

## Cardinal and ordinal meanings of possessed numeral constructions in Ch'ol

This paper investigates a certain underscribed numeral construction in Ch'ol, a Mayan language of Southern Mexico, that can mean either a cardinal (e.g., ‘the two’) or ordinal (e.g., ‘the second’) meaning. The numeral constructions, which I call ‘possessed numerals’, are composed of a numeral and its classifier with a possessive suffix. An example is given in (1).

- (1) *I-cha'-k'ejl-el* *jiñi waj.*  
A3-two-CL-RS DET tortilla  
(i) ‘This tortilla is the second’. or  
(ii) ‘These tortillas are the two.’

Without context, the numeral underlined could be translated as either a definite cardinal (‘the two’) or an ordinal (‘the second’).

I discuss how the possessive morphology contributes to the semantics of these numerals. I propose that the ambiguity in meaning arises from the possessive morphology on the numeral. The possessive morphology tracks whether the numeral picks out a salient set in the discourse and gives back the cardinality of that set or if it picks out an individual/subset from a contextually ordered salient set and gives back the position of an individual from that set.

BACKGROUND. Ch'ol is a head-marking, ergative-absolutive Mayan language of Chiapas Mexico. Absolutive morphemes are glossed with B person markers. Possessive morphemes appear on the head noun and are syncretic with ergative markers, glossed as A person markers. The possessee appears before the possessor, as can be seen in (2).

- (2) *i-juñ aj-Shenia*  
A3-book NC-Shenia  
‘Shenia’s book’

The construction relevant to this paper are possessive constructions with the *-el* relational suffix, which derives a tighter semantic relationship between possessor and possessee, as in the minimal pair in (3).

- (3) a. *i-pisil aj-Rosa*  
A3-clothes NC-Rosa  
‘Rosa’s clothing/cloth (e.g. her family’s laundry, curtains, sheets)  
b. *i-pisil-el aj-Rosa*  
A3-clothes-RS NC-Rosa  
‘Rosa’s clothing/cloth (i.e. that she wears on her body)

When attached to numerals it derives ordinals or definite cardinals as in (4). Note that the preposition *tyi* also optionally appears before as well.

- (4) (*tyi*) *i-cha'-p'ejl-el*  
(PREP) A3-two-CL-RS  
‘the second’ or ‘the two’

POSSESSED NUMERALS. As in the data in (4), without context the possessed numeral has a cardinal or ordinal meaning. However, with other person, we see that the A prefix changes. With an ordinal meaning, the possessive prefix is third person as in (5a) but first person when modifying first person in (5b).

- (5) a. *Tyi* i-*cha'-tyikl-el-oñ*.  
 PREP A3-two-CL-RS-B1  
 'I am the second.'
- b. *Tyi* k-*cha'-tyikl-el-oñ*.  
 PREP A1-two-CL-RS-B1  
 'We are the two.'

Semantically, the cardinal meaning of the possessed numeral is exhaustive. Once the speaker introduces into the context *tyi icha'tyikl-el kalobil* 'my two children' in (6a), it is infelicitous to follow it up with 'Actually another one went there too'.

- (6) a. *Chumul-Ø-ob tyi i-cha'-tyikl-el k-alobil tyi Estados Unidos*.  
 live-B3-PL PREP A3-two-CL-RS POSS.1-child PREP SP:states SP:united  
 'My two children live in the United States.'
- b. # *Che' a' tsa' majl-i-Ø yambä je'e*.  
 PART there PRFV go-IT-B3 another.one also  
 'And another one (of my children) went there, too.'

Thus, the data in (6) provides evidence that the possessed numeral in this context entails a set of *exactly* the number of children I have.

Other the other hand, bare numerals do not have such entailments. The sentence in (7) with the bare numeral *cha'tyikil* can be followed up felicitously with (6b).

- (7) *Chumul-Ø-ob cha'-tyikil k-alobil tyi Estados Unidos*.  
 live-B3-PL two-CL A1-child PREP SP:states SP:united  
 'Two of my children live in the United States.'

With a singular predicate as in (8), there are no cardinality entailments of the possessed numeral and (8) can be followed up with (6b).

- (8) *Chumul-Ø i-cha'-tyikl-el k-alobil tyi Estados Unidos*.  
 live-B3 A3-two-CL-el POSS.1-child PREP USA  
 My second child lives in the United States.

Descriptively, the relational suffix and third person possessive prefix derive an ordinal numeral interpretation. The addition of a preposition derives definite cardinal interpretations. In the ordinal meaning, the possessive prefix is always third person. For the definite cardinal, the possessive prefix has the same person features as the group it group it describes. So for phrases like 'we are the two' in (5b), the possessive prefix is first person plural. In other words, when the possessive prefix and the entity that the possessed numeral modifies are co-indexed, it results in the cardinal meaning. This provides evidence for third person: when the third person marker is referential with the set of objects that the numeral quantifies, it has a cardinal meaning. When it is not, it has an ordinal meaning. This provides evidence that the third person possessive prefix is referring to something else. A possibility I explore is that it refers to an abstract set to which the ordinal belongs.

PUTTING THE MORPHOLOGY TOGETHER. By thinking about the possessive structures as conveying proper or improper relations, we can think about an analysis for the *-el* morpheme in Ch'ol on whether it conveys a proper or improper relationship between possessor and possessee. A part-whole structure in Ch'ol is given in (9). This is similar to the derived relational meaning of the possessed noun in (3b).

- (9) *i-tye'-el otyoty*  
 A3-wood-RS house  
 ‘the wood of the house’

Say that *-el* is a transitive morpheme that defines a relation between two arguments. The complement (i.e., *tye'* ‘wood’) must have a proper subpart relation with the possessor *otyoty* ‘house’. Indeed, as this is a part–whole relation the relationship between the wood and the house is one where wood is part of what makes up the house. This would be proper subset relation (as there are other things that make up a house, not just wood).

Ordinal numerals are derived from cardinal ones with the same morphology in the part-whole relation in (9). In this possibility the part is the number (three) and the whole is some set. One way to think about three as a part is to think about dividing a set into subsets. The cardinal number ‘three’ divides a set of entities into a subset and then ascribes a property to last member of that subset. In other words, an ordinal is always a proper part of a set: it picks out a member of a plurality.

Evidence that a proper subset notions may be on the right track to account for ordinals is that ‘first’ in Ch’ol is suppletive. Adding the possessive morphology on ‘one’ in Ch’ol does not derive ‘first’. Rather the suppletive form *ñaxañ* means first. If the possessed numeral ‘one’ meant ‘first’ then there would be counterevidence for concluding that *-el* conveys a proper subset. If an entity is first in a set of one then it is *not* a proper subset of that set. Since the possessed numeral ‘one’ does not mean ‘first’, rather a suppletive form is used, this is evidence that a proper subset relation can capture the relationship between ordinal and the set to which it belongs, since if something is second, it will always belong to a plurality (i.e., of at least two members). Indeed, Barbiers (2007) discusses this fact that many languages have suppletive forms for ‘first’, one reason being that the number ‘one’ is different from higher numbers as it is the only nonplural one. Thus, so far the possessed numerals with their ordinal meaning seem to be predicted by assuming that *-el* conveys a proper subset relation.

However, the possessed numeral has a definite cardinal meaning. These constructions bring up the possibility of an improper subset meaning for *-el*. In the definite cardinal numeral examples, the possessor clearly references a whole set of individuals. In this case the first person plural inclusive refers to a set of individuals numbering in exactly three. Thus, the numeral is describing the exact number of individuals that the first person plural possessive morphology refers to. Thus, it is not a proper subset relationship in this case. Thus, I propose the relational suffix *-el* defines an improper subset relation between the possessor and possessee. (Indeed, Ionin et al. (2006) define partitive relationships as being improper, partially based on evidence like ‘the three of us’ in English).

Finally, this work contributes important, new data on how languages without determiners express definiteness or uniqueness. Ch’ol is an NP language as defined by Boskovic (2008). The ordinals do not necessitate a definiteness interpretation, however the cardinal meaning does and is semantically equivalent to English ‘the *n*’. However, in Ch’ol both the structure and possessive marking contributes to the definiteness meaning.

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