

NAHUATL AND THE POLYSYNTHESIS PARAMETER*

Joyce Bruhn de Garavito¹, Roberto Herrera Herrera²,
Amanda Holzrichter²

¹The University of Western Ontario, ²Universidad de las Américas, Puebla

1. Introduction

Nahuatl or Mexicano, a language spoken in central Mexico, has been in contact with Spanish for over 500 years. Most speakers are bilingual. Recent work has suggested that there has been a great deal of restructuring of Nahuatl, so that it is converging with the grammar of Spanish (Suarez 1977; Hill and Hill 1986). For example, although classical Nahuatl is known to have had post-positions (Sullivan 1992; García Escamilla 1994), currently it exhibits prepositions, although these are not totally similar to Spanish prepositions in that they generally have to appear incorporated into a possessive pronoun (Campbell and Karttunen 1989; Ramírez 2005).

Nahuatl is spoken by around a million people, but speakers are spread out in small villages that may be relatively isolated from other regions. As a consequence, it has fragmented into different dialects, to the point that it has been suggested that it is a language family and not a language. This may be one of the reasons for the discrepancies that, as we shall see, can be found among the different authors regarding its current structure.

The aim of this paper is to ascertain to what degree convergence has taken place, in particular regarding the structure of Nahuatl as a polysynthetic language. Following Baker (1996) we will assume that, in order to be polysynthetic in the technical sense, a language must exhibit certain properties. We will focus on three of these, noun incorporation (NI), variable word order and determiners.

This paper reports on a field study carried out in two villages, one of which, San Isidro Buensuceso, lies among a cluster which has been very well studied (Hill and Hill 1986), in the state of Tlaxcala, and the other which has been relatively ignored, Cuetzalan. This last is situated north of the state of Puebla, about three hours by car from San Isidro. The Cuetzalan dialect differs from San Isidro's in significant ways, in fact it is not certain up to what point the two are mutually intelligible.

2. The Polysynthesis Parameter

Baker (1996) argues that there is a macroparameter which distinguishes polysynthetic languages from other types. In particular, the Morphological

* This research was made possible by a grant from the Social Sciences and Humanities Research Council of Canada to the first author. We are truly grateful.

Visibility Condition (1) applies to these languages exclusively. Basically, what (1) states is that arguments in polysynthetic languages are licensed by the presence of agreement on the verb (i) or by incorporation of the argument into the verb (ii).

- (1) The Morphological Visibility Condition (MVC) (Baker, 1996, p. 17)
 A phrase X is visible for θ -role assignment from a hear Y only if it is coindexed with a morpheme in the word containing Y via:
- i. an agreement relationship, or
 - ii a movement relationship

Several properties are derived from the presence of the MVC in a language. Of interest to this paper are the possibility of NI, free word order, and lack of determiners.

MacSwan (1998) has argued that Nahuatl serves as evidence against Baker's Polysynthesis Parameter in that it exhibits some of the characteristics, but not others. He found that NI was very productive but word order is fixed. Furthermore, he argues that Nahuatl exhibits determiners not unlike the determiners in Spanish.

There is very little agreement on several of the points MacSwan argues for. According to Hill and Hill (1986) NI is no longer productive (see also Suarez 1977). Regarding word order, most researchers agree that it is fixed, but cannot agree on what it is. MacSwan found an SVO order (see also Brockway 1979; Tuggy 1979), while Beller and Beller (1979) and Hill and Hill (1986) found VSO with possible SVO and VOS. Finally, MacSwan argues for determiners, but few authors are in agreement with this point. There is a particle *in* that sometimes precedes nouns, but it is not certain exactly what role it plays. According to Andrews (1975) its use is more or less optional.

3. Noun Incorporation: Findings

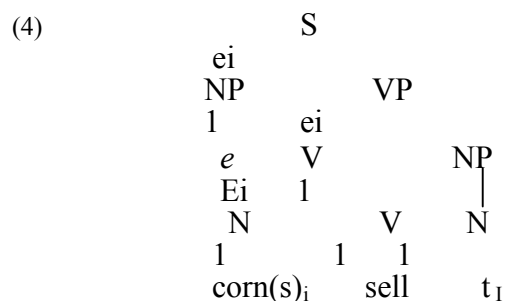
Noun Incorporation is a characteristic of Polysynthetic languages. It is the process by which the head of an object is moved from the object position to form part of the verb. This process is illustrated for Nahuatl in (2) and (3), and in the structure given in (4), based on Baker (1988). In (2), the object 'corn' is realized as a complement of the verb. The verb carries the prefixes of subject agreement [*ni-*] and object agreement [*-k-*]. In (3) the object *tlaul* 'corn' has been incorporated between the subject agreement and the verb root *nemaka* 'sell'. The object agreement morpheme is no longer present.

- (2) Ni-k-nemaka-s tlaul
 1^{sg}-3rd-sell -fut corn
 'I sell corn.'

- (3) Ni-tlaul-nemaka-s
 1^{sg}-corn-sell-fut

'I will sell corn.'

The structure proposed for NI (Baker 1988):



As we shall see in the in the next section. we found that NI was very productive in the two towns we studied. There were few lexical restrictions on the type of noun that could incorporate, but there were syntactic restrictions, as expected.

3.1 Syntactic Restrictions

Given the structure in (4), the prediction regarding noun incorporation is that neither subjects nor adjuncts should be able to incorporate, as this would be a violation of the ECP (Baker 1988), as stated in (5).

- (5)
- a. Traces must be properly governed.
 - b. A properly governs B iff A governs B, and A and B are coindexed.

As we saw above, when an object incorporates, it replaces the agreement morpheme. There is no third person subject agreement. There are two ways of verifying whether incorporation of the subject is possible. Nahuatl words, when used in isolation, bear a particular word marker. This marker is not present after incorporation. In the second place, we must examine the stress placement, which always falls on the penultimate syllble in Nahuatl. If the subject is separated from the verb, you expect both the subject NP and the verb to have stress, while if the subject has been incorporated, stress should fall only on the penultimate syllable of the verb. As far as we can tell, this is ungrammatical (6).

- (6) *Pil-ki-nemáka koton-me. (San Isidro Buensuceso)
 child-3rd- sell shirt-pl
 'The child sells shirts.'

We do not have definitive information about the case of unaccusatives. Both Merlan (1976) and Hill and Hill (1986) suggest unaccusative subjects behave differently, but our subjects treated them as all other intransitive verbs.

Evidence that the incorporation of adjuncts is not grammatical is easier to come by. An example of the ungrammaticality of this construction is given in (7).

- (7) a. Ne ni-neknemi kwatlan. (San Isidro Buensuceso)
 I 1st-walk to the field
 'I walk to the field.'
- b. *Ne ni-kwa-neknemi.
 I 1st-field-walk (=6a)

We have suggested that incorporation is restricted to direct objects for syntactic reasons (Baker 1988). However, a possible interpretation is that it is the theme that is incorporated, and the restriction is semantic (Mithun 1984). The following sentences ((8)-(9)), in which a direct object which is not the patient of the sentence is incorporated, shows that incorporation is a process that involves a syntactic relationship.

- (8) a. Nochitonal ni-kochi (San Isidro Buensuceso)
 all day 1st-sleep
 'I sleep all day.'
- b. Ni-tonal-kochi.
 1st-day-sleep (=7a)
- (9) a. Ne ni-k-panawia atlatl. (San Isidro Buensuceso)
 I 1st-3rd-cross river
 'I cross the river.'
- b. Ne ni-atlat-panawia.
 I 1st-river-cross
 'I cross the river.'

3.2 Productivity

Counter to what Hill and Hill (1986) and Suárez (1977) argue, we found noun incorporation to be very productive, with very little restrictions on the type of noun that could incorporate. As shown in the following examples, both inanimate ((10)-(12)) and animate ((13)-(14)) nouns could incorporate, and so could borrowings from Spanish (15).

- (10) a. Ni-k-chijua taxkal (Cuetzalan)
 1sg.-3rd-make tortilla
 'I make tortillas'

- b. Ni-taxkal-chijua
1sg-tortilla-make (=4a)
- (11) a. Yehua-tsin kon-(k)-chiwa tlaxkal . (San Isidro Buensuceso)
she -hon 3rd- (3rd)-make tortilla .
'She makes very good tortillas.'
- b. Yehua-tsin kon-tlaxkal-chiwa.
she -hon 3rd-tortilla-make (=5a)
- (12) a. Pipiltontzin ki-nemaka koto(n)-me. (San Isidro Buensuceso)
child 3rd-sell shirt-pl
'The child sells shirts.'
- b. Pipiltontzin ki-koto-nemaka.
child 3rd-shirt-sell
- (13) a. Ne takat ki-ni-nemaka pili-mej. (Cuetzalan)
that man 3rd-?-sell child-pl
'That man sells children.'
- b. Ne takat pil-nemaka.
That man child-sell (=11a)
- (14) a. Ni-k-pia bebe. (San Isidro Buensuceso)
1st-have baby
'I have a baby.'
- b. Ni-bebe-pia.
1st-baby-have (=12a)
- (15) a. Ni-k-namaka kamisas (Cuetzalan)
1st-3rd-sell shirts (Spanish)
'I sell shirts'
- b. Ni-kamisa-namaka.
1st-shirt-sell (=14a)

Although incorporation is productive, this does not mean that the process has not on occasion been lexicalized, leading to a different meaning for the incorporated and non-incorporated sentence. For example, (14a), with the object still in base position, is interpreted in the literal sense, while (14b), where the object has moved to the verb, means 'to care for a child.' The same happens with the verb 'to have' and the object 'field', in which the incorporated form means 'to tend the fields'.

3.3 Interpretation

One of the questions raised about NI in Nahuatl is whether it can be referential. According to Merlan (1976) it is usually used to refer back to an object which has already been mentioned. However, if NI is no longer productive in Nahuatl it may have lost this property, in which case NIs may be interpreted as compounds along the lines of ‘grocery shopping’ or ‘child care’ in English. This is exactly what Hill and Hill (1986) argue for this construction. The following two examples ((16)-(17)) show that this is not the case.

- (16) a. Ni-ki-marchi-li tekatl. Ni-ki-nemaka-ti tekatl. (San Isidro Buensuceso)
 1st-3rd-find-past shoes. 1st-3rd-sell-fut shoe
 ‘I found (some) shoes. I am going to sell them.’
- b. Ni-tekat-nemaka-ti mostla.
 1st-shoe-sell-fut tomorrow (=15a)
- (17) a. Kin-tasojta i-pil-juan. (Cuetzalan)
 3rd- love his/her-child-pl
 He/She loves his/her children.
- b. Mo-pil-tasojta.
 refl-child-love (=13a)

In (16), a story was presented to the informants, in which somebody found a pair of shoes and decided to sell the shoes because they did not have money. As the example shows, incorporation was allowable in such a situation. In (17), the unincorporated sentence expresses the fact that the person loves his/her own children. The incorporated form includes the reflexive agreement morpheme [-mo-], which stands for the possessive. Thus the meaning is not lost.

To summarize this section, NI appears to be productive in Nahuatl, with relatively few limitations on the type of noun that can incorporate. Furthermore, as expected, NI appears to obey the syntactic restrictions imposed by principles of grammar. Finally, as has been argued in Merlan (1976), the nouns that are incorporated into the verb can refer to individual items, that is, interpretation is not necessarily generic.

4 Word Order

As we saw above, the main argument put forward against the Polysynthesis Parameter rests on the fact that Nahuatl, generally considered a polysynthetic language, exhibits at least one of the properties of the parameter, namely NI, but not one of the other defining properties, free word order. According to Baker (1996), free word order is a direct consequence of the Morphological Visibility Condition (see (1)). Because arguments are made visible by agreement on the

verb or by incorporation, they do not have to appear in any fixed position in relation to the verb, but rather may be adjoined to IP, either to the right or to the left.

As we saw above, there is no agreement on word order in Nahuatl, perhaps due to the fact that different researchers have focused on different dialects. In our data, given that Nahuatl is a pro-drop language, most of the sentences we elicited from the informants followed the order (S)VO. However, there was variability across speakers. The informants from Cuetzalan, who were literate in both Spanish and Nahuatl, seemed to adhere more to the word order of Spanish, than the informants from San Isidro, who were semi-literate in Spanish.

According to Brockway (1979), who examined the Northern Region of the state of Puebla, which would include Cuetzalan, the basic word order is as in (18).

(18) INTR LOC SUBJ PRT OBJ/IOBJ

In Brockway's terms INTR refers to 'conjunctions, appositives, and interrogatives. PRT includes negatives, demonstratives, locatives (of time and space), quantifiers, directionals, numbers, subordinator, and articles' (1979, 146). The author explains that any change in word order signals focus or topicalization.

We decided to investigate the possibility that word order variation was tied to pragmatics by trying to elicit different word orders in different contexts. The informants were provided with different scenarios, and, as expected, this led to a greater variability than we had previously found. For example, almost all of the participants refused to accept the word order OVS. However, when the focus was changed, both the word orders in (19a) and (19b) were accepted by all the speakers. In a similar fashion, the speakers from Cuetzalan produced the sentence in (20) without problem.

(19) a. Nosoa okishi in molli.
my-wife made *in* mole (sauce)
'My wife made the mole.'

b. In molli okichi in nosoa
in mole made *in* my-wife
'The mole was made by my wife.'

(20) Ne tal kinamakak no-compadre ika ome poual uan majtak mil peso.
the land sold my compadre for 50 000 pesos
'The land was sold by the godfather of my child for 50 000 pesos.'

It is important to note that in (19) and (20) no morphological change has taken place from the 'active' to the 'passive'. The verb appears in exactly the same form, and nothing has been added to the DPs. In other words, it is clear that the focus of a sentence can be changed by changing the word order.

We would like to suggest that Nahuatl is still a free word order language, but the interpretation of the different orders has been tied to Spanish pragmatics. In Spanish changes related to focus and topic are accompanied by added morphology of some kind and/or changes in intonation (Zubizarreta 1998). These changes signal changes in the position of the different elements. For example, in (21), the object has been moved to Topic Phrase, with concomitant clitic doubling (Cinque 1990; Anagnostopoulou 1997; Rizzi 1997).

- (21) Los chocolates *(los) compré en el supermercado.
 the chocolates them bought-I in the supermarket
 ‘The chocolates, I bought in the supermarket.’

Given that in Nahuatl there is no morphological indication to point to the distinction between new and old information or between focused and non-focused material, it is possible to speculate that these pragmatic differences are not encoded in the syntax (see Vikner 1995; Vikner 1997; Rohrbacher 1999 for arguments that morphology in fact drives syntax), but rather that the different arguments are free to adjoin to IP, as the Polysynthesis Parameter suggests. However, because of contact with Spanish, the different word orders have come to be associated with certain pragmatic interpretations. Convergence between Spanish and Náhuatl has taken place, but not in the syntax, but rather at the level of pragmatic interpretation of the relation between the different arguments and the discourse.

So far these conclusions are only tentative, and more work has to be done. Particularly, we would like to study possible changes in intonation between the different word orders.

Before moving on to the next section, we would like to point out that word order within the noun phrase seems quite free, as the examples in (22) and (23) show. This was so for all the informants.

- (22) a. Atol tlaol
 atole corn
 ‘Corn atole’
 b. Tlaol atol
 corn atole (=22a)
 c. c. Atol de tlaol.
 Atole *de* corn (=22a)
- (24) a. Istak tilma.
 white clothing
 ‘White clothing.’
 b. Tilma istak
 clothing white (=24a)

5. Determiners

One of the predictions of the Polysynthetic Parameter Hypothesis is that a language with NI does not have determiners. This is due to the fact that a determiner phrase would add another functional layer to the structure of the NP. If the incorporating lexical head moves straight from the object position into the verb, it will cross the head of DP, thus violating the Head Movement Constraint (Travis 1984). If, on the other hand, it first adjoins to D, then it is no longer a simple head which is incorporating, which is ruled out (Li 1990).

MacSwan, referring to the particle *in* which precedes many nouns, (MacSwan 1998) argues that Nahuatl has determiners that are indistinguishable from Spanish determiners. We have not found this to be the case, although we freely admit we don't have an explanation for this particle. Again, it seems to us that the informants who were literate were more likely to insert this particle as if it were a Spanish determiner, although even for these informants there was a great deal of variability. For example, one of the informants from San Isidro, who read and wrote Spanish and seemed to be able to transfer this ability to Nahuatl, almost, but not always inserted *in* in subject position, as Spanish would require, as shown in the examples in (25), which were all produced by him. (25a) includes the particle, (25b) does not include it in the subject, but does in the object and (25c), produced later, includes it in both subject and object. Note that in (25c), the Spanish translation would not include a determiner before the object. In contrast, another informant, who was semiliterate in Spanish, almost never used *in* with subjects (26), and not often with objects. Finally, we found cases in which the particle was used preceding a possessive marked noun (27), which would not be possible in Spanish.

- (25) a In suatsintli omichiwili tlashkal
in woman made-you tortilla(s)
 'The woman made you tortillas.'
- b. Popokatsin okitek in xochitl denka teopantsinko
 girl cut *in* flowers is church-in
 'The girl who cut the flowers is in the church.'
- c. In suatsintli okinchiwili in tlashkal
in woman made-them *in* tortilla
 'The woman made them tortillas.'
- (26) Chichi ki-kwa tlashkal.
 dog 3rd-eat tortilla
 'The dog eats tortillas.'
- (27) Nikunituki in no-cerveza.
 I-drink *in* my-beer

‘I am drinking my beer.’

As the data above suggest, the use of the particle *in* cannot easily be equated with a determiner system, and certainly not with the determiner system of Spanish. In this regards, therefore, we must strongly disagree with MacSwan (1998).

6. Summary and Conclusions

In this paper we have tried to evaluate Baker’s (1996) Polysynthesis Parameter in light of data from Nahuatl. Baker proposed that Polysynthetic languages exhibit certain properties, all of which can be derived from the Morphological Visibility Condition. Among those, we have examined Noun Incorporation, word order and determiners.

The conclusions regarding Noun Incorporation are clear. This process is productive among the speakers that we interviewed, from two different dialects. Furthermore, we found evidence that noun incorporation did not violate principles of grammar such as the ECP, but otherwise incorporation was quite free. However, we have not yet examined unaccusative verbs. Merlan (Merlan 1976) suggested that the subject of unaccusatives can incorporate. This is to be expected if we assume that these subjects are underlying objects.

Regarding word order the results are not so clear, although there is some evidence that word order variations are tied to discourse factors, such as distinguishing between new and old information, and focus. We have tentatively suggested that this may not be evidence against Baker’s theory, but rather that it is evidence of convergence at the level of pragmatics, but not necessarily syntax.

Finally, we have disagreed strongly with the suggestion that Nahuatl has a determiner system similar to Spanish (MacSwan 1998). In fact, we find no evidence for a system at all. Rather, our informants used the candidate for a determiner, the particle *in*, sporadically at best.

In conclusion, it seems premature to dismiss the Polysynthesis Parameter based on data from Nahuatl. This does not mean, clearly, that there may not be other evidence, both from a theoretical and an empirical perspective, that may lead us to discard it. However, we believe it is an hypothesis worth considering in depth.

References

- Anagnostopoulou, Elena. 1997. Clitic left dislocation and contrastive left dislocation. In *Materials on Left Dislocation*, ed. Elena Anagnostopoulou, Henk Van Riemsdijk and Frans Zwarts, 151-192. Amsterdam: John Benjamins.
- Andrews, J. Richard. 1975. *Introduction to Classical Nahuatl*. Austin, TX: University of Texas Press.
- Baker, Mark C. 1996. *The Polysynthesis Parameter*. Oxford: Oxford University Press.

- Baker, Mark C. 1988. *Incorporation: a theory of grammatical function changing*. Chicago, IL: University of Chicago Press.
- Beller, Richard, and Patricia Beller. 1979. Huasteca Nahuatl. In *Modern Aztec grammatical sketches*, ed. Ronald Langacker, Arlington, TX: Summer Institute of Linguistics.
- Brockway, Earl. 1979. North Pueblo Nahuatl. In *Studies in Uto-Aztecan Grammar II*, ed. Ronald Langacker, 143-198. Arlington, TX: The Summer Institute of Linguistics and the University of Texas at Arlington.
- Campbell, Joe, and Frances Karttunen. 1989. *Foundation course in Nahuatl grammar. Volume 1: text and exercises*. Austin: The University of Texas at Austin.
- Cinque, Guglielmo. 1990. *Types of A'-dependencies*. Cambridge, MA: MIT Press.
- García Escamilla, Enrique. 1994. *Tlahtolnahuatilli. Curso elemental de náhuatl clásico en 15 fascículos*. México, DF: Plaza y Valdés Editores.
- Hill, Jane H., and Kenneth C. Hill. 1986. *Speaking Mexicano: Dynamics of Syncretic Language in Central Mexico*. Tucson: The University of Arizona Press.
- Li, Yafei. 1990. X⁰-binding and verb incorporation. *Linguistic Inquiry* 21: 399-426.
- MacSwan, Jeff. 1998. The argument status of NPs in Southeast Puebla Nahuatl: Comments on the Polysynthesis Parameter. *Southwest Journal of Linguistics* 17: 101-114.
- Merlan, Francesca. 1976. Noun incorporation and discourse reference in modern Nahuatl. *International Journal of American Linguistics* 42: 177-191.
- Mithun, Marianne. 1984. The evolution of Noun Incorporation. *Language* 60: 847-895.
- Ramírez, Alma. (2005). *Náhuatl y español: Un caso de convergencia sintáctica*. MA Thesis. London, ON: The University of Western Ontario.
- Rizzi, Luigi. 1997. The fine structure of the Left Periphery. In *Elements of Grammar*, ed. Liliane Haegeman, 281-337. Dordrecht: Kluwer Academic Publishers.
- Rohrbacher, Bernhard. 1999. *Morphology driven syntax: a theory of V to I raising and pro-drop*. Amsterdam: John Benjamins.
- Suárez, Jorge A. 1977. La influencia del español en la estructura gramatical del náhuatl. *Anuario de letras* 15: 115-164.
- Sullivan, Thelma D. 1992. *Compendio de la Gramática Náhuatl*. México, DF: UNAM.
- Travis, Lisa. 1984. *Parameters and effects of word order variation*, Ph.D Dissertation. Cambridge, MA: Massachusetts Institute of Technology.
- Tuggy, David. 1979. Tetelcingo Nahuatl. In *Modern Aztec grammatical sketches*, ed. Ronald Langacker, 3-140. Arlington, TX: Summer Institute of Linguistics.
- Vikner, Sten. 1995. *Verb movement and expletive subjects in the Germanic languages*. Oxford: Oxford University Press.
- Vikner, Sten. 1997. V-to-I movement and inflection for person in all tenses. In *The new comparative syntax*, ed. Liliane Haegeman, 189-213. London: Longman.
- Zubizarreta, María Luisa. 1998. *Prosody, Focus and Word Order*. Cambridge, Mass.: MIT Press.