Externally-dynamic dynamic semantics

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1 Externally-dynamic dynamic semantics

In the first generation dynamic systems we've considered, culminating in pointwise FCS, dynamics are a sentential phenomenon.

Charlow teaches us how to factor out dynamics into our compositional regime. We'll make use of this in EDS (Charlow 2014, 2020).

First, we adopt Charlow's general recipe for a dynamic type.[1, 2]

(1) $D\ a := g \to (a \times g)$

For example, sentences in EDS will be type $D\ t$; VPs in EDS will be type $D\ (e \to t)$.

[1] a is an implicitly universally-quantified variable over types.
[2] Initially, we'll present EDS as an extensional system; ultimately, everything will need to be intensionalized.

1.1 Pronouns and partiality

In EDS, much like in Charlow's monadic grammar, pronouns are expressions of type $D\ e$, i.e., *dynamic individuals*.

In EDS, assignments are assumed to be *partial*, i.e., undefined for certain variables.

We'll model this by treating the domain of assignments (D_g) as a set of *total* functions $f : V \to D_e$, where D_e contains a privileged value $\#_e$ - the impossible individual.[3]

For example, given a stock of variables $\{ x, y, z \}$, the following is a partial assignment:

(2) $$\begin{bmatrix} x & \to \textbf{josie} \\ y & \to \textbf{sarah} \\ z & \to \#_e \end{bmatrix}$$

The unique initial assignment, $g_\top$, maps every $v \in V$ to the impossible individual.

Pronouns have the following semantics in EDS:

(3) $\textbf{she}_v := \lambda g\,.\,\{ (g_v, g) \}$ $\qquad D\ e$

Since EDS builds on a Strong Kleene logical foundation, we'll make use of three distinct truth values:

(4) $D_t = \{ \textbf{yes}, \textbf{no}, \textbf{maybe} \}$

We'll make use of an operator $\delta : t \to t$ to model presuppositions, with the following semantics.

(5) $$\delta(t) = \begin{cases} \textbf{yes} & t = \textbf{yes} \\ \textbf{maybe} & \text{otherwise} \end{cases}$$

Sentences with a pronoun indexed v presuppose that v is defined at the input assignment. Formally:

(6) $\textbf{she}_v\ \textbf{satDown} := \lambda g\,.\,\{ (\delta(g_v \neq \#_e)\ \&\ \textbf{satDown}(g_v), g) \}$

An alternative rendering:

(7) $\lambda g\,.\,\{ (\textbf{yes}, g) \mid \textbf{satDown}(g_v) \wedge g_v \neq \#_e \}$

[3] See (Mandelkern 2022) for a similar set up.

2 References

References

Charlow, Simon. 2014. *On the semantics of exceptional scope*. New Brunswick: Rutgers University dissertation.

Charlow, Simon. 2020. Static and dynamic exceptional scope. Unpublished manuscript. Accepted at journal of semantics.

Mandelkern, Matthew. 2022. Witnesses. *Linguistics and Philosophy*.