# Thematic Roles and Proto-Roles

## 1   Is there a neo-Davidsonian THEME?

Last week we considered Kratzer's arguments that the AGENT is not a syntactic (or semantic) argument of the verb, but is rather syntactically (and semantically) introduced by an independent (functional) head: the *v*oice projection. What about internal arguments? In particular, what about THEMEs?

## 1.1   Cumulativity

Krifka (1989, 1992) argues that all thematic relations are cumulative in the sense specified in (1) (where '+' is the mereological sum operation).

(1)     A relation $R$ between events and individuals is **cumulative** iff:
        $\forall e, e' \forall x, y[[R(x)(e) \land R(y)(e')] \rightarrow R(x+y)(e+e')]$

This is a variant of a more general definition which simply says of a predicate that if it applies to $x$ and $y$, it applies to the sum $x + y$.

Kratzer suggests that in order to qualify as a 'natural category', a relational expression must be cumulative; this is a kind of general constraint on lexicalization, and something that puts important limits on the kinds of meanings that a language learner would posit. This is of course quite important for theories that posit null lexical items like voice projections.

According to Kratzer, AGENT is a cumulative relation, but THEME is not; this explains the contrast between (3a) and (3b) given the subevents described in (2).

(2)     a.    Alan digs a hole.
        b.    Brian puts the rosebush in the hole.
        c.    Campbell adds manure, leaf mold and compost.
        d.    Dunn covers the roots with dirt and topsoil.

(3)     a.    Alan, Brian, Campbell and Dunn planted the rosebush.
        b. #Alan, Brian, Campbell and Dunn planted a hole, the rosebush, the compost and the
              dirt.

But is this really a fair criticism? Couldn't the problem be that *plant* doesn't necessarily apply to all its subparts? Consider the case of *write, draw* and *create* in (4a-c) (from Williams 2007).

(4)     a.    Al wrote a poem.
        b.    Bill drew a picture.
        c.    Al and Bill created a poem and a picture.

Here we get cumulativity for both AGENT and THEME. However, it is worth observing that AGENT is always cumulative, while THEME is only for verbs like *create*, whereby a description of the sum also applies to the parts. This sort of cumulativity is reflected most directly if we just keep the verb constant:

(5)     a.    Al wrote a poem.
        b.    Al wrote a novel.
        c.    Al wrote a poem and a novel.

One way to bring these ideas together in a way that provides a cumulative characterization of THEMEs is to assume a bunch of different kinds of THEMEs, each of which is cumulative, e.g. (from Krifka):

(6)  a.  GRADUAL EFFECTED PATIENT: write a letter
     b.  GRADUAL CONSUMED PATIENT: eat an apple
     c.  GRADUAL PATIENT: read a letter
     d.  AFFECTED PATIENT: touch a cat
     e.  STIMULUS: see a horse

The idea here would be that in all of the sentences in (4), the direct object is the argument of a neo-Davidsonian predicate that is true of it iff it comes into existence over the course of the event (much more on this later and next week), and this predicate is cumulative. The examples in (2), however, involve different elements of (6), so we don't expect cumulativity.

However, it is hard to differentiate this account from one that instead says that the verb itself is also a relation between individuals and events:

(7)  $\forall e, e' \forall x, y [[\textbf{write}(\textbf{x})(\textbf{e}) \wedge \textbf{write}(\textbf{y})(\textbf{e}')] \rightarrow \textbf{write}(\textbf{x} + \textbf{y})(\textbf{e} + \textbf{e}')]$

Moreover, when we look at lots of verbs, it becomes quite hard to come up with some way of generalizing over the role played by the direct object:

(8)  a.  The engineer _____ the bridge.
     b.  praised, touched, avoided, owned, imagined, studied, built, destroyed

(9)  a.  The engineer _____ the architect.
     b.  ignored, praised, greeted, selected, supervised, fought, met, kissed, visited, followed

Taking these issues under consideration, there really does seem to be an asymmetry between AGENTs and THEMEs with respect to cumulativity, which Kratzer summarizes as follows:

(10)  Unlike the agents of actions, then, the themes of actions do not get summed up when the actions are. Themes lack the conceptual independence of agents. Theme arguments seem to be tightly linked to their verbs. Agents are different. Actions seem to have agents independently of how we describe them.

However, it's possible that some objects are introduced by a neo-Davidsonian voice head, or something similar. It would have to have a meaning that is predictable, and it would have to satisfy some general constraints, such as cumulativity. Verbs that interact with such arguments would denote 'bare' event descriptions (be of type $\langle \epsilon, t \rangle$, and the arguments themselves would be introduced by some sort of secondary predication structure.

Something like this is presumably exactly what is going on with 'basic' intransitive unergatives:

(11)  a.  I ran the strength back into my body.          (effected patient)
      b.  I ran myself ragged.                           (affected patient)
      c.  I ran the strength out of my body.             (consumed patient)

So if our focus is primarily transitive verbs, then we should start with verbs that have transitive and intransitive unergative variants. Kratzer discusses the interesting pair *construct* and *build*.

(12)  a.  We're constructing a barn here.
      b.  *We're constructing here.

(13)     a.   We're building a barn here.
         b.   We're building here.

So *build* is a potential candidate for a radical neo-Davidsonian analysis, but Kratzer thinks the facts in (14) are problematic (whereas (15a-c) are expected).

(14)     a.   build this barn                                    (effected patient)
         b.   *build these plots                                 (affected patient)
         c.   *build my yearly income                            (consumed patient)

(15)     a.   construct this barn                                (effected patient)
         b.   *construct these plots                             (affected patient)
         c.   *construct my yearly income                        (consumed patient)

But it's actually not all that hard to get close to the meanings in (14b-c) by modifying the predicate a bit, though (15b-c) are, I think, out of reach:

(16)     a.   The overambitious contractor built away his entire income.
         b.   The unscrupulous contractor built those plots into distant memory.

(17)     a. ??The overambitious contractor constructed away his entire income.
         b. ??The unscrupulous contractor constructed those plots into distant memory.

So perhaps we have reason to think that some THEMEs may be (syntactically) neo-Davidsonian after all. But which ones, and how still do we ensure the right mappings, so that the verbs in (6) are interpreted correctly and so that e.g. *build*'s object is default EFFECTED PATIENT? As we saw last time, the only way to capture verb-'severed' argument relations is through the event argument, but it's not clear how that would help here. (Or is it: what about *eat rice* vs. *eat a bowl of rice*?)

These are Kratzer's worries, which lead her to conclude that the simplest analysis — the one in which only the external argument is syntactically and semantically neo-Davidsoinan — is the right one. However:

1. If there is no THEME role or no subtypes thereof, then what exactly is the semantic role associated with the direct object? Is it always arbitrary and verb-specific, or are there some (syntactic and/or semantic) generalizations that we should still try to capture?

2. Are all AGENTs really created equal? Could there be non-Davidsonian external arguments as well? What about non-AGENTive external arguments of transitive verbs?

## 2   But what are thematic roles anyway?

- A finite list of relational categories (Fillmore 1970)

- Consequences of lexico-syntactic structure (Jackendoff 1972)

- Entailments of a group of predicates with respect to one of their arguments (Dowty 1991)

## 3   Proto-Roles

### 3.1   Empirical and methodological problems with traditional roles

Dowty (1991) discusses some well-known problems with traditional conceptions of thematic roles. The most basic one is the 'inventory' problem: how many, and how to know where to draw the line?

(18)   a.   I paid $5/this amount/??this $5-bill for the book.
       b.   The book cost me $5/this amount/??this $5-bill.
       c.   I bought the book for $5/this amount/??this $5-bill.

(19)   a.   I paid for the book with ?$5/??this amount/this $5-bill.
       b.   I bought the book with ?$5/??this amount/this $5-bill.

A related one is what to do with predicates for which it is not clear that there is are any roles at all, or at least not easily differentiatable ones:

(20)   a.   This is similar/equal/near to that.
       b.   This resembles/weighs as much as that.

(21)   a.   John sold the piano to Mary for $100.
       b.   Mary bought the piano from John for $100.

How do we motivate the existence of a particular thematic role? In general, you want to find a pattern that is sensitive to a property with which we can only identify a role. But there are pitfalls.

Claim: adjectival passives are based on theme arguments.

(22)   a.   A new car was sold to the customer.
       b.   The customer was sold a new car.
       c.   an unsold car/*customer (* on relevant interpretation)

Fact: they're based on 'monotransitive' verbs.

(23)   a.   John sold the book (to the customer).
       b.   John sold the customer *(a book).

(24)   a.   John served the soup.
       b.   John served the children.
       c.   unserved soup/children

Research strategy: focus on particular domains (argument selection, lexical meaning extension, language acquisition, sentence processing) in detail, then look for correlations later.

## 3.2   Incremental themes

Roughly speaking, INCREMENTAL THEMES are arguments such that there is a homomorphic relation between the part structure of the argument and that of the event described by the verb whereby the progress of the event can be tracked by looking at the structure of the argument.

Among other things, the semantics of incremental themes should account for the following pattern, which we will be studying in great detail over the next couple of weeks:

(25)   a.   drink a beer in 10 minutes
       b.   drink beer for 10 minutes

Dowty notes a number of different subtypes of incremental theme arguments, which are unified by the general feature of supporting the kind of homomorphic mapping described above.

(26)   INCREMENTAL THEMES
       a.   build a house, write a letter, perform a sonata

     b.    destroy a record, eat a sandwich

     c.    paint a house, polish a shoe, proofread an article

(27)   HOLISTIC THEMES

     a.    walk from the bank to the post office, drive (a car) from NYC to Chicago, run a mile

     b.    grow into an adult, become an architect

(28)   REPRESENTATION-SOURCE THEMES

     a.    photograph a scene

     b.    copy a file

     c.    memorize a poem

     d.    read a book

All of these are distinguished from 'normal' themes in that the latter do not 'measure out' the event, even when the verb itself is 'incremental'.

(29)   a.    push a cart

       b.    raise the thermostat

       c.    dim the lights

(30)   a.    die

       b.    touch the finish line

       c.    recognize a face

Interestingly, the various types of incremental themes ARE cumulative; this is something to keep in mind as we go ahead!

## 3.3   Thematic roles as prototypes

See other handout.

## 3.4   Can proto-roles be neo-Davidsonian?

I'm not sure yet....

## References

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