# Talking to Objects in Natural Language
## Toward Semantic Tools for Exploratory Programming

Observations

- Exploratory programmers understand problems and systems iteratively by asking questions and running experiments [1]

- Exploratory programming systems provide several tools to enable experiments, such as:
  - Object inspection tools and property sheets
  - Code browsers and call graphs
  - Symbolic debuggers

- Many experiments are technically complex and interrupt programmers from their high-level flow
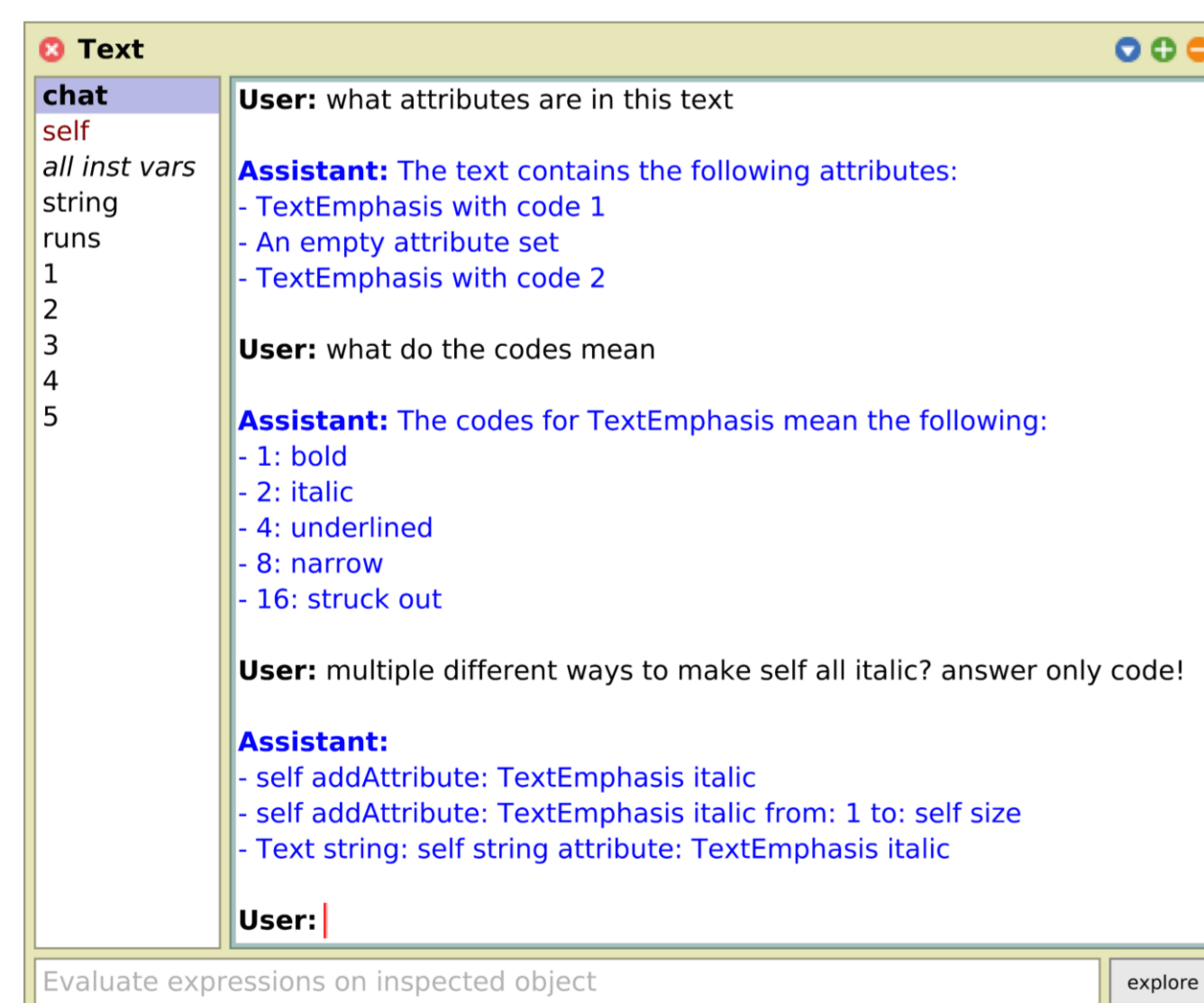
A conversation mode for Squeak's inspector tool

Idea

If we can develop semantic tools to answer conceptual questions, programmers can hold natural conversations with systems in terms of their mental model and delegate low-level experiments to these tools.
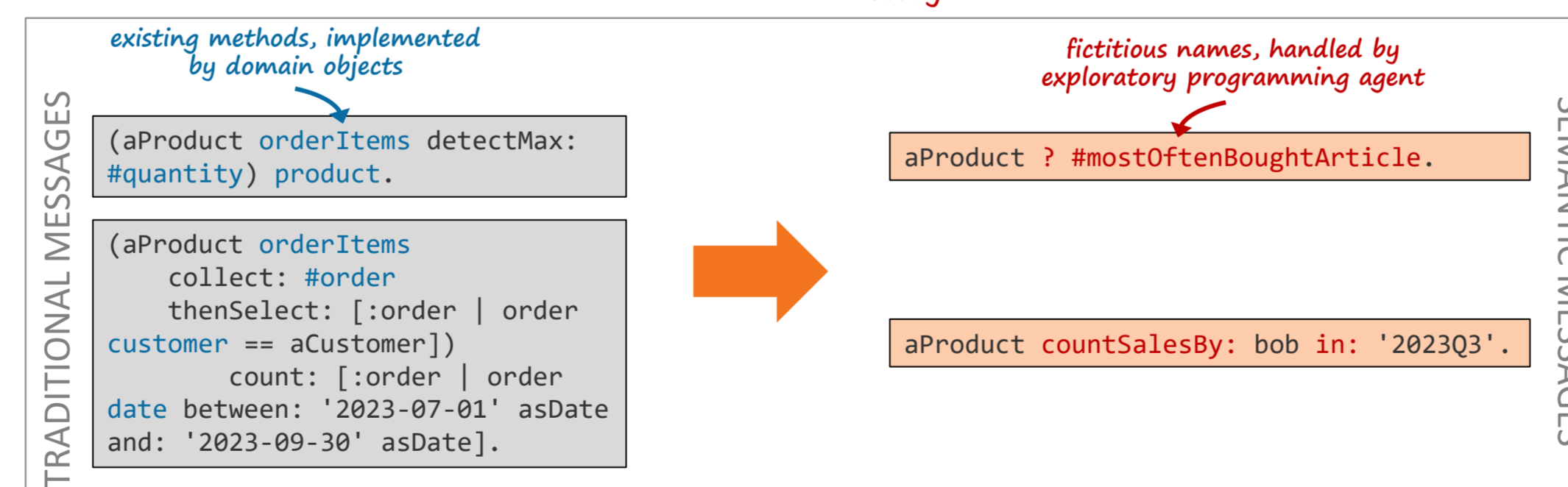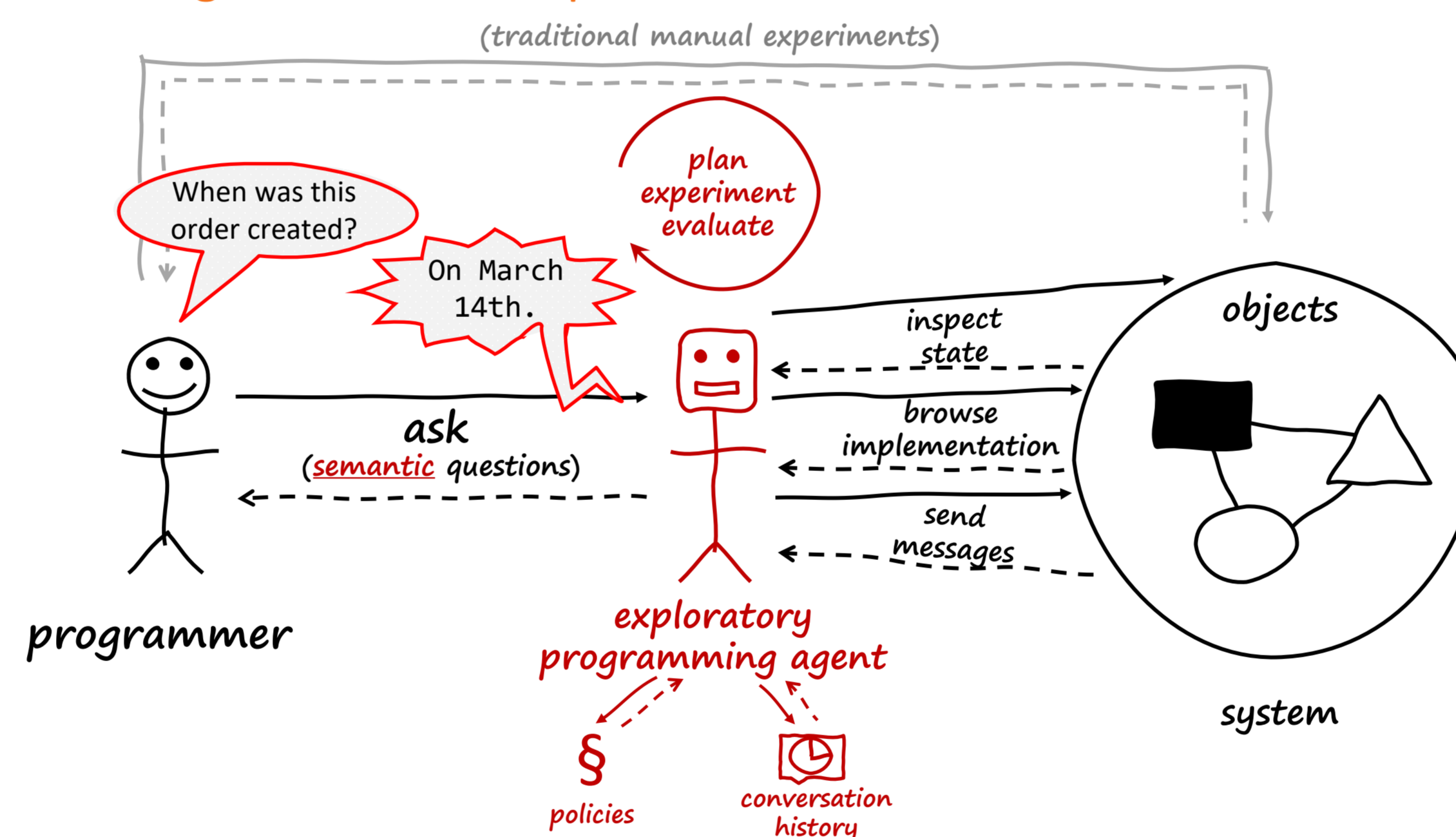

Sending semantic messages to objects from exploratory scripts

Approach

To ease and augment exploratory programming, we…

- Provide semantic object interfaces through that programmers can ask natural-language questions about runtime objects

- Build an exploratory programming agent that mediates between programmers and systems and uses generative AI to plan, experiment, and evaluate experiments automatically

- Integrate semantic interfaces into different exploratory programming tools
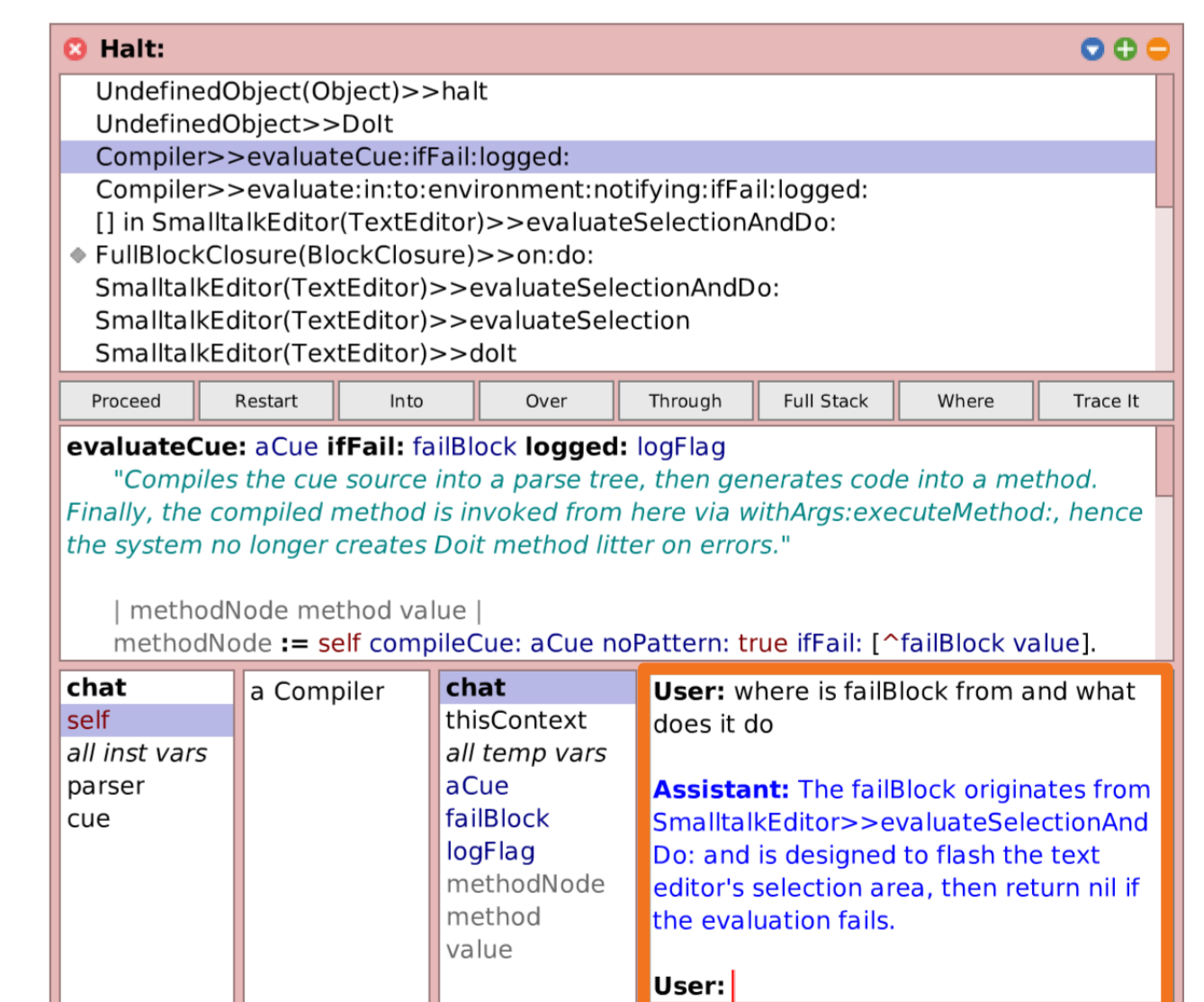
Semantic access to a halted program in a debugger

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Chat on Discord

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[1] David W. Sandberg. 1988. Smalltalk and Exploratory Programming.
SIGPLAN Not. 23, 10 (1988), 85–92. doi.org/10.1145/51607.51614

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