# Roots Are Syntactic: Evidence from Nishnaabemwin

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## 1. Introduction

There has been much debate about the nature of roots, as with Harley (2014a) and subsequent replies, specifically whether they are individuated syntactically, semantically, or phonologically. Harley argues that roots are purely syntactic entities, with a major argument revolving around number-conditioned verb suppletion in Hiaki (Uto-Aztecan), as in (2).[1]

(1) a. Aapo/Vempo uka koowi-ta **mea**-k
3.SG/PL the.SG pig-ACC.SG kill.SG-PRF
'He/they killed the pig.'

b. Aapo/Vempo ume kowi-m **sua**-k
3.SG/PL the.PL pig-ACC.PL kill.PL-PRF
'He/they killed the pigs.'

(Harley 2014a:256)

Since Hiaki does not have object agreement, Harley proposes that a head–complement relation is the conditioning environment for the *mea-* ~ *sua-* alternation. That is, the root √KILL merges with the object, resulting in a maximally local relationship that triggers contextual allomorphy.

However, Borer (2014) counters that, since a syntactic relationship between the root and the object cannot be tracked via an Agree relation, it cannot be determined whether *mea-* and *sua-* are indeed the same root. Rather, this alternation may be analyzable as a *murder* ~ *massacre* relationship—namely, although their meanings overlap considerably, the two verbs are distinct roots and the number of their respective objects are merely implied and not syntactically represented.

This paper explores how Nishnaabemwin (Algonquian) roots may bear on this debate, providing preliminary evidence in favour of Harley's proposal that roots are syntactically individuated. Like Hiaki, Nishnaabemwin root suppletion is triggered by a sub-$\varphi$-feature, gender (animacy). As shown in (2a) below, the root √EAT appears as *amw-* with animate *miskominag* 'raspberries', and as *miijin-* with inanimate *miinan* 'blueberries' in (2b).[2]

(2) a. miskomin-ag ni-gii-**amw**-∅-aa-ag
raspberry.AN-AN.PL 1-PST-eat-TA-DIR-AN.PL
'I ate raspberries.'

b. miin-an ni-gii-**miijin**-∅-∅-an
blueberry.IN-IN.PL 1-PST-eat-TI-TI3-IN.PL
'I ate blueberries.'

Notably, number agreement exponence also co-varies with the gender feature of the object. In (2a), *-ag* cross-references the animate *miskominag*, whereas in (2b), *-an* appears with the inanimate *miinan*.

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[1] The form of the verb also co-varies with the number-features of the intransitive subject, which I discuss in section 2.

[2] Abbreviations are as follows: 1, 2, 3 = 1st, 2nd, 3rd; AI = animate intransitive; AN = animate; DIR = direct; IN = inanimate; INV = inverse; PL = plural; SG = singular; TA = transitive animate; TI = transitive inanimate.

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This pattern provides evidence against a *murder* ~ *massacre*-type account since the number agreement shows that an Agree relation is in place between the verb and the object. These behaviours follow from Harley's proposal that roots take complements, suggesting that the conditioning environment for root suppletion is indeed maximally local.

This paper is organized as follows. I summarize the main arguments in favour of syntactically individuated roots in section 2, where I also further discuss the details of Hiaki root suppletion and Borer's (2014) reply to Harley's analysis. In section 3, I overview Algonquian verb stems, focusing specifically on Nishnaabemwin. I show that animacy triggers Nishnaabemwin root suppletion and conditions contextual allomorphy of number agreement in section 4, suggesting these phenomena are better captured under Harley's (2014) analysis. Section 5 concludes.

## 2. What are roots?

This section discusses some of Harley's (2014) main claims and arguments in favour of syntactically individuated roots, and against phonological or semantic individuation.[3] I then discuss further details of Harley's proposal that roots can take complements, and Borer's counter-arguments.

### *2.1. Roots are neither semantic nor phonological*

Arguing against semantic individuation, Harley discusses roots whose interpretation can only be derived in a specific morphosyntactic context after Spell-Out. Consider the English suffixes *-ceive, -port*, and *-pose*, 'caboodle' items which do not receive a semantic interpretation outside of *deceive, support* and *suppose*. Yet, each 'meaningless' root has a regular alternation. For example, *-ceive* consistently alternates with *-cept*, as in *deceive* ~ *deception*. Storing this alternation as a property of the pair would be redundant given its productivity, as in *receive* ~ *reception*, *perceive* ~ *perception*, etc. A more reasonable account is to store the *-ceive* ~ *-cept* alternation as a property of *-ceive* itself. Importantly, it cannot be stored on the basis of its interpretative properties, since it has none.

At first glance, a phonological account of root individuation appears to derive these patterns. Although the *-ceive* ~ *-cept* alternation is productive across various morphosyntactic environments, modelling the relationship between the two as pure phonological information—say, /siv/—allows a way out of individuating roots solely by syntactic specification. However, this cannot derive other suppletive pairs, such as English *go* ~ *went*. Borer argues that the two are distinct roots that have complementary gaps in their respective paradigms due to diachronic change and levelling, but this fails to capture their participation in the same idioms. This suggests instead that *go* ~ *went*, and other suppletive pairs, are indeed surface manifestations of the same linguistic object.

Harley thus concludes that, if roots are not *semantically* nor *phonologically* individuated, they must be *syntactically* individuated. The next section discusses the Hiaki root suppletion data in more detail, providing further evidence of the syntactic nature of roots.

### *2.2. Syntactic properties of roots*

#### *2.2.1. Roots can take complements - Harley (2014a,b)*

This section outlines Harley's argument that roots can take complements, which draws on Hiaki verb suppletion as evidence. The logic of the argument is as follows: (i) Hiaki has verbal suppletion based on the features of the internal argument, (ii) Hiaki does not have object agreement, therefore (iii) any triggers for suppletion must be based on a head–complement relation.

In Hiaki, suppletive intransitive verbs are sensitive to the number of their subjects, as in (3), whereas suppletive transitive verbs are sensitive to the number of their objects, as in (4).

[3] The main force of the view that roots must be individuated somehow comes from root suppletion, which requires the surface forms to be traceable to a single syntactic representation. See Marantz (1995) and Harley (2014a) for arguments on both sides of this debate.

(3) a. Aapo **weye**
3.SG walk.SG
'She/he/it is walking.'

b. Vempo **kaate**
3.PL walk.PL
'They are walking.'

(4) a. Aapo/Vempo uka koowi-ta **mea**-k
3.SG/PL the.SG pig-ACC.SG kill.SG-PRF
'He/they killed the pig.'

b. Aapo/Vempo ume kowi-m **sua**-k
3.SG/PL the.PL pig-ACC.PL kill.PL-PRF
'He/they killed the pigs.'

(Harley 2014:256)

However, this phenomena raises a potential issue with respect to case and agreement. Although the suppletive forms of the verb follow an ergative-absolutive alignment, its case-marking system is nominative-accusative. It has long been noted in the literature that, cross-linguistically, there is no language that has a nominative-accusative case alignment but an ergative-absolutive agreement alignment.[4] Since the case/agreement facts in Hiaki appear to deviate from this universal, Harley proposes that number-conditioned suppletion in Hiaki verbs is not triggered by an Agree relation. Rather, the root merges with the object, deriving root suppletion as contextual allomorphy conditioned by maximally local Vocabulary Item competition at the level of root insertion.

### *2.2.2. Roots can't take complements - Borer (2014)*

Borer (2014) challenges Harley's proposal and analysis by dismantling the argument from suppletion more broadly. Recall that, in Hiaki, the number feature of the object triggers suppletion of verb forms (i.e. roots). Since Hiaki does not have object agreement, Harley argues that suppletion must be triggered by a maximally local head-complement relation.

However, Borer argues that the fact that Hiaki verbs do not show any broader sensitivity to number weakens the overall claim. Consider the case of English *murder* ~ *massacre*. Even though the number of their respective objects are not syntactically represented as part of the $\varphi$-feature bundle, *murder* implies a singular object whereas *massacre* implies many—yet the two items are not taken to be surface manifestations of a single linguistic object. However, in some sense, they echo the Hiaki *mea-* ~ *sua-* alternation where *mea-* appears with a singular object and *sua-* appears with a plural one, but they are indeed argued to instantiate a single root.

While it is not explicitly proposed that the Hiaki alternation is the same kind of (non-) relationship between *murder* and *massacre*, Borer does place the burden of proof on Harley, arguing that there would need to be independent evidence that Hiaki verbs/roots are otherwise sensitive to the number features of their complements outside of the alternations. Additionally, we might expect to find other cases of contextual allomorphy conditioned by number. Borer claims that there is no such evidence in Hiaki, concluding that its number-conditioned verb suppletion is not actually suppletion nor representative of a potential root–complement constituent.

In the next section, I show that these phenomena can be found in Nishnaabemwin. Some Nishnaabemwin roots are suppletive, conditioned by ANIMACY, a grammatical gender—so, part of the $\phi$-feature bundle. Furthermore, the Nishnaabemwin agreement system is transparently sensitive to the animacy and number features of the objects of transitive verbs and subjects of intransitive verbs. These phenomena thus provides empirical support for Harley's account of syntactically individuated roots.

[4] See Anderson (1977) for discussion on this universal, and Bobaljik (2008), *a.o.*, for theoretical accounts on this typological gap.

## 3. Empirical landscape: Nishnaabemwin verbs

This section overviews the general properties of Algonquian verb stems and roots. I first outline the major points as described in the traditional literature, and then discuss their implementation in generative syntax.

### *3.1. A general view*

The Algonquian verb stem is traditionally divided into three parts: (i) INITIAL, (ii) MEDIAL, and (ii) FINAL. The initial appears at the left edge of the stem and generally conveys the core meaning; the final appears at the right edge and defines the category of the stem, encoding information about transitivity and animacy.[5] The medial, which appears between the initial and final, is typically nominal. For example, the sentence in (5a) below consists of the initial *misko* 'red' and an 'animate intransitive'—AI—final *-si*. The sentence in (5b) has all three elements: the initial *tahki* 'cold', the medial *-sit-* 'foot', and an AI final *-e*.

(5) a. misko-si
red-AI
'It$_{animate}$ is red.'

b. tahki-sit-e
cold-foot-AI
'She/he has cold feet.'

(Ojicree; Slavin 2012:14)

Like all Algonquian languages, Nishnaabemwin has four major verbal paradigms that index transitivity and animacy. The VTA paradigm consists of transitive verbs that take an animate object, and the VTI paradigm consists of transitive verbs that take an inanimate object. The initial *waab-* 'see' appears in both sentences below: the final *-am* marks the animate object in (6a) whereas the final *-and* marks the inanimate object in (6b).

(6) a. gi-waab-**am**-aa
2-see-TA-DIR
'You see him/her.'

(Valentine 2001:287)

b. gi-waab-**and**-am-n
2-see-TI-IN-NON.PL
'You see it$_{inanimate}$.'

(Valentine 2001:311)

The VAI paradigm consists of intransitive verbs that take an animate subject, while the VII paradigm consists of intransitive verbs that take an inanimate subject. In (7) below, the initial *bigishk-* is associated with the meaning 'break up'. In (7a), the final *-anani* marks the animate subject; in (7b), the final *-anad* marks the animate subject.

(7) a. bigishk-**anani**
break.up-rot.AN
'It$_{animate}$ rots.'

b. bigishk-**anad**
break.up-rot.IN
'It$_{inanimate}$ rots.'

[5] The finals can be further subdivided into two categories, ABSTRACT and CONCRETE. While both elements define the category of the verb stem, concrete finals also carry some lexical meaning. I only discuss abstract finals in this paper; see Valentine (2001), Mathieu (2008), and Slavin (2012) for more detailed discussion.

To recap, Nishnaabemwin verb stems show sensitivity to the animacy of the transitive object and the intransitive subject, furnishing an ergative–absolutive alignment, similar to the number-sensitivity in Hiaki.[6] While the Nishnaabemwin agreement system is notoriously complex and beyond the scope of this paper, it is important to note that Nishnaabemwin verbs can also mark the number of its arguments with an overt suffix, in contrast to Hiaki. In (8) below, for example, the suffix *-ag* marks the 3rd person plural object. This is an important point which I will discuss in more detail in the next section.

(8) ni-waab-am-aa-**ag**
1-see-TA-DIR-PL
'I see them.'

Note that, although there are seven logically possible combinations of INITIAL + MEDIAL + FINAL (excluding the empty set), only two are attested: (i) initial + final, and (ii) initial + medial + final, as seen in (5). There is a robust generalization that the initial and the final are the only obligatory elements of the verb stem, which has pushed more recent work to recast the initial as a DM-style root and the final as a categorizing little *v*. This characterization thus rules out the combinations where they are absent from the verbal template. I discuss some recent accounts of these properties in the following section.

### *3.2. Theoretical implementations*

As previously mentioned, the initials have broadly been taken to be equivalent to the DM root, i.e. √. For arguments towards this analysis, see Brittain (2003), Hirose (2003), Slavin (2012), among others. Brittain (2003) notes that elements of any category can appear in the initial position, lending further support to its category-less counterpart in the DM framework. As can be seen in (9) below, the 'root-ness' of the initial *wa·p-* 'light' is intuitive and transparent due to its ability to combine with four distinct finals.

(9) *Proto-Algonquian initial + final*

| INITIAL | FINAL | | STEM | GLOSS |
|---|---|---|---|---|
| **wa·p-* | *-i* | AI | **wa·pi-* | 'to look on' (animate) |
| **wa·p-* | *-an* | II | **wa·pan-* | 'to dawn' (inanimate) |
| **wa·p-* | *-am* | TA | **wa·pam-* | 'to look at someone' |
| **wa·p-* | *-ant* | TI | **wa·pant-* | 'to look at something' |

(Bloomfield 1946)

The data in (9) further illustrate the finals' categorizing properties. Given this behaviour, abstract finals have been taken to be at least as high as $v^0$ in the recent generative Algonquian literature, many of them appearing to be light verbs (see Brittain 2003, Hirose 2003, Piggott & Newell 2006, Mathieu 2007, and Slavin 2012, among others). This representation captures their ability to determine transitivity/animacy of a given argument.

Going beyond the verbal stem, the Nishnaabemwin agreement system allows both subject and object agreement morphology, as shown in the verbal template in (10). The prefix *ni-* and the inner suffix (IS) *-naan* together index the 1st person plural subject, and the outer suffix (OS) *-ag* indexes the 3rd person plural object. The theme sign (TS) slot has received a wide range of analyses—most recently, it has been argued to be a reflex of fused subject–object features (e.g. Lochbihler 2012) or object agreement alone (e.g. Oxford 2014, 2017).

(10) *Nishnaabemwin agreement slots*

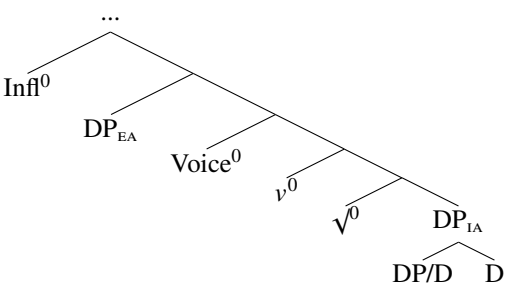
| PREFIX | INITIAL | FINAL | TS | IS | OS |
|---|---|---|---|---|---|
| DC | $\sqrt{}^0$ | $v^0$ | Voice$^0$ | Infl$^0$ | DC |
| **ni-** | waab | -am | -aa | -**naan** | -ag |

'**We** see them$_{\text{animate}}$.'

[6] Nishnaabemwin—and Algonquian languages more generally—has no overt case marking, so the potential issues that Harley raises about Hiaki case and agreement does not hold for Nishnaabemwin.

Despite the variety of approaches accounting for the distribution of the theme signs, there is a general consensus that they—and the inner suffix—are reflexes of Agree in $\varphi$-features: their positions are fixed and their forms are tense-variant (see Oxford 2013 for further discussion and references therein). This relates to recent research on doubled clitics, which has independently shown that Agree is preliminary for clitic doubling (see Preminger 2019 and references therein). The prefix and outer suffix have been argued to be doubled clitics (DC) of category D: they appear in word-initial/-final positions, respectively, and their forms are tense-invariant. These two lines of research suggest that the outer suffix *-ag* is a doubled clitic, a reflex of an Agree relation exponed in the 'theme sign' slot. Putting all of these pieces together, we come to a general representation of the syntactic structure of a Nishnaabemwin sentence with a transitive verb.

(11)




In section 4, I discuss the details of some derivations featuring an animate object vs. an inanimate object. But, at this point, it is worthwhile to lay out the major points overviewed in this paper. First, Harley argues that roots are syntactically individuated and behave as other syntactic objects, crucially in that they can take complements. Second, Borer dismantles the argument, upholding that roots cannot take complements. Third, the Nishnaabemwin agreement system was shown to closely interact with animacy, a sub-$\varphi$-feature. Further, Algonquian verbal stems were shown to be transparently divided into roots (the initials) and the categorizer *v* (the finals). The remainder of this paper will show that Nishnaabemwin roots show suppletion based on animacy.

## 4. What Algonquian roots might tell us about the nature of roots

In this section, I show that Nishnaabemwin suppletive roots are conditioned by animacy. As the Nishnaabemwin agreement system is closely tied to the animacy of its arguments, I argue that Borer's counter-arguments against Hiaki complement-taking roots do not hold in Nishnaabemwin. This provides empirical support in favour of Harley's proposal that roots are syntactically individuated.

The sentences below shows the granularity with which Nishnaabemwin roots and agreement interact with the animacy and number features of their objects. First, for certain roots, its surface forms alternate based on the animacy features of the transitive object. In (12a), the root $\sqrt{}$EAT appears as *amw-* with an animate object, but it appears as *miijin-* in (12b) with an inanimate object. This is similar to the Hiaki verb alternation which was conditioned by number.

(12) a. miskomin-ag ni-gii-**amw**-∅-aa-ag
raspberry.AN-AN.PL 1-PST-eat-TA-DIR-AN.PL
'I ate raspberries.'

b. miin-an ni-gii-**miijin**-∅-∅-an
blueberry.IN-IN.PL 1-PST-eat-TI-TI3-IN.PL
'I ate blueberries.'

The crucial data point here is the co-varying number agreement on the verb. As a plural and animate argument, *miskomin* 'raspberry' requires one form of the plural suffix, *-ag*, which also appears on the verb as agreement morphology. In contrast, the plural inanimate *miin* 'blueberry' requires another form of the plural suffix, *-an*, which also appears on the verb as agreement morphology. It is highly unlikely

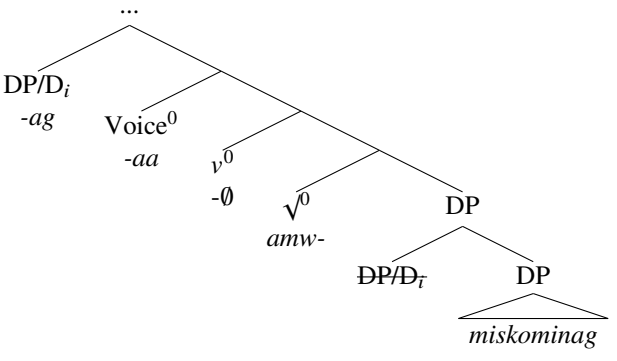
that the *-ag* ~ *-an* alternation can be analyzed as two distinct roots, as in the *murder* ~ *massacre* analogy. For one, *-ag* and *-an* are clearly derived by agreement mechanisms, appearing across the board in relevant constructions; other inflectional suffixes may also appear to its left, such as negation and tense-marking (see Valentine 2001 for a detailed overview of the Nishnaabemwin verbal template). Furthermore, *-ag* can track the number of the subject, as shown below.[7] This behaviour would be surprising under an account where *-ag* is non-decompositional from the verbal stem.

(13) ni-waab-am-igo-**ag**
1-see-TA-INV-AN.PL
'They see me.'

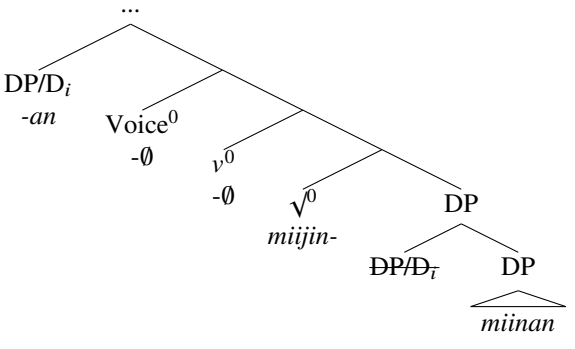
This alternation and co-variance provides independent evidence that Nishnaabemwin verbs are sensitive to the animacy features of their complements outside of the *amw* ~ *miijin* alternation. Namely, number agreement is also sensitive to the animacy of the cross-referenced argument. Recall that Borer's critique against Harley's analysis of Hiaki verb suppletion called for exactly this data point. While no such evidence was available in Hiaki, it is available in Nishnaabemwin, thus providing evidence in favour of Harley's proposal that roots are syntactically individuated. The animacy-conditioned allomorphy of the plural marker provides independent evidence that the syntax of the Nishnaabemwin verbal stem is interacting with (a subset of) the $\varphi$-features of transitive objects. Thus, the *amw* ~ *miijin* alternation cannot be characterized as a type related to the *murder* ~ *massacre* alternation where the number of its object is implied, but not syntactic in any way.

The structures in (14-15) below derive the co-variance in the forms of the plural marker with respect to the animacy of the object, as well as the root alternations. Bobaljik (2012) argues that suppletive allomorphy arises under a sisterhood relation, a structure that directly follows from Harley's proposal that roots merge with objects. This allows us to derive the animacy-based suppletive forms in (14) (=12a) and (15) (=12b). The categorizing $v^0$ selects the root + object constituent, which then combines with Voice$^0$. Following Oxford (2014, 2017), a licensing probe on Voice$^0$ searches its c-command domain and agrees with a 3rd person object, respectively exposed as *-aa* in (14) and -∅ in (15).

(14)




(15)




[7] Algonquian languages generally do not allow inanimate subjects, so a similar example with *-an* is not applicable in this context.

This Agree relation allows for clitic doubling of the object, realized as *-ag* in (14) and *-an* in (15). I leave the exact details of this process aside as it is sufficient for the purposes of this paper that *-ag* and *-an* are doubled clitics that is preconditioned by Agree on Voice$^0$.

## 5. Conclusion

In this paper, I proposed that the behaviour of Nishnaabemwin roots provides evidence in favour of the syntactic approach to roots. This was shown by first outlining Harley's (2014) analyses and contrasting Borer's (2014) reply. The crux of the argument is based on root suppletion in Hiaki verbs: Harley argues that certain alternations are cases of suppletion conditioned by the number features of the internal argument. Since Hiaki does not have object agreement, Harley concludes that root suppletion must be triggered by a head–complement relation. But, Borer counter-argues that the fact that Hiaki does *not* have general object agreement weakens the argument. Namely, there would need to be independent evidence that Hiaki verbs are sensitive to the number features of its arguments beyond the attested alternations, e.g. number-conditioned cases of contextual allomorphy.

After overviewing the general properties and characteristics of the Algonquian verbal stem, I showed that Nishnaabemwin roots illustrate the hypothetical cases outlined by Borer. I showed that Algonquian roots are sensitive to animacy, part of the $\varphi$-feature bundle. Not only does animacy condition suppletion of Nishnaabemwin roots, it also triggers contextual allomorphy of plural number agreement. Borer's critique and reasoning against Hiaki verbal suppletion is thus borne out in Algonquian root suppletion. While further research is required to solidify this claim, the initial findings in this paper serves to provide evidence in favour of Harley's (2014) account of the syntactic nature of roots.

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