A typology of semantic entities
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Overview
While some framework-internal assumptions in formal semantics are hotly debated (e.g. the static/dynamic divide; Lewis 2014, Rothschild & Yalcin 2015), the matter of how many and which basic entities a theory assumes is largely treated as a matter of personal taste or convenience. Standard Montagovian formalisms employ truth values, individuals, and possible worlds, although some have argued we should do away with individuals (Keenan 2015) and others, possible worlds (Thomason 1980). In contrast, some frameworks incorporate as many as nine entities, differentiating between kinds and event-kinds (Landman 2006) or degrees and numbers (Champollion 2010).

In this paper, I establish some standard practices for what constitutes a basic semantic entity, based on arguments (largely empirical) that have been implicitly assumed in the linguistics literature. I argue that – if a semantic theory is typed – there are several criteria for which types should be differentiated. This creates a cross-linguistically variable but determinable typology of basic entities.

A history of typed entities
Montague (1970, 1973) described his intensional logic as an extension of Russell’s Simple Theory of Types (Russell 1908), differentiating between truth values \( t \) and entities \( e \). Gallin (1975) argued that – by virtue of its use of possible worlds – Montague Semantics is more appropriately characterized as a two-sorted variant of Russell’s type theory, which he dubbed ‘Ty-2’ (Brasoveanu 2010). Modern adaptations of these intensional semantic frameworks – motivated in part by empirical arguments from Kripke 1959, discussed below – differentiate in type between individual entities (type \( e \)) and possible worlds (type \( s \)).

Davidson’s (1967) work on events spurred its own event type (type \( v \)), and considerations raised by Partee (1973, 1984) initiated the inclusion of times (type \( i \)) in theories dealing with the semantics of verb phrases. Elsewhere, Carlson (1977) advocated for kinds \( k \); Cresswell (1977) advocated for degrees \( d \); Barwise (1981) for situations, and Zwarts (1995) for vectors.

Few theories are comprehensive enough to warrant the inclusion of all types, but questions remain regarding the necessity of a typed semantics and how theorists should distinguish basic entities. This is especially pressing given theoretical arguments that considerations of parsimony and simplicity should compel theorists to eliminate typed distinctions in their semantic theories (e.g. Keenan 2015).

Empirical diagnostics for distinct entities
Partee (1973, 1984) argued that the semantic behavior of tense parallels that of individual pronouns in several respects: their ability to corefer and their ability to be bound, for example. While Partee framed the significance of these parallels in terms of anaphora, they can also be seen as evidence of a type-specific proform. In particular, her arguments implicitly assume that if a semantic theory identifies individuals as a basic entity, then it should do the same for a phenomenon that demonstrates identical linguistic behavior.

I argue, along these lines, for a few related properties that constitute evidence that language differentiates between types of entities. In particular:

(1) **Diagnostics for distinct semantic entities**
A language differentiates between entity \( x \) and entity \( y \) iff:
   (i) it lexicalizes different proper name for \( x \) and \( y \);\(^1\) and/or
   (ii) it lexicalizes different proforms for \( x \) and \( y \); and/or
   (iii) it lexicalizes different quantifiers for \( x \) and \( y \)

\(^1\) I use the term ‘proper name’ to pick out non-context-sensitive referring expressions.
Something like (1) is implicitly assumed in Partee's work, where ten o'clock can be thought of as a name for times, and the past tense marker -ed can be thought of as a temporal proform. (See Table 1.) It's also implicit in Stone's (1997) claim that Partee's anaphora claims extend to modals, and Anderson & Morzycki's (2015) arguments that language assimilates degrees, kinds, and manners into a single type. Something like (1) is also assumed in Bochnak (2015), who argues that while languages like English have degrees as basic semantic entities, other languages do not. Among other things, the argument is predicated on the absence of measure phrase constructions in those languages (e.g. 6ft in Jane is 6ft tall, which is arguably a proper degree name) and degree quantifier constructions (e.g. -er in Jane is taller than Sue).

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NAME</th>
<th>PROFORM</th>
<th>QUANTIFIER</th>
</tr>
</thead>
<tbody>
<tr>
<td>individual</td>
<td>Mary</td>
<td>she</td>
<td>everyone</td>
</tr>
<tr>
<td>degree</td>
<td>6ft</td>
<td>yea</td>
<td>more</td>
</tr>
<tr>
<td>times</td>
<td>6:00</td>
<td>then, -ed</td>
<td>everytime</td>
</tr>
<tr>
<td>locations</td>
<td>Rome</td>
<td>there</td>
<td>everywhere</td>
</tr>
</tbody>
</table>

Table 1: Evidence for types of entities

This research suggests a powerful conditional, encoded in (1): If you believe that entities should be typed, then motivations for individuals as a basic entity also identify other basic entities, like degrees, times, and locations. The inclusive disjunctions in (1) leave open the issue of how to deal with putative types of entities that aren’t completely morphologically distinguished; or that are variably morphologically distinguished across languages. Possible worlds are an example of the former; there is, as far as I know, no proper name for a possible world in any language. The cross-linguistic differences in the relationship between degrees, kinds, and manners might be an example of the latter, as I’ll discuss in more detail in the talk.

Importantly, (1) leaves open the issue of whether these entities should be typed at all; we could instead imagine a single entity type, and distinguish between e.g. individuals and degrees where appropriate using lexicalized selectional restrictions, as we do for e.g. animacy restrictions within the individual domain. (And we would have a ready explanation for those phenomena that don’t seem type-dependent, like Adverbs of Quantification, Lewis 1975.) There is, however, reason to think that certain semantic concepts – like what constitutes an informative maximum – are calculated differently for entities whose plurals are linearly ordered (like degrees, times, and locations) than entities whose plurals are lattice-ordered (Schlenker 2006, Rett 2015). I’ll discuss this evidence in more detail in the talk, as well.

**Summary**

I argue that the standardly assumed motivations for treating individuals as a separate basic entity also commit a theorist to acknowledging other types of basic entities, like degrees and times. And while this result is in principle compatible with a Ty-1 formalism – differentiating only between truth values and entities broadly construed – there is some reason to think that natural language cares about at least one distinction within the group of entities: the mathematical structures of pluralities.
References


Brasoveanu, A. 2010. Two-type logics. Ms., UCSC.


