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Shifting animacy shifts

De Swart and de Hoop (henceforth dS&dH) make the suggestion that the linguistic distinction between animate and inanimate categories should be brought within the scope of the formal semantic theory of types and type shifts, overt and covert. I would like to work out this interesting idea a bit more. The result might be different from what dS&dH had in mind, although it is hopefully in the same promising spirit.

Let me start with their idea that the type e, corresponding to the domain of entities E, has two subtypes: a (for dogs and men, for instance) and i (for breads and cups, for instance).[1] The type distinction between a and i seems straightforward enough, but it does not provide a good foundation for type shifts in the formal sense. Such type shifts require some sort of structure, which the domain of entities all by itself does not have. Once we have complex types, like $\langle e,t \rangle$ (domain of sets) and $\langle \langle e,t \rangle,t \rangle$ (domain of quantifiers), we also have useful shifts, like **ident**, which can shift any entity x to the singleton set $\{x\}$ (Partee 1987). It is also possible to create more structure within the domain of entities, for example, by having kinds that are realized as individual objects (Carlson 1977) or individual objects that consist of stuff (Link 1983). Once we have such a richly structured domain of entities, it becomes possible to define shift between properties and kinds and mass and count (e.g., Chierchia 1998).

It is not clear how we could structure the domain E in such a way that animate and inanimate entities are systematically related to each other. It is true that we might imagine some sort of function, call it STATUE, from animates to their inanimate representation (i.e. of type $\langle a,i \rangle$) as well as a function of type $\langle i,a \rangle$, say WAND, that takes an inanimate (e.g. a cup) and makes it a living thing (in a fairy tale context). Such functions could at first sight accomplish the required covert conceptual shifts in examples (3) and (4) from dS&dH (with my analytical embellishments):

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1 dS&dH use e_{animate} for a and $e_{\text{inanimate}}$ for i. Those long subscripts quickly get cumbersome with more complex types. Moreover, a and i can more easily be used to give us sorted variables, like x_a and x_i, for animate and inanimate objects, respectively.

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(1) *#De gier   beet in [$_i$ STATUE [$_a$ de   man]].*
    the   vulture bit   in   the   man

(2) *#Jan slaat [$_a$ WAND [$_i$ het kopje]].*
    Jan   hits   the   cup

These examples are 'pragmatically odd' (hence #): 'the animate argument is interpreted as inanimate, and the other way around' (p. 3).

However, the problem is that not all statues of men correspond to real living men and not all living cups are necessarily derived from ordinary cups. If the animacy shifts operate at the entity type level, then there must be an actual animate man in (1) of which the statue is made and an actual inanimate cup in (2) brought to life, which is too strong a requirement.

What is needed instead are shifts at the $\langle e,t\rangle$ level. The animate category *man* (type $\langle a,t\rangle$ is shifted to the inanimate category of statues or bodies of men (type $\langle i,t\rangle$) or it is maybe extended to a 'neutral' category that includes such inanimate entities. In the same way, the inanimate category *cup* (type $\langle i,t\rangle$) is shifted to the animate category of living cups (or extended to include those).

(3) *#De gier   beet in de [$_{\langle i,t\rangle}$ STATUE [$_{\langle a,t\rangle}$ man]].*
    the   vulture bit   in the   man

(4) *#Jan slaat het [$_{\langle a,t\rangle}$ WAND [$_{\langle i,t\rangle}$ kopje]].*
    Jan   hits   the   cup

This makes sense from what we know about modified nominals, like the famous *stone lion* (Kamp and Partee 1995), where the application of *stone* requires a shift in the extension of the noun *lion*. Instead of seeing the type shift in (1)/(3) and (2)/(4) as a kind of 'repair' at the noun phrase level (to coerce that noun phrase in the argument slot of the verb), a shift at the noun level fits into a picture where the interpretation of such sentences results from the flexibility of our animate and inanimate *categories* (rather than *entities*).

The previous type of conceptual shifts happens covertly. For dS&dH, the *overt* type of (in)animacy shifts are probably much more interesting, because they are tied up in interesting ways with the morphosyntax of languages. As De Swart (2014) shows, there is a class of contact verbs in Dutch (like *bijten* 'bite' and *slaan* 'hit') of which the transitive form selects for an animate object. A preposition is needed to allow for an inanimate object. We already saw the effects of this in examples (1) and (2), which require the conceptual shifts exactly because of these requirements. Compare this with the more regular sentences in (5) and (6):

(5) *De gier   beet de man.*
     the vulture bit   the man

(6) *Jan slaat tegen   het kopje.*
     Jan hits   against the cup

    dS&dH write that prepositions like *in* 'in' and *tegen* 'against' are 'inserted', forming a 'complex verb' (p. 13f). This operation then changes the $\langle a,\langle a,t\rangle\rangle$ relation of biting or hitting into a $\langle i,\langle a,t\rangle\rangle$ relation. From the perspective of type shifting, there are two problems with this view.

    The first problem is that the prepositions that occur with contact verbs are not the kind of items that are 'inserted' somewhere: they have complex spatial meanings, alternate in meaningful ways (*bijten in/op* 'bite in/on', *slaan op/ tegen* 'hit on/against') and can be modified (*bijten diep in* 'bite deep into', *slaan recht tegen* 'hit straight against'). Moreover, the same prepositions appear together with an animate object with the same role of specifying the point of contact:

(7) *De gier   beet de man in zijn nek.*
     the vulture bit   the man in his neck

(8) *Jan slaat de gier   op zijn kop.*
     Jan hits   the vulture on its   head

    This suggests that the preposition cannot be just a marker on the transitive verb to shift the animacy of the object.

    The other problem is that it seems to assume that biting or hitting or kicking an animate patient is somehow more 'basic' than biting or hitting or kicking an inanimate patient (independent of how we describe these events). However, we do not understand contact with inanimate objects on the basis of contact with animate objects (in the same way in which we understand statues or corpses on the basis of living beings). It seems more likely that we have a general notion of contact that can be *differentiated* depending on whether the contact is with an animate or inanimate entity. (This is basically how de Swart 2014 describes it in terms of differential object marking.)

    This has consequences for how we should approach this in terms of shifting. The *a*-version and *i*-version of a Dutch contact verb are not derived from each other, but they are both derived from a more basic intransitive version that leaves the animacy of the implicit patient unspecified, as we can see in the intransitive uses:

(7)   *De   gier   beet.*
      the vulture bit   (something or someone)

(8)   *Jan slaat.*
      Jan hits   (something or someone)

Suppose we represent the basic meaning of these contact verbs as predicates over events (as in Goldschmidt and Zwarts 2016). This intransitive base can then be shifted to a transitive version (the ... indicates a subcategorized direct object), with an animacy restriction *a* on that object, which carries the patient role:

(9)   *bijten*$_{\text{intransitive}}$ ⇒   [*bijten* ...]
      $\lambda e.\text{bite}(e)$ $\lambda x_a.\lambda e.\text{bite}(e)\ \&\ \text{patient}(e) = x_a$

(10)   *slaan*$_{\text{intransitive}}$ ⇒   [*slaan* ...]
      $\lambda e.\text{hit}(e)$ $\lambda x_a.\lambda e.\text{hit}(e)\ \&\ \text{patient}(e) = x_a$

It can also be shifted through modification by a spatial PP, of which the preposition is restricted to inanimate objects (or parts of animate objects):

(11)   *bijten*$_{\text{intransitive}}$ ⇒   *bijten* [*in* ...]
      $\lambda e.\text{bite}(e)$ $\lambda x_i.\lambda e.\text{bite}(e)\ \&\ \text{in}(e,x_i)$

(12)   *slaan*$_{\text{intransitive}}$ ⇒   *slaan* [*tegen* ...]
      $\lambda e.\text{hit}(e)$ $\lambda x_i.\lambda e.\text{hit}(e)\ \&\ \text{against}(e,x_i)$

Goldschmidt and Zwarts (2016) show how forces can help us to understand the patient role and spatial relations like 'in' and 'against' as two sides of the same coin.

In this view, we do not shift between transitive and prepositional patterns, but we derive their differential marking from an underlying intransitive verb, allocating the animacy and inanimacy in a way that fits with the paradigmatic argument selection principle used in de Swart (2014), but that also respects the broader range of verb patterns and the meaningful role of prepositions.

In conclusion, dS&dH have made a valuable contribution by bringing animacy into the world of types and type shifts and my attempt to think through some of their suggestions hopefully underlines that contribution, even though I propose to shift some of their shifts to different levels.

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