Crouching Theta, Hidden Predicate

Our model.

(1)

This gives us a way of describing Burzio's Generalization.

(2) Burzio's Generalization
If a VP has accusative Case, then there is an external \( \theta \)-role.

And it gives us a way of modeling alternations like (3).

(3) a. The ball bounced.
   b. Sally bounced the ball.

(4) \( [\sqrt{\text{bounce}}] = \lambda x. \lambda \epsilon . x \text{ bounces in } \epsilon \).
(9) a. Satoshi closed the door.
   b. The door closed.

(10) a. Satoshi melted the ice.
    b. The ice melted.

(11) a. Satoshi broke the glass.
    b. The glass broke.

A paraphrase of the meanings of these transitive sentences is something like:

(12) Satoshi did something that caused the object to become Ved.

There is evidence that some of the parts of this paraphrase map onto different portions of the syntactic representation.

(13) Satoshi opened the door again.

(14) a. Satoshi opened the door, and the door had been opened before.  
    (repetitive)
   b. Satoshi opened the door, and the door had been open before.  
    (restitutive)

von Stechow (1996) argues that this ambiguity reflects a structural ambiguity. In the repetitive reading, again modifies the constituent we have identified with vP, as in (15b). In the restitutive reading, by contrast, again modifies the lower predicate, as in (15a).

(15) a. vP
    
    DP vP
    Satoshi v VP
    \(\sqrt{open}\) again

    v V
    DP the door

    v V
    DP the door

For this structural ambiguity to manufacture the semantic ambiguity, we would have to see the phrase headed by \(\sqrt{open}\) as describing the state of the door being open. We’ll want the meaning of again to be something that says that the phrase it combines with happened previously. So, roughly, we’ll want something like (16).

(16) The meaning of \(\alpha\) in \(\alpha \text{ in } \beta \text{ again}\) is the same as: “\(\beta \text{ and } \beta \text{ held previously}\”

That this is the right way to treat the ambiguity comes from the observation that where again is placed syntactically determines which reading is possible.

(17) Satoshi again opened the door.
    = Satoshi again made the door be in an opened state.
    ≠ Satoshi made the door again be in an opened state.

And this is precisely what is predicted, given the way that English vPs get linearized. (17) would have the representation in (18), which puts again together with \(\sqrt{\text{ }}\).

(18) vP
    
    DP vP
    Satoshi again \(\sqrt{\text{ }}\)
    v V
    v VP
    \(\sqrt{\text{open}}\)
    DP
    the door

But something is wrong here. This story requires \(\sqrt{\text{open}}\) to have a denotation that makes it like an adjective. But the intransitive use of open doesn't have that meaning.

(19) a. The door opened.
    b. The door was open.
Maybe, then, \textit{open} comes with a hidden “become” predicate accompanying it. That hidden predicate must be syntactically separate from \(\sqrt{\text{open}}\), because we want there to be a constituent for \textit{again} to modify that doesn’t contain “become.” So we have a picture something like (20).

\[(20) \lambda e. \exists s \text{become}(e, (\text{open}(i, s))) \land \text{Agent}(\text{Satoshi}, e)\]

\[
\text{DP} \quad \lambda x. \lambda e. \exists s \text{become}(e, (\text{open}(i, s))) \land \text{Agent}(x, e) \\
\text{Satoshi} \quad \lambda e. \exists s \text{become}(e, (\text{open}(i, s))) \\
\lambda P. \lambda x. \lambda e. \forall \text{Agent}(x, e) \\
\lambda P. \lambda e. \exists s \text{become}(e, (\text{open}(i, s))) \\
\lambda x. \lambda s. \text{open}(x, s) \land \text{Agent}(\text{Satoshi}, e) \\
\sqrt{\text{open}} \land \text{Agent}(\text{Satoshi}, e)\]

I’ve distinguished two kinds of eventualities in this representation. I use the variable \(s\) to refer to states, and \(e\) to refer to action events, that is eventualities that aren’t states. I’ve represented the denotation of \textit{Bec} as \textit{become}, which you can think of as having a meaning paraphrased by (21).

\[(21) \llbracket \text{bec} \rrbracket = \lambda P. \lambda e. \exists s \text{becomes (or results in) the state } P(s).\]

This denotation says that the event that Satoshi is the Agent of is the same event that is the opening. Some semanticists feel that’s wrong. Instead, they feel there are two events involved here, one that constitutes what Satoshi did and the other that constitutes the opening event. If that is correct, we need to add something that connects these two events, and that something could be close to what the English word “cause” means. One way of implementing this idea is to change our definition of \textit{Agent} so that it builds in this “cause” component.

\[\lambda P. \lambda e. \exists s \text{cause}(e, e') \land \text{become}(e', (\text{open}(i, s))) \land \text{Agent}(\text{Satoshi}, e)\]

\[
\text{DP} \quad \lambda x. \lambda e. \exists s \text{cause}(e, e') \land \text{become}(e', (\text{open}(i, s))) \land \text{Agent}(x, e) \\
\text{Satoshi} \quad \lambda e. \exists s \text{become}(e, (\text{open}(i, s))) \\
\lambda P. \lambda x. \lambda e. \text{cause}(e, e') \land P(e') \land \text{Agent}(x, e) \\
\lambda P. \lambda e. \exists s \text{become}(e, (P(s))) \\
\lambda x. \lambda s. \text{open}(x, s) \land \text{Agent}(\text{Satoshi}, e) \\
\sqrt{\text{open}} \land \text{Agent}(\text{Satoshi}, e)\]

Let’s assume that the lexical item \textit{open} can be inserted into an \(X^0\) position that meets one of the two descriptions in (23).

\[
(23) \quad a. \quad \text{open} \rightarrow \sqrt{\text{open+<become>}} \quad \text{b.} \quad \text{open} \rightarrow \sqrt{\text{open+<become>+Agent}}\]

We’ll assume that this forces the \(V^0\) to move to \textit{Bec\textsuperscript{0}} and onto \(V^0\), if present.

This syntax and semantics gives \textit{again} three places to attach when it comes at the end of the VP (\(\sqrt{\text{Bec}}, \sqrt{\text{V}}, \sqrt{\text{V}}\)), and one place to attach when it comes to the left of the verb (\(\sqrt{\text{V}}\)). If the meaning of \textit{again} adds to the sentence it is in the information that the thing it joins with has held before, then we should expect the three readings in (24) when \textit{again} comes after the VP, and just the reading in (24a) when it comes before the verb.
a. When \( v \) is modified:
   \[ \exists x. \exists \epsilon. \exists s. \text{cause}(\epsilon, \epsilon') \land \text{become}(\epsilon', \text{open}(it, s)) \land \text{Agent}(x, \epsilon) \text{ previously} \]

b. When \( \text{Bec} \) is modified:
   \[ \exists \epsilon. \exists s. \text{become}(\epsilon, \text{open}(it, s)) \text{ previously} \]

c. When \( \text{V} \) is modified:
   \[ \exists s. \text{open}(it, s) \text{ previously} \]

(24a) is the repetitive reading, and (24c) is the restitutive reading. It's difficult to detect the meaning in (24b), as it is very close to the repetitive reading. If it doesn't exist, then this model over-generates.

1 Double Object

Let's revisit the problem of the "double object" construction. We've seen an approach to these sentences that gives them two Accusative Case assigners, one \( v^0 \) and the other the root. We'll look at a variant of that analysis that attempts to account for some of the finer details of the construction.

1.1 Double Object

Let's revisit the problem of the "double object" construction. We've seen an approach to these sentences that gives them two Accusative Case assigners, one \( v^0 \) and the other the root. We'll look at a variant of that analysis that attempts to account for some of the finer details of the construction.

    b. John baked Sue a cake.

Most of these verbs are also allowed to combine with a DP and PP complement and communicate something that is roughly equivalent.

(26) a. Sue gave a book to John.
    b. John baked a cake for Sue.

Verbs that allow both of these frames are said to participate in the "dative alternation." We'd like an explanation of why certain verbs are able to participate in this alternation, while others aren't. For instance, the very similar donate cannot.

(27) a. Sue donated a book to the library.
    b. * Sue donated the library a book.

We don't have a solution to this problem. See Pinker (1989) for an extended stab at it. We'll be satisfied today with the narrower problem of understanding what the syntax of the double object construction is and how it differs from the other frame.

One proposal, championed in Kayne (1984), is that there is a hidden small clause in the double object frame, as indicated in (28).

Kayne's reasons have to do with how the complement structure of nouns and verbs differ.

Nouns can have argument structure like verbs.

(29) a. The Iberians’ construction of Rome.
    b. Barry’s enlargement of the slide.

(30) a. Rome’s construction (by the Iberians)
    b. the slide’s enlargement (by Barry)

(31)\[ DP
    \]
But there are several systematic differences between the complementation of nouns and verbs. One of these is that nouns do not have small clauses.

(32)  
(a) I believe this fact interesting.
(b) * this fact's belief interesting.
(c) I consider this sentence instructive.
(d) * this sentence's consideration instructive.
(e) Some find these facts remarkable.
(f) * these facts' finding remarkable

(33)  
(a) * my belief of this fact interesting
(b) * my consideration of this sentence instructive
(c) * my finding of these facts remarkable.

Now, interestingly, the double object frame, but not the DP+PP frame is blocked in nouns too.

(34)  
(a) Her teacher gave Mary the letter.
(b) * Her teacher's gift of Mary of the letter
(c) * Mary's gift of the letter (by her teacher)
(d) Her classmate offered her a crayon.
(e) * her offer of a crayon by her classmate
(f) * her classmate's offer of her of a crayon
(g) This salesman sold us that defective natto pot.
(h) * our sale of that defective natto pot (by this salesman)
(i) * this salesman's sale of us of that defective natto pot
(j) The coach tossed him the ball.
(k) * his toss of the ball (by the coach)
(l) * the coaches toss of him of the ball
(m) I rented John the office.
(n) * John's rental of the office (by me)
(o) * my rental of John of the office

(35)  
(a) my toss of the ball to Sally
   the ball's toss to Sally (by me)
(b) my placement of the item on the table
   the item's placement on the table (by me)
(c) my forfeiture of the game to Shawn
   the game's forfeiture to Shawn (by me)
(d) my sale of the car to you
   my car's sale to you (by me)
(e) my rental of the office to Hugh
   the offices rental to Hugh (by me)
(f) Jane's explanation of the problem to Bill
   the problem's explanation to Bill (by Jane)

Kayne suggests that these facts can be related if double object constructions are small clauses. He then goes on to propose a theory that derives these facts about nominal complementation.

What could the content of $X^0$ be? Green (1974) suggested that we could detect the meaning of $X^0$ by looking at the difference in meaning between the double object and DP+PP frames. Here are some examples that will get us going on that project.

(36)  
(a) This book taught Mary French.
(b) * This book taught French to Mary.
(c) Your article showed Henry a problem.
(d) * Your article showed a problem to Henry.
(e) The manual told Susan everything.
(f) * The manual told everything to Susan.
(g) The TV gave Gary the bad news.
(h) * The TV gave the bad news to Gary.

(37)  
(a) John bought a book for Bill.
(b) John bought Bill a book.
(c) John taught French to Mary.
(d) John taught Mary French.
(e) John threw a ball to first-base.
(f) * John threw first-base a ball.
(g) Mary sent a letter to New York.
(h) * Mary set New York a letter.

Green suggested that a suitable paraphrase for the meanings of all the double object frames is something like:

(38)  
Subject caused/intended 1st Object to have 2nd object by verbing it.

example: [Sue baked Joe a cake] ≈ Sue intended Joe to have a cake by baking it.
We might assign to $X^0$ a denotation like that given to *have*. That would give us structures like (39).

This isn't enough to get the meanings right, as you can see, and there aren't fully successful accounts so far as I now.

One promising line of thinking, however, is to imagine that the “cause” part of the meaning I’ve bundled into the $v^0$ that has the Agent $\theta$-role could, in some languages, be unbundled. Imagine, that is, that *cause* could be a hidden predicate inside sentences in English outside of its function in the Agent $\theta$-role. We might imagine it could be positioned between the higher verb and the hidden HAVE, as in (40).

We’d have to come up with a meaning for *cause* that would allow it to relate the event described by the verb to the state described by XP. We should understand this semantics to allow us to give (40) a paraphrase like:

(41) the event of baking caused the state of Sally having cookies.

This is still not complete, as it doesn’t capture the fact that the event of baking has to be an event of baking the cookies. And it’s a little too strong, as it entails that the baking event will ensure that Sally has the cookies, and that’s not quite right. After all, it’s possible to truthfully say that “Joe baked Sally cookies” even if, for whatever reason, Sally didn’t end up getting the cookies. So this is just a start. There’s more work to be done.

This structure for a double object construction looks a lot like a resultative, which Hoekstra (1988) argues has a similar syntax.

(42) Jill hammered the metal flat.
Similarly, perhaps, are the way that certain locative PPs function in English VPs. The modifier *in an hour* is capable of modifying VPs that denote accomplishments, but not mere activities. This is what is responsible for the contrast in (44).

(44)  
   a. # Smith walked in an hour.  
   b. Smith built a chair in an hour.

Interestingly, some PPs in English can combine with activity verbs to make VPs that have a meaning which passes the test for being accomplishments. That’s why (45) is an improvement on (44a).

(45) Smith walked to the summit in an hour.

The difference between activities and accomplishments is the presence of a culmination state. Using *cause* to put together the VP in (46) creates such a meaning.

(46)  

We’d have to do some other things here, like make sure that *to* has the meaning of a locative and let that PP be a small clause with a silent subject that is controlled with the local subject.

There are other examples, then, in which the idea that there is a hidden *cause* predicate might be of some service. Beck and Snyder (2001) argues from typological grounds that this ability depends on the lexicon containing *cause*. They report that languages that don’t allow resultatives of the sort *John wiped the table clean* also don’t allow the sorts of conversions from activities to accomplishments that we find in English. Here is their sample:
We should expect the availability of the double object frame to track this typology. More particularly, if the double object construction uses a hidden cause, we should only find it in languages where these other constructions are possible. (We might not expect to find that all of these languages have the double object construction, of course, since the double object construction also requires have.) I don’t know if this expectation arises.

Whether or not the cause predicate idea is the right way of putting together the small clause that makes up the double object construction with the verb that precedes it, there is some independent evidence that there is a small clause in the double object construction that is headed by have. That evidence (see Beck and Johnson 2004) comes from again. Consider:

(48) Sally gave John his innocence again.

The first (only?) meaning this sentence has is something close to “Sally restored to John his innocence.” It doesn’t have a meaning in which what is happening again is a “giving” event. We need a syntax like (49).

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\text{References}
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