A binary feature analysis of Mi’gmaq number agreement

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1 INTRODUCTION

My goal is to contribute to the debate on a binary feature (Harbour, 2007; Nevins, 2011; Noyer, 1992) versus a feature geometric (Harley and Ritter, 2002) approach to the singular, dual, plural distinction.

I present data from Mi’gmaq (Eastern Algonquian) that supports a binary approach – Mi’gmaq plural is derived from dual

1. a. Amalg-a-t.
   dance-AT
   ‘S/he dances.’

   b. Amalg-a-j-ig.
   dance-AT-3-PL-AN
   ‘They (dual) dance.’

   c. Amalg-al-ti-j-ig.
   dance-PLU-3-PL-AN
   ‘They (plural) dance.’

I argue that the pattern in Mi’gmaq is expected under a binary feature account, but not under a feature geometric account.

2 FORMAL REPRESENTATION OF NUMBER

Overview a feature geometric approach (2.1) and a binary feature approach to number (2.2)

Exemplification of how each approach applies in Hopi (Uto-Aztecan) (2.3)

2.1 Feature geometry

Harley & Ritter (2002) using data from 92 languages as well as acquisition data, motivate a feature geometry to characterize person and number features of the world’s languages.

Each node in the feature geometry represents a positive monovalent feature

(2) [A]
   [B] [D]
   [C]

This feature geometry captures one of Greenberg’s Universal 34: ‘No language has a dual unless it has a plural’ (Greenberg, 1963: 94).

This approach predicts complex or constructed dual forms, which will be relevant when exemplifying number in Hopi.

2.2 Binary features

Two binary features ([±singular] and [±augmented]) to account for number categories (Conklin, 1962; Harbour, 2007; Nevins, 2011; Noyer, 1992).

A binary feature account of singular-dual-plural from Nevins (2011) is given in (5)

(5) a. Singular = [+singular, –augmented]
   b. Dual = [–singular, –augmented]
   c. Plural = [–singular, +augmented]
   d. The combination [+singular, +augmented] is impossible

Nevins (2011) also derives Greenberg’s generalization via markedness rules – Dual is more marked than plural and plural is more marked than singular.

(6) From Nevins 2011: 421
   a. Context-free markedness statement: The marked value of [± singular] is –.
   b. Context-sensitive markedness representation: In the context [–singular], the marked value of [± augmented] is –.

A marked category implies the presence of an unmarked one – the presence of dual implies plural.

I thank Miloje Despić, Sarah Murray the 2017 Cornell Spring Syntax Seminar, and audiences at PLC 41 for comments. Any errors are my own.

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2 Data has been adapted to the Listuguj orthography from (Hewson and Francis, 1990). Other data comes from the Mi’gmaq Online Dictionary. Listuguj orthography: a – [a]; g – [k]; j – [j ]; q – [x]; ‘ – [s]; – V’. long vowel. Abbreviations: 1 = first person; 2 = second person; 3 = third person; AI = animate intransitive verb; EXCL = exclusive; IN = inanimate; INC = inclusive; PL = plural; PLU = pluralizer; SG = singular.

3 Markedness does not correlate to phonological exponents or semantic markedness; it is abstract feature markedness.
2.3 Summary

Table 1: Two formal representations of number

<table>
<thead>
<tr>
<th>Feature Geometry</th>
<th>Binary features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Singular</td>
<td>INDIVIDUATION [+singular, –augmented]</td>
</tr>
<tr>
<td></td>
<td>Minimal</td>
</tr>
<tr>
<td>Dual</td>
<td>INDIVIDUATION [–singular, –augmented]</td>
</tr>
<tr>
<td></td>
<td>Group Minimal</td>
</tr>
<tr>
<td>Plural</td>
<td>INDIVIDUATION [–singular, +augmented]</td>
</tr>
<tr>
<td></td>
<td>Group</td>
</tr>
</tbody>
</table>

2.4 Case study: Hopi

• In Hopi (Uto-Aztecan) singular and plural features appear on two different syntactic elements (pronoun and verb) to construct the dual in (7)

(7) Hopi (Nevins, 2011: 492)

a. Pam warì.  
he ran.SG
b. Puma yùutu. 
they ran.PL
c. Puma warì. 
they ran.SG

‘They (dual) ran.’

→ Feature geometry: Harley & Ritter (2002: 492) argue that this type of system is expected under a feature geometric account as “dual can be expressed as a combination of minimal (≈ singular) and group (≈ plural) marking on different parts of speech” given in (8)

(8) Hopi dual in a feature geometry

INDIVIDUATION
Group Minimal
puma | warì
‘they’ | ‘ran.SG’

→ Binary features: Nevins (2011) captures the Hopi data in a binary feature system, where the features [–singular] and [–augmented] appear on different syntactic elements in (9)

(9) Hopi in a binary feature system

/puma/ ← [–singular, +pronominal]
/pam/  ← [+singular, + pronominal]
/wari/ ← [–augmented, RUN]
/yùutu/ ← [+augmented, RUN]
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→ Proposal: Mi’gmaq morphemes spellout abstract feature values in a binary approach

(11) Third person number morphemes in the verbal domain:
   a. -ig ⇔ [–singular]
   b. -alti ⇔ [+augmented]

• The pluralizer -alti, which appears in plural forms, is always the spell out [+augmented]

• Depending on person features, [–singular] has different spellouts.
  – In the context of second person [–singular] is -oq, in first person exclusive -eg etc.
  – For third person, -ig appears in both dual and plural, and by associating it with the feature value [–singular] we can account for its appearance in both dual ([–singular, –augmented]) and plural ([–singular, +augmented])

• The feature-value [–augmented] is not associated with any morpheme

• In brief, each morpheme in Mi’gmaq number agreement corresponds to an abstract feature-value in the binary system, with variations happening only in the context of person

→ Can derive the verbal agreement pattern in Table 2

3.3 Mi’gmaq number in a feature geometry?

• Harley & Ritter (2002) proposed a feature geometry approach to be explicitly designed for pronominal systems

  – Though, the Hopi data explained in [Harley & Ritter (2002) and exemplified in §2.3 does also take agreement into consideration

  – For the purposes here let us extend it to account for verbal agreement

• Under this approach, let us propose that -ig is the spellout of the feature Group

  – Unclear where -alti morpheme comes from

(12) a. Dual
    \[ \begin{array}{c}
      \text{INDIVIDUATION} \\
      \rightarrow \text{Minimal} \\
      \rightarrow -ig
    \end{array} \]

• Or, let’s propose the feature Group to be associated with the plural morpheme -alti

(13) a. Plural: Group associated with -alti
    \[ \begin{array}{c}
      \text{INDIVIDUATION} \\
      \rightarrow \text{Group} \\
      \rightarrow -alti
    \end{array} \]

b. Dual: – wrongly predicts -alti in dual

• Though a feature geometry can capture constructed dual forms like in Hopi, complex plural forms, like in Mi’gmaq, are not easily composed via their features.

• A binary feature approach like Nevins’s (2011) can easily derive complex plural forms

4 Deriving agreement in a binary approach

• In nouns, on the other hand, -alti never appears
  – The phonetic forms of nouns only distinguish singular from non-singular
  – Bare nouns are interpreted as singular [14], whereas -g suffix marks nonsingular [15]
  – The noun ‘girls’ in both dual and plural forms is e’pite’j-j-g

(14) E’pite’j-j-g amalg-a-t.
    ‘The girls dance.’

(15) a. E’pite’j-j-g amalg-a-j-ig.
    girl dance-AI-3
    ‘The girl dances.’

b. E’pite’j-j-g amalg-alti-j-ig.
    girl-PL-AN dance-AI-3-PL-AN
    ‘The girls (dual) dance.’

• The feature-value [–singular] is not associated with any morpheme (see [13])

• The feature-value [–singular] in the context of the animate noun e’pite’j-j ‘girl’ in [15] is the spellout of the animate plural morpheme -alti

  – As expected nominal -g is morpho-phonologically very similar to -ig in [15]

• Following a Distributed Morphology model of grammar [Halle and Marantz 1993], we can assume that in nouns the feature [augmented] is deleted postsyntactically, accounting for why -alti does not appear

  – Following Chomsky (2000) and Chomsky (2001), I take agreement morphemes to be the result of an Agree relation between a probe with unvalued φ features and a goal (an NP or DP) with valued φ features

(16) How agreement happens in [15]

a. Agree occurs prior to feature deletion

\[ \begin{array}{c}
  \text{GIRL} \\
  \rightarrow \text{[–singular]} \\
  \rightarrow [+\text{augmented}] \\
  \rightarrow \text{DANCE} \\
  \rightarrow \text{[–singular]} \\
  \rightarrow [+\text{augmented}] \\
\end{array} \]

b. [augmented] feature is impoverished on the noun

\[ \begin{array}{c}
  \text{GIRL} \\
  \rightarrow \text{[–singular]} \\
  \rightarrow [+\text{augmented}] \\
  \rightarrow \text{DANCE} \\
  \rightarrow \text{[–singular]} \\
  \rightarrow [+\text{augmented}] \\
\end{array} \]

• Spellout/Vocabulary Insertion

\[ \text{e’pite’j-j-g amalg-alti-j-ig} \]

• Via impoverishment rules, we can account for number in the nominal domain

[Nouns in Mi’gmaq are either of the animate or inanimate gender. In the context of an inanimate noun, the spellout of [–singular] would be -l as in mutputi-l ‘chairs’. Indeed, the plural for inanimate verbal agreement is also -l.
5 Conclusions

• We began with a discussion of a feature geometry and binary feature approach to number, each exemplified with Hopi data and the ‘constructed’ dual form

• However, Mi’gmaq displays a different typological pattern whereby to express plural with animate intransitive verbs, an extra morpheme is needed
  – I posited the plural morpheme -alti is the spellout of the feature-value [+augmented]
  – Nonsingular morphemes are the spellout of [–singular]
  – Captures the existence of -alti in plural forms, but not dual forms as the value for [augmented] in dual forms is –
  – Captures appearance of [–singular] spellouts in both dual and plural forms

• Under a feature geometric approach the complex plural form is unexpected as plural is represented with the activation of one node
  – The parsimonious association of features to morphemes is not possible in a feature geometry

• Thus, I argue that Mi’gmaq gives support to a binary feature approach to number

• Finally, by impoverishing the [augmented] feature in nouns, we can capture the singular/plural distinction with [±singular]
  – If [augmented] is impoverished in nouns, we correctly predict the plural morpheme -alti does not appear in these forms

References


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