

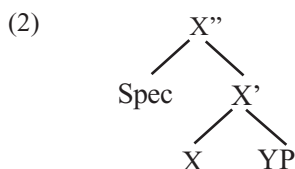
X-BAR SYNTAX AND LANGUAGE ACQUISITION

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This paper attempts to explore the empirical support for the idea that X-bar principles are part of universal grammar, and are innately present in the child approaching the language learning task. The basic principles of X' syntax are listed in (1) (following e.g. Haegeman 1991):

- (1) $X'' \longrightarrow \text{Spec, } X'$
 $X' \longrightarrow X, YP$

A tree diagram version of (1) is shown in (2).



(Note that the commas in (1) indicate lack of ordering, and that the role of adjuncts is ignored.) These principles encapsulate the notions of headship and hierarchy. I wish to argue that while the notion of headship is reflected in the earliest child utterances, the notion of hierarchy is not.

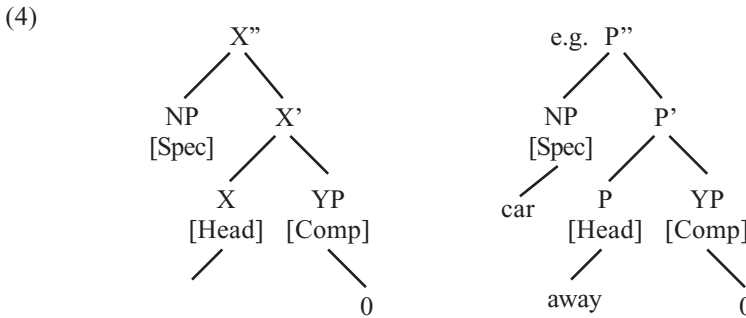
If the principles of X' syntax are innately given, we would presumably expect to find them reflected in the structure of the earliest two-word utterances produced by children. I am assuming that two-word utterances are a necessary condition of the establishment of syntax.

Radford (1990) argues that early child utterances do in fact reflect the schema in (2), with the proviso that all constituents belong to lexical categories, i.e. NP, VP, AP or PP. Radford adopts the distinction drawn by Chomsky (1986) between lexical and non-lexical or functional categories, examples of functional categories being Determiner, Complementiser and INFL or Inflection. The lexical/functional distinction is roughly equivalent to the open/closed class distinction in traditional gram-

mar. Radford (1988) argues that early child utterances can be analysed in terms of «small clauses» consisting of lexical categories in the combinations [NP VP], [NP AP], [NP PP] and [NP NP]. Examples from his data are given in (3).

- | | | |
|-----|---------------|---------|
| (3) | Lady do | [NP VP] |
| | Wayne naughty | [NP AP] |
| | Car away | [NP PP] |
| | Bee window | [NP NP] |

The way in which they fit the X' schema is shown in (4):

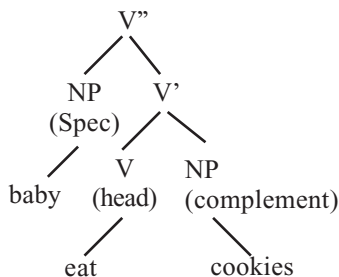


Radford (1988:7) argues that these «small clauses» have the canonical structure [NP XP] where NP is the Subject, XP the Predicate. Radford's justification for identifying XP with a specific lexical category in each case appears to be that the same words later appear in structures which show evidence of lexical categorisation of the kind that appears under (5).

- (5) (i) development of complements as evidence of phrasal projections, e.g. NP complements appearing after verbs in English;
 (ii) development of category-specific inflections, e.g. -ing attached to verbs and -s attached to nouns.

An example of an utterance from Radford's data which includes evidence of lexical categorisation is shown in (6):

- (6) Baby eat cookies [NP VP]



We may note here partial evidence for the lexical categorisation of VP in the form of an NP complement to the verb, and for the lexical categorisation of NP, in the form of a plural inflection on the noun. However, as I've indicated, Radford assigns lexical categories not only to items like those in (6) which satisfy the criteria in (5), but also to those items which do not yet satisfy such criteria. This is the case in the examples under (3) and (4) where lexical categories are presumably assigned on the basis of categories in the adult language.

So far we have not examined any examples of early utterances which contain items which cannot even potentially be assigned to lexical categories. However, many of the earliest two-word utterances in my bilingual English-Spanish data contain items of this kind. Words in these utterances which cannot obviously be assigned to lexical categories include the following: 'more', 'más' (Spanish for 'more') 'no' and 'oh-dear'. Some of these utterances are shown in (7):

- | | | | |
|-----|------------------|--------|--------------------------------------|
| (7) | more juice | [? NP] | (requesting more juice) |
| | más juice | [? NP] | (requesting more/some juice) |
| | juice más(=more) | [NP ?] | (requesting some juice) |
| | oh-dear book | [? NP] | (after dropping a book on the floor) |
| | no cama(=bed) | [? NP] | (not wanting to go to bed) |
| | no papa(=daddy) | [? NP] | (commenting on father's absence) |

Note the variable word order in utterances containing these words. My data also contain utterances which do seem to consist of lexical categories and to fall within Radford's small clause analysis, as shown in (8):

- | | | | |
|-----|-------------|---------|--|
| (8) | Manuela hat | [NP NP] | (Manuela wanting to put her hat on) |
| | juice gone | [NP VP] | (a cup was now empty of juice) |
| | babero off | [NP PP] | ('bib off': wanting to take her bib off) |

I am using these data without wishing to draw any particular conclusions about any special implications of bilingual versus monolingual data. To justify that decision, I will now demonstrate that similar phenomena occur in monolingual English and monolingual Spanish data. Data from English are given in (9).

- | | | | |
|-----|--------------------------|---------|--|
| (9) | Data from Braine (1963): | | |
| | Papa away | [NP PP] | |
| | mail car | [NP NP] | |
| | Mama come | [NP VP] | |
| | see baby | [0 VP] | |

BUT

- | | | | |
|--|----------------|--------|--|
| | more car | [? NP] | |
| | more cereal | [? NP] | |
| | more fish | [? NP] | |
| | no water | [? NP] | |
| | no bed | [? NP] | |
| | Calico allgone | [NP ?] | |
| | allgone juice | [? NP] | |

Data from Spanish are given in (10) and (11):

- (10) Data from Hernández Pina (1990):
- | | | |
|---------------------------|-----|-----|
| botón mama(=button Mummy) | [NP | NP] |
| abrigo nene(=coat boy) | [NP | NP] |
| mena cayó(=girl fell) | [NP | VP] |

BUT

- | | | |
|-----------------------|----|-----|
| más pan (=more bread) | [? | NP] |
| no caca (=no poo) | [? | NP] |

- (11) Data from CHILDES corpus (Linaza):

- | | | |
|-----------------------------|-----|-----|
| nene grande(=boy big) | [NP | AP] |
| lápiz planta(=pencil plant) | [NP | NP] |

BUT

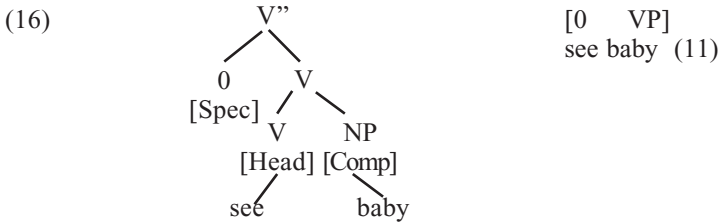
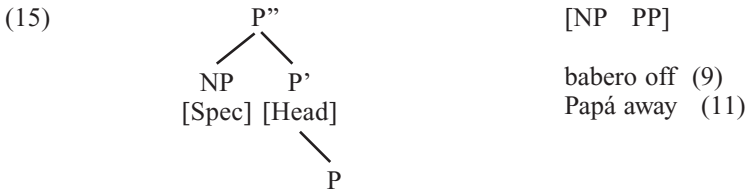
- | | | |
|-------------------|----|-----|
| no gato(=no cat) | [? | NP] |
| no pipa(=no pipe) | [? | NP] |

So how are we to deal with these kind of data, some of which appear to fit the small clause analysis, but some of which do not? The data in (7-11) which appear to fit in with the small clause analysis could presumably be represented as in (12)-(16):

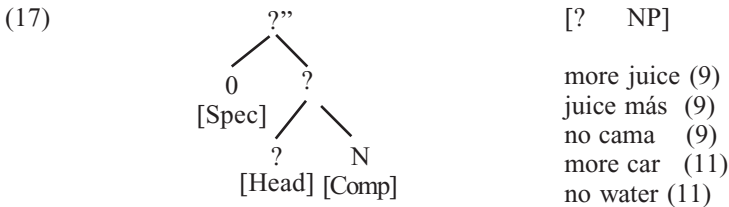
- (12)
- | | |
|---|--|
| $ \begin{array}{c} N'' \\ \swarrow \quad \searrow \\ NP \quad N' \\ [Spec] [Head] \\ \quad \quad \quad \searrow \\ \quad \quad \quad \quad N \end{array} $ | <p>[NP NP]</p> <p>Manuela hat (9)
 mamá zapato (9)
 mail car (11)
 botón mama (12)</p> |
|---|--|

- (13)
- | | |
|---|--|
| $ \begin{array}{c} V'' \\ \swarrow \quad \searrow \\ VP \quad V' \\ [Spec] [Head] \\ \quad \quad \quad \searrow \\ \quad \quad \quad \quad V \end{array} $ | <p>[NP VP]</p> <p>juice gone (9)
 Mamá come (11)
 mena cayó (12)</p> |
|---|--|

- (14)
- | | |
|---|--|
| $ \begin{array}{c} A'' \\ \swarrow \quad \searrow \\ NP \quad A' \\ [Spec] [Head] \\ \quad \quad \quad \searrow \\ \quad \quad \quad \quad A \end{array} $ | <p>[NP AP]</p> <p>nene grande (13)</p> |
|---|--|

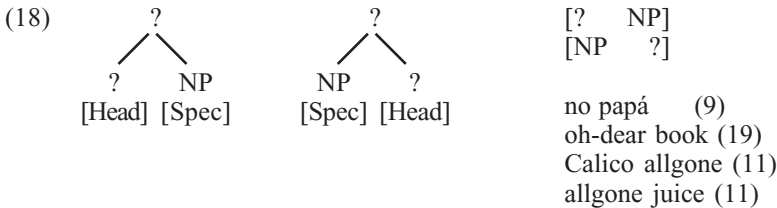


But what about the data containing items which do not belong to lexical categories? Attempts to represent their structure appear in (17) and (18):



Note that this structure has been deliberately designed to resemble that in (16), although the question marks, showing no identification of lexical category, make it clear that no hierarchical relationship between bar levels can be postulated. However, I would argue that ‘more’, ‘no’, etc. in these examples function as predicates, and that they relate to their adjacent NPs as heads to complements.

The structure in (18) is needed to account for data where I would argue on semantic grounds that the NP is the specifier of the predicate rather than its complement. Note that alternative orders are allowed here.



Could ‘?’ items be analysed as lexical categories? This would seem to be difficult, since the words involved do not belong to lexical categories in the adult language, and would not be expected to develop category-specific inflections. Radford

(1990:71) suggests that ‘more’ and ‘no’ might be analysable as verbs, and yet there is no evidence from any data I know of that they develop verb inflections of the kind shown in (19):

(19) ‘*more-ing’, ‘*no-ing’

In the adult language ‘more’ and ‘no’ are determiners, Determiner being a functional (i.e. non-lexical) category. If we decide that functional categories are present in the earliest child utterances, then we would be refuting Radford’s hypothesis that such categories are initially absent. In this case we might want to explain why other examples of determiners do not appear, e.g. the definite and indefinite articles. We would also have to explain the status of data items like ‘oh dear’ which can be assigned neither to lexical nor to functional categories in the adult language.

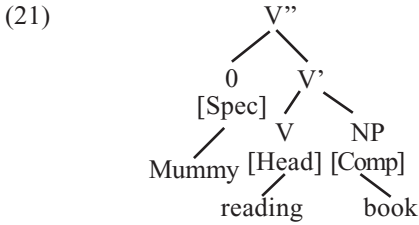
An alternative would be to decide that ‘more’, ‘no’, etc. are acategorial items in early child language, which cannot yet be assigned to any category, whether lexical or functional. Radford (1990) argues that one-word utterances by children are acategorial, by which he means (p. 239) that they «have phonological and semantic properties, but no morphosyntactic properties». Indeed ‘more’ and ‘no’ have clear semantic properties in the examples given, in that they function as predicates juxtaposed to arguments. ‘More’ means ‘I want’ or ‘I want more’, and ‘no’ means ‘I don’t want’ or ‘there is no’. There seems to be no reason why acategorial items should not appear in early two-word as well as one-word utterances; indeed I should like to argue that all words in multi-word utterances are acategorial until proved otherwise. This means that a category like ‘NP’ would not be assigned to a word just on the grounds that it is a noun in the adult language. Other criteria, such as its appearance with an appropriate complement, or the appearance of appropriate inflections, would have to be satisfied first.

So instead of a small clause analysis of the earliest child utterances, I would propose a semantically based description in terms of a basic distinction between predicate and argument. For example, ‘more juice’ can be described as an utterance consisting of a predicate, ‘more’ and an argument, ‘juice’. This could be applied to my own data as in (20).

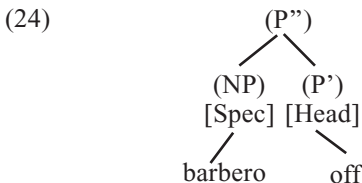
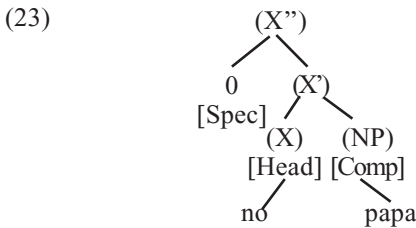
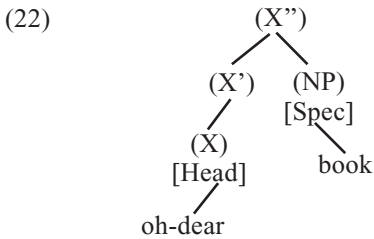
(20)	more juice	MORE (juice)
	más juice	MORE (juice)
	juice más	MORE (juice)
	oh-dear book	OH-DEAR (book)
	no cama	NO (bed)
	no papá	NO (papá)
	Manuela hat	HAT (Manuela)
	juice gone	GONE (juice)
	babero off	OFF (bib)

Predicates in (20) are given in capital letters, arguments in lower case letters in parentheses.

Such data would not merit full syntactic specification of the kind suggested by the small clause analysis. Full specification would be reserved for utterances showing evidence of lexical categorization, like the example from my data in (21):



Here the gerundive inflection on ‘read’ and the NP Complement ‘book’ provide evidence for the lexical categorisation of ‘read’. However, utterances of the kind shown in (20) could be considered to consist of proto-heads with proto-specifiers or complements, the syntactic categories being unspecified or underspecified. (Cf. Goodluck (1991:78-9) for a similar idea). (22) exemplifies an unspecified Head and an underspecified Specifier, (23) an unspecified Head and underspecified Complement, and (24) exemplifies an underspecified Head and Complement. ‘(X)’ indicates non-specification; parentheses around other category symbols indicate underspecification.



The proposed distinction between underspecified and unspecified categories would correspond to the distinction between items potentially belonging or not belonging to lexical categories.

CONCLUSION

Early child utterances can be analysed in terms of predicate-argument structures where the predicate can be seen as a proto-head, and the argument as a proto-specifier or proto-complement. In the earliest utterances both predicate and argument are likely to be acategorial in the sense that there will be no evidence of lexical categorisation. As far as X-bar syntax is concerned, these claims are consistent with assuming the innateness of the head-nonhead distinction, but not with assuming innately given hierarchical structure. In other words, the earliest utterances reflect the asymmetry of daughters, but not the existence of mothers. This could be interpreted as assuming a more important role for dependency than for constituency in UG.

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