

# Comments on Modelling Programming Language Concepts

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# CSC334: “Understanding Programming Languages”

- ▶ Led by Cliff Jones
- ▶ Nige Jefferson is a past student
- ▶ Topic: Language Semantics
  - ▶ Structural Operational Semantics (SOS)
  - ▶ Understanding key language ideas
  - ▶ Problem-solving
- ▶ Final-year undergraduates

# Knowledge Half-Lives

- ▶ Java's "15 minutes of fame"
  - ▶ Useful today
  - ▶ How's your Pascal syntax?
- ▶ Abstract language concepts
- ▶ Quality of language design
  - ▶ One good idea is not enough
- ▶ SOS as a lightweight method

# Plotkin rules

$$\frac{P(\textit{Config}, \textit{Config}')}{\textit{Config} \rightarrow \textit{Config}'}$$

- ▶ Based on transition systems
- ▶ VDM notation (Jones)
- ▶ This past year emphasized the rules
- ▶ But I want to talk about tools...

# Use of tools

- ▶ CSK VDMTools (was IFAD)
- ▶ Only in some years
  - ▶ Not last year
  - ▶ Three previous years
- ▶ Assistant support
  - ▶ Brought about by Nige Jefferson
- ▶ Student choice

# Tradeoffs of the Tool

- ▶ Pros:
  - ▶ error checking
  - ▶ immediate feedback loop
  - ▶ interactive language model
- ▶ Cons:
  - ▶ language/meta-language confusion
  - ▶ poor non-deterministic structure
  - ▶ Plotkin-style rules
    - ▶ Poor support
    - ▶ Tool-using students

Thank you very much.  
Questions?