosyntactic function is expressed as follows:

(B)

fi / e..eo
V + –
– V +
– + V

where V stands for an interactive verb, + stands for the control of the pre- or postverbal position in any of the given syntactic configurations, and – is the rest of this control, where we find the values opposite to those positively ascribed to the + position. Thus, for instance, a configuration like [NOMINAL$_1$ + VERB + NOMINAL$_2$] is the target structure for [– V +] above (the subscripts mark word order, not hierarchical order). If the VERB in this construction contained the *fi* + *i* interaction, then NOMINAL$_2$ would be controlled by *fi*, and thus receive from it all its morphological specification (Passive, non-topical, 2nd argument), whereas NOMINAL$_1$ would be coindexical with *i* (and consequently Active, topical, 1st argument). Again, in a configuration like [VERB + NOMINAL$_1$+ NOMINAL$_2$] (the target for [V + –]), say in the *eyeo* interaction, NOMINAL$_1$ would obtain the whole morphological specification from *e..eo* and NOMINAL$_2$ that from *i*. Any syntactic configuration of the type of clause under study can be mapped onto (B) to obtain the right morphosyntactic coindexicalization.

Results (valid for both informants, unless stated otherwise):

(i)	P_3 = María	P_4 = Juana
(ii)	P_3 = María	P_4 = Juana
(iii)	P_3 = Juana	P_4 = María
(iv)	P_3 = Juana	P_4 = María

(v)	P_3 = María	P_4 = Juana
(vi)	P_3 = María	P_4 = Juana
(vii)	P_3 = Juana	P_4 = María
(viii)	P_3 = Juana	P_4 = María
(ix)	P_3 = María	P_4 = Juana
(x)	P_3 = Juana	P_4 = María
(xi)	P_3 = Juana	P_4 = María
(xii)	P_3 = María	P_4 = Juana (informant 1)
	P_3 = Juana	P_4 = María (informant 2)

Summary of results:
There are 24 deictic judgements (i.e. two informants and 12 linguistic trials). 23 of these judgements conform to the following regularity: the Satellite person refers to entities farther away from the dialogical situation than the Axis person. Informant 2 in (xii) is the only exception to that rule.

TEST 2
Like Test 1 above, but the verb root now is *chali* 'salute', and only informant 1 was tested:

			Results	
(i)	*María chalifi Juana*	'María saluted Juana'	P_3=María	P_4=Juana
(ii)	*María chalieyeo Juana*	'Juana saluted María'	P_3=María	P_4=Juana
(iii)	*chalieyeo María Juana*	'María saluted Juana'	P_3=Juana	P_4=María
(iv)	*chalieyeo Juana María*	'Juana saluted María'	P_3=Juana	P_4=María
(v)	*Juana chalifi María*	'Juana saluted María'	P_3=Juana	P_4=María
(vi)	*chalifi Juana María*	'María saluted Juana'	P_3=María	P_4=Juana
(vii)	*chalifi María Juana*	'Juana saluted María'	P_3=Juana	P_4=María

Summary of results:
There are 7 deictic judgements, 6 of which are grasped by the following generalization: the Satellite person refers to entities farther away from the speech situation than the Axis person. (iv) is an exception.

DISCUSSION OF TESTS
As we saw throughout section 3 above, there is a pattern in the combinatory possibilities between Axis and Satellite persons. This pattern is stated in terms of grammatical status vis-à-vis the first person oriented hierarchy 1p > 2p > 3p: The choice of grammatical status for the interacting persons is ruled by this hierarchy. The centricity on first person in this pattern suggests an

egocentric organization of participants in the referential field. That is the interpretation which tests 1 and 2 above examine. We also established in sections 3 and 4 that this was particularly relevant for interactions between two third persons, since the category of topic emerged then from what is interpreted as a basic proximity function. These are the interactions tested here. The tests are only meant to be suggestive. Only two native speakers were tested, and that makes no sample. Neither can the two verbal roots used here aspire to be a representative portion of the lexical mass that can undergo interactive patterning. But even if the results above do not verify any interpretation, they at least do not falsify the one under consideration. The informants show a clear association pattern relating proximity judgements with grammatical status. The Axis position is regularly connected with the entity closer to the speech situation (and thus to ego) than the Satellite position. There are exceptions to this regularity in 1 (xii) and 2 (iv) above. It should be kept in mind, however, that there is nothing impossible about either alternative in any of these cases. That is, there is always the possiblity of interpreting Axis as referring to P_4 and Satellite to P_3. Previous information and discourse structure could render such a judgement appropriate. Needless to say, informants intuitively know that both alternatives are possible. They are asked to judge with no additional information which one they would choose first and which one they feel is the most natural first interpretation. We have reduced things to a level where variables are the minimally required ones and are under control. Any extraneous premise, assumption, or sudden switch of orientation from the informant could change his or her judgement. Exceptions may well prove to be the rule in a given real speech situation. The results of these tests, however, are clearly compatible with the proximity correlates arrived at from the morphosemantic approach of this study.

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Morphology in Referent Grammar and in the Automatic Translation System SWETRA

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Abstract
Most of the work in Referent Grammar so far has focused on syntax, but it is clear that the syntactic rules must rely on some kind of lexical information about the form, meaning and category of the words to be used in the rules. As the lexicon cannot include all possible forms, at least not in such languages as Swedish, Russian and Georgian, some kind of morphological rules are needed. Such rules also reflect the morphological competence of the language users, as demonstrated e.g. when new loan-words are to be inflected. This joint paper is a discussion of the problems met when morphological rules are to be integrated in Referent Grammar and when morphological rules are to be localized in the whole multilingual translation system SWETRA.

INTRODUCTION

Referent grammar (RG; Sigurd 1987) is a type of generalized phrase structure grammar enriched with functional representations. Its noun phrases also include numbered referent variables which has given the grammar its name. Referent grammar is written directly in the Definite Clause Grammar formalism (supported by most Prolog programs) and can therefore be run and tested both in analysis and generation directly on computers. Referent grammar is used in the automatic translation project SWETRA (Swedish Computer Translation Research, supported by The Swedish Research Council for the Humanities and Social Sciences) and extensive grammatical modules for English, Swedish and Russian have been implemented (Sigurd & Gawrońska-Werngren 1988).

The RG grammar rules can analyze a sentence and give the equivalent functional representation(s) or generate a sentence if given a functional representation. The RG analysis also gives information about the mode and the focused constituent of the sentence. The following are some simplified RG rules which may be found in a grammar module analyzing and generating Swedish. The rules can analyze and generate such sentences as: *Idag kom hunden* (literally: 'Today came the dog').