Procedural Generation of Narrative Puzzles

Barbara De Kegel
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Supervisor: Mads Haahr

Narrative puzzles involve exploration, logical thinking and progressing a story. This project proposes a system for the procedural generation of such puzzles for use in story-rich games or games with large open worlds. An extended type of context-free grammar forms the basis for both the generation algorithm and the puzzle solving. Each designer-defined rule in the grammar defines a possible behavior of item types in the game world. Puzzles, which consist of a tree of rules, are generated live on a per area basis, through recursive generation of inputs for outputs. Given a valid grammar, the backwards generation guarantees that all created puzzles are solvable. A proof of concept adventure game was developed to demonstrate some of the possibilities provided by the generation. Different playthroughs of this game resulted in different puzzles, integrated into a small 3D world.