



## Invitation

Logic Colloquium

**Daniel Kuby**

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*The linguistic nature of programming  
(a work-in-progress research proposal)*

the talk will take place online

on **Monday, 01.02.2021** at **15:15**

on the Cisco Webex platform, reachable through:

<https://uni-konstanz.webex.com/uni-konstanz/j.php?MTID=m5e20d604a3ea7d0ead2275ac72b13ba4>

All interested are welcome to attend

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**Abstract:** In my talk I will present a work-in-progress, large-scale research proposal about the philosophy of programming languages, combining philosophy of language, computer science, computational/cognitive linguistics, and logic/formal semantics. The main motivation of this project is to examine, and possibly defend from a philosophical point of view, the linguistic nature of programming languages. The proposed project currently has three main parts, each part being guided by a main research hypothesis.

1) Programming "languages" are languages.

Against the common view that the term "languages" in a programming context is a metaphor (a useful one, at best, or a misguided one, at worst), we want to argue that programming languages are languages in a substantive sense to be worked out with resources from philosophy of language (building on recent work on formal languages), computational linguistics (esp. the naturalness hypothesis that source code corpora have similar statistical properties to natural language corpora) and neurolinguistics (linguistic processing at work when reading source code).

2) The variety of programming languages can be captured semantically.

While computer scientists commonly introduce pragmatic considerations to distinguish different programming languages, we want to show that the variety of programming languages can be captured logically in a semantic framework, allowing

to reconstruct several computational features of different programming languages as (hyper-) intensional differences. This builds on the "semantic cube" idea resulting from the game-semantic approach to denotational semantics of programming languages.

3) Semantics can track (some) cognitively salient features of programming languages.

Generally, the cognitive dimension of programming is studied in the field of the psychology of programming languages (esp. research in cognitive psychology). Programming languages are designed with specific goals in mind; some of the resulting language features and abstractions have a cognitive import. We want to show that some of these cognitively salient features addressed in the design of programming languages can be tracked in the intensional semantic framework introduced in (2). I will then discuss the possible consequences of such a project; several challenges that this project faces; and ask the participants for feedback and help on how to address these challenges from their disciplinary perspective.

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Carolin Antos, Salma Kuhlmann  
Coordinators of the Logic Colloquium