# Crosslinguistic Compositional Semantics

- Maria Bittner | session 2 | MW 8:30 – 10:15, 101 Moffitt Hall
- Course notes at *http://rci.rutgers.edu/~mbittner* (under **Teaching**)
- DESCRIPTION

Natural languages vary widely in their morphology and syntax. For example, English is an isolating language with rigid word order and a grammatical system of tenses and modals. At the other extreme, Kalaallisut (Eskimo-Aleut: Greenland) is a polysynthetic language with "free" word order and a tenseless grammatical system that marks illocutionary mood and centering. Nevertheless, a discourse in one language can be translated into any other language.

An influential approach to crosslinguistic compositional semantics attributes this semantic convergence to an abstract syntactic level of "Logical Form" (LF), which on this view serves as the input to universal compositional rules. However, there is still no formally precise syntactic theory that would generate all and only the requisite input LF's independently of the desired semantic output.

In this course we will explore an alternative approach, without any LF. Instead, linguistic forms are built and interpreted directly by universal rules of *Combinatory Categorial Grammar* (*CCG*, Steedman 2000). Each *CCG*-rule consists of a syntactic rule and a correlated semantic rule. Given a language-specific lexicon the syntactic rule builds a well-formed (morphological or syntactic) string. The correlated semantic rule translates this natural language string into a typed logic with explicit syntax and model-theoretic semantics. The typed logic we will use is *Update with Centering* (*UC*, Bittner 2009), a dynamic system which formally represents changing states of information and focus of attention in discourse (formalizing Grosz *et al.* 1995).

The resulting formal system captures semantic convergence across linguistic diversity in semantic terms—to wit, universal combinatory rules (*CCG*), universal ontology of possible discourse referents (*UC*), universal discourse-initial defaults (*UC*), and so on. The general claim is that all natural languages (e.g. both English and Kalaallisut) agree on these semantic universals even though they may express equivalent meanings by very different grammatical forms.





- PREREQUISITES:

This course presupposes working knowledge of predicate logic, type theory, and some theory of compositional semantics (LF-based or direct, static or dynamic). Knowledge of some theory of discourse dynamics (e.g. DRT) will be helpful, but is not required.

- REQUIREMENTS:

For credit you are required to write a short paper (5–7 pages) developing a CCG + $UC_n$ fragment of some language.

- OVERVIEW OF THE COURSE

**M1**. Introduction.

**W1**. Update with nominal centering ($UC_1$). Semantic representation.
*Read*: Baldridge 2002:13–31

**M2**. Semantic composition: Kalaallisut in CCG + $UC_1$
*Read*: Jelinek 1984

**W2**. $UC_1$ + events = $UC_2$. Kalaallisut and English in CCG + $UC_2$.
*Read*: Kratzer 1996

**M3**. $UC_2$ + worlds = $UC_3$. English in CCG + $UC_3$.
*Read*: Bittner 2009: Sec. 1–3

**W3**. Kalaallisut in CCG + $UC_3$. Deriving translation equivalence.
*Read*: Bittner 2009: Sec. 4–5
***Deadline**:* Course papers due

REFERENCES

Baldridge, J. 2002. *Lexically Specified Derivational Control in Combinatory Categorial Grammar.* University of Edinburgh.

Bittner, M. 2009. Tense, mood, and centering. Under review for *Tense across Languages* (R. Musan and M. Rathert, eds.)

Grosz, B. *et al.* 1995. Centering: A framework for modelling the local coherence of discourse. *Computational Linguistics* **21**:203–225.

Jelinek, E. 1984. Empty categories, case, and configurationality. *Natural Language & Linguistic Theory* **2**:39–76.

Kratzer, A. 1996. Severing the external argument from its verb. In: *Phrase Structure and the Lexicon* (J. Rooryck and L. Zaring, eds.). Kluwer.

Steedman, M. 2000. *The Syntactic Process.* MIT Press, Cambridge MA.