Ling 130 Guide to PS 5:
Representing Tense in DRT

James Pustejovsky

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For problem 6.4 in the book, you need to create DRSs for miniature discourses. Consider what's involved with constructing a DRS with temporal and event variables as well as individual variables.

(1) Mary cleaned the table.

A DRS is a data structure with two parts: (a) Discourse Referent List (DR-list); and (b) the Constraint list. What are the discourse referents in this sentence? Well, there is a speech time n, and we know Mary is presumed to exist, so we push both n and m onto the DR:

$$\boxed{m, n}$$

Next, we see that the sentence is tensed, so there is an event time, t, and a reference time r:

$$\boxed{m, n, t, r}$$

The predicate *clean* denotes an event, so there is an event variable e as well. The object that was acted on is definite, so there is a contextually salient referent for the table, a, which needs to be added along with the variable introducing the table in the sentence, u. This gives us:

$$\boxed{m, n, t, r, e, a, u}$$

Next, determine what constraints are at play for the lexical expressions (the words), *Mary*, *clean*, and *table*:

$$\begin{array}{|c|}
\hline
m, n, t, r, e, a, u \\
\hline
\text{Mary}'(m) \\
\text{clean}'(e,m,u) \\
\text{table}'(u) \\
\hline
\end{array}$$

Finally, determine the constraints imposed by the tense and/or aspect of the sentence. Here, we see that the event time t is prior to the speech time n; reference time r is the same as the event time e; and the event is contained within the event time. This gives us the complete DRS for the sentence above:

$$\begin{array}{|l|}
\hline
\textit{m, n, t, r, e, a, u} \\
\hline
\text{Mary'(m)} \\
\text{clean'(e,m,u)} \\
e \subseteq t \\
t < n \\
r = t \\
\text{table'(u)} \\
u = a \\
\hline
\end{array}$$

You need to do the same sort of composition. The only additional steps you need are to incorporate constraints from multiple sentences in the discourse. These continue to add variables and constraints. And, also, if you have certain quantifiers, you need to embed the boxes. For example, for

(2) Mary cleaned every table.

would change to the following DRS;

$$\begin{array}{|c|}
\hline
\textit{m, n, t, r} \\
\hline
\text{Mary'(m)} \\
t < n \\
r = t \\
\\
\begin{array}{|c|}
\hline
\textit{y, e} \\
\hline
\text{table'(y)} \\
\hline
\end{array}
\Rightarrow
\begin{array}{|c|}
\hline
\\
\hline
\text{clean'(e,m,y)} \\
e \subseteq t \\
\hline
\end{array} \\
\hline
\end{array}$$