

Semantic Correlates of Adjunct and Complex-NP Islands (for ECO5 2010)

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1 Introduction

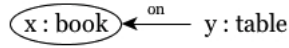
One of the long standing mysteries of syntactic theory is the origin of adjunct and complex-NP islands. While many accounts can be given (e.g. subadjacency), they're all hard to understand in terms of why those constraints should be the constraints of UG. In this discussion we're going to look at some correlations between the syntactic structures and the semantic representations that they're associated with.

2 Notational Preliminary

For convenience, it's useful to define a graph-theoretic notational variation on predicate/argument logical forms as follows:

Given a logical form L we can derive the graph-theoretic notation L_G in which each variable and constant term in L is represented by a node in L_G , each monadic predicate $p(x)$ is a label attached to the relevant node by a colon $x : p$, and each dyadic predicate $p(x, y)$ in L , there is an edge in L_G from the x node to the y node labeled p . If the logical form is a lambda expression, as opposed to just a formula, the argument of the lambda expression will be circled. Existential quantifiers, and other similar things, will be omitted for clarity.

$\lambda x. book(x) \ \& \ on(x, y) \ \& \ table(y)$



For more complex semantic representations, the graph notation will be incredibly useful, and will be provided alongside the more traditional predicate/argument notation.

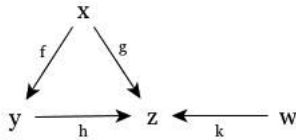
3 Semantic Correlates of Adjunct/Complex-NP Islands

3.1 Paths through Logical Forms

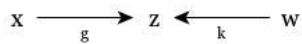
Let a predicate path in a logical form L be a sequence of predicates in L where predicate i and predicate $i + 1$ share exactly one argument, and no argument appears more than once otherwise. Direction of predication is immaterial to paths.

Example:

$$L = f(x, y) \ \& \ g(x, z) \ \& \ h(y, z) \ \& \ k(w, z)$$



A path in L : $\langle g(x, z), k(w, z) \rangle$



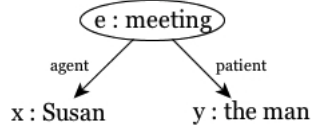
The path shown is a path *from* x *to* w . A second path from x to w exists, namely, the one that goes through y : $f \langle (x, y), h(y, z), k(w, z) \rangle$.

3.2 Approximate Logical Forms of Relative Clauses

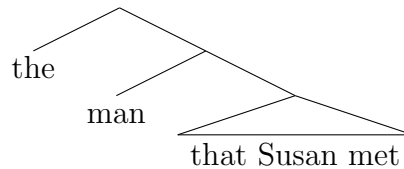
Consider the following sentence and its (approximate) logical form:

Susan met the man

$\lambda e.meeting(e) \ \& \ agent(e, x) \ \& \ Susan(x) \ \& \ patient(e, y) \ \& \ the_man(y)$

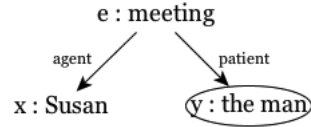


One relative clause modified DP associated with this sentence is ‘the man that Susan met’. The structure for this relativized DP is approximately:



The semantics associated with this is roughly:

$\lambda y.meeting(e) \ \& \ agent(e, x) \ \& \ Susan(x) \ \& \ patient(e, y) \ \& \ the_man(y)$

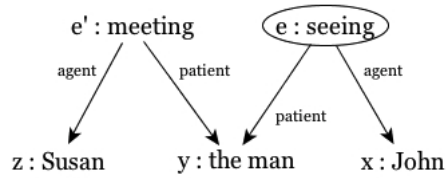


We can observe that the path from y , the argument predicated on by the semantic content of ‘man’, to e , the argument of the semantic content of rest of the relative clause that ‘man’ is combined with, is simply the single predicate $\langle patient(e, y) \rangle$.

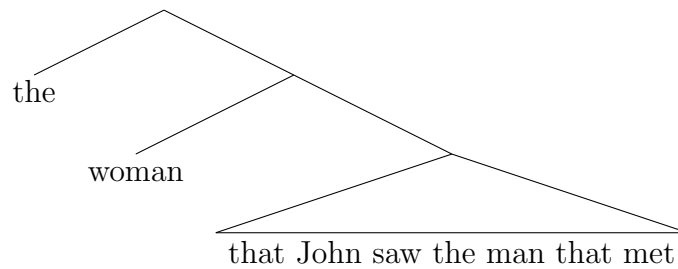
3.3 Complex-NP Islands

Building further on the previous relative clause, we can produce the sentence ‘John saw the man that Susan met’, which has the approximate semantics:

$\lambda e.seeing(e) \ \& \ agent(e, x) \ \& \ John(x) \ \& \ patient(e, y) \ \& \ the_man(y) \ \& \ meeting(e') \ \& \ agent(e', z) \ \& \ Susan(x) \ \& \ patient(e', y)$

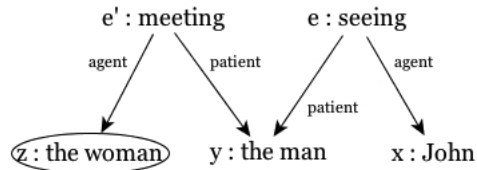


We can now try to form a relative clause by relativizing over 'Susan' like so:



The corresponding semantics is:

$$\lambda z. \text{seeing}(e) \ \& \ \text{agent}(e, x) \ \& \ \text{John}(x) \ \& \ \text{patient}(e, y) \ \& \ \text{the_man}(y) \ \& \ \text{meeting}(e') \ \& \ \text{agent}(e', z) \ \& \ \text{the_woman}(z) \ \& \ \text{patient}(e', y)$$



The path from z , the argument of the semantic content of 'woman', to e , the argument of the rest of the relative clause that 'woman' is combined with, is:

$$\langle \text{agent}(e', z), \text{patient}(e', y), \text{patient}(e, y) \rangle$$

$$z \xleftarrow{\text{agent}} e' \xrightarrow{\text{patient}} y \xleftarrow{\text{patient}} e$$

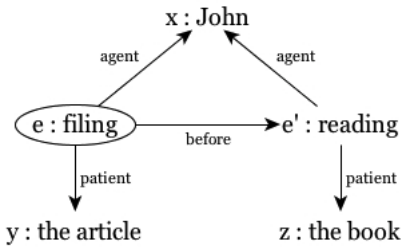
The path in this case is three predicates long, and the relativized DP is

unacceptable.

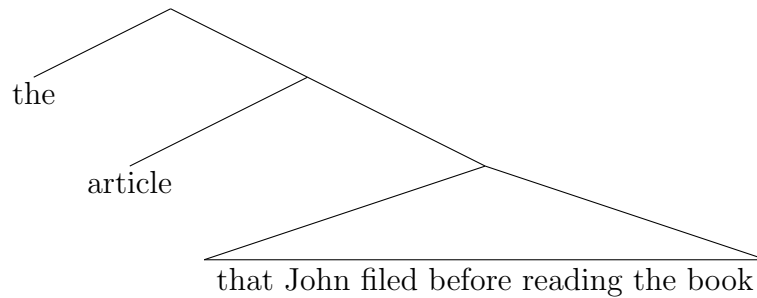
3.4 Adjunct Islands

A similar fact can be observed about adjunct islands. Consider the approximate semantics for sentence ‘John filed the article before reading the book’:

$$\lambda e.filing(e) \ \& \ agent(e, x) \ \& \ John(x) \ \& \ patient(e, y) \ \& \ the_article(y) \\ \& \ before(e, e') \ \& \ reading(e') \ \& \ agent(e', x) \ \& \ patient(e', z) \ \& \ the_book(z)$$



This sentence has the acceptable relativization ‘the article that John filed before reading the book’:



$$\lambda y.filing(e) \ \& \ agent(e, x) \ \& \ John(x) \ \& \ patient(e, y) \ \& \ the_article(y) \\ \& \ before(e, e') \ \& \ reading(e') \ \& \ agent(e', x) \ \& \ patient(e', z) \ \& \ the_book(z)$$

4 The Hypothesis

As can be seen from the examples above, whenever the semantic argument of the head noun is linked to the semantic argument of the clause that it combines with via a single thematic predicate, the relativization is acceptable, as in good relativizations, and parasitic gaps. When it is linked via more than one thematic predicate, forming a path of length 2 or more, the relativization is unacceptable, as in complex-NP islands and adjunct islands. I would offer the following hypothesis that constraints the syntax/semantics correspondence:

The head node of a local subtree must be related to each of its sisters by no more than one thematic predicate in the corresponding semantics, and for every thematic predicate that links two items in the semantics, the corresponding syntactic items must be sisters in a phrase headed by one of them.

5 Concluding Remarks

This constraint, if taken seriously, can be shown to also result in the impossible verb facts as follows:

Bad: ‘X flimped Y’ = ‘X kissed someone who is allergic to Y’

e.g. ‘John flimped peanuts’ = ‘John kissed someone who is allergic to peanuts’

Bad: ‘X klimped Y’ = ‘X kissed Y, who is allergic to peanuts’

e.g. ‘John klimped Susan’ = ‘John kissed Susan, who is allergic to peanuts’

Good: ‘X tlimped’ = ‘X kissed someone who is allergic to peanuts’

e.g. ‘John was out tlimping last night’ = ‘John was out kissing someone/people who is/are allergic to peanuts last night’

The constraint also can be shown to result in semi-hierarchies in the syntax, providing an explanation for the previously inexplicable but quite robust generalization that hierarchies of projection are cross linguistically very similar, if not identical.

At least two questions are raised by this constraint, namely, what about non-complex NPs, such as ‘the person that John read a book about’, and what about long-distance movement, such as ‘the person that John knew Susan had married’, neither of which seems to obey the constraint. This issue is left for future investigation.