# A Binary Feature Analysis of Mi'gmaq Number Agreement

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## 1. Introduction

This article aims to contribute to the debate on a feature-geometric approach versus a binary feature approach to number. With data from the Eastern Algonquian language, Mi'gmaq, I argue that the feature geometry in Harley & Ritter (2002) does not successfully capture the Mi'gmaq singular-dual-plural agreement pattern. On the other hand, a binary feature approach to number easily allows for a one-to-one abstract feature-to-morpheme correspondence in Mi'gmaq.

The data in (1) shows the singular, dual, and plural morphology for the animate intransitive verb *mijj(i)-* 'eat' in Mi'gmaq. The third person marker is *-t* as in (1a). Dual is derived from the singular adding the *-ig* nonsingular marker to (1a) in (1b) (where *-t* affricatizes to *-j*). The plural is derived from the dual by adding *-ulti* to the dual form in (1c).

(1) a. Mijj-i-t.
eat-AI-3
'S/he eats.' [1]

b. Mijj-i-j-ig.
eat-AI-3-PL.AN
'They (dual) eat.'

c. Mijj-**ulti**-j-ig.
eat-**PLU**-3-PL.AN
'They (plural) eat.'

I argue that such a pattern is expected under a binary feature account, but not under Harley & Ritter (2002)'s feature-geometric account. While Harley & Ritter (2002)'s feature geometry predicts complex dual forms as dual is represented with more features, a complex plural form like in (1c) is unexpected. In a binary feature system, there is no such prediction: typologically we expect languages to be able to have morphologically complex dual or plural forms. Thus, a binary feature system can capture the number pattern in (1).

This paper is organized as follows. In §2, I describe how the feature geometry and binary feature approaches formalize the singular-dual-plural distinction. In §3, I present the Mi'gmaq animate intransitive verbal paradigm that makes the three-way number distinction (§3.1). The data shows that *-ulti* appears in plural forms and that the plural is morphologically more complex than the dual. The Mi'gmaq data poses problems for the feature geometry of Harley & Ritter (2002) where a morpheme-to-feature correspondence is not possible since complex plural forms are unexpected (§3.2). The Mi'gmaq data is easily captured in a binary feature feature system by associating morphemes to feature-values (§3.3). In §4, I extend the binary feature analysis of verbs to account for nouns by showing how to derive agreement between nouns and verbs in Mi'gmaq. In §5, I summarize my arguments and conclude.

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[1] Mi'gmaq is an Eastern Algonquian language with about 8,000 reported speakers according to a 2011 census. It is spoken primarily in eastern Canada. All data is written in the Listuguj orthography and any data from the grammar by Hewson & Francis (1990) has been adapted to the Listuguj orthography for consistency. Other data comes from the Mi'gmaq Online Dictionary by Haberlin et al. (1997–2017). Listuguj orthography: a – [ɑ]; g – [k]; gw – [k$^{w}$]; j – [ʧ]; q – [q]; qw – [q$^{w}$]; ' – [ə]; V' – long vowel. Abbreviations: 1 = first person; 2 = second person; 3 = third person; AI = animate intransitive verb; EXCL = exclusive; IN = inanimate; INCL = inclusive; LOC = locative; PL = plural; PLU = pluralizer; PROG = progressive; SG = singular; TI = transitive inanimate verb.

 Proceedings of the 35th West Coast Conference on Formal Linguistics, ed. Wm. G. Bennett et al., 242-250. Somerville, MA: Cascadilla Proceedings Project.

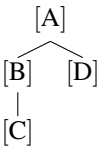
## 2. Formal representations of number

The following sections give an overview of a feature-geometric approach to number (§2.1) and a binary feature approach to number (§2.2).

### *2.1. Feature geometry*

Before moving to the formal representation of number in a feature geometry, consider the abstract feature geometry in (2).

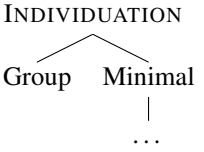
(2)




In this representation, each feature is monovalent and only appears if it has a positive value. So, a feature like [–C] would not appear in the structure. There is a dependency relationship between features: [C] implies the existence of [B] and [C] cannot be present if [B] is not present. However, [C] can be eliminated from the feature geometry without deleting [B].

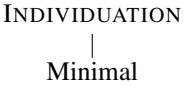
Using data from 92 languages and generalizations from language acquisition, Harley & Ritter (2002) posit a feature geometry to characterize person and number features of the world's languages. As this paper concentrates on number, I will focus the INDIVIDUATION node responsible for representing singular, dual, and plural. An abbreviated tree extracting the INDIVITUATION node is given in (3).

(3)

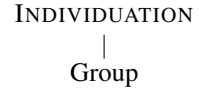



Harley & Ritter (2002)'s feature-geometric approach to represent singular, dual, and plural is given in (4).

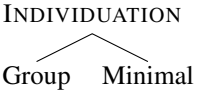
(4) a. Singular




b. Plural




c. Dual




Singular is expressed with the activation of the Minimal node under INDIVIDUATION in (4a) and plural with the Group node activated in (4b). Dual is expressed as the activation of the nodes Minimal and Group in (4c). This feature geometry captures Greenberg's Universal 34: 'No language has a dual unless it has a plural' (Greenberg, 1963:94). Without the node Group, there can be no dual. Thus, dual implies the existence of a plural.

Descriptively, it is clear that the dual is more complex than the plural in terms of its features. Indeed, this helps derive the implication that dual implies plural. Complex plurals would be unexpected in such a system as the plural is just as complex as the singular (with just one node activated). This is different than in a binary feature system, which I turn to in the next section.

### *2.2. Binary features*

A binary feature approach as argued for by Noyer (1992), Harbour (2007, 2011, 2014) and Nevins (2011), has two binary features, [±singular] and [±augmented], to account for number categories. The binary feature formalizes the singular, dual, and plural number in (5).

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

In (5), we see that [–singular] appears in both the dual and plural representations, whereas [+augmented] occurs only in the representation of the plural. This will become relevant in §3.3, where I posit that Mi'gmaq morphemes are the spellouts of these feature-values.

In order to derive Greenberg's Universal, Nevins (2011) argues for the markedness statements in (6) and (7). Nevins (2011:421) argues that the marked value of [±singular] is –, given in (6). Furthermore, in the context of [–singular], the marked value of [±augmented] is –, given in (7).

(6) Context-free markedness statement: (Nevins, 2011:421)
The marked value of [± singular] is –.

(7) Context-sensitive markedness representation:
In the context [–singular], the marked value of [±augmented] is –.

So, plural is more marked than singular because it has a marked feature-value [–singular]. Dual is more marked than plural because dual contains both the marked value of [–singular] and the feature [–augmented], which is marked in the context of [–singular], as per (7). Plural and dual are then both marked with respect to singular because both have the marked feature [–singular].

The feature [augmented] is always relativized to another feature. In prose, the feature [+augmented] means that "given some predicate *P* that is true of some set *x*, *x* is [+augmented] if there is a proper subset of *x* for which *P* is also true" (Nevins, 2011:422).[2] For instance a set of cardinality such as 20 is [+augmented] for its value of ±singular (i.e., [–singular]) because there is at least one proper subset of 20 that is also [–singular]. Sets of the cardinality of 1 are always [–augmented] for their value for [±singular] (i.e., [+singular]) since there is no proper subset of 1 which is also [+singular].

We can thus account for the dual number, or, sets that have a cardinality of 2. Dual is expressed in a binary feature system as [–singular, –augmented]. For dual number, there is no proper subset of 2 that is also [–singular] therefore its feature value for [augmented] is –.

In sum, a binary feature account uses the binary features [±singular] and [±augmented] to formalize a three-way singular-dual-plural number distinction. With markedness statements, we can account for Greenberg's universal that the presence of dual number implies the existence of plural. In contrast to the feature geometry in the previous section, the binary feature formalism makes no predictions on which number we would expect to be more morphologically complex: dual and plural number in the binary feature number formalism in (5) are represented as being equally complex, each with two feature-values.

## 3. Mi'gmaq number agreement

Below, I present data from Mi'gmaq that displays a three-way contrast between singular, dual, and plural number in animate intransitive verbs. I argue that Harley & Ritter (2002)'s feature geometry approach does not capture the data as it is not able to accommodate complex plural forms. A binary feature approach does capture this data easily by corresponding feature-values to morphemes.

### *3.1. Animate intransitive number morphology*

The relevant data comes from intransitive animate verb agreement patterns in Mi'gmaq.[3] Table 1 gives the verbal agreement morphemes for first person exclusive (a), first person inclusive (b), second person (c), and third person (d). Note that in the orthographic system, the postalveolar affricate [ʧ] is transcribed as *j*. I use orthographic conventions to exemplify the Mi'gmaq data.

[2] Its formal definition comes from the work of Noyer (1992) and Harbour (2007).

[3] Transitive verbs and inanimate intransitive verbs only distinguish between singular/plural. I discuss some other instances of a three-way number distinction in Mi'gmaq in the conclusion.

**Table 1:** Number agreement in Mi'gmaq animate intransitive verbs.

| | Person | Sing. | Dual | Plural |
|---|---|---|---|---|
| a. | 1.EXCL | *Ø/-an* | *-eg* | ***-ulti**-eg* |
| b. | 1.INCL | — | *-'gw* | ***-ulti**-'gw* |
| c. | 2 | *-n* | *-oq* | ***-ulti**-oq* |
| d. | 3 | *-t* | *-j-ig* | ***-ulti**-j-ig* |

Mi'gmaq makes a three-way contrast for number, i.e., singular, dual, and plural. Dual number forms for first and second persons are formed by adding the nonsingular person ending in the third column. The third person dual form is fully decomposable into *-j* (third person) and *-ig* (animate plural), where the third person marker *-t* affricatizes to *-j* before the animate plural marker *-ig*. The fourth column shows that *-ulti* is then added before person markers and after the verb stem to form the plural.[4] Thus, *-ulti* consistently derives the plural forms from dual. Table 2 exemplifies forms with the verb *teluis(i)-* 'to be named'. The plural morpheme is bolded and nonsingular morphemes are underlined.

**Table 2:** Animate intransitive verb example *teluis(i)* 'to be named' (Hewson & Francis, 1990:46).

| | Person | Sing. | Dual | Plural |
|---|---|---|---|---|
| a. | 1.EXCL | *teluisi* | *teluisi-eg* | *teluis-**ulti**-eg* |
| b. | 1.INCL | | *teluisi-'gw* | *teluis-**ulti**-'gw* |
| c. | 2 | *teluisi-n* | *teluisi-oq* | *teluis-**ulti**-oq* |
| d. | 3 | *teluisi-t* | *teluisi-j-ig* | *teluis-**ulti**-j-ig* |

Depending on the verb, the pluralizer has the allomorphs *-uti*, *-u'ti* or *-a'ti*, as shown in (8) with forms from the Mi'gmaq Online Dictionary (MOD). Numbers on the right indicate their entry number in the MOD.

(8) a. *uti* pluralizer
Eptegw-a'-**uti**-eg.
have.freckles-AI-**PLU**-1.EXCL
'We (plural) have freckles.' 822

b. *u'ti* pluralizer
Gisu'g-m-**u'ti**-eg.
warmly.dressed-TI-**PLU**-1.EXCL
'We (plural) are warmly dressed.' 1,538

c. *a'ti* pluralizer
Paqa'l-u-**a'ti**-eg.
bite-AI-**PLU**-1.EXCL
'We (plural) bite.' 2,850

I assume that in the context of certain verbs like in (8), the pluralizer's phonological form changes. In a Distributed Morphology framework (Halle & Marantz, 1993) this is specified in the Vocabulary.[5] For the rest of this paper, I will refer to the pluralizer morpheme by its allomorph *-ulti*.

[4]The dual-plual distinction is an innovation of Eastern Algonquian languages. In other Algonquian languages the Mi'gmaq dual corresponds to the plural. Historically, the plural marker comes from the Proto-Algonquian reciprocal marker **-etwi-* (Goddard, 1967:9), which is why it attaches so close to the verb stem. The morpheme *-ulti* in Mi'gmaq has completely lost its function as a reciprocal marker. Indeed, the reciprocal and the pluralizer can co-occur.

[5]Verbs of motion with *-a'si* or *-ie* animate intransitive verb suffixes have suppletive forms for dual and plural, as in (1). However, the singular-dual-plural contrast still remains.

### *3.2. Mi'gmaq number in a feature geometry*

Now let us consider the Mi'gmaq data in Harley & Ritter (2002)'s feature-geometric approach as outlined in §2.1. Note that although a feature geometry approach was explicitly designed for pronominal systems, Harley & Ritter (2002) do take some agreement data into consideration. So, I will extend the system to try to account for the Mi'gmaq verbal agreement.

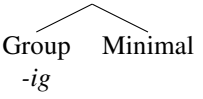
Recall the feature-geometric approach representing plural with the node Group activated under INDIVIDUATION. I assume that the features under INDIVIDUATION correspond to nonsingular and plural morphemes in Mi'gmaq. Recall that *-ulti* appeared in all plural forms. Group also appears as the representation for plural in Harley & Ritter (2002)'s feature geometry, so let's say the feature Group is the spellout of the plural morpheme *-ulti* as in (9a). Once we consider the feature-geometric representation of dual, we encounter problems if Group is associated with *-ulti*. Dual is represented as the activation of the features Group and Minimal. If the feature for Group is *-ulti* then we would expect to see *-ulti* in both dual and plural, shown in (9b). However, *-ulti* only appears in the plural forms, not the dual.

(9) a. Plural: Group associated with *-ulti*

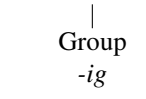

b. Dual – wrongly predicts *-ulti* in dual


On the other hand, if we associate the Mi'gmaq nonsingular *-ig* form with Group in (10a), then it seems unclear how to compose the Mi'gmaq plural forms, which are made up of *-ulti* plus the nonsingular endings of the dual, once the node Minimal has been deactivated, shown in (10b). How do we derive the complex plural when the number of features for plural in a feature geometry are less complex?

(10) a. Dual




b. Plural — where is *-ulti*?




Though the feature-geometric approach can capture complex dual forms as dual is formally represented with more features, the data in Mi'gmaq poses a problem for it. Under a feature-geometric approach a complex plural form is unexpected given that plural is only represented as the activation of one node. A feature-geometric approach does not seem to provide a clear path to compositionally represent Mi'gmaq number morphology.

In the next section, I argue that a binary feature analysis can better account for the Mi'gmaq number morphology as we can capture the data by associating each morpheme to a feature-value.

### *3.3. Mi'gmaq in a binary feature system*

The decomposition of number categories in a binary feature system lends itself to naturally account for the decomposable Mi'gmaq number morphology.[6] I propose the plural morpheme *-ulti* is the spellout of the feature-value [+augmented]. This accounts for why *-ulti* is always present in the plural forms, as [+augmented] appears in the formal representation of plural. Recall that [–singular] appears in the formal

(1) Verb of motion *ala'si-* 'to go about' 48

a. Al-a'si.
about-AI
'I am going about.'

b. Al-a'ti-eg.
about-AI.DU-1.EXCL
'We (dual) are going about.'

c. Al-**'tai**-eg.
about-**AI.PLU**-1.EXCL
'We (plural) are going about.'

[6]Fidelholtz (1968:111) similarly proposes binary features to account for the Mi'gmaq number morphology with the features [±singular] and [±plural].

representations of dual and plural. Thus, I propose *-ig* is the spellout of the feature [–singular] as this morpheme also appears in both dual and plural forms.[7] This is given in (11).

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

Depending on person features, [–singular] has different spellouts. In the context of second person [–singular] is *-oq*, in first person exclusive *-eg* and so on. As both dual and plural forms in a binary feature system both have the feature-value [–singular], this accounts for why nonsingular endings appear in both dual and plural forms in Mi'gmaq. The feature-value [–augmented] is not associated with any morpheme.[8]

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. By associating abstract features with morphemes, we can derive the verbal agreement pattern in Table 1.

A language like Mi'gmaq is expected under a binary approach where the number system does not have a morpheme [–augmented] with which [–singular] would give dual. Rather, the language has a morpheme for [+augmented] with which [–singular] gives you plural. A binary feature system is able to capture a wide range of typological patterns. To this end, it can easily capture the complex plural forms in Mi'gmaq.

## 4. Deriving agreement: Nouns in Mi'gmaq

In this section, I extend the binary analysis of verbs to account for nouns. In most nouns *-ulti*, never appears. The phonetic forms of most nouns distinguish singular from nonsingular. How this works with verbal agreement is shown in (12) and (13). Bare nouns are interpreted as singular in (12), whereas *-g* suffix marks nonsingular on nouns in (13). The noun 'girls' in both dual and plural forms is *epite'ji'j-g*. Here the allomorph of *-ulti* for the verb dance is realized as *-alti*.[9]

(12) E'pite'ji'j amalg-a-t.
girl dance-AI-3
'The girl dances.'

(13) a. E'pite'ji'j-g amalg-a-j-ig.
girl-PL.AN dance-AI-3-PL.AN
'The girls (dual) dance.'

b. E'pite'ji'j-g amalg-**alti**-j-ig.
girl-PL.AN dance-**PLU**-3-PL.AN
'The girls (plural) dance.'

For the noun, I posit that the feature-value [+singular] is not associated with any morpheme (as in the bare noun in (12)). The feature-value [–singular] in the context of the animate noun *e'pite'ji'j* 'girl' in (13) is the spellout of the animate plural morpheme *-g*. The [–singular] feature *-g* in nouns is, as expected, morpho-phonologically very similar to *-ig* in (11a).[10]

As for agreement, following a Distributed Morphology model of grammar (Halle & Marantz, 1993), we can assume that in nouns the feature [augmented] is impoverished, or deleted postsyntactically, accounting for why *-ulti* (allomorphically *-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

[7]Hamilton (2015:35) has suggested that *-ig* is a clitic due to its attachment position in the final slot in the verbal morphology and that it is not subject to the same locality restrictions as other morphemes in the verbal spine.

[8]The feature [+singular] is always null. This explains why we see the third person morpheme *-t* in singular, dual, and plural. The presence of [+singular] can affect the spellouts of person features. This accounts for why second person singular is spelled out as *-n* when [+singular] is present. On the other hand, the feature [–singular] is not null (e.g., *-ig*) but it can be affected by other features like person.

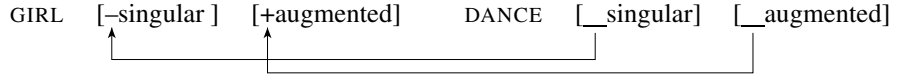
[9]Coon & Bale (2014) report the allomorph of the pluralizer to be *-a'ti* for the verb 'dance'. The lengthened *a'* is likely a process whereby the [l] of the pluralizer *-alti* deletes then there is compensatory lengthening of the vowel.

[10]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'.

with unvalued $\phi$ features and a goal (an NP or DP) with valued $\phi$ features. I schematize how agreement works for example (13b) below in (14). Agreement occurs prior to feature deletion so a verb with unvalued [singular] and [augmented] features can agree with the plural noun in (14a) that has valued [singular] and [augmented] features. After agreement, the [augmented] feature is deleted before any phonetic content gets inserted in (14b). Then phonetic content is inserted in (14c).

(14) Deriving agreement in (13b)

a. Agree occurs prior to feature deletion




b. [augmented] feature is impoverished on the noun

GIRL [–singular ] ~~[+augmented]~~ DANCE [–singular] [+augmented]

c. Spellout/Vocabulary Insertion
*e'pite'ji'j-g amalg-**alti**-j-ig*

Only the feature [singular] gets spelled out on the noun, while both [singular] and [augmented] features are spelled out on the verb. Thus, the pluralizer (bolded in (14c)) appears on the verb but not the noun. In sum, by impoverishing the feature [augmented] on nouns, we can account for agreement.

## 5. Summary and conclusions

In Mi'gmaq nonsingular endings appear in both dual and plural forms. The plural is derived from the dual by adding a pluralizing morpheme, *-ulti*. Thus, the plural is morphologically more complex than the dual. A complex plural form is unexpected under Harley & Ritter (2002)'s feature geometry as the plural is formally represented as being less complex (i.e, less features) than the dual. There is no simple way to parsimoniously associate features in Harley & Ritter (2002)'s feature geometry to morphemes in Mi'gmaq that would derive the Mi'gmaq agreement pattern.

In a binary feature system, plural is represented as [–singular, +augmented]. By associating the plural morpheme *-ulti* with the feature-value [+augmented], the system can capture the existence of *-ulti* in the plural forms, while excluding it in dual forms, as the value for [augmented] in dual forms is –. Both dual and plural have the [–singular], so by associating the nonsingular morphemes in Mi'gmaq with [–singular] we account for their appearances in both dual and plural forms.

I also extended the binary feature system to nouns and agreement in Mi'gmaq. In other parts of the language, like in most nouns, there is only a two-way distinction spelled out: singular and plural. In these contexts since the plural morpheme does not appear, the [augmented] feature is impoverished, or deleted postsyntactically, after agreement.

It might be tempting to argue for a lexical analysis of the *-ulti* pluralizer where it only attaches to animate intransitive verbs (AI). This seems to be inconsistent with some empirical facts in both the verbal and nominal domains.

Firstly, there are other verbs that are not animate intransitive that make a three-way number distinction. For instance, some verbs that do not have an animate intransitive verbal suffix do show a three-way contrast. These are the so-called "objectless transitive inanimate verbs", or, TI-O. These verbs have a transitive inanimate verbal suffix (glossed as TI) but do not allow any arguments in object position. An example with the TI-O verb *ewistu-* 'talk' is given in (15).

(15) An example of a TI-O which displays a three-way number contrast 890

a. Etl-ewis-tu.
PROG-talk-TI
'I am talking.'

b. Etl-ewis-tu-eg.
PROG-talk-TI-1.EXCL
'We (dual) are talking.'

c. Etl-ewis-tu-**'ti**-eg.
PROG-talk-TI-**PL**U-1.EXCL
'We (plural) are talking.'

Some verbs that do not have object agreement but can take objects also make a three way contrast. The verb *a'sisege-* 'throw over' makes a three way contrast (*a'sisegei* 'I throw it over', *a'sisegei-eg* 'we (dual) throw it over', *a'siseg-**a'ti**-eg* 'we (plural) throw it over'). In shape it looks like an animate intransitive verb (i.e., it has an animate intransitive verbal suffix, glossed as AI in (16)). However, it can still take an overt object as the example in (16) shows.

(16) A'sis-ege-t a'gusn llutaqan-igtug.
throw.over-AI-3 hat fence-LOC
'He throws the hat over the fence.' 394

Under a lexical analysis, it would be difficult to account for all these instances of *-ulti* attaching to a variety of verbs. Under the binary feature analysis presented here, the augmented feature is simply spelled out in these cases, rather than impoverished.

Secondly in the nominal domain, some nouns listed in the MOD, mainly those denoting professions with the prefix *nuji-/nut* 'skilled in', make a three-way number contrast as in Table (3).

**Table 3:** Examples of nouns in the MOD that make a three-way contrast in number in Mi'gmaq.

| Singular | Dual | Plural | |
|---|---|---|---|
| *nujiputaqiget* | *nujiputaqigej-ig* | *nujiputaq-ati-j-ig* | 'butcher' |
| *nutanteget* | *nutantegej-ig* | *nutantaq-ati-j-ig* | 'hunter' |

Though these nouns look like verbs in some respects (the *-t* third person suffix, for instance), they can function as nouns. The example in (17) shows that *nujiputaqiget* 'butcher' is the subject of the verb *pegisin-* 'arrive'.

(17) Nujiputaqiget pegi-sin-g gisgug...
butcher arrive-AI-3 today
'The butcher is here today...'

Under a lexical account where *-ulti* only attaches to verbs, it would be difficult to include the data in Table 3, which provides evidence that some nouns make the three-way number distinction. I posit that the feature [augmented] is not impoverished for the cases in Table 3.

These data thus show that a three-way number distinction is attested in verbs other than animate intransitive verbs and in some nouns. Under a lexical analysis of *-ulti* attaching to just animate intransitive verbs, it would be difficult to account for these other pieces of data. Under a binary feature system, the feature [augmented] is simply spelled out for these cases rather than impoverished.

To conclude, I make a final note on markedness. Using typological evidence on markedness, Nevins (2011) argues that plural is more marked than singular, but plural is unmarked apropos dual. By markedness, he refers to morphological markedness, rather than semantic. Under the framework of Distributed Morphology (Halle & Marantz, 1993), Nevins (2011) states that it is possible to separate featural markedness from how the language phonetically realizes the abstract feature terminals. So, though a phonological exponent may look more marked (additional morphemes, for example) this does not mean that the form is marked in terms of its features. In order to construct dual forms, *two* binary features are needed, namely [±augmented] and [±singular]. This allows for a singular-dual-plural number distinction. Although morphological dual number in Mi'gmaq has less morphemes, the fact that another feature is needed to make a three-way contrast with number makes the existence of dual, in a formal sense, more marked than plural. This follows from Nevins (2011) description of markedness being *abstract featural markedness* which does not necessarily correlate to phonological exponents.[11] Thus, it is important not to conflate abstract markedness and the markedness of phonological exponents in the Vocabulary.

[11] Milačić (2016) comes to a different conclusion. Comparing complex dual forms in Manam (Austronesian) and Mi'gmaq complex plural forms, he equates phonological exponents with markedness.

What part of the language displays the more marked pattern is subject to language-dependent variation. Mi'gmaq is not the only language where the plural is derived from the dual form. Hopi (Uto-Aztecan) also has complex plurals that can be seen on nominal morphology in Table 4.

**Table 4:** Some Hopi nouns make a three-way contrast in number with plural derived from dual. Data from Hale (1997:73).

| Singular | Dual | Plural | |
|---|---|---|---|
| *taaqa* | *taaqa-t* | *tàataq-t* | 'man' |

This tells us that, crosslinguistically, whether nouns or verbs in a language display the more marked pattern is subject to parametric variation. It is my hope that empirical insights from understudied languages can further our development of morphological theories of number.

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# Proceedings of the 35th West Coast Conference on Formal Linguistics

edited by Wm. G. Bennett, Lindsay Hracs, and Dennis Ryan Storoshenko

**Cascadilla Proceedings Project Somerville, MA 2018**

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ISBN 978-1-57473-472-0 library binding



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Little, Carol-Rose. 2018. A Binary Feature Analysis of Mi'gmaq Number Agreement. In *Proceedings of the 35th West Coast Conference on Formal Linguistics*, ed. Wm. G. Bennett et al., 242-250. Somerville, MA: Cascadilla Proceedings Project. www.lingref.com, document #3395.