Balancing Syntax and Prosody in the Algonquian Verb Complex

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While the Bloomfieldian characterization of Algonquian stem derivation in terms of initial, medial, and final components has been both useful and revealing, a complete theory of nouns and verbs in Algonquian languages remains elusive. The issue in the theory of stem structure which primarily concerns us is how to reconcile the existence of the patterns which Bloomfield so ably elucidated with the imperatives of linguistic theory as a whole, and in particular with the research questions posed in the generative tradition. Chomsky has demonstrated conclusively that much of language structure must be biologically determined, and therefore universal. It follows that the principles which control Algonquian word structure must be common to other languages, too. The unique character or "genius" of Algonquian must be a superficial (although not trivial) matter, and it must be possible to find deeper principles which obtain both in Algonquian languages and in others. Our aim in this paper is to describe the interaction of morphemes in the typically complex Algonquian verb, and to do so using a technical language that is consistent with the findings of broader linguistic theory. We hope to progress beyond the Bloomfieldian initial/medial/final template characterization which, while it has proven invaluable in the development of our current understanding, remains difficult to reconcile with current generative models of the language faculty.

The specific proposals we wish to make rely on language-particular constraints which hold in both syntactic and phonological components of the grammar. On the syntactic side, we propose a fully transformational

1. Many thanks to our colleague, Marguerite MacKenzie, for sharing with us her insights into the grammatical issues we deal with in this paper. Our thanks also to the two anonymous readers and to the audience at the 36th Algonquian Conference for constructive comment during question period. In particular, we thank Rich Rhodes, for stimulating discussion of relative roots, and Amy Dahlstrom, whose comments on our analysis of finals are partly addressed in example (16), and will be further addressed in future work. The research reported here was funded in part by SSHRC Standard Research Grant 410-2000-0413 (Branigan), and by SSHRC Postdoctoral Fellowship 756-2000-0035 (Brittain).
treatment of Algonquian verbal morphology, complete with phrase-level transformations. In this way, we take up the program initiated by Goddard in his paper on ‘Post-transformational stem derivation in Fox’ (1988). We take this program quite literally, in that we offer a specific model of the “transformations” and then of the “stem derivation” process. Our proposals thus fall into the family of general theories of morphosyntax in which much of the morphology is derived by regular syntactic processes, and not by lexicon-specific rules or templates.²

On the phonological side, we propose a syntax-prosody mapping in Algonquian such that the verb stem is a single phonological unit: a phonological or P-phrase. Moreover, we propose that the stem morphology referred to as finals is prosodically dependent (i.e., enclitics). Their status as enclitics will account for two cases of non-syntactically motivated movement within the verb stem. We also propose prosodic size constraints, both minimal and maximal. The verb stem minimal size constraint accounts for cases where a preverb appears in initial position (a situation we refer to as preverb lowering), and the maximal size constraint prevents preverb lowering – that is, accounts for cases where the preverb remains in its default (preverb) position.

We will present the syntactic and phonological components of our model in turn. All examples are in Innu-aimun, unless otherwise stated.

THE TRANSFORMATIONS

We begin with a few basic assumptions. We will suppose that the structure of vP in Algonquian is head-initial, as shown in (1), and that all “final” morphemes (probably) originate in v.³

(1)        vP
          /  \\            (agent)
            /  \       v’
            /   \       v    VP
            /     \     V    complements

². For a recent overview of the debate over how much morphology is done by the syntax, the reader is referred to Ackema & Neeleman (2004) and the references therein.
As is typical of many languages, the vP-internal subject normally undergoes NP-movement, and is therefore not visible inside vP. As usual, movement of the subject will presumably take place to allow an EPP feature of T(ense) to be satisfied (Chomsky & Lasnik 1991). To simplify the exposition, we ignore the subject and its trace in detailing the vP structure from now on.

It must be kept in mind throughout that the details of vP-structure, and the position of nominal arguments in particular, will not be evident from the word order; in a "pronominal argument" language, much of the content inside vP will be pro, hence invisible. 4 (In pronominal argument languages, most lexical nominals are syntactic adjuncts, adjoined to IP; Baker 1996).

We now propose two vP-internal transformations. The first is familiar from studies of other languages, and involves raising of V to v. 5 In Algonquian, this transformation has quite limited application, in contrast with the unrestricted usage found elsewhere. The second involves a more productive process of VP-attraction by v, forming the structure shown in (2). Note that VP raises to the specifier position so we are assuming multiple specifier structures (Richards 1997). (As yet, we have no specific proposal concerning the syntactic forces which drive this VP movement – speculation on this issue would be premature, given our incomplete understanding of the scope of this phenomenon. Crucially, however, the syntactic movement will have a beneficial effect on the prosodic constraints active for vP, as shown below.)

4. For the purposes of this paper, it does not seem important to take a position on whether nominals are categorically D or N in any given context. We use the N label generally, simply as a notational convenience.
5. The literature on the V-to-v transformation provides ample evidence that this operation takes place, but little in the way of explanation for why this is the case. It is widely assumed that some morphological principle requires movement, and we will assume this as well. (But cf. Takano 1996 for discussion of parametric options on v-to-V movement.)
THE EFFECTS OF vP-INTERNAL TRANSFORMATIONS

To see the effects of this vP-internal transformation, we begin with the simplest case: a verb stem we suppose consists of lexical verb plus final: nipau, for example. The pre-movement structure is shown in (3a). In (3b), the lexical verb raises to Spec,vP; that is, to “initial position.” (The prosodic structure of each derivation appears beneath the post-movement tree; we’ll ignore this for the time being and return to it in the phonology section.)

(3) nipau VAI ‘s/he sleeps’

(3a) vP
    /\  vP
   |   VP
  -a  V
   nip-

(3b) vP
    /\ vP
   |   V
  nip- v
   nip-a
    \        \ (( nip -a)p <w_d )p

In (4) and (5) we show the same basic structure: a vP comprising of lexical verb and nominal complement. In (4), we suppose a null object, in (5) the object is overt. The structure in (5) simply derives the familiar initial-medial-final ordering of morphology.
(4)  *tshishtaputau* VAI ‘s/he washes s.t.’

(4a)  

\[
\begin{array}{c}
\text{vP} \\
\text{v} \\
\text{-a} \\
\text{V} \\
\text{tshishtaput-} \\
\text{pro}
\end{array}
\]

(4b)  

\[
\begin{array}{c}
\text{vP} \\
\text{VP} \\
\text{v'} \\
\text{V} \\
\text{N} \\
\text{tshishtaput-} \\
\text{pro} \\
\text{-a} \\
\text{t}
\end{array}
\]

(5)  *tshishtaputshimitshuapeu* VAI ‘s/he washes the floor’

(5a)  

\[
\begin{array}{c}
\text{vP} \\
\text{v} \\
\text{-e} \\
\text{V} \\
\text{N} \\
\text{tshishtaput-} \\
\text{-mitshuap}
\end{array}
\]

(5b)  

\[
\begin{array}{c}
\text{vP} \\
\text{VP} \\
\text{v'} \\
\text{V} \\
\text{N} \\
\text{v} \\
\text{VP} \\
\text{tshishtaput-} \\
\text{-mitshuap} \\
\text{-e} \\
\text{t}
\end{array}
\]

6. In the analysis of *tshishtaputau*, we assume that the -put portion of the verb is a part of the prefinal stem and not contained in v. Although traditional analysis of this morpheme might include it in the list of instrumental finals, nothing in our approach precludes some elements from this list being lexically reanalyzed so that they morphologically combine in the V position.
In (6), we assume that there is no lexical verb, that the object is null pro, and that there is a PP in the structure. Raising the entire VP to Spec,vP derives the correct surface order.

(6)  \textit{shekuashtakaim} VTI ‘s/he hides s.t. underneath the boughs’

\begin{enumerate}
\item \textbf{(6a)}
\begin{center}
\begin{tikzpicture}

\node (v) at (0,0) {vP}
child {node (vp) {VP}}
child {node (v) {V}}
child {node (n) {N}}
child {node (pp) {PP}}
child {node (zero) {Ø pro}}
child {node (p) {shekuashtakaim}}
child {node (n) {ashtak}}
\end{tikzpicture}
\end{center}
\end{enumerate}

\begin{enumerate}
\item \textbf{(6b)}
\begin{center}
\begin{tikzpicture}

\node (v) at (0,0) {vP}
child {node (vp) {VP}}
child {node (v) {V}}
child {node (n) {N}}
child {node (pp) {PP}}
child {node (zero) {Ø pro}}
child {node (p) {shekuashtakaim}}
child {node (n) {ashtak}}
\end{tikzpicture}
\end{center}
\end{enumerate}

\begin{center}
\((\text{shekuashtakaim})_{pwd} (\text{ashtak} -a(h))_{pwd})_{p}
\end{center}

In (7) we show a Fox example from Goddard 1990. Here we assume the structure described by Goddard – a verb having a sentential complement, in this case, a CP. Since we have not yet determined a location for preverbs, we have not detailed where in CP \textit{ki.ši} is located, nor have we a prosodic structure for the derived form yet.

(7)  \textit{ki.ši-ki.ke.nowe.nemaki}
\begin{itemize}
\item \textit{ki.ši-} preverb-finish
\item \textit{ki.ke.now} initial-celebrate.feast
\item \textit{-e.nem} final-think.about.TA
\item \textit{-aki} Conjunct.1sg$>$3pl
\end{itemize}

‘When I thought they were finished with the clan feast.’
Now consider examples involving more complex semantic relationships between the components of a verb stem, such as morpheme strings of Adjective-Noun-final, and Verb-final-Noun-final.

A case of the former is shown in (8):

(8)  mikushtikuaneu VAI 's/he has red hair'

((miku)pwd (shtikuan -e)pwd)p
Notice that the analysis of (8) provides a quite different structure to that proposed for the Verb-Noun initial-medial pairs shown in (4) and (5). As Wolfart (1973) observed, the semantic relationships between the two types of pairings are quite dissimilar, so we should prefer a morphosyntactic relationship which is also different. In (8), the relationship between A and N inside a verb stem is identical to what we would naturally suppose for A-N compounds. The fact that our analysis makes this possible is one of the main arguments in favour of this type of syntactic approach.

The Plains Cree example in (9) illustrates what we take to be a third relevant type of transformation.

(9) Plains Cree: nitahkiskawastimwân VAI ‘I kicked the horse’ (Hirose 2003)

(9a)

(9b)

Here, we suppose little-\(vP\) attraction to the specifier position (shown in (9b)). We further assume that the lexical verb  \(tahk\) moves leftward to satisfy the enclitic requirements of the final  \(iskaw\). In other words,  \(iskaw\),

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7. An anonymous reviewer points out that final -\(\dot{a}\) in nitahkiskawastimwân is derived by regular rule from the same underlying -\(e\) which appears in tshishtaputshimitshuapeu.
being a final, needs a phonological host to its left. (The verb still precedes its object after raising internal to the lower vP.)

Many details remain to be worked out, of course, and this work is still in its early stages, but the basic transformational apparatus we propose here seems to explain morpheme order in enough cases that the "program" seems tenable, and, at least potentially, explanatory.

SYNTAX-PROSODY MAPPING

We next discuss why the vP appears to be a single word. Our solution involves the mapping between syntactic structures (such as the vP) and prosodic structures (such as the phonological phrase). We outline our theoretical assumptions first and then describe the empirical benefits of our approach.

Several principles govern the relationship between morphosyntactic and prosodic structure. The Stem=Pwd homology (10) is a principle of Universal Grammar.

(10) The Stem=Pwd homology (McCarty 2000:169):
The stem (or root) is a Pwd.

Morphological stems or roots are equivalent to Pwds cross-linguistically.

Alignment principles also govern the relationship between morphological structure and prosodic structure (Selkirk 1986; McCarthy & Prince 1993). Morphological structure (the stem or root, and the vP) and prosodic structure (the corresponding Pwd and P-phrase) are aligned at one edge. The left edge is relevant for Algonquian (11).

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8. In fact, the proposed vP does not include the person prefixes, which are generated to the left of it. However, since preverbs can intervene between the person prefixes and the remainder of the verb complex, the person prefixes cannot be viewed as prototypical affixes. See note 12 for an account of the person prefixes.

9. The implications of this claim for polysynthetic and agglutinating languages remain to be worked out. However, it is interesting to note that words in Nxa'amxcin (Moses-Columbia Salish) contain a smaller prosodic root domain which has well-defined phonological characteristics distinguishing it from the remainder of the word domain (Czakyowska-Higgins 1998). Similarly, words in Bantu languages have an internal prosodic domain that is coextensive with the stem; Downing (1999) refers to this domain as the 'P-stem' domain.
Left-edge alignment

(11a) The stem/root and the Pwd are aligned at the left edge.

(11b) The vP and the P-phase are aligned at the left edge.

Examples illustrating the prosodic structures resulting from alignment (11) are provided in (17).

Separate principles of prosodification often apply to affixes (cf. Selkirk 1984, 1986, 1993; Inkelas 1990; Selkirk & Shen 1990:320). For example, affixes can be incorporated (or restructured) into adjacent prosodic domains.

Prosodification of (smaller) affixes

(12a) affix + ( stem/Pwd ) \rightarrow ( affix + stem/Pwd )

(12b) ( stem/Pwd ) + affix \rightarrow ( stem/Pwd + affix )

Examples of finals that prosodify in this manner are provided in (17).

Larger affixes can prosodify in various ways (13, 14).

Prosodification of larger, more loosely-bound affixes (after Inkelas 1990)

(13a) (( stem/Pwd)( affix/Pwd ))_{WORD}

(13b) (( affix/Pwd)( stem/Pwd ))_{WORD}

(13c) ( affix/Pwd )_{WORD} (stem/Pwd)_{WORD}

Larger, more loosely-bound affixes can be represented as compound-like structures (13a, b). Alternatively, they can prosodify as separate Pwds or words (13c). Algonquian preverbs are a case in point, as are certain Algonquian suffixes.

In contrast, larger, more closely-bound affixes can be prosodified as shown in (14).

10. The requirement that prosodic and morphosyntactic structure align at one edge only – at either the right or left edge in a given language – accounts for cross-linguistic differences in the prosodic phrasing of morphosyntactic structure. For example, it is not uncommon for languages to have identical syntactic structures (such as [ V NP [ P NP ]_{PP} ]_{VP}) which prosodify differently – either as (V)_{P-PHRASE} (NP P)_{P-PHRASE} (NP)_{P-PHRASE} or as (V)_{P-PHRASE} (NP)_{P-PHRASE} (P NP)_{P-PHRASE}. The former prosodification is left-edge-based, while the latter is right-edge-based. In the Algonquian verb complex, left-edge-alignment produces a boundary between the person prefixes and the remainder of the verb complex; right-edge-alignment, in contrast, would produce a boundary between the final and any suffixes following it. See Selkirk 1986 for details about this research program.
(14) Prosodification of larger, more closely-bound affixes (after Raffelsiefen 1997:164)\textsuperscript{11}

(14a) \(((\text{stem/Pwd} (\text{affix}))_{\text{WORD}}\)

(14b) \(((\text{affix}) \text{stem/Pwd})_{\text{WORD}}\)

Such affixes constitute non-cohering prosodic domains within prosodic domains. Algonquian person prefixes are possible examples of this type of affix (see note 12).

Prosodic domains such as the Pwd and P-phrase domain can be subject to minimal and maximal size constraints. The minimal and maximal size constraints relevant to the vP/P-phrase domain are shown in (15a,b); a minimal size constraint relevant to the Pwd domain is shown in (15c).

(15) Size constraints

(15a) Minimal P-phrase size: \(((\quad)_{\text{Pwd}})^{_{\text{n}}}_{\text{P}}\)

(15b) Maximal P-phrase size: \(((\quad)_{\text{P}})_{\text{Pwd}}(\quad)_{\text{P}}\)

(15c) Minimal Pwd size: \((\sigma \quad \sigma)^{_{\text{Pwd}}}\)

The vP/P-phrase domain minimally contains one stem/Pwd (that is, one initial or medial); it maximally contains two. The minimal size constraint (15a) will account for preverb lowering (23) and the maximal size constraint (15b) will account for the absence of preverb lowering (24). Finally, the disyllabic minimal Pwd size constraint (15c) is well-attested cross-linguistically. It will help account for differences in how small and large finals are prosodified.

We summarize our proposals concerning the prosodic structure of the Algonquian verb in (16).

(16) Syntax-prosody alignment

(16a) Syntactic structure (modified from 1)

\[
[[[[V][\text{complement}]]_{V}\]_{P}[[v_{P},[t_{V}\]_{V},_{v_{P}}]]_{V},_{P}
\]

that is: \[[[[\text{initial}][\text{medial}]]_{V}\]_{P}[[\text{final}\_,_{V},[t_{V}\]_{V},_{v_{_P}}]]_{V}_{P}

(16b) Prosodic structure (assuming the final to be monosyllabic)

\(((\text{initial})_{\text{Pwd}} (\text{medial+final})_{\text{P}})_{\text{P}}\)

\textsuperscript{11} Raffelsiefen (1999:164) proposes a similar structure for English non-cohering suffixes such as -\textit{hood} and -\textit{less}.\]
(16c) Prosodic structure (assuming the final to be larger; e.g., at least disyllabic)

\((V)_{pwd} (complement)_{pwd} P_1 ((V)_{pwd})_{pwd} P_2\)

that is:

\(((initial)_{pwd} (medial)_{pwd} P)_{pwd} P_1 ((final)_{pwd})_{pwd} P_2\)

The syntactic structure of the vP (16a) corresponds to two possible structures, depending on whether the final is monosyllabic (16b) or larger (16c). Monosyllabic finals prosodify with the preceding initial or medial (16c), as they are too small to form an independent Pwd. (The structure in 16c is parallel to that in 12.) In contrast, larger finals constitute a separate Pwd and P-phrase, as shown in (16b). (The structure in 16b is similar to that in 13a.)

We can now consider the prosodic structures of the Algonquian examples presented earlier in the paper; they are summarized in (17).

(17) Algonquian verbs, prosodic structures:

(17a) \(((nip\,-a)_{pwd})_p\)

(17b) \(((tshishtaput\,-a)_{pwd})_p\)

(17c) \(((tshishtaput)_{pwd}(mitshuap\,-e)_{pwd})_p\)

(17d) \(((miku)_{pwd}(shtikuan\,-e)_{pwd})_p\)

(17e) \(((sheku\,u)_{pwd}(ashtak\,-a(h))_{pwd})_p\)

Any stem (initial or medial) present in the vP complex constitutes a Pwd domain (10). In contrast, the small finals shown in (17) do not constitute a separate prosodic domain (16). Finally, the entire vP complex corresponds to a P-phrase domain (11b; 16).

WHY THE VP IS A SINGLE WORD

We now have the tools in place to address why the vP in Algonquian languages is a single word. Our answer: the vP is a single word because the domain of syllabification in 'polysynthetic' languages is larger than the Pwd. At least in the case of verbs, this seems to be so – details for other types of phrases, such as NPs, remain to be worked out.

12. Strictly speaking, the vP is not a single word since person prefixes are generated to the left of it. It is not unusual, however, for prefixes to be non-cohering. (For example, many English prefixes are non-cohering; see Raffelsiefen 1997 for details.) Algonquian person prefixes can be represented as non-cohering affixes that adjoin to the following vP domain: \(((prefix/syllable) (initial/Pwd) (medial/Pwd + final))_P\)
To begin, we make the uncontroversial claim that words constitute prosodic domains within which syllabification takes place (18).  

(18) The word is a prosodic domain within which syllabification takes place.

We also propose that the definition of the word in (18) admits to parametric variation: words can be either Pwd-sized or P-phrase-sized (19).

(19) Parametric variation in word domain size

(19a) The word is equivalent to a Pwd.

(19b) The word is equivalent to a P-phrase.

The parametric variation in (19) could account for the difference between ‘isolating’ languages, on the one hand, versus ‘polysynthetic’ and ‘agglutinating’ languages, on the other (20).

(20) Word size in ‘isolating’ languages versus in ‘polysynthetic’ and ‘agglutinating’ languages

(20a) ‘Isolating’ languages: the Word domain is coextensive with the Pwd domain.

(20b) ‘Polysynthetic’ or ‘agglutinating’ languages: the Word domain is coextensive with the P-phrase domain.

More ‘isolating’ languages could be defined as ones in which the Word domain (the domain of syllabification) is Pwd-sized. Languages with Pwd-sized domains of syllabification include Dutch (Booij 1985; 1997), German (Hall 1997) and English (Raffelsiefen 1997). In contrast, more ‘polysynthetic’ or ‘agglutinating’ languages could be defined as ones in which the Word domain (the domain of syllabification) is P-phrase-sized.  

Languages with P-phrase-sized domains of syllabification

13. We use the terms ‘isolating,’ ‘polysynthetic’ and ‘agglutinating’ loosely. ‘Isolating’ refers to languages with, on average, relatively few morphemes per word. Similarly, the terms ‘polysynthetic’ and ‘agglutinating’ refer to languages with, on average, a greater number of morphemes per word. No technical claims are otherwise implied by the use of these terms.

14. In smaller words, the P-phrase/word domain and the Pwd domain can be co-extensive: \(( \text{stem/Pwd + affix } )\).

15. Again, there are well-known, principled exceptions, including non-cohering affixes and clitics, which typically constitute separate domains of syllabification within words. Space does not permit us to review the literature on this topic, but see the articles in Hall & Kleinhenz (1997) for arguments that such cases are not problematic.
include Slave (Athapaskan; Rice 1992) and Cayuga (Iroquoian; Dyck 2004).

In summary, we propose that the vP in Algonquian languages is a single word because (a) the vP prosodifies as a P-phrase; (b) the P-phrase is the domain of syllabification in Algonquian; and (c) cross-linguistically, the domain of syllabification (either the Pwd or P-phrase) is the unit which is identified as ‘the word’. The following section illustrates how these proposals constitute a promising research program.

PROSODIC SIZE CONSTRAINTS AND PREVERB LOWERING

Within the vP/P-phrase domain, we proposed maximal and minimal constraints (15). These constraints account for preverb lowering and provide a research agenda which will ultimately account for relative roots in particular.

The Ojibwe data in the right-hand column of (21) shows preverb lowering – the case where a preverb appears in initial position:

(21) Ojibwe data from Rhodes (2005)

<table>
<thead>
<tr>
<th>PREVERB</th>
<th>INITIAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>akw-</td>
<td>‘length’</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>apiit-</td>
<td>‘extent’</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>daN-</td>
<td>‘at’</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>das(w)-</td>
<td>‘number’</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>iN-</td>
<td>‘to, like’</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>ond-</td>
<td>‘from, because of’</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

16. The difference between ‘agglutinating’ and ‘polysynthetic’ words could then be attributed to Alignment constraints affecting the relationship between prosodic and morphological structure: the morpheme and syllable often align or coincide in ‘agglutinating’ languages, but not in ‘polysynthetic’ ones.
As Rhodes shows, even when used as initials (rather than preverbs), relative roots have properties which locate them in the syntax, rather than in the morphology proper. Most strikingly, they may refer anaphorically to definite referents – something which should be impossible for a morpheme buried within a word (DiSciullo & Williams 1987; Hirose 2003):

(22) Baamaa go ga-zhaami
    baa(ni)maa go (gi)-ga=izhaa-mi(n)
    afterwards EMPH 2SUBJ-FUT=go.to-1PL
    ‘Afterwards we’ll (inc) go there.’

In our approach, both preverb and initial relative roots can be treated as syntactically independent of the verb, and indeed of the verb phrase. They appear prosodically linked with verbal material (as “initials”) only when there is nothing else present in the vP/P-phrase domain to satisfy the minimal size constraint (23).

(23) Preverb lowering to satisfy minimal size constraint

\[
\text{(preverb)}_{\text{pwd}} \; (\; \text{(final)} \; )_{\text{pwd}} \; )_{P}
\]

Assuming that the final is too small to form a Pwd, it will typically not constitute a separate prosodic domain (15c), and so will not count towards fulfilling the minimal size constraint. (Larger finals are discussed in example 25). Preverb lowering is required in order to fulfill the minimal size constraint (15a).

Example (24) illustrates the case where the vP contains two roots/Pwds, as in the case of ‘she/he has red hair’ (8).

(24) Preverb lowering should not be possible where, within the relevant domain, the proposed maximal size constraints are satisfied:

\[
\text{(preverb)}_{\text{pwd}} \; ((\text{miku})_{\text{pwd}} \; (\text{shtikuan} \; -e)_{\text{pwd}} \; )_{P}
\]

The maximal size constraint is already satisfied without preverb lowering; if there were a preverb, not only is it not required to lower, it cannot lower (24).

A third option, where preverb lowering would be optional in the case that the VP contains one Pwd, should, in theory, not exist. First, movement in this case would violate the principle of last resort (Chomsky 1995). Second, preverb lowering would also be barred for prosodic reasons (25).
There is no third option, where preverb lowering is optional, in the case where VP already contains one prosodic word.

The final is too small to form an independent Pwd (see 16b)

\[ \text{preverb}_{P_wd} ( \text{root-final}_{P_wd} )_P \]

The final is large enough to form an independent Pwd and P-phrase (16c).

\[ \text{preverb}_{P_wd} ( \text{root}_{P_wd} )_P ( \text{final}_{P_wd} )_P \]

In Optimality-theoretic terms (Prince & Smolensky 1993), a constraint which would normally align the preverb to the left of the vP complex would only be violated in order to prevent a violation of the more highly-ranked minimal size constraint (15a). In the non-lowered version of (25a), however, no such violation occurs; the non-lowered structure satisfies both the relevant alignment constraint and the minimal size constraint, regardless of whether the final is smaller (25a) or larger (25b).

We now return to the analysis of the Ojibwe preverb lowering cases in (21). Example (26) illustrates a hypothetical scenario, where preverb lowering in the Ojibwe cases would occur in order to create a minimally-sized P-phrase, here labelled as P1. Example (26) is parallel to (25b).

Hypothetical preverb lowering to satisfy minimal size constraint within 1, in cases where the final is large enough to form an independent Pwd and P-phrase (see 25b)

\[ \text{preverb}_{P_wd} ( \text{final}_{P_wd} )_{P1} ( \text{final}_{P_wd} )_{P2} \]

As shown in (26), however, the Ojibwe cases are problematic: our prosodification algorithm in (16) only aligns spelled-out or overt morphemes with prosodic structure. Thus, nothing forces the creation of P1 in (26); the prosodic structure of the Ojibwe cases in (21) should, in fact, be that shown in (27).

Prosodic structure of Ojibwe preverb cases in (21)

\[ \text{preverb}_{P_wd} ( \text{final}_{P_wd} )_{P2} \]

The only P-phrase in (27) is already minimally-sized, and thus preverb lowering cannot be prosodically motivated for the Ojibwe preverb cases in (21), at least given our present set of assumptions. (However, the analysis works for the Ojibwe verb in (22), which contains a small final.)
Alternatively, however, when Ojibwe relative roots pattern like initials, they could be analysed as non-cohering prefixes or proclitics, as illustrated in (28).

(28) Ojibwe relative roots (3b)

\[( (\text{relative root/Pwd}) (\text{stem/Pwd}))_p \]

We note that the Ojibwe cases in (21) are problematic not only from a prosodic viewpoint, but also from a syntactic viewpoint. Not only are they large, but they are also quite 'meaningful' for finals. We take it, then, that the status of these large and exceptionally meaningful Ojibwe finals requires further investigation.

CONCLUSION

To sum up, our proposals provide a new and principled account of a variety of otherwise problematic aspects of Algonquian stem morphology, including in particular the rich variety of semantic relationships available within the verb complex. We also obtain a better understanding of the syntactic nature of the relationship between relative roots and their antecedents, and of the principles governing morpheme order in complex verbal stems.

Part of the "genius" of Algonquian is how rich morphological structure makes it possible to express within a single word ideas which in other languages can only be formulated syntactically. On closer study, however, it now appears that languages do not differ in this respect, because Algonquian languages, too, rely primarily on syntactic resources to construct complex semantic structures. The location of the most prominent difference between Algonquian languages and many others is, in fact, the phonological component, and not the morphology, syntax or semantics.

REFERENCES


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