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MULTIPLE THETA-ROLE ASSIGNMENT

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In this paper I will argue that arguments may be assigned more than one theta role, based on evidence from the verbal morphology of Choctaw, a Muskogean language spoken in Oklahoma and Mississippi. I argue that a system of lexical decomposition like that of Jackendoff (1972) must be incorporated into grammatical theory, and show how the Theta Criterion (Chomsky 1981) can be revised to accommodate this conception of thematic structure.

The argument is as follows -- in section 1, I show that verbal agreement is sensitive to the thematic role that an argument bears, and allows us to identify arguments as Agents, Themes, etc. In section 2, I explore another area of verbal morphology -- number suppletion, and show that it is tied to the argument bearing the Theme role. However, there is a class of intransitive verbs in which the single argument triggers both the verbal agreement appropriate to Agents, and the number suppletion appropriate to Themes. I argue that these arguments bear both Agent and Theme roles. In section 3, I show how the Theta Criterion can be modified to accommodate these data, and conclude in section 4.

1. The Choctaw agreement system.

Choctaw has a complex system of verbal agreement

which indexes the subject, object, dative, and certain oblique arguments¹. A partial table of the agreement morphology is shown in (1), where the labelling of the sets follows Munro and Gordon (1982).

1.)	I	II	III
1s	-li	sa-	am-
2s	ish-	chi-	chim-
3	---	---	im-
1p	il/ii-	pi-	pim-
2p	hash-	hachi-	hachim- ²

Affixes from the I set agree with the subjects of most transitive verbs and some intransitives, as is shown in (2).

2.)	Chi-sso-lih 2sII-hit-1sI	'I hit you'
	Chi-ahpali-lih 2sII-kiss-1sI	'I kissed you'
	Balili-lih run-1sI	'I ran'

In addition to agreeing with the objects of most transitive verbs, as shown in (2), affixes from the II set also agree with the subjects of some intransitive verbs.

3.)	Sa-chaahah 1sII-tall	'I'm tall'
	Chi-kayyah 2sII-pregnant	'You're pregnant'
	Sa-habishko 1sII-sneeze	'I sneezed.'

Though several of the examples in (3) are translated by predicate adjectives in English, there is clear evidence that they are verbs in Choctaw. The adjectival predicates may occur with the full array of verbal morphology, including person and number agreement and tense marking.

Affixes from the III set generally agree with dative arguments, and with the subject of a small number of mostly psychological predicates.

- 4.) Im-a-li-tok 'I gave it to him/her'
 3III-give-1sI-pt
- I-chopa-li-tok 'I bought it for/from him'
 3III-buy-1sI-pt
- A-takoobih 'I'm lazy'
 1sIII-lazy

Although the treatment of III agreement will ultimately be important to the theory of th-roles, I will disregard it in this paper, and focus on I and II agreement exclusively.

Verbs may have subject agreement from either the I or the II set. This is a lexical property of individual verbs, and in general a verb's subject may take either I agreement or II agreement, but not both.³ The distribution of I and II agreement is far from random, and there are several semantic generalizations over these classes of verbs.

Most transitive verbs with agentive subjects take I subject agreement, as do verbs of perception and cognition and verbs of volitional motion. Examples of these types are shown in (5).

5.) Sample verbs with I subjects

a.) agentive transitive verbs

kobaffih	'break'	kalashlih	'cut'
awashlih	'fry'	achiifah	'wash'

b.) verbs of perception and cognition

hakloh	'hear'	pisah	'see'
ikh ^u nah	'know'	ahnih	'think'

c.) verbs of volitional motion

balilih	'run'	toloblih	'jump'
hilhah	'dance'	nowah	'walk'

To delineate the semantic types of verbs which take I subject agreement, I appeal to the lexical decomposition analyses of Jackendoff (1972, 1976, 1983) and Dowty (1979), the latter as modified by Foley and Van Valin (1984). These analyses assume that individual lexical items can be decomposed into a small number of abstract generalized predicates. Furthermore, the th-roles borne by various arguments can be defined by their positions within these predicates. In Jackendoff's system, for example, verbs of motion have the decomposition GO (x, y, z), where the argument x bears the th-role Theme; y, Source; and z, Goal.

Turning to the verbs listed in (5), let us examine the lexical decompositions of each class. I will assume the structures given in (6).

6a.) agentive transitive verbs

CAUSE (x, GO (y)) x = Agent, y = Theme

b.) verbs of perception

pred' (x, y) x = Experiencer, y = Theme

c.) verbs of volitional motion

CAUSE (x, GO (x)) x = Agent & Theme

I have suppressed the Source and Goal roles in the preceding classification. For more extensive justification for the structures and th-roles assigned see Jackendoff (1972, 1976, 1983) and Foley and Van Valin (1984).

In addition to the classes of verbs described above, two other types of verbs take I subjects. This first is the class of verbs with non-volitional agents, as in (7):

7.) Okkissa ish-kooli-tok! 'You broke it!'
 window 2sI-break-pt

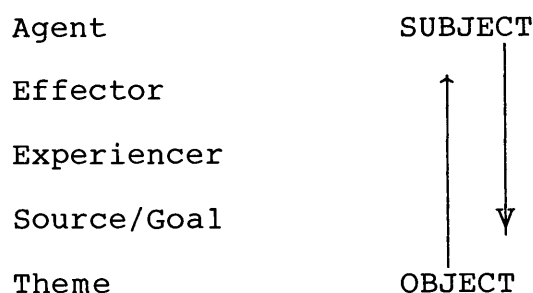
This sentence can be uttered even when the addressee's unconscious body fell through the window. Following Foley and Van Valin (1984), I will call this role Effector, and I assume that it is the same role assigned to the causee in a causative construction.

A final type of verb is exemplified by the verb 'receive', which has a Goal subject which receives I agreement.⁴

- 8.) Habiina-li-tok. 'I received it.'
 receive-1sI-pt

Subjects which take I agreement thus include those bearing Agent, Effector, Experiencer, and Goal th-roles. This range of roles recalls the th-role hierarchies suggested by Jackendoff (1972) and Foley and Van Valin (1984). Consider the following hierarchy, which incorporates aspects of both the preceding analyses.

- 9.) Theta-role hierarchy



Recall from (2) and (3) above that II agreement is associated with the objects of transitive verbs and the subjects of stative intransitive. In the examples given, the argument bears the Theme role. Davies (1981, 1986) presents a range of arguments within a Relational Grammar framework for an analysis in which the subjects of stative verbs originate as initial objects, and become subjects through the rule of unaccusative advancement (Perlmutter 1978) (or ergative movement Burzio (1981)). I will assume that Davies is correct, and that the subjects of verbs which trigger II agreement are d-str objects.

Verbs which show causative morphology may have arguments bearing the roles Goal, Experiencer, and Effector which trigger II agreement on the verb, as shown in (10).

- 10a) Sa-habiina-chih 'He gave me (something)'⁵
 1sII-receive-caus

b.) Holisso sa-pisaa-chih 'He showed me the book'
 book 1sII-see-caus

c) Sa-fohaa-chih 'He made me rest/he
 1sII-rest-caus fired me'⁶

(contrast Fohaa-lih 'I rested')

In (10a), the object of the verb bears the th-role Goal; in (10b), it bears the role Experiencer, and in (10c), it bears the roles Effector (since it is a causee) and Theme.

I propose that the range of data presented for I and II agreement are best accounted for by interpreting the th-role hierarchy in (9) above as selecting d-str subject and object. I agreement is then associated with d-str subject, and II agreement with d-str object.⁷

In the account of Choctaw verbal agreement that I have presented, agreement type is based on d-str grammatical relations. An alternative theory, suggested by Martin (this volume) for the related language Oklahoma Seminole, would allow the inflectional rules to refer directly to the th-roles that arguments bear.

I think there are two problems with this type of analysis. First, examination of the data above show that arguments bearing the roles Effector, Experiencer, and Goal may trigger either I or II agreement, depending on whether they are the subject or object of the sentence. In an account which refers directly to th-roles, it is unclear why the presence of other arguments in the clause should have any effect on agreement.

Yet this follows directly in an account that bases agreement type on d-str grammatical relation. An Experiencer argument (for example) is d-str subject when it is the highest ranking argument, and it thus triggers I agreement. But when there is both an Agent and an Experiencer in the same clause, the Agent is d-str subject and the Experiencer is d-str object. Thus the Agent triggers I agreement, and the Experiencer triggers II agreement.

There is a second problem with a semantically based account which is less an argument than a question. If the function of Choctaw verbal agreement is to identify the th-role that an argument bears, why does the system do such a bad job of it? There are half a dozen (or more) th-roles, but only three types of verbal agreement. Some th-

roles have to share an agreement type, while other th-roles are associated with more than one agreement type. Why isn't there a one-to-one, or at least a many-to-one relation between th-roles and agreement types?

These are all puzzling questions in a semantically based account, but in the syntactic account presented here there is a natural answer. There are three agreement types because there are three grammatical relations being indicated -- subject, direct object, and indirect object.

I have argued that the type of verbal agreement that an argument triggers is indicative of the d-str grammatical relation it bears, which in turn can provide us with information about the types of th-roles that various arguments bear. Having established verbal agreement as one criterion for identifying th-roles, in section 2 I identify another morphology process, verbal suppletion, which also allows us to identify th-roles.

2. Verbal suppletion

Choctaw does not obligatorily mark the number of third person arguments, either on nouns or through verbal agreement.⁸ However, there are several verbs which have suppletive stems that indicate the number of the subject of a intransitive verb or the object of an transitive.⁹ Examples are given in (11).

11a.) Transitives

kobaffih 'break (1) long object'
 kobahlichih 'break (2+) long objects'

palhallih 'split (1) thing'
 palhahlichih 'split (2+) things'

b.) Intransitives

takalih 'be hanging up (1)'
 takohlih 'be hanging up (2)'
 takohmayah 'be hanging up (3+)'

talayah 'be right-side up (1)'
 talohlih 'be right-side up (2)'
 talohmayah 'be right-side up (3+)'

Note that in all these cases, the suppletion is tied to the argument that bears the Theme role.¹⁰

Given that suppletion is tied to Themes in Choctaw, consider verbs like those shown in (12).

12.) onah	'arrive there (1)'
ittonaachih	'arrive there (2)'
aayonah	'arrive there (3+)'
hikiiyah	'stand up (1)'
hiilih	'stand up (2)'
hiyohlih	'stand up (3)'

These verbs supplete for the number of their single argument, but they also trigger I subject agreement. I assume that they have the lexical decomposition shown in (13).¹¹

13.) CAUSE (x, GO (x))	x = agent, theme
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I have argued above that I agreement is tied to the th-roles Agent, Effector, Experiencer, and Source/Goal. Since the Choctaw verb 'arrive' triggers I agreement, its subject must bear one of these th-roles. But I have also argued that suppletion is tied to the Theme, thus the subject must bear the role Theme. We thus have a strong argument for the the type of lexical decomposition shown in (13), where a single argument may bear more than one th-role. This argues that the theta-criterion of Government-Binding theory, as it is generally formulated (Chomsky 1981, for example) must be revised.

3. Multiple theta-roles and the theta-criterion

Chomsky (1981:36) states the theta-criterion as follows:

- 14.) Each argument bears one and only one th-role, and each th-role is assigned to one and only one argument.

As noted, the evidence in (12) is inconsistent with this

formulation.¹²

I propose that at the lexical level, verbs have the type of decomposition shown in (13), and that there is a simple mapping process between this decomposition and the syntactically-relevant theta-grid. The mapping can be stated as follows. Merge all th-roles assigned to a single variable into a complex th-role, and assign this complex th-role to a single argument. The th-criterion may then be restated as follows:

15.) Th-criterion (revised)

Each argument is assigned one and only one complex th-role, and each complex th-role is assigned to one and only one argument.

Given this process of th-role merger, we may ask what constraints apply to it, since it does not seem descriptively true that any two th-roles can be merged. Given our lexical decomposition analysis, however, there is a natural restriction on th-role merger. Two (or more) th-roles may be merged only if each component th-role is assigned by a different abstract predicate. This produces exactly the right descriptive results. The following complex th-roles are attested, and each meets the well-formedness condition defined : agent-theme (run, jump), agent-source (give), agent-goal (receive, take), and effector-theme (the cane hit the wall). On the other hand, the following th-roles are unattested, and would seem to be impossible: theme-source, theme-goal, source-goal.

The proposal here also provides a test for determining the structure of a lexical decomposition: If two th-roles may never be combined, then they are assigned by the same predicate.

4. Conclusions

This paper has argued that arguments may receive more than one th-role, based on evidence from verbal agreement and suppletion in Choctaw. A theory incorporating complex th-roles has been proposed, and constraints on the possible internal structure of complex th-roles have been suggested. The th-criterion has been revised to accommodate these revisions.

In closing, I believe that as the theory of syntax

becomes increasingly concerned with predicting the properties of d-str from the lexical properties of syntactic items, it becomes necessary to sharpen our notions of thematic structure. The theory sketched here allows a broader and more coherent theory of th-role content, and is thus a contribution to that project.

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NOTES

1. Oblique morphology has the effect of adding an internal argument to the subcategorization frame of a verb. The role of the argument indexed by the oblique marker may include instrumental, benefactive, comitative, locative, and others, as discussed by Ulrich (1986). I will have nothing further to say about oblique morphology in this paper.

2. The following orthographic conventions are in use: <sh> = / /, <ch> = /t /, <lh> = /l/. Underlining indicates vowel nasalization. The III affixes surface as Vm- before stems beginning with a vowel, and as V before stems beginning with a consonant. Verbs in Choctaw end in h, as the examples illustrate. See Ulrich (1986) for details.

3. There are a few verbs which may take both I and II agreement. These include habishkoh 'to sneeze', hotilkhoh 'to cough'. For some speakers, I and II marking are in free variation, while others use I affixes with volitional subjects, and II affixes with non-volitional subjects. There are also other verbs which display I/II alternations only under certain syntactic conditions, such as the addition of a dative. These effects seem somewhat variable

from speaker to speaker. See Davies (1981) for a full discussion of this subject.

4. There are, of course, other verbs in which the subject takes Goal in addition to some other role (usually Agent), as in the verbs *chopah* 'to buy', *hokopah* 'to steal', etc. So far as I know, there are no verbs where the subject bears the Source role alone, though there are many where the subject bears both Source and Agent roles, e.g. *imah* 'to give', *kachih* 'to sell', etc.

5. The semantics of *habiinachih* are somewhat like those of 'present' in English, in that the direct object of the verb is the recipient.

6. I deal here with the literal sense 'cause to rest', rather than the idiomatic sense 'fire'. It seems to me that the analysis of 'fire' would be CAUSE (x, GO (y, z, w)), where the goal 'unemployment' is inherent in the specific lexical semantics of the verb and is thus unexpressed syntactically.

7. However, it must be noted that although this approach to subject agreement has greater generality than previous approaches (Payne 1981, Heath 1977), there are still a few exceptional verbs. Munro and Gordon (1982) explore a range of verbs with problematic agreement types. Predominant among these are verbs whose semantics seem stative, but which nevertheless take I subject agreement. Examples are quantifiers, and certain psychological predicates like 'careful', 'proud' and 'jealous'.

8. There are a number of optional elements which indicate plurality. These include the plural preverb *oklah*, the dual postverb *toklah*, and the auxiliary verb *tahah* 'completive'. See Broadwell (1983) for more details on *tahah*.

9. By suppletion, I mean both partial and full suppletion. Many of the examples show partial suppletion and certain regularities occur. However, pluralization is not a productive process for Choctaw, and thus synchronically the forms given are monomorphemic. The distribution of suppletion recalls the traditional notion 'absolute' (which is available in a theory like Relational Grammar). However, there are certain cases of transitive verbs with Theme subjects which trigger verbal suppletion. An example from the closely related language Chickasaw is *achoshsho'wa* 'to follow around, sg. subj.'/ *achoshkayya'chi* 'du. subj.'/ *achoshkachit maa* 'pl. subj.'. The existence of such verbs favors an account which relates suppletion to the Theme, rather than to the absolute. (I am indebted

to Pam Munro for bringing this example to my attention.)

10. Though this is observationally true for Choctaw, there is cross-linguistic evidence that verbal suppletion tends to be related to Themes. S. Anderson (class lectures) has proposed this analysis for Georgian, and similar facts hold for all the Muskogean languages. It seems that that verbs are cross-linguistically sensitive to properties of their Themes, for reasons that are not entirely clear.

11. The analysis of 'arrive' differs from that proposed by Burzio (1981) for Italian, where it is claimed that 'arrive' has a non-agentive subject. I claim that arrive is agentive in Choctaw, based on the agreement facts. In general I would argue that languages may differ from each other in this respect. Both the Choctaw and the Italian lexical decompositions are in some sense compatible with our real-world knowledge of the meaning of 'arrive'. Animate arrival is typically a volitional activity, while inanimate arrival is not. A generalization specific to Choctaw is that any verb whose semantics may be construed as either agentive or non-agentive will always take agentive type agreement. In this respect Choctaw differs from Tsova Tush, as described by Van Valin (this volume).

12. However, Chomsky (1981:335) and Chomsky (1986) revise the *th*-criterion to allow an argument to bear more than one *th*-role so long as each is assigned by a different predicate in the syntax, as in examples like John ate the fish raw. This revision is essentially identical to what I propose at the level of lexical decomposition.

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