

WICHITA AND THE TYPOLOGY OF SYNTACTIC STRUCTURE

David S. Rood

University of Colorado

The direct inspiration for this essay is a paper by Ken Hale (Hale [1979]),¹ proposing modifications in current transformational theory (as, e.g. in Chomsky 1973 or 1980) to accommodate phenomena in some of the languages he studies. Since past transformational models have never seemed right for the languages I study, I am always intrigued by modifications which promise to be true to and also clarify and explain the structures I have discovered. The following is therefore an exploratory look at how Wichita might be included in this latest proposal.

Hale's thesis is that languages such as Waripiri (formerly spelled Walbiri) and Navajo require an apparently drastic revision of the form of the universal base. Specifically, he suggests that these languages have no phrase structure rules. For them, the base consists of one rule only, namely (1),

(1) $E \rightarrow W^*$

to be read 'an expression (E) consists of an unstructured concatenation of an indefinite number of words (W).' "Words," previously derived and inflected by a set of word-formation rules, are strung together randomly by this rule, and the labeled bracketing of the output string is achieved by a set of interpretive "parsing" rules rather than by any generative device.

Much of Hale's paper is devoted to a detailed description of how the parsing rules work: in essence, they make use of labels in the lexicon, surface proximity, and inflectional morphology to associate words into groups and thereby assign hierarchical structure to the expression. These rules also make use of the notions of binding and control from current TG theory, and include the processes of "merger," whereby like-inflected but non-contiguous elements (e.g. a noun and an adjective) are bracketed together, and "construal," which associates correctly arguments and predicates and replaces the more familiar case assignment and agreement rules.

To determine whether a given language belongs to this type (called W-star) or to the type with phrase structure rules (called X-bar), one must seek evidence for or against the existence of "phrases," i.e. clusters of words that behave together. In Warlpiri, such evidence includes the extreme freedom of word order linguists generally associate with Australian languages (cf. e.g. Dixon (1972) on Dyirbal) and, much more importantly, the analysis of sentences with non-overt arguments. As an example of the latter Hale ([1979]:48) gives:

- (2) wajilipi - nyi ka - pala
 chase - NONPAST AUX:pres - 3du
 'They two are chasing it'

He then shows that his parsing rules will interpret this as a perfectly well formed expression with a subject and an object which are both definite in reference, without any need to suggest that such reference is the result of "empty" slots or of deletions in some abstract underlying structure.

For classifying Navajo as a W-star language, the most compelling evidence comes from the structure of relative clauses (Hale [1979]:56ff.). Normally Navajo transitive clauses with two NPs and the morpheme yi in the verb must be read as S-O-V; if only one NP occurs, it will be interpreted as object. Yi is therefore said to mean 'interpret the NP closest to the verb as object.' If the element before the verb is not an NP, the grammar allows one to search further to the left; if two adjacent NPs are found there, they are interpreted as subject and object in the normal way. Thus in a relative clause structure such as (3), NP₁ and NP₂ are, respectively, subject and object of both verbs:

- (3) X NP₁ NP₂ yi - V₁ - rel yi - V₂
 rel. clause

But in an X-bar grammar of Navajo, the whole relative clause would be an NP (\bar{N}), and should, therefore, be interpreted as the object of V₂ (which would then have an unspecified subject). That this is not the case shows that the relative clause is not an \bar{N} , and thus casts doubt on the X-bar analysis in general.

We have, then, examples of two different surface structure typologies in the class of W-star languages: Warlpiri nominals and auxiliaries are both elaborately inflected for case and/or number and person, while Navajo is synthetic, with most overt role and feature marking on verbs. I would now like to turn to Wichita, whose surface structure is polysynthetic, and I will argue that it, too, belongs in the W-star class. The evidence to be considered includes word order properties, an analysis of possible phrases, and a consideration of places traditionally analyzed as "empty" positions.

Freedom of word order is not a prerequisite for W-star classification, since Navajo relies on word order for correct application of its parsing rules. Nevertheless, Hale suspects that free word order languages are more likely to be of the W-star type than are those with fixed word order. Before discussing order in Wichita, however, we must agree to define "word" to include verbs with incorporated patients, such as those in (4):

- (4) a. *iskí:cʔasinnʔi* 'make me some shoes'
 i-s-ki-:c-ʔasi:r-rirʔi
 imp.-2sub-lob-dative-shoe-make pl.
- b. *i:kaʔa:kiʔí:wa:waʔasʔi* 'they (dual) had a grandchild'
 i:-kaʔ-a:-ki-ʔí:wa:waʔas-ʔi
 nongsg.sub-quotative-poss.-past-grandchild-be
- c. *i:keʔekiʔiscari* 'they cut his hands'
 i:-kaʔ-iy-ki-ʔis-r-tari
 nongsgsub-quotative-indef.sub-past-hand-pl.obj-cut

There is no doubt that these sequences are "words," in the sense of "minimal free forms," both because the beginning and ending morphemes are bound, and because the incorporated nouns are not in citation form: 'hand' would be ʔiskʔa in citation form; the -s on 'grandson' marks it as incorporated; and 'shoe' would be ʔasi:rʔa in citation form (-kʔa and -ʔa are noun-forming suffixes).

d. ta²akhá:r²i::s tac aki:²i khac áki?²i

'he saw a big white house'

ti - ²akha:r - ²i::s tac a - ki - i - ²i

indic - house - see big² 3sg.-past-?³-be

That (6a-c) are all single words is demonstrated by the use of riwa:c and riya:s for 'big' and 'old' (neither morpheme occurs unbounded), the use of the compounding form akhá- for 'house', and by the fact that the whole form is closed with the suffix -²a, which does not occur on the citation form of khac.

Example (6d) was the response to a request for 'he saw a big white house'; the Wichita is not one sentence, but three, with three fully inflected finite verbs, corresponding to English 'he saw a house; it was big; it was white.'

As for demonstratives and quantifiers, while they do co-occur with nouns, there is no fixed order in the constructions, and all of them can occur without nouns as well. Note, e.g. example (7) (from Rood 1977:107, 11. 36-38):

(7) híriwa? ti:ra:ckawi:kwískih ass hiri:²arharikiwa:wih
 then they surrounding this some they being on horseback
 ire:wiyá:s ass ne:we²ekih a:ki:cco:ra:wa
 afoot some they being they went down in

'Then, after they got around it, some on horseback and some afoot, they went down in.'

In this example the first word is a conjunction whose function is to move the narrative forward. The next three verbs ('surround', 'on horseback', 'be') are not marked for tense but are marked as subordinate; the last verb is the only main one in the string. The two occurrences of the quantifier ass 'some' are the subjects of the verb they precede. In contrast, the demonstrative ti: prefixed to 'surround' is the object of that verb. Nowhere in this narrative is there an overtly expressed antecedent for 'they' or 'some'.

Perhaps the most likely candidate for membership in a noun phrase is the article, either definite or indefinite. Examples of Wichita sentences with overtly expressed articles are those in (8) (Rood 1977:100, 11. 1-3; 107, 11. 33-34):

- (8) a. *kiya:s?i:ka?akiwe?ecaki to:rikic?a kiya:s?a:ki:?i*
 two people dwelt young man a
hinn kà:hi:rá:i:c?a há:wa? kiya:s?a:kí:?i hinn
 and old woman also a and
tá:kwic has?a:ʔa:kiwé?es?arhi
 four dogs were
 'two people lived there, a young man and an old woman,
 and four dogs'
- b. *ka:hi:k?a kiyararé:r?ih wéra? ni:ʔí::skih*
 woman the one being perhaps non-topic saw topic
ti?i wi:c kíyararé:r?ih ka?akiré:hir?í:rasah
 this man the one being the finder of her
 'The man who found the woman [topic] must have seen her
 [run away].'

Sequence (8a) opens a narrative, so we expect the nouns to be indefinite. That they are, but they are so marked by fully inflected main verbs. *Kiya:s?a:ki:?i* consists of *kiya* 'indefinite person' + *has?a* 'narrative past' + *a* 'third subject' + *ki* 'past' + *i*³ + *?i* 'be'; *has?a:ʔa:kiwé?es?arhi* is essentially the same construction: *has?a* 'narrative' + *a:ʔa* 'quotative' + *a* + *ki* + *we?es* 'dog' + *?arhi* 'be a certain number'. Now of course one could simply assert that the indefinite article in this language has the surface form of a verb and write NP rules accordingly, but that strikes me as forcing the language into a preconceived mold. Moreover, as the examples in (8b) show, we would have to write a different rule for the definite article.

The meaning 'definite' is expressed by the morpheme re:(r) in the words where the gloss 'the' is underlined. In the first two cases the verb is 'be' and the construction looks phrasal to the

extent that the verb 'be' seems to have no purpose except to carry re:r; but in the third occurrence, the article is simply part of the whole word. It therefore seems obvious that no straightforward analysis of Wichita can posit articles as part of noun phrases, and the whole notion of "noun phrase" seems suspect.

I have been presenting evidence that there are no surface structure phrases in this language: adpositional phrases are absent because the candidates for NP constituency are either fully nominal themselves or occur as particles or bound morphemes parallel to other elements in the language. It is of course impossible to prove a negative claim, but I hope to have shown that describing phrases requires some abstraction from surface structure facts which the W-star proposal would not require.

The crucial criterion for W-star status, however, is the absence of empty syntactic slots, especially for unspecified noun phrases. These might occur either to supply non-overt arguments, or between sentences. Wichita is exactly like Warlpiri and Navajo in permitting well-formed predications with non-overt arguments, e.g. those in (9):

- (9) a. ka:?a 'he will come'
 b. a:kí:cco:ra:wa 'They went down in'
 c. we?eskiré:wakha:r?as hirí:ra? 'They're coming back!'
 d. áki?icaras 'he recognized her'

If such forms satisfy this criterion in Hale's languages, then they satisfy it equally well here. The other place where empty noun phrases have sometimes been posited, however, is in the argument positions of subordinate verbs when the position is understood to be controlled or bound by an argument from a higher verb. Hale ([1979]:50-52) discusses this problem at length for Warlpiri infinitives and concludes that such forms will have to be evaluated by the parsing rules as having obligatorily bound arguments, with the controlling argument in the finite verb with which the infinitival is automatically bracketed anyway. Thus while he avoids the generation of empty noun phrases to be bound by the configuration of the phrase marker, he nevertheless needs a device for binding. Wichita does not even need this kind of interconnection mechanism.

In a paper written several years ago (Rood 1973), I argued that all intersentential relationships in Wichita were the result of coordination, i.e. that there were no embedded sentences in this language. There are, to be sure, both main and subordinate verb forms, but the subordinate forms are fully inflected for person and number. Two of the phenomena discussed there have a bearing on the phrase structure component of a Wichita grammar, namely, the for-to or purpose construction, and pronominalization.

The for-to construction consists of a verb with the prefixes ha. . .ki; pronominal affixes appear between these elements. The significant fact is that a verb of this type is usually as fully inflected for its arguments as is a main verb, even if the arguments in the two predications are identical; cf. example (10):

- (10) a. tatí:ʔi:khiyaʔa hackihiʔiyaskwah
 I am wishing for me to cross the water
 'I want to cross the water'
- b. tatí:ʔi:khiyaʔa hakihiʔiyaskwah
 I am wishing for him to cross the water
 'I want him to cross the water'
- c. taki:cʔí:kshirʔi:sis hackiʔiyácah
 he forced me for me to shoot
 'he made me shoot'
- d. ciwéraro:kha:rʔa hakiki:ctárʔa:tih
 might it happen? for him to doctor me
 'Would he doctor me?'

Note especially example (10c), where the first person marker in the subordinate verb is completely redundant, since he could not force me for someone else to do something. There is no need for any binding or control phenomenon to explain anything here, and neither transformational nor parsing rules need look beyond the immediate word at hand to achieve argument assignment.

Wichita pronominalization is odd only because there is no person copying involved. A verb without overt arguments can be understood to refer to any person or number; cf. (11):

- (11) taciye:ra:kʔí:ri:w te:stacirʔis kiyaʔinnʔis hinnih
 we incl. had lots bleached corn 3sg. made pl. and
 kiyaʔiyá:ckirʔi:cirʔis kirʔi:cho:s kiyaʔinnʔis e:kw
 indef. made bread for self dumplings sg. made pl. or
 té:skiti:ʔi:ʔi kiyaʔiyá:ciwa:cirʔis
 hominy indef. made lots for self

The natural translations for all the verbs in (11) contain 'we', but the Wichita forms are marked for third person subjects. If one can conceive of the W-star hypothesis as a claim about speakers, then this situation seems intuitively appropriate: verbs without overt arguments are used without any kind of cross-referencing to earlier statements. This is in sharp contrast with phrase structure grammars, where interconnection among sentences is part of the generating apparatus so that cross-indexing by morphemes, rather than by construal, would be appropriate. The absence of morphological cross-reference, then, would be an argument for W-star status.

The text immediately preceding (11) offers two constructions which support the analysis of non-overt arguments and "pronouns" as the same, having no obligatory cross-reference mechanisms in the surface strings; cf. (12):

- (12) ká:kiriʔaciyé:ra:kʔi kirikirʔi:s
 We incl. have no reason Wichita
 hikiré:hiya:wa:sskih
 for the plural to be hungry (distributive)
 'We Wichitas had no reason ever to be hungry'

In (12) we see that a first person inclusive verb is used with an overt nominal argument, and that the subjunctive for-to construction has a third person plural subject and a definite article. This utter disregard for agreement implies to me that

the grammar of this language is treating each word as independent of the others, and that the W-star hypothesis probably works even better here than for Warlpiri or Navajo.

There remain, of course, many problems, some of which may still force us to abandon W-star as an option. Not the least of these is formulating the word-structure rules. Since Wichita words look so much like sentences of other languages, especially in that person, tense, and number information is all supplied in that part of the grammar, might it not be the case that we will have to shift the old phrase structure rules into a lexical formation component and thus gain nothing at all? Secondly, it seems to me that the more we look at W-star, the more diversity we find within it. Are we not, perhaps, as with most typologies, faced with a continuum rather than a binary division? Wichita seems to lack not only phrase structure, but also those intersentential connections which require Hale to maintain Subjacency and the Tensed Sentence Constraint for Warlpiri, together with the notion of binding. Moreover, he suggests that Navajo is so close to the boundary between W-star and X-bar that some speakers may have learned the language one way and thus accept certain constructions as parseable even if not easily generated; other Navajo speakers might reject the same construction because they have learned the language as X-bar, and the PS rules disallow certain configurations. We could, then, have a continuum of types of syntactic structure from Wichita's heavy dependence on separate words through Warlpiri's word based but interconnected constructions to Navajo's borderline status and then on into purely X-bar types such as Papago and English. That, of course, remains to be seen.

I would like to make one more comment before I close, or rather, to ask one more question. If W-star languages really do exist as such and if the difference between W-star and X-bar can be accommodated in one theory, what is the nature of that theory? Without a base, a transformational component, or any kind of lexical insertion except random, we are left with a lexicon, semantic interpretation, and phonology. The whole description of a grammar, then, becomes interpretive rather than generative, and the name transformational-generative is strikingly inappropriate.

NOTES

¹Hale's paper was brought to my attention by Dr. Barry Alpher of the Coalition of Indian Controlled School Boards, whom I would like to thank for being so considerate.

²A few adjectives, including 'big', have both a bound and a free root. Here -riwa:c is the bound form, tac is the free one.

³This morpheme has no identifiable meaning, and its occurrence is predictable. Cf. Rood (1976:20,81).

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