Constructive Dynamic Syntax

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1 Abstract

The goal of this talk is to present a version of Dynamic Syntax (DS) [3, 1] which is equipped with constructive semantics, i.e. semantics within the tradition of Martin Löf's Type Theory [4]. The rationale behind this is that these semantics are potentially better suited to perform reasoning tasks given their proof-theoretic nature. What we want to keep intact, however, is the action based calculus behind DS. DS can be claimed to be agnostic as to the actual semantics that will be output as result of the actions performed. Indeed, there are versions with different semantic backbones, DS-STANDARD [3, 1] (Montague-like semantics), DS-TTR [2] (Type Theory with Records) and DS-DIST [5] (Distributional Semantics). I present a sketch of DS-MTT, that is, DS equipped with a modern type theoretic backbone.

Some of the issues to be discussed in giving such a semantics in DS are:

- The AXIOM: Prop or Type? What should the starting point be? The universe of logical propositions or a much more general Type universe?

- Type many sortedness plus subtyping: will type many-sortedness, i.e. having a more structured domain of individuals plus subtyping, help?

- Ad hoc subtyping formation based on ad hoc concept formation

- How will the Epsilon Calculus look like in this new system?

- Rules for Dependent Typing

References

[1] R. Cann, R. Kempson, and L. Marten. The Dynamics of Language. Elsevier, Oxford, 2005.

[2] Arash Eshghi, Julian Hough, Matthew Purver, Ruth Kempson, and Eleni Gregoromichelaki. Conversational interactions: Capturing dialogue dynamics. 2012.

[3] R. Kempson, W. Meyer-Viol, and D. Gabbay. Dynamic Syntax: The Flow of Language Understanding. Blackwell, 2001.

[4] P. Martin-Löf. Intuitionistic Type Theory. Bibliopolis, 1984.

[5] Mehrnoosh Sadrzadeh, Ruth Kempson, and Matt Purver. Incremental distributional semantics for dynamic syntax. In Proceedings of the Second Dynamic Syntax Conference.