## Project B02: Computational linguistic creativity in reference games between

**Project leaders:** Hendrik Buschmeier, Sina Zarrieß

### Project Summary

In situated dialogue, speakers commonly adopt and re-use strategies from previous interactions with their partners, for example, to effectively refer to objects in the environment. To flexibly respond to changes in the environment, though, they also readily develop novel reference strategies and expressions and further refine them throughout the interaction. In this project, we (i) investigate human speakers' linguistic creativity in iterated dialogue tasks in changing environments and (ii) model the creative formation of reference strategies in dialogue agents whose linguistic knowledge is represented in a language model trained on interaction data. We aim to develop dialogue agents that have the ability to use their language model to generate creative language use that deviates from and transforms the linguistic units and strategies in their individual models, resulting in partner-specific use over the course of a dialogue. The project will examine and model interactive reference games in controlled visual environments and study the formation and adaptation of referential strategies and the invention of novel words and constructions to describe the visual world.

The project will collect data from human participants playing iterated reference game settings through chat-based online experiments as well as lab-based dialogue studies. As our core tool for modeling linguistic creativity, we will develop a computational architecture for language generation in dialogue. This architecture will integrate symbolic components for controlling, planning, and reasoning in dialogue management, language generation, and language understanding with a neural, visually grounded language model. The overarching goal is to study human-like computational linguistic creativity and human-machine co-creativity that develops within and across dialogues.

### Open Positions

#### PhD position 1 (100%)
*Profile:* The ideal candidate has a master's degree in computational linguistics, cognitive science, linguistics, computer science or a related field and a strong interest in (1) analyzing dialogue data and (2) computationally modeling the dialogue and interactional components of the dialogue agent.
*Main research focus within the project:* The PhD student will focus on systematic empirical analyses and computational modelling of partner-specific creativity and reference strategies in dialogical interaction.

**For further information please contact the project leaders:**

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