

## **The Acquisition of Inherent Binding**

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A variety of scholars have argued for the necessity of an argument-structure within lexical items that forms an interface with syntax. Williams (1994) argues for direct-theta-control, Grimshaw argues for a level of Argument structure, Pusteovsky (1993) has argued for an articulated notion of Events, and Hale and Keyser argue for a Lexical-Conceptual structure (1993) of the sort advocated by Jackendoff in many works.

Roeper (1993) argues that lexical syntax reflects a precise interaction between the absence of higher structure (a functional category such as DP) and argument control. This should allow efficient acquisition and an uncomplicated computer representation. Both argument control and traditional syntactic control of PRO are necessary to account for the following contrasts:

- (1) a. John needs helping
- b. John needs help
- c. John needs Bill's help
- d. \*John needs Bill's helping.

This difference can be captured by following Williams' direct argument control for (c) [need => AG = TH of derived nominal]. But in order to capture (d) we must argue that the affix -ing forces the projection of a VP structure [spec HELP comp] and this structure involves a movement of the object to subject position which is then subject to syntactic PRO-control (as argued by Clark (1986)):

- (2) John needs [PRO<sub>i</sub> help t<sub>i</sub>].

Since the subject is controlled, we predict that it cannot be occupied by a subject, thus blocking (1d).

This distinction then is needed to account for the lexical variation among nominalizations, some of which allow lexical argument control while others require syntactic PRO-control:

- (3) a. the city's prevention of disease
- b. the city's attention to disease
- c. the disease requires the city's attention
- d. \*the disease requires the city's prevention
- e. the disease requires prevention

In (3c) the argument control is indifferent to the POSS phrase, while the contrast between (3d) and (3e) requires us to apply argument control in (3c), but not (3d).

How is the learning system fixed for this distinction? In order to prevent overinclusion of (3d) we must assume that argument control is excluded for derived nominals until there is positive evidence in its behalf. That is, either a child must hear a sentence like (3d) to know that it is grammatical, or the preposition *to* is a clue that the nominalization has been lexicalized (*attention to disease*). Now we can argue that all "lexicalized" nominals automatically undergo argument control, even if a possessive is present. This then leads to a solution to a new question. All bare nominals have the property that object argument control is operative:

- (4) a. John needs Bill's help  
       /advice/love/support/interest  
       b. John needs a push  
       /kick/shove/kiss

Precisely the cases which require object control, exclude an object complement:

- (5) a. \*the [push]<sub>v</sub> ]<sub>N</sub> of a door (obj)

We argue then that an invisible affix adds a nominal marker and prevents the inheritance of implicit arguments. Since the derived nominal does not inherit the complements, there is no theta-c-command of complements from the thematic grid on the verb.

Uninherited implicit arguments

become, automatically, implicit roles. The existence of roles with no syntactic project domain, makes them automatically eligible to undergo argument control.

Only bare nominal, without a DP, automatically undergo this effect. Any further affixation blocks automatic argument control (although lexical variation is involved). For instance, articles can have this effect:

- (6) a. Reagan enjoyed defeat (obj)  
       b. Reagan enjoys the defeat  
           (subj or obj)

All plural forms involve only agent control:

- (7) a. John has plans  
       /designs/intentions/  
       hopes/desires  
       b. \*John needs helps  
       /loves/advices

The plural cases allow only agent (or subject) readings. It is only an agent reading which can occur with the complement as well:

- (8) John needs the help of Bill

The effect can be seen with complex forms which tend to create result readings of those nominals:

- (9) a. the loss of bankers (obj)  
       b. the losses of bankers (subj)

- c. the movement of the child  
(subj or obj)
- d. the movements of the child  
(subj)

We conclude that bare nominal control is a systematic property of lexical items when they appear as the object of VP. In prepositional contexts, it is the subject which is generally controlled, but again, no free reference is possible:

(10) John is at work.

Pustevsky (pc) points out that apparent "idiomatic" features of such relations follow from the telic nature of prepositions. Thus (10) is possible with the meaning "John is at his own work" but not "John is at Bill's work" consequently *\*the book is at computer* is not possible because the book has no purposeful relation to the computer. Thus the lexical control is modified by the telic implications of the preposition.

How does a child acquire this knowledge or a computer represent it? If the bound character of some lexical items is inherent, then we can begin with the assumption that binding exists, and then see if it is altered by experience. Thus if the child hears a bare noun, the possibility is that such bare noun is considered automatically bound and generic. Thus the primary meaning of an expression like (a) is (b):

- (11) a. baseball is fun
- b. baseball (with me in it) is fun  
(for me)
- c. "baseball" is fun  
= the activity in general including observation of professionals

And the (11c) representation occurs only when a context forces it. This entails that the uncontrolled readings are contextually determined. This view of the automatic binding of bare lexical items predicts that in acquisition children will recognize their bound character with little difficulty. We are seeking to establish just that point. It would follow that a computer representation of this distinction could be represented in the same manner, with open parameters for lexical items that assumed a global generic reading that requires special knowledge. We have represented this form with quotation. The quotation representation may be syntactically appropriate since it is notable that the controlled bare nominal permits extraction, while the other does not:

- (12) a. How does John like [advice t]  
[=> only from his favorite teacher]
- b. How does John like t "advice"  
=> [(likes it) a lot, if he is giving it]

Thus subtle facts correlate with the distinction we have drawn. We now

discuss our ongoing efforts to establish the course of acquisition empirically.

We have argued that the formal properties of binding are in part associated with lexical items and affixation. Acquisition evidence indicates that children do not acquire the bound properties of reflexives immediately, treating them instead as logophoric (Reinhard and Reuland (1992)) in the initial stages. For instance children will allow a sentence like:

(13) John told Bill to help himself

to mean "help John" (Read and Hare (1981)).

Intrinsic properties of lexical items also exhibit binding properties. For instance, -ed in passive imposes disjoint reference. Informal evidence (Deng (pc)) indicates that three year olds will give disjoint reference to John was kissed but not to John kissed him. If this is correct, it indicates that children are sensitive earlier to binding features encoded in morphology rather than at the phrasal (syntactic) level.

We will discuss below early evidence on children's production of nominals elicited from a CHILDES search which indicates that children may not understand that expressions like 'home' entail binding. Jackendoff

et al (1992) argues that 'home' obeys clause-mate restrictions and Roeper (1993) argues that a large class of bare nouns shows this characteristic. For instance, we find that in John told Mary to bring Bill home that "home" can be Bill's or Mary's but not John's. This is not the case for John told Mary to bring Bill to his home. The same holds for expressions like 'near school'. Consider the following situation: (X) "John lived near a school in the country but went to school in the city. Did John live near school?" Adults answer "no" because near school means near his school. If this kind of Inherent Binding is a property of Universal Grammar, then, possibly, it is invoked whenever there is no Functional Category, in this case a Determiner Phrase (DP), allowing external reference. A full DP projection makes the domain referentially opaque, and the possessor is not controlled. It would then follow that children could recognize such properties immediately upon (a) recognition that no DP is present, and (b) recognition that the lexical item allows an inherent possessive reading (much like inalienable possession). When are such binding relations acquired? We hypothesize that they are in fact available early, though not immediately, and earlier than traditional forms of non-lexical binding (reflexives). An initial search through

CHILDES reveals interesting conversations at the two-word stage. Initially, it appears that children are using 'home' indiscriminately

(14) \*EVE: left Cromer briefcase home  
(i.e., Cromer left the briefcase at Eve's home)  
(From EVE 08. CHA)

(15) \*ADA: Cromer home  
\*MOT: Cromer's at your home  
\*ADA: Jowha home  
\*MOT: Joshua's at his home  
(From ADAM02.CHA)

However, these readings disappear about the time they start using the word 'home' in a DP. There are no errors in Adam's files after he utters 'home' for the first time with a possessor:

(16) \*ADA: dis is my home?  
\*URS: Yes. It is your home.  
\*URS: Is it my home?  
\*ADA: no.

Children at the age of three, long before they master reflexives, make no errors with these nominals. The fact that such forms obey structural locality principles indicates that the binding is not pragmatically determined and requires the presence of abstract structural principles. On the other hand, it may be possible, to avoid any form of algebraic co-indexing between NP's. Chomsky (1994) has proposed that

one in fact could avoid indexing in all forms of binding theory. This evidence is consistent with that approach, but leaves the question open of how one represents binding that is not linked to lexical items like home. The ideal method for the representation of Inherent Binding is also not yet clear; it can be represented on Argument structure or in terms of a hidden pronoun [pro home] which would be controlled in some of the positions. We will discuss some of the consequences of each alternative.

The acquisition evidence is being supplemented by experimental research where we try to answer whether children's interpretation of nominals is governed by Inherent Binding. We asked the following questions:

- a) Is children interpretation of the possessor of nominals like 'home' sentence bound?
- b) Is is restricted to the CP containing the nominal?
- c) Is it interpreted distributively with quantificational antecedents?

We asked children of 3-4 yrs questions like (17) to establish unmistakably that children by the age of three are in control of the local interpretation of such nominals. So, in a story where Grover went to his friend house, we ask children questions like (17) and (18):

- (17) Did Grover go home? (bound)  
(18) Did Grover go to his home?  
(ambiguous)

analysis shows that such experiences are available to the child, and that the child acquires the crucial interpretation early.

Which in the adult grammar receives a negative response for (17) and an affirmative response for (18). In addition, children are also asked to interpret sentences like (19), to ascertain whether the antecedent is strictly local:

- (19) Grover told Cookie Monster to go home, and he did

where the only interpretation for the adult is that Cookie Monster goes to his own home, not Grover's. Another method lies in establishing the distinction the bare noun and the DP via quantifiers:

- (20) everyone went home  
(21) everyone went to his home

where (20) is interpreted distributively and (21) is ambiguous.

The triggering experience lies in the joint recognition of two facts: First, that no DP is present in the bare 'home' expression, and second, that words like "home" vary with the subject of a clause and not according to the pragmatic circumstance. If Bill hears that John, visiting him, says "I want to go home", he infers that he means "John's home" and does not say "but you are home" (meaning Bill's home). Transcript