

Chapter 20

Babel

A Tool for Running Experiments on the Evolution of Language

Luc Steels and Martin Loetzsch

Abstract Computational and robotic research into symbolic communication systems requires sophisticated tools. This chapter introduces Babel, a tool framework that has been developed to engage in extensive repeatable multi-agent experiments including experiments with embodied robots. A brief example is presented of how experiments are configured in this framework.

1 Introduction

Experiments on the evolution of language like the ones described in Part III require a sophisticated technological infrastructure. This infrastructure must have:

1. A way to set up multi-agent experiments which includes setting up scripts for the behaviors of the agents as well as tools for monitoring their behavior.
2. A way to integrate the different processing steps: perception, conceptualisation, production, and rendering for language production and perception, rendering, parsing, and interpretation for language interpretation.
3. A formalism for the representation of linguistic knowledge that supports the progress emergence of lexicons and grammar.

Such an infrastructure has been built in Common Lisp and released under the name BABEL. BABEL can be downloaded freely through the site <http://www.emergent-languages.org>. This website also contains additional background information and downloadable papers that show in-depth experiments with BABEL and the *Fluid Construction Grammar* (FCG) formalism that incorporates it. BABEL has been used in courses on language evolution at the University of Brussels and in various tutorials, including the ERICE summer school on Language Dynamics, the IK cognitive science spring school in Guenne, the Bremen Construction Grammar

L. Steels (✉) · M. Loetzsch
Sony-CSL, Paris, France
e-mail: steels@arti.vub.ac.be

M. Loetzsch
e-mail: martin.loetzsch@gmail.com

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