Prosody and Bare Nouns in Mongolian*

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1. Introduction

We examine the prosody of bare nouns in Mongolian and propose different structures for pseudo incorporated objects (PNI) and otherwise bare objects based on prosodic differences. We analyze these two types of bare nouns under the framework of Match Theory (Selkirk, 2009; Elfner, 2015) and propose a modification to Match Theory as follows. The prosodic categories of intonational phrase, ι, phonological phrase, φ, and phonological word, ω match exclusively to phases (Chomsky, 2001, inter alia), extending the proposals of Compton and Pittman (2010); Kratzer and Selkirk (2007); Newell (2008); Ershova (2020), in which the DP phase maps to φ, and the nP phase maps to ω.
Specifically, we show that PNI objects (diagnosed by narrow scope) lack an initial LH contour, which is found on full objects. The literature on Mongolian prosody, the LH contour is related to the ω; however, we re-analyze the facts and propose that the LH contour appears at the left edge of a φ. In short, the discussion here offers prosodic evidence for the distinction between DOM and PNI in addition to the morpho-syntactic evidence discussed by Guntsetseg (2016).
The rest of this paper is organized as follows. Section 2 gives the background on the analysis, including a description of Match Theory, Pseudo Noun Incorporation and Differential Object Marking, PNI and DOM in Mongolian, and prosodic properties of Mongolian. Section 3 gives the methodology for the prosody experiment we ran. Section gives the results of the analysis, where we show that PNI objects differ crucially from non-PNI objects in that the PNI objects lack an initial LH contour. Section 5 presents the analysis of the results. Section 6 is a brief conclusion.

2. Background

This section gives the theoretical and empirical background for our analysis of PNI in Mongolian. We begin with a discussion of Match Theory and then go on to describe the properties of differential object marking and pseudo noun incorporation and gives some suggestions for differences in structures between the two. We end with a discussion of DOM and PNI in Mongolian following Guntsetseg's Guntsetseg (2016) discussion

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2.1. Match Theory

Match Theory proposes a direct relationship between syntactic structure and prosodic structure governed by violable constraints (Elfner, 2015; Selkirk, 2009). The syntactic and prosodic categories match as follows.

(1) Match Theory Constraints
  (a) CP – ι (CP with illocutionary force?)
  (b) XP – φ
  (c) X – ω

A growing body of research, however, suggests that prosodic categories correlate to syntactic *phases* (Compton and Pittman, 2010; Newell, 2008; Kratzer and Selkirk, 2007). Although there is no consensus on how phases match with prosodic categories (or even what the phase heads are!) we adopt the notion that the KP phase maps to ω and the *n*P phase (if *n* is indeed a phasal head either fails to map to a prosodic category or maps to something smaller than ω).
Example-(Times New Roman, 12pt)

2.2. DOM and PNI

In differential object marking (DOM), case marking on the noun varies with respect to a variety of properties. It is cross-linguistically associated with humanness, animacy, specificity, and definiteness (Bossong, 1991; Fábregas, 2013; López, 2012, *inter alia*). Here is a typical example from Spanish (Fábregas, 2013, p.1).[1]

(2) Spanish DOM

  (a) *Encontré un problema.*
  I.found a problem
  'I found a problem'
  (b) *Encontré a un superviviente.*
  I.found K a survivor
  'I found a survivor'

In (2 a) the direct object does not have a visible case marker; however, in (2 b) the case marker *a* is present. This pair of examples illustrates the usual trend whereby animate nouns trigger DOM while inanimate nouns do not. In PNI a noun (typically the object) is bare or has reduced morphology (Massam, 2001; Dayal, 2011). Additionally, it has a number of semantic properties that resemble canonical noun incorporation (Mithun, 1984). Here is a typical example of PNI in Niuean (Massam, 2001).

[1] The morpheme *a* in Spanish is glossed as K (for the K head, case). The actual identity of this marker is a matter of debate.

(3) Niuean

(a) *Kua fakahū he ekekafo e tohi.*
PVF send ERG doctor ABS letter
'The doctor sent the letter.'
(b) *Kua fakahū tohi e ekekafo.*
PFV send letter ABS doctor
'The doctor sent the letter.'

Observe that the regular transitive construction in (3 a) has case marking on the subject and on the object. In the PNI construction in (3 b), case marking is absent on the object, and the subject is marked with absolutive case. Note also that in the PNI construction the object is adjacent to the verb.
Given that DOM and PNI bear many striking surface similarities distinguishing be-tween them can be tricky. In general, DOM is associated with a larger structure than PNI. Note that in Finnish DOM is not marked by the absence of case but by partitive case (Kiparsky, 1998), suggesting that the DOM/non-DOM contrast involves only a minor difference in structure, if any. PNI constructions, however, typically lack higher functional morphology altogether, suggesting a significantly decreased structure. In the next section, we present Guntsetseg's disussion of case-less objects in Mongolian.

Property	**ACC case marking**
pronoun	obligatory
proper name	obligatory
definite NP	obligatory
indef specific NP	optional
indef non-specific NP	unavailable
PNI noun	unavailable

Table 1: Accusative Case Marking on different types of Objects in Mongolian

2.3. DOM and PNI in Mongolian

DOM in Mongolian has been studied most extensively by Guntsetseg (2016). She shows that animacy, definiteness, and specificity play a strong role in DOM in Mongolian. The following examples illustrate a portion of the variation found (Guntsetseg, 2016, p.78).

(4) (a) *Bi ene oxin-*(yg) xar-san.*
I this girl-ACC see-PST
'I saw this girl.'
(b) *Bi neg oxin-(yg) xar-san.*
I a girl-ACC see-PST
'I saw a girl.'
(c) *Bi oxin-(*yg) xar-san.*
I girl-ACC see-PST
'I saw a girl.'

Guntsetseg (2016) gives the following example of PNI in Mongolian.

(4) *Bi öčigdor nom unš-san.*
I yesterday book read-PST
'Yesterday, I did book-reading.'

We will discuss the difference between the obligatorily caseless examples as in (4 c) and PNI examples as in (5) shortly. For now, we summarize Guntsetseg's findings. Note that despite the breadth and depth of her study, Guntsetseg notes that there are interactions among the properties that affect DOM in Mongolian that remain to be worked out. Nevertheless, she makes the approximate observations in Table 1. Note that the animacy scale interacts with the properties in Table 1 in ways that are not fully clear, yet.

Guntsetseg gives the following properties of PNI nouns in Mongolian (Guntsetseg,2016, p.61ff). These properties are generally in line with the usual syntactic and semantic properties of PNI found in other languages (Dayal, 2011; Massam, 2001).

1 generally adjacent to the verb
2 no determiners or demonstratives
3 no postpositions or case markers
4 can be modified by an adjective
5 no plural marking
6 low scope
7 low discourse transparency

As these properties have been discussed by Guntsetseg, we move on to the prosodic properties of these bare nouns in the next section.

3. Methodology

Four native speakers of Mongolian from Ulaanbaatar living in Seoul were given a randomized list of sentences to record, including PNI, DOM and a number of filler sentences (24 test sentences and 57 filler sentences). Each participant received 30,000 won for participating in the experiment. The following factors were tested.

1 Accusative case – present or absent
2 Plural marking present or absent
3 wide or narrow scope
4 animacy: human, animate, inanimate

In this preliminary investigation only bare nouns were examined and compared with wide scope and narrow scope readings.

For the purposes of this investigation, we defined PNI as bare nouns with low scope and DOM as bare nouns with high scope. Here is an example of each. In the actual experiment, the sentences were written in Mongolian Cyrillic script and were checked by a native speaker for accuracy.

(6) Test examples for Mongolian PNI and DOM, respectively
(a) *Bi guu saa-maar baina …ali ch guu hamagui.*
I mare milk-INF want …any mare will do
'I want to milk a mare…any mare will do.'
(b) *Bi guu saa-maar baina …ter tsagaan guu.*
I mare milk-INF want ...that white mare
'I want to milk a mare…that white mare'

The pitch contours of these sentences were analyzed on Praat (Boersma and Weenink, 2018) and compared to known intonational correlates of prosodic categories in Mongolian (Karlsson, 2014). Of importance here is that the phonological word in Mongolian exhibitsa LH contour, where the tone bearing unit is the mora.

	LH contour	**Flat contour**
Non-bare	19	0
Bare, narrow scope	1	8
Bare, wide scope	4	0

Table 2: Pitch contours on nouns

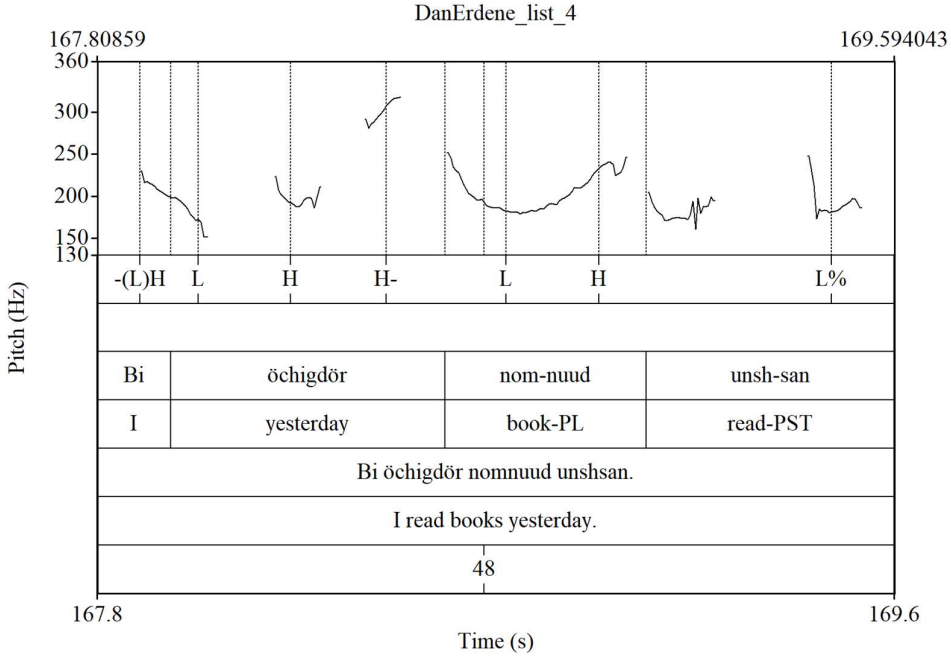


Figure 1: Plural Noun

4. Results

The results were grouped as bare nouns versus non-bare nouns. Bare nouns are defined here as nouns with no plural or case marking. A non-bare noun, then, has either plural marking, case marking, or both. We did not consider nominals with articles or adjectives for this study. Some results were discarded due to disfluencies or unconnected speech. For each example, we recorded whether there was a definite LH pitch contour on the noun or whether the pitch contour was flat. Pitch contours that were too narrow were not considered. The results are shown in Table 2. Objects with plural marking or case marking (or both) clearly showed the LH contour typical of *ω*s, see Figure 1. PNI nouns (bare, narrow scope) in nearly all cases lack this contour. An example is shown in Figure 3. Bare nouns with wide scope (which we assume are not pseudo incorporated but rather simply lack DOM) do bear the LH contour. An example is shown in Figure 2. We did not examine animacy as the number of tokens was too small.

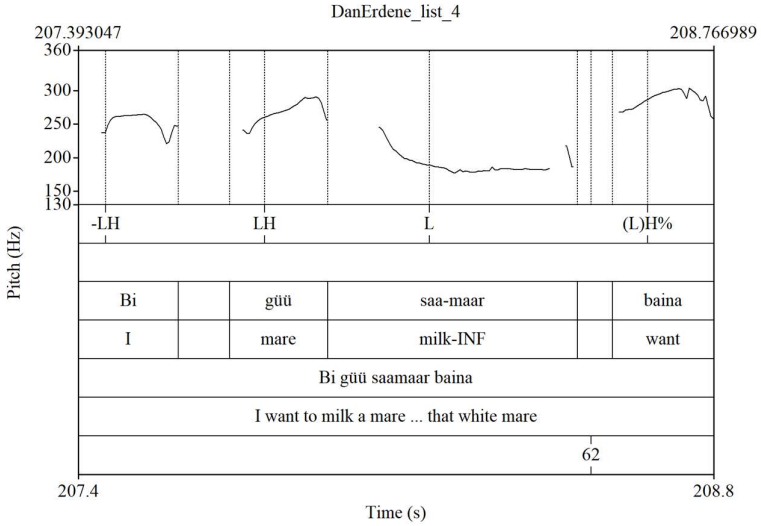


Figure 2: Bare Noun, wide scope

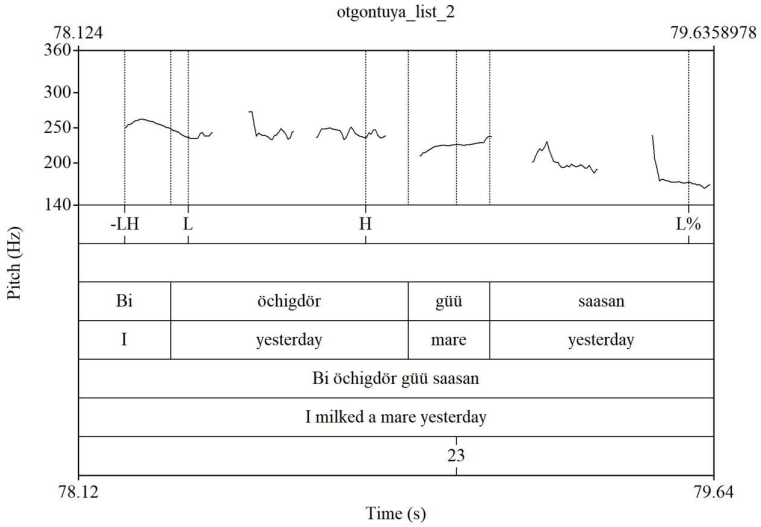


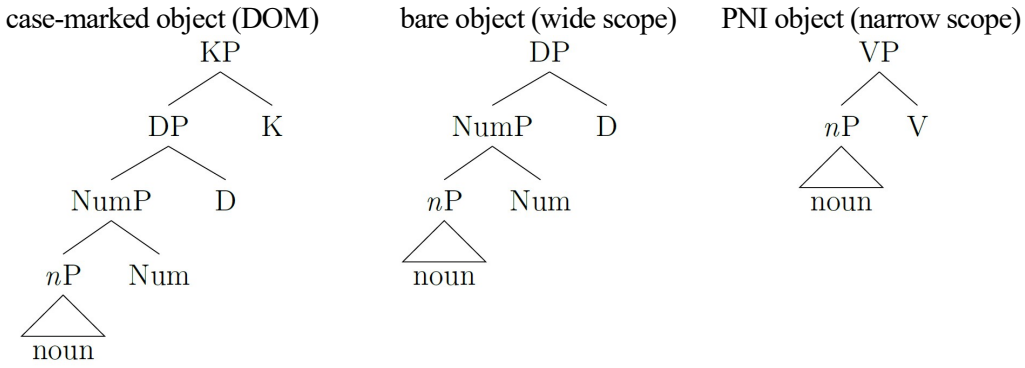
Figure 3: Bare noun, narrower scope

5. Discussion

As mentioned, phonological words in Mongolian typically bear an initial LH contour (Karlsson, 2014). As shown in the results section, this contour was found on full noun phrases (including noun phrases with overt number or case morphology) and on morpho-logically bare nouns with wide scope. Morphologically bare nouns with narrow scope do not bear this contour. Since narrow scope is a prototypical property of PNI (Dayal, 2011), we assume the bare nouns with narrow scope have been pseudo incorporated while the bare nouns with wide scope are full DPs that lack DOM and just happen to be singular (i.e., no number marking). Unlike morphological incorporation (in the sense of Baker,1988), in which a head is incorporated, PNI involves the incorporation of a phrase.

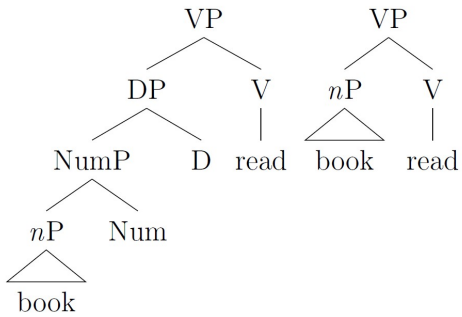
We do not make any claims here about the analysis of DOM in Mongolian, but adopt the analysis in López (2012) for convenience. We assume that PNI involves a structure no larger than *n*P, akin to Massam (2001). Here are the three structures.

(7)



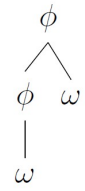
Under Match Theory, all XPs map to φ. Thus, we expect no difference between a full DP and an NP. Consider the following examples. The tree on the left is a non-case- marked full DP (bare noun with wide scope) and the tree on the right is a PNI noun (narrow scope).

(8)



The trees in example (8) have the following prosodic structure after pruning of empty categories.

(9)



Thus, standard Match Theory fails to predict any prosodic difference between the two kinds of bare nouns. Adapting the proposals of Compton and Pittman (2010), Kratzer and Selkirk (2007), and Newell (2008), we propose that the phases map to prosodic categories. Although we do not consider the whole clause here, we propose that the CP phase maps to *ι*. The v P and DP phases, we suggest, map to φ[2]. Finally, the nP phase maps to ω. We then must say that the initial LH contour is a property of φ rather than ω[3].

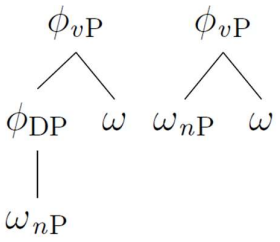
[2] We eschew the question of whether D or K is the phase head.

[3] Alternatively, one could say that DP maps to ω and *n*P maps to a smaller category. In the absence of evidence

(10) Proposed Match Theory Constraints
(a) CP = *ι*
(b) DP = *φ*
(c) *v*P = *φ*
(d) *n*P = *ω*

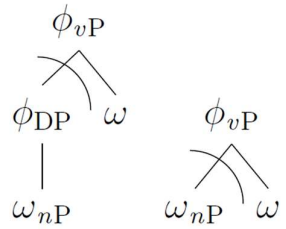
The intuition we wish to capture is that the difference in the structure between the wide-scope bare object and the PNI object is what is responsible for the difference in the prosodic structure. On the proposal in (10), the two trees in (8) have the following structures, respectively. The subscript notations are added for convenience.

(11)



If we say nothing further, then we still don't quite capture the facts. Although the full DP object is a *φ* and the PNI object is a *ω*, they are both still dominated by a higher *φ*, which should have a LH contour at its left edge. We add one final ingredient to counteract the effect of the higher *φ*. The notion of an extended projection offers a solution (Grimshaw, 1990). Richards (2016) and Sheehan et al. (2017) both exploit the notion of an extended projection to distinguish the nominal domain from the verbal domain. Precisely, what we propose is that once an extended projection is topped off, its prosodic structure is computed. Strengthening this claim we could say that it is not every phase that is sent to Spell-Out, but only the highest phase in an extended projection. We do not examine the consequences of this proposal here[4].
The prosodic structures in (12), then, represent the result of Spell-Out of the extended nominal projections, indicated with the arcs. The tree on the left (the bare noun with wide scope) is a *φ*, so has an initial LH contour. The tree on the right is a *ω*, so does not.

(12) Prosodic Trees with Spell-Out Domains



for an additional prosodic category, we stick to the schema in (10).

[4] One interesting consequence is that in a full clause *wh*-movement need not target Spec*v*P to reach CP. This is a welcome consequence as there is considerable less evidence for the Spec*v*P escape hatch. For instance, so far as we know, there are no w*h*-copy constructions found in Spec*v*P. See Legate (2003) and Rackowski and Richards (2005), however, for evidence of Spec*v*P as an escape hatch.

6. Conclusion

We have shown that there is a difference between morphologically bare PNI (with narrow scope) and non-PNI nouns (with wide scope) in Mongolian. Bare non-PNI nouns have an initial LH contour. Bare PNI nouns lack this contour. We argued that non-PNI bare nouns are full DPs and that PNI nouns are *n*Ps. We showed that an analysis couched within Match Theory cannot account for the facts as given, so we suggested the following amendment. In traditional Match Theory all phrases map to φ. Following Compton and Pittman (2010) and much other work, we assume that only phases map to prosodic categories. For our purposes here, DP (or KP) maps to φ, *v*P maps to φ, and *n*P maps to ω. Assuming that the initial LH contour is a property of φ, not ω, the facts fall into place. The bare PNI noun, being an *n*P is a ω and lacks the LH contour. The wide-scope bare object, being a full DP, is a φ, so possesses the LH contour.

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