Continuations and friends: what linguists can learn from programming language theorists

Syllabus - HHU Seminar, WS 2022-23

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1 Materials

You can find the syllabus, handouts and and a subset of the readings at the following github repository. This will be updated on a regular basis.

- https://github.com/patrl/hhu-fp

2 Class description

Richard Montague famously made the following conjecture (Montague 1970):

> "There is in my opinion no important theoretical difference between natural languages and the artificial languages of logicians."

In this course we'll be considering a natural extension of Montague's thinking, as we explore parallels between natural languages and *the artificial languages of computer programmers*. The main focus will be on techniques developed by functional programmers for programming languages grounded in the lambda calculus, and their utility for analyzing phenomena in natural language semantics. Topics covered will include continuations and scope-taking, monads and exceptional scope, as well as applicative functors and enriched semantic composition.

3 Prerequisites

- At least one introductory class in compositional semantics, with similar coverage to *Semantics in Generative Grammar* (Heim & Kratzer 1998).

- At least one class covering basic formal methods, i.e., logic (up to first order), and set theory.

4 Contact information

- Instructor: Patrick Elliott (`https://patrickdelliott.com`)

- Email: `patrick.d.elliott@gmail.com`

- Secretary: Tim Marton: `tim.marton@phil.hhu.de`

- For any content questions, please use the rocket chat channel. You should have received an invitation, but email me for one if not.

- For office hours, please don't hesitate to email me to schedule an ad-hoc meeting.

5 Online and offline info

- Meetings will take place in person, in `23.21.U1.72`.

- If circumstances (illness, Deutsche Bahn. . .) demand that the class go remote, I'll send out a zoom/webex link via rocket chat.

- Tuesdays, 10:30-12:00.

6 Schedule

Total of 14 sessions:

date	topic
Tue Oct 11	Preliminaries + technical primer
Tue Oct 18	Basic continuation semantics
Tue Oct 25	Continuations continued
Tue Nov 1	**no class (all saints)**
Tue Nov 8	Split-scope and flexible coordination
Tue Nov 15	Crossover phenomena
Tue Nov 22	Environment sensitivity: anaphora
Tue Nov 29	Environment sensitivity: anaphora ii
Tue Dec 6	Environment sensitivity: opacity
Tue Dec 13	Environment sensitivity: opacity ii
Tue Dec 20	Expressives and supplements
winter break	
Tue jan 10	TBC
Tue jan 17	Student presentations
Tue Jan 24	Student presentations
Tue Jan 31	Student presentations

7 Assessment

7.1 Beteiligungsnachweis

- Regular active participation.

- Do the readings.

7.2 Requirements for Abschlussprüfung

- One class presentation (this can be either a reading group style presentation of a paper, or a group discussion of your squib topic).

- A squib (i.e., short research paper, max 12 pages, prefereably 5-10).

  - At least one meeting with me to discuss your squib topic.

The etymology of "squib", according to Haj Ross:[1]

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[1] https://www.ucl.ac.uk/pals/linguistic-inquiry-squibs-discussion

"WRT the word: I no longer know – my memory is too foggy over the 48 ± years since I started collecting them. I got to MIT in January of 1964; George Lakoff was an assistant professor at Harvard; we both were research assistants in Susumu Kuno's lab, and we squibbed well and truly on a daily basis. I have asked George whether he knows who came up with the term or not; he says he is positive: I was the one. Could be – I certainly can't deny responsibility."

"At some point I went looking in the OED to see if it contained a meaning like "short note" or anything like that. My wretched memory tells me that yes, there was such a meaning among the many that the OED offered up, but when I went this morning to look again for it for you, not a bit of it. There is one basic meaning, which has to do with with some kind of firework. But one of the citations is"

"1599 Master Broughtons Lett. 47 Your bookes [are] but squibs, compounds of gunpowder and pisse."

"Which I think would be an excellent sentence to have at the beginning of every squib section in each issue of LI."

8 Readings

8.1 Continuations

- Primary text: (Barker & Shan 2014)
- (Barker 2002)

8.2 Environment sensitivity

- (Charlow 2019)
- (Elliott to appear)
- (Asudeh & Giorgolo 2016)

8.3 Expressives and supplements

- (Giorgolo & Asudeh 2012)
- (Gutzmann 2019)
- (Asudeh & Giorgolo 2020)

References

Asudeh, Ash & Gianluca Giorgolo. 2016. Perspectives. *Semantics and Pragmatics* 9. `http://semprag.org/article/view/sp.9.21`.

Asudeh, Ash & Gianluca Giorgolo. 2020. *Enriched Meanings: Natural Language Semantics with Category Theory* (Oxford Studies in Semantics and Pragmatics). Oxford, New York: Oxford University Press. 208 pp.

Barker, Chris. 2002. Continuations and the Nature of Quantification. *Natural Language Semantics* 10(3). 211–242. `https://doi.org/10.1023/A:1022183511876` (28 January, 2020).

Barker, Chris & Chung-chieh Shan. 2014. *Continuations and natural language* (Oxford Studies in Theoretical Linguistics 53). Oxford University Press. 228 pp.

Charlow, Simon. 2019. A modular theory of pronouns and binding. Unpublished manuscript. Rutgers University. `https://ling.auf.net/lingbuzz/003720`.

Elliott, Patrick D. to appear. A flexible scope theory of intensionality. *Linguistics and Philosophy.* `https://ling.auf.net/lingbuzz/005107`.

Giorgolo, Gianluca & Ash Asudeh. 2012. Monads for conventional implicatures. In Ana Aguilar Guevara, Anna Chernilovskaya & Rick Nouwen (eds.), *Proceedings of sinn und bedeutung 22.* Cambridge, MA: MITWPL.

Gutzmann, Daniel. 2019. *The Grammar of Expressivity.* Oxford University Press. `http://www.oxfordscholarship.com/view/10.1093/oso/9780198812128.001.0001/oso-9780198812128` (29 April, 2020).

Heim, Irene & Angelika Kratzer. 1998. *Semantics in generative grammar* (Blackwell Textbooks in Linguistics 13). Malden, MA: Blackwell. 324 pp.

Montague, Richard. 1970. English as a formal language. In Bruno Visentini (ed.), *Linguaggi nella societa e nella tecnica*, 188–221. Edizioni di Communita.