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Word-Internal Syntax: Evidence from Ojibwa*

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1. Introduction

Many theories of grammar make a sharp distinction between the arrangement of words within a clause and the arrangement of morphemes within a word (but see Baker 1988). What is unfortunate about this distinction is that theories of syntax provide universal and well-motivated operations to account for the arrangement of words within a clause, while the arrangement of morphemes within a word is relegated to the application of idiosyncratic and unmotivated rules.

Some (e.g. Heap 1995) have asked why, for example, clitic placement should be given a syntactic account, when idiosyncratic readjustments are needed in any case. The answer to this question is hope. It must be hoped that a principled account of clitic placement, and inflectional morphology, and even derivational morphology can be found, since only by giving such an account can we determine what universals are operating on the level of word formation.

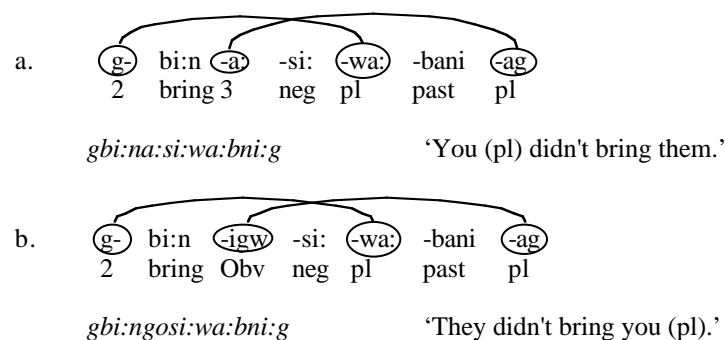
The approach I endorse is one by which the arrangement of morphemes within a word is determined by the same operations and constraints which determine the arrangement of words within a sentence. My examples are drawn from the verbal inflectional system of Ojibwa. As I cannot possibly do justice to the complexities of this system within the scope of the present paper, I examine only a small fragment of the system and show how it illustrates the view of morphology I am taking. (For a fuller account of the verbal inflectional system of Ojibwa, see Rhodes 1976; McGinnis 1995).

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2. Syntax Affects Morphology

Features of the subject and the object in Ojibwa appear in several positions within the verb complex. In (1a), for example, features of the second-person subject appear both in the clitic to the left of the verb and in the *-wa:* suffix. Features of the third-person object appear in two suffixes, one immediately following the verb stem, and another at the end of the word. (1b) shows that the order, and in most cases the form, of the morphemes is the same when the subject and object are reversed. My claim is that the appearance of features of a single syntactic item in several positions within a word is the result of word-internal syntactic movement.

(1) Multiple feature positions



2.1. Morphemes are Syntactic Nodes

I adopt several of the claims made by Halle and Marantz (1993, 1994) in their work on Distributed Morphology (DM). In particular, three of these claims are morphological composition, late insertion, and competition of vocabulary items.

One of my assumptions is that morphology is compositional. In other words, separate morphemes occupy separate terminal nodes in a syntactic structure. These morphemes form words by head-movement, and perhaps by merger under adjacency as argued by Bobaljik (1994). This view contrasts with a checking theory of morphology (Chomsky 1993), whereby words are inserted into the syntactic structure with all morphemes already attached. The features of these morphemes are then checked by movement into the domain of a functional head. I maintain that a checking theory is too unconstrained, allowing each morpheme within a word to bear any combination of features, as long as they are properly checked. If a more constrained version of checking is adopted, with morphemes checked strictly in order from the stem outwards, the result is essentially a compositional theory.

A simple case of morphological composition is shown by the French example in (2). The verb head-raises to Tense in overt syntax. By the assumptions I have outlined, the verb does not begin with its tense morphology intact, but rather acquires this morphology when it lands in T.

(2) Morphological composition

- a. [TP Marie [T [V embrasse] ra] [VP souvent tV Jean]]
 ‘Marie will kiss Jean often.’
- b. embrasse -ra
 kiss fut.3sg
 ‘(she) will kiss’

A second claim I adopt is that of late insertion. By this approach, phonological features are not inserted until after all syntactic operations have taken place. Thus, the syntactic terminal nodes to which these operations apply are bundles of formal features lacking phonological content. I therefore distinguish between these bundles of features, or lexical items, and vocabulary items, which are strings of phonological features. The phonological strings are associated with an underspecified set of syntactic features. Vocabulary items are inserted into terminal nodes bearing the appropriate syntactic features after all syntactic operations have taken place.

The third claim I take from DM states that vocabulary items which are in complementary distribution can be said to compete for insertion into a single syntactic node. The winner of the competition is the vocabulary item whose syntactic features best match those of the terminal node, or the one most highly ranked according to a feature hierarchy, as described for example by Noyer (1992) and Harley (1994).

An example of competition for vocabulary insertion is given below. The features of the subject and the object compete for insertion into the position of the pronominal clitic to the left of the verb stem in Ojibwa. (3) shows the ranking of vocabulary items competing for insertion into this node. If any second-person features are present from either the subject or the object, the second-person vocabulary item is inserted (4a,b). Otherwise, if first-person features are present, the first-person item is inserted (c). Finally, if only third-person features are present, only the “elsewhere” item can be inserted (d).

(3) Vocabulary items: pronominal clitic

[+2]	<—>	/g-/
[+1]	<—>	/n-/
else	<—>	/w-/

(4) Competition for vocabulary insertion

- a. **g-** bi:n-i-mw ‘**You (pl)** bring me.’
 [+2 +pl Nom; +1 Acc] (Rhodes 1976: 3,11a)
- b. **g-** bi:n-ini-mw ‘I bring **you (pl)**.’
 [+1 Nom; +2 +pl Acc] (Rhodes 1976: 3, 11b)
- c. **n-** bi:n-a:-nani-an ‘**We (excl)** bring him.’
 [+1 +3 +pl Nom] (Rhodes 1976: 3, 11c)
- d. **w-** bi:n-a:-an ‘**He** brings him (obv).’
 [+3 Nom] (Rhodes 1976: 3, 11c)

Having outlined my assumptions with regard to the morphology, I now sketch the theory of syntax I assume in order to argue that Ojibwa inflectional morphology involves syntactic movement within a word.

2.2. *Syntactic Units are Sublexical*

Under many current theories of syntax, including that of Chomsky (1993, 1994), syntactic movement within a word (X^0) is impossible, since syntactic operations apply to units no smaller than a word, within a domain no smaller than a phrase. However, a recent reformulation of the notion of syntactic movement (Chomsky 1995) makes it possible for the syntax to operate on elements smaller than a word. Indeed, it is claimed that the syntax always moves elements smaller than a word.

Chomsky proposes that syntactic movement involves not the raising of a category to the domain of a functional head, but rather the attraction of a formal feature to a functional head. If the head overtly attracts a feature of a phrasal category, the category “pied-pipes” into the specifier of that head. This so-called generalized pied-piping is forced by phonological or morphological well-formedness conditions; the real syntactic movement is feature attraction.

Under such a view, the notion of word-internal syntactic movement becomes comprehensible. If the features of a word are spread across more than one functional or lexical head, they may be subject to movement from one of these heads to another. I explore the possibility that feature movement from one position to another within the word takes place for licensing purposes.

3. Fission is Feature-Movement

Under the theoretical assumptions I have outlined, I now turn to the substance of the claim that the appearance of features of the same syntactic element in several positions within a word is the result of word-internal syntactic movement.

Halle and Marantz (1993) describe rules of fission whereby one bundle of syntactic features splits into two, yielding the insertion of two separate vocabulary items. An example is given in (5). Here, a clitic bearing plural features splits into two nodes, one bearing the plural features, and the other bearing the remaining features of the clitic.

(5) Fission

$$\begin{array}{l}
 \text{Cl} + \text{Stem} \longrightarrow [+pl] + \text{Cl} + \text{Stem} \text{ (linear order irrelevant)} \\
 | \\
 [+pl] \hspace{15em} \text{(Halle and Marantz 1993: 3)}
 \end{array}$$

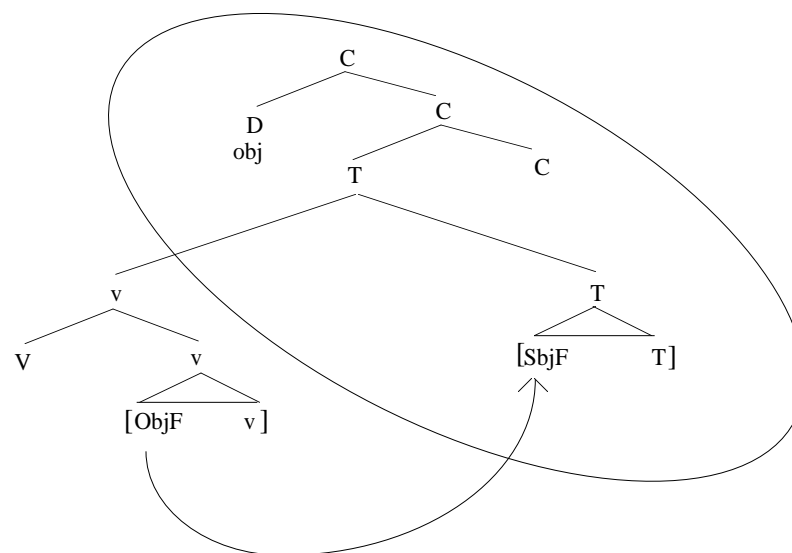
For Halle and Marantz, morphological rules such as (5) apply to terminal nodes in a syntactic structure. However, these rules are agnostic as to the dominance and precedence relations of the elements they apply to.

I would like to propose an alternative view, whereby fission is actually an instance of syntactic movement within a word. Both ends of the chain of word-internal movement can be pronounced, so features of the same element will appear phonologically in more than one position in the word.¹

In (6) is a schematic diagram of word-internal movement in Ojibwa. Features of the object fission from the verb to Tense in order to license an object clitic (D) adjoined to the verb complex.

¹It may be, however, that any given *feature* is pronounced no more than once per chain (thanks to Elan Dresher and Norvin Richards for pointing this out to me). The possibility is certainly open for word-internal chains in Ojibwa, and bears a similarity to the idea (Noyer 1992) that a morphosyntactic feature is discharged as soon as it is phonologically realized.

(6) Another fission rule: attract F



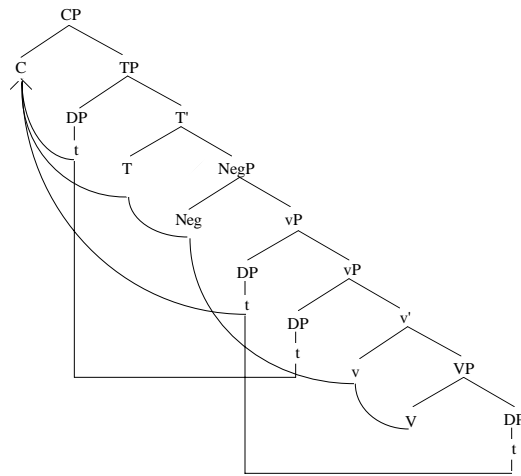
4. Fission in Ojibwa

First, let me outline some assumptions about the grammar of Ojibwa. Following Halle and Marantz 1993 for Potawatomi, I assume that the verb head-raises to C in overt syntax. I am also assuming that arguments in Ojibwa are pronominal, optionally doubled by full DPs adjoined to CP (Jelinek 1984; Baker 1988; Reinholz and Russell 1995; and others). Features of these pronominal arguments are attracted to functional heads in the usual way for case reasons. Some of the pronouns are clitics, which, I claim, must be licensed by a local word-internal relation with their agreement features. In this respect they resemble *pro*, which has been argued to be licensed by the presence of agreement (e.g. Borer 1989).

4.1. Clitic Licensing

The structure in (7), following Halle and Marantz (1993), shows the phrasal syntax of Ojibwa, with CP dominating TP, NegP, and VP in turn. Some less significant aspects of the structure are the absence of Agr phrases (cf. Chomsky 1995) and the presence of a light verb dominating VP in transitive constructions (Hale and Keyser 1993), which in Ojibwa has no phonological features. The subject of transitive clauses is assumed to be projected in the specifier of the light verb. Subject features are attracted to T, and object features to the light verb *v*, for case assignment.

(7) Ojibwa phrasal syntax



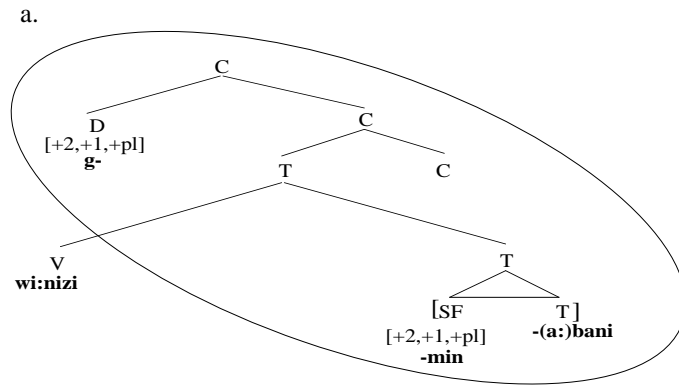
Once the verb has raised to C in the syntax, it forms a structure like that in (8). The subject clitic must be licensed word-internally by proximity to its agreement features. Thus it raises to adjoin to C, where it enters a local relation with T, as indicated by the curved line. I am assuming that the appropriate local relation obtains essentially in the “checking domain” (Chomsky 1993). The upshot of this definition is that in (8), the clitic is in a local relation with C and T, but not with V.² This two-layer visibility is essentially the same as that in Chomsky (1994), where spec-head agreement is possible between the specifier and both the head itself (there, AgrS or AgrO) and the highest head adjoined to it (there, T or V).

In (8), T bears the features it attracted from the subject for case reasons, so the subject clitic is properly licensed by proximity to its agreement features, which trigger insertion of the first-person plural vocabulary item *-min*. Notice that the subject features form part of the same syntactic node as T, though they are separate for the purposes of vocabulary insertion.³

²Moreover, light adverbs may be adjoined to T without affecting the locality relation between the clitic and T. Bobaljik (1994) argues that adverbs do not interfere with syntactic adjacency. Thanks to Carson Schütze for drawing this issue to my attention.

³This separation between T and subject features may be the result of operations in a distinct morphological component. However, see Bobaljik (1995) for arguments that a lack of competition between tense and agreement vocabulary items indicates the presence of both T and Agr heads in the syntax.

(8) Clitic licensing: intransitives



b. *gwi:nzimna:ba*
‘We (incl) were dirty.’ (Rhodes 1976: 3, 17)

In transitive clauses, the structure in C is more complex (9). The pronominal clitic includes features of both the subject and object, which merge and fuse into a single node. The features of the subject are properly licensed by proximity to its agreement features on T exactly as in (8). Features of the object are present on the light verb, having been attracted there for case reasons before cliticization. Recall, however, that the D clitic is in the checking domain of C and T, but not of the light verb in (9). Thus, as the curved line indicates, the features of the object are too far away from their agreement features on the light verb to be properly licensed.

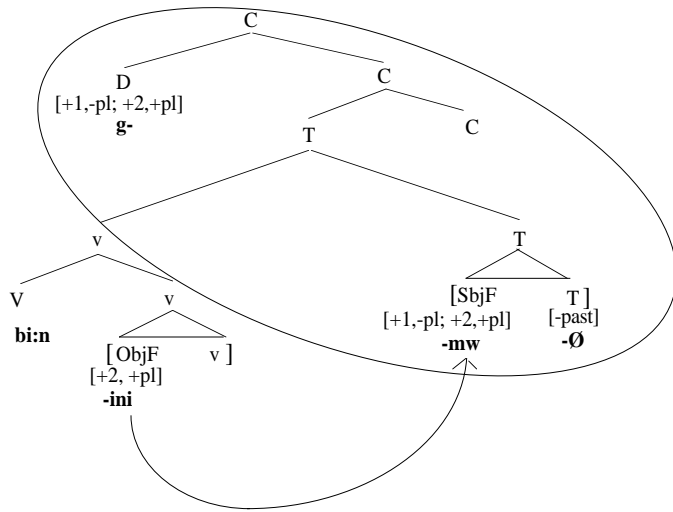
In order to license the object features of the clitic in the proper local relation, agreement features of the object fission off from v to T. The example in (9) shows that the features of the second-person plural object fission off to T, where they trigger the insertion of the plural vocabulary item. This item is more highly ranked than the null default item inserted if no plural features are present (9a), as would be the case if only the features of the subject were present on T.⁴

⁴This kind of movement resembles what Campana (1995) suggests for Palauan metathesis. He claims that features of the verb can move within the word to a higher functional head in order to reassert themselves. If, as seems likely, this movement is syntactic and can be syntactically motivated, it would appear to be of the same type.

(9) Clitic licensing via fission and fusion: transitives

[+1,+pl] <=>		/-min/
[+pl]	<=>	/-mw/
else	<=>	∅

a.



b. *gbi:nnim*
'I bring you (pl).'

= (4b)

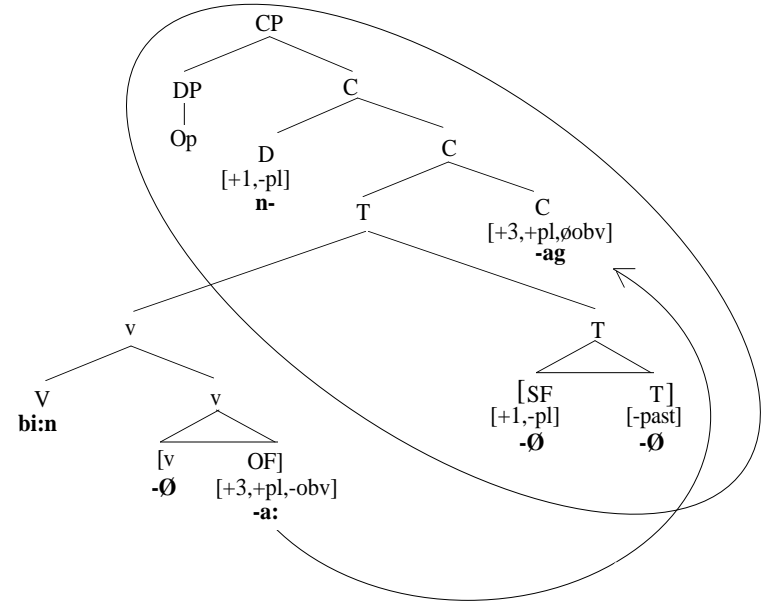
4.2. Obviation

The interaction of third-person arguments with the clitic licensing requirements is complex, and are not included here.⁵ However, word-internal syntactic movement also occurs when third-person features are present, though for different reasons. Third-person arguments participate in an obviation system, with both discourse and intrasentential effects. I hypothesize that obviation involves a relation with a discourse operator in the specifier of CP. To participate in the obviation system, features of a third-person argument must be in a local relation with this operator. The appropriate relation is the same as the relation in which Ojibwa clitics are licensed by their agreement features.

⁵See McGinnis (1995) for a fuller treatment of third-person arguments.

Take a case with a third-person object, as in (10). The light verb bears third-person features, but these features are not in the relevant local relation with spec-CP. The C head therefore attracts the features of the third-person argument into the appropriate relation with spec-CP.

(10) Fission for Obviation



b. *nbi:na:g*
'I bring them.'

(Rhodes 1976: 3, 11c)

5. Conclusions

I have sketched here an approach to morphology whereby the arrangement of morphemes within a word is derivable from syntactically motivated operations. Once extended to cases in other languages, this approach will lead to a better understanding of the universals applying below the word level.

Appendix

Below is a collection of the relevant vocabulary items for inflection in Ojibwa, and their insertion contexts.

Node label	Formal feature(s)		Phonological string
Tense	[+past]	<-->	/(a:)bani/
Neg	[+neg]	<-->	/si:/
ObjF	[+2]	<-->	/-ini/
	[+1]	<-->	/-i/
	else	<-->	/-a:/
C	[+obv]	<-->	/-an/
	[+pl]	<-->	/-ag/
D	[+2]	<-->	/g-/
	[+1]	<-->	/n-/
	else	<-->	/w-/
SbjF	[+1,+pl]	<-->	/-na:ni/ in env. [+3]
	[+pl]	<-->	/-(i)wa:/ in env. [+3]
	[+1,+pl]	<-->	/-min/
	[+pl]	<-->	/-mw/

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