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Syntax vs. morphology: A chicken and egg problem

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Preliminaries.¹ The question of the exact nature of the relationship between syntax and morphology is an issue that remains very much up in the air. On the one hand there are those who view morphology as a special syntactic subcomponent distinguished primarily from the rest of syntax by a principle of incorporation. This is the approach whose foremost advocate is Baker (1988), at least in a GB context. But varieties of such an approach are assumed in other frameworks by other authors, including the present one (Rhodes 1976). Let me call this the Syntax First position. At the other extreme are those who maintain a strong lexicalist position. At the heart of this position is a claim that can be approximately characterized by saying that words are entirely structured within the lexicon and are available to fill syntactic slots when the appropriate syntactic properties match. This appears to be the position implicit in Anderson's extensive work on inflection (1977, 1984, 1985, 1988, 1990, 1991), for example, as well as the early generative work on morphology represented by Halle (1973) and Aronoff (1976). Let me call this the Morphology First position.

The point of this brief paper is not to resolve this issue, but rather to bring to light some facts about verb inflection that bear on this question. Inflectional paradigms of verbs promise to be of some significance in this matter, precisely because, pre-theoretically, they appear both to have properties of both syntactically imposed structure as predicted by those favoring incorporation and also to contain inflectional "idioms" and have a rigidity of structure that a lexicalist position would predict.

An inflectional gap. Let us start by looking at a class of gaps in verb paradigms with subject-object agreement systems. One apparently universal feature of such systems is that they never have forms which would realize cases in which the one of the terms refers to a set of entities which properly includes the entities referred to by the other.² That is, the following combinations are never realized:

(1)	Subject includes object	Object includes subject
(a)	'We <i>verb</i> me.'	'I <i>verb</i> us.'
(b)	'You <i>pl verb</i> you <i>sg</i> .'	'You <i>sg verb</i> you <i>pl</i> .'
(c)	'We <i>incl verb</i> you <i>sg/pl</i> .'	'You <i>sg/pl verb</i> us <i>incl</i> .'

Of course, when the subject exhaustively includes the object, reflexive forms are used, but in no case that the present author knows about can reflexives be used in the meanings summarized in (1). Notice, of course, that languages which do not have distinct inclusive/exclusive forms in first person plural do have *we-on-you* forms and *you-on-us* forms. Thus (1c) is a ban on possible forms only for languages that have an inclusive/exclusive distinction marked in their agreement morphology.

Below are given example subject-object agreement systems from four unrelated languages of the Western Hemisphere representing each of the major two-term agreement system types, nominative/accusative, absolutive/ergative, active/stative, and syntactically loaded. This typology is discussed in Rhodes

(1991). In the following examples the gaps in the paradigm that were summarized in (1) are indicated by a long dash in a box. The places that would be filled with reflexive forms are indicated with the abbreviation REFL in small caps. We factor out the reflexive forms like this because they form their own subsystems, either acting like verbs with simple third person objects or acting like simple intransitives. In either case, including them would only serve to obscure the morphemic structure from which the agreement typology can be seen.

The first system is a nominative/accusative system. It is laid out in (2) with the subject markers indicated by underlining and the object markers indicated by boldface.³ This system does not have an inclusive/exclusive distinction, so only forms corresponding to (1a) and (1b) are missing.

(2) nominative/accusative system — Nahuatl (Classical) (Andrews, 1975)

<i>noca</i>	'call'			
(a) <u>singular objects</u>	<i>intransitive</i>	'... me'	'... you sg.'	'... him'
'I...'	<u>ninoca</u>	REFL	<u>nimicnoca</u>	<u>niknoca</u>
'you sg. ...'	<u>tinoca</u>	<u>ținečnoca</u>	REFL	<u>tiknoca</u>
'he ...'	<i>noca</i>	<i>nečnoca</i>	<i>micnoca</i>	<i>kinoca</i>
'we ...'	<u>tinoca?</u>	—	<u>timicnoca?</u>	<u>tiknoca?</u>
'you pl. ...'	<u>annoca?</u>	<u>annečnoca?</u>	—	<u>ankinoca?</u>
'they ...'	<u>noca?</u>	<u>nečnoca?</u>	<u>micnoca?</u>	<u>kinoca?</u>
(b) <u>plural objects</u>	'... us'	'... you pl'	'... them'	
'I...'	—	<u>namečnoca</u>	<u>nikimnoca</u>	
'you sg. ...'	<u>titečnoca</u>	—	<u>tikimnoca</u>	
'he ...'	<i>tečnoca</i>	<i>amečnoca</i>	<i>kimnoca</i>	
'we ...'	REFL	<u>tamečnoca?</u>	<u>tikimnoca?</u>	
'you pl. ...'	<u>antečnoca?</u>	REFL	<u>ankimnoca?</u>	
'they ...'	<u>tečnoca?</u>	<u>amečnoca?</u>	<u>kimnoca?</u>	

The second kind of system is an absolutive/ergative system. An example is laid out in (3) with the subject markers again indicated by underlining and the object markers indicated by boldface.⁴ For clarity the intransitives are aligned above the transitives. This system also lacks an inclusive/exclusive distinction, so again only the forms corresponding to (1a) and (1b) are missing.

(3) absolutive/ergative system — Tzutujil (Mayan) (Dayley 1981)

-wari 'sleep' completive aspect

(a) (i) <u>singular subjects</u>	<u>'I ...'</u>	<u>'you sg. ...'</u>	<u>'he ...'</u>
<i>intransitive</i>	<i>šinwari</i>	<i>šatwari</i>	<i>šwari</i>
	- <i>čey</i>		
	'hit' completive aspect		

(ii) <u>singular objects</u>	<u>'... me'</u>	<u>'... you sg.'</u>	<u>'... him'</u>
'I...'	REFL	<i>šatnuučey</i>	<i>šinčey</i>
'you sg. ...'	<i>šinačey</i>	REFL	<i>šačey</i>
'he ...'	<i>šinruučey</i>	<i>šatruučey</i>	<i>šuučey</i>
'we ...'	—	<i>šatqačey</i>	<i>šqačey</i>
'you pl. ...'	<i>šinečey</i>	—	<i>šečey</i>
'they ...'	<i>šinkečey</i>	<i>šatkečey</i>	<i>škečey</i>

(b) (i) <u>plural subjects</u>	<u>'we ...'</u>	<u>'you pl. ...'</u>	<u>'they ...'</u>
<i>intransitive</i>	<i>šoqwari</i>	<i>šišwari</i>	<i>šeewari</i>

(ii) <u>plural objects</u>	<u>'... us'</u>	<u>'... you pl'</u>	<u>'... them'</u>
'I...'	—	<i>šišnuučey</i>	<i>šeenuučey</i>
'you sg. ...'	<i>šoqačey</i>	—	<i>šeʔačey</i>
'he ...'	<i>šoqrūčey</i>	<i>šišrūčey</i>	<i>šeerūčey</i>
'we ...'	REFL	<i>šišqačey</i>	<i>šeeqačey</i>
'you pl. ...'	<i>šoqečey</i>	REFL	<i>šeʔeečey</i>
'they ...'	<i>šoqkečey</i>	<i>šiškečey</i>	<i>šeekkečey</i>

The third type of system is an active/stative system. It is presented in (4) with the subject markers again indicated by underlining and the object markers indicated by boldface.⁵ For clarity the stative intransitives are aligned above the transitives and the active intransitives are aligned to the right of the object marked forms. This system also lacks an inclusive/exclusive distinction, so again there are only gaps corresponding to (1a) and (1b).

(4) active/stative system — Lakhota (Siouan) (Buechel 1983)

	<i>kakiža</i>	'suffer' (stative stem)		
(a) (i) <u>singular subjects</u>		'I ...'	'you sg. ...'	'he ...'
<i>stative intrans</i>		<i>makakiže</i>	<i>nicakiže</i>	<i>kakiže</i>
	<i>kaštaka</i>	'strike'		
(ii) <u>singular objects</u>	<i>active intrans</i>	'... me'	'... you sg.'	'... him'
'I...'	<i>wakaštaka</i>	REFL	<i>chicaštaka</i>	<i>wakaštaka</i>
'you sg. ...'	<i>yakaštaka</i>	<i>mayakaštaka</i>	REFL	<i>yakaštaka</i>
'he ...'	<i>kaštaka</i>	<i>makaštaka</i>	<i>nicaštaka</i>	<i>kaštaka</i>
'we ...'	<i>ykaštakapi</i>	—	<i>unicaštakapi</i>	<i>ykaštakapi</i>
'you pl. ...'	<i>yakaštakapi</i>	<i>mayakaštakapi</i>	—	<i>yakaštakapi</i>
'they ...'	<i>kaštakapi</i>	<i>makaštakapi</i>	<i>nicaštakapi</i>	<i>kaštakapi</i>
(b) (i) <u>plural subjects</u>		'we ...'	'you pl. ...'	'they ...'
<i>stative</i>	<i>ukakižepi</i>	<i>nicakižepi</i>	<i>kakižepi</i>	
(ii) <u>plural objects</u>		'... us'	'... you pl'	'... them'
'I...'	—	<i>chicaštakapi</i>	<i>wichawakaštaka</i>	
'you sg. ...'	<i>yukaštakapi</i>	—	<i>wichayakaštaka</i>	
'he ...'	<i>ykaštakapi</i>	<i>nicaštakapi</i>	<i>wichakaštaka</i>	
'we ...'	REFL	<i>unicaštakapi</i>	<i>wichykaštakapi</i>	
'you pl. ...'	<i>yukaštakapi</i>	REFL	<i>wichayakaštakapi</i>	
'they ...'	<i>ykaštakapi</i>	<i>nicaštakapi</i>	<i>wichakaštakapi</i>	

The fourth type of system is a syntactically loaded system. Typologically this class of systems is less coherent than the other types. A very approximate characterization of them is that the morphology of agreement suggests an analysis in which the transitive forms could be viewed as being of two or more syntactically distinct clause types. Such systems are found in Salishan languages, which have passives for certain subject-object combinations. Also included in this class are inverse systems like those found in Algonquian, Wakashan, some Hokan languages⁶, and various isolates, like Kutenai. In this type are also the Tanoan systems which have elaborate agreement systems that include incorporations as well as other adjustments of clause type (Allen, *et al* 1990, Rosen 1990). An Algonquian example of an inverse system is shown in (5) with the morphology marked to highlight a syntactic analysis. Subject markers are indicated by underlining and the markers that distinguish simple forms from inverse are indicated by boldface. This system has an inclusive/exclusive distinction, so all the forms listed in (1) are missing.

- (5) syntactically loaded system (inverse) — Southwestern Ojibwe (Baraga 1878)
waabid 'see' intransitive, *waabandang* 'see (inanimate object)', *waabamaad* 'see (animate object)'

(a) singular objects	'... it'	'... you sg'	'... me'	'... him'
'you sg ...'	<i>giwaab</i>	REFL	<i>giwaabam</i>	<i>giwaabamaa</i>
'I ...'	<i>niwaab</i>	<i>giwaabamin</i>	REFL	<i>niwaabamaa</i>
'he ...s'	<i>wabi</i>	<i>giwaabamig</i>	<i>niwaabamig</i>	<i>qwaabamaan</i>
'you pl ...'	<i>giwaabim</i>	—	<i>giwaabamin</i>	<i>giwaabamaawaa</i>
'we incl ...'	<i>giwaabimin</i>	—	—	<i>giwaabamaandan</i>
'we excl ...'	<i>niwaabimin</i>	<i>giwaabamigoo</i>	—	<i>niwaabamaanaan</i>
'they ...'	<i>wabiwag</i>	<i>giwaabamigoo</i>	<i>niwaabamigoo</i>	<i>qwaabamaawaan</i>
(b) plural objects	'... you pl'	'... us incl'	'... us excl'	'... them'
'you sg ...'	—	—	<i>giwaabamin</i>	<i>giwaabamaag</i>
'I ...'	<i>giwaabamininim</i>	—	—	<i>niwaabamaag</i>
'he ...s'	<i>giwaabamigowaa</i>	<i>giwaabamigonaan</i>	<i>niwaabamigonaan</i>	<i>qwaabamaan</i>
'you pl ...'	REFL	—	<i>giwaabamin</i>	<i>giwaabamaawaa</i>
'we incl ...'	—	REFL	—	<i>giwaabamaannanig</i>
'we excl ...'	<i>giwaabamigoom</i>	—	REFL	<i>giwaabamaanaanig</i>
'they ...'	<i>giwaabamigowaag</i>	<i>giwaabamigonaanig</i>	<i>niwaabamigonaanig</i>	<i>qwaabamaawaan</i>

I want to argue here that the systematic series of gaps listed in (1), though semantically based, is a reflection of a syntactic constraint. The facts were first noticed by Postal (1966, 1971) who called his observation the Inclusion Constraint. He observed that sentences violating the clauses of (1a) and (1b) are ungrammatical (Postal 1971:77), as shown in (6).

- (6) (a) (i) *We saw me in the mirror.
 (ii) *I gave us a small donation.
 (b) (i) *You (guys) sent you a message.
 (ii) *You heard you (guys) on the radio.

He of course did not observe the (1c) cases, but they can be seen even in English in the difficulty of getting inclusive readings of sentences like those in (6c).

- (6) (c) (i) We (**excl*) saw you in the mirror.
 (ii) You gave us (**excl*) a small donation.

There are more subtleties to the English constraint, but they are beyond the scope of this paper. All that is important here is the argument that the Inclusion Constraint is syntactic. It runs as follows: the meanings expressed in the sentences in (6) are not logically inconsistent, therefore it must be, at least in part, a fact of clause structure that these sentences are bad. This analysis is further corroborated by observing that for sentences banned by the Inclusion Constraint which have close paraphrases of a different structure such that one of the terms in the simple sentence is not a nuclear term in the paraphrase, the paraphrases are significantly better, as shown in (7).⁷

- (7) (?) I gave a small donation to us.

Given that the Inclusion Constraint is syntactic in nature, the existence of the gaps in paradigms like that outlined above is *prima facie* evidence that the internal structure of an inflectional system can be governed by syntactic constraints. There are further possible arguments to this effect in the structure of syntactically loaded systems. For example, there is a constraint on clause structure in Ojibwe such that no transitive clause may have as its surface subject an inanimate nominal. This is known as the Inanimate Ergative Ban (Perlmutter and Rhodes 1988). It operates not on grammatical inanimacy but on notional inanimacy. Consider sentences like those in (8), taken from the Ottawa dialect. They contain both subjects and objects, *mshiiimin* 'apple' and *pwaagan* 'pipe', which are grammatically animate but notionally inanimate. They are therefore ungrammatical.

- (8) (a) **Wgii-bsikwaan mshiiimin niw pwaagnan*. 'The apple struck the pipe.'
 (b) **Wgii-bsikaagoon aw pwaagan mshiiimnan*. 'The apple struck the pipe.'

Notice that this constraint must be syntactic and not morphological because the verb forms, *wgii-bsikwaan* 'he struck him *obv*' and *wgii-bsikaagoon* 'he *obv* struck him', are perfectly well-formed. This constraint accounts both for the fact that there are no verb forms available to express inanimate acts on inanimate and for the distribution of inverse verb forms in the clauses containing notional inanimates, since inverse verb forms arise where notional subjects and objects have reversed grammatical relations (Perlmutter and Rhodes 1988). Again this is a constraint which governs the structure of a verb paradigm.

Morphological constraints. But on the other hand there are clauses in Ojibwe that are unsayable, not because they are banned by any syntactic consideration, but solely because there is no appropriate morphology to express the meanings in question. For example, one can have independent transitive clauses with inanimate notional subjects of either grammatical animacy. This is exemplified in the following Ottawa sentences. In (9) *sin* 'stone' is grammatically inanimate and *mshiimin* 'apple' is grammatically animate.

- (9) (a) *Ngii-bsikaagon niw sin.* 'The stone struck me.'
 (b) *Ngii-bsikaag aw mshiimin.* 'The apple struck me.'

But in the conjunct, only clauses with grammatical inanimates are possible, because there are no inverse verb forms available in the conjunct for first and second person objects.

- (10) (a) *Mii-sh gii-bsikaagyaan niw sin.* 'Then the stone struck me.'
 (b) *Mii-sh* $\left\{ \begin{array}{l} *gii-bsikwid \\ ?*gii-bsikaagyaan \\ *gii-bsikaagooyaan \end{array} \right\}$ *aw mshiimin.* 'The apple struck me.'

In (10b) the first form *bsikwid* is bad because it violates the Inanimate Ergative Ban. The second form is bad because it is the form appropriate to grammatical inanimates. And the third form is bad because it is the passive. These three forms exhaust the available morphology for forming this person number combination. None is good. This suggests that the structure of the verb forms in some way precedes the syntax.

A second argument that the morphological forms can't be assembled from the syntax is given in conjunct inflections with plural non-third persons. A number of these forms simply lack some of the appropriate morphology necessary to be unambiguous, yet the forms have no ambiguity; they are listed in (11).

(11) Southwestern Ojibwe (Baraga, 1878)

<i>waabamiyaang</i>	'(that) you hear us <i>excl</i> '
<i>waabam</i> + <i>i</i> + <i>yaang</i>	
see 1 OBJ 1 EX PL	
<i>waabaminang</i>	'(that) he hears us <i>incl</i> '
<i>waabam</i> + <i>in</i> + <i>yangw</i>	
see 2 OBJ 1 IN PL	
<i>waabamineg</i>	'(that) he hears you <i>pl</i> '
<i>waabam</i> + <i>in</i> + <i>yegw</i>	
see 2 OBJ 1 PL	

Again this is only possible if there is a paradigm structure so that it can be known that all the other possible ambiguities are expressed in other forms. Such paradigm structures must precede in some logical sense, the syntactic demands which would simply supply the appropriate morphology automatically. This class of 'inflectional idioms' again provides a *prima facie* argument for the existence of pre-syntactic inflectional complexes.

Conclusion. Given that there is evidence for both the Syntax First position and for the Morphology First position, we are faced with a paradox. The best way out is to have a theory which predicts both syntactically active morphological processes and word-formation in the lexicon. Construction grammar (Fillmore and Kay 1993) is just such an approach.

NOTES

¹I would like to thank Fred Lupke and Sharon Inkelas for the various discussions that have contributed significantly to this paper. The usual disclaimers apply.

² These facts were first observed by Postal (1966) in a footnote to an article about Mohawk verb agreement.

³ It can be seen that this is a nominative/accusative system by the fact that the same morphology is used to mark the subject of transitive as the subject of intransitive.

⁴ It can be seen that this is an absolutive/ergative system by the fact that the same morphology is used to mark the object of transitive as the subject of intransitive.

⁵ It can be seen that this is an active/stative system by the fact that there are two kinds of intransitive inflection, in the one, the active, the morphology that is used to mark the subject of transitive is used for marking subjects. In the other, the stative, the morphology that is used to mark the object of transitive is used for marking the subject.

⁶Yana/Yahi has an inverse system and it is claimed that the modern system in Karuk points to an earlier inverse system (MacCawley, 1992).

⁷Passives are not a particularly good test of the Inclusion Constraint because of the strangeness of passive clauses with overt but unstressed non-third person agents.

(12) (?) He was given a small donation by me.

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