

Representing space in silent gesture: Communicative contexts compared in Bali

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Much of our everyday interaction concerns communicating about objects in space. How exactly space gets conceptualised differs between language communities. For instance, in some cultures, like in the Netherlands, space is conceptualised in an egocentric way predominantly using a relative Frame of Reference (FoR). However, we know that other cultures, for instance in Bali, also conceive space geocentrically (Wassman & Dasen, 2006). Being a landmark-based FoR, the four directions used in the Balinese system *kangin*, *kauh*, *kelod*, and *kaja* can be interpreted as 'east', 'west', 'seawards', and 'mountainwards', the latter referring to the volcano (Gunung Agung) at the centre of Bali (Aryawibawa et al., 2018). While cultures might employ a dominant FoR, this does not mean that they are limited to using just one FoR. Different FoRs can be used depending on situation and addressee, in everyday life of Balinese people, when, e.g., interacting with Indonesians from other islands or foreigners. In this study, we investigated how these FoRs are encoded when Balinese people use silent gesture to convey spatial information.

In addition, the way we conceptualise and the way we (successfully) communicate spatial relations might not be the same across communicative situations. Indeed, within communities what information is conveyed will depend on aspects of the communicative context. For instance, a higher level of communicative demand has been shown to elicit different gestural behaviours (Trujillo et al., 2018). Adding to the complexity of the meaning space in a communicative task by, for example, introducing ambiguity might further push participants to adopt certain strategies and abandon others (cf. Kim & Schachner, 2020).

This preregistered study aimed to investigate the conceptualisation of space as well as the effect of different levels of communicative burden employing the silent gesture paradigm. In silent gesture experiments, hearing participants unfamiliar with communicating in the manual modality were asked to improvise a

communication system using only their hands and bodies. Previous research has shown this paradigm to be effective in weakening biases learnt by participants from structure in their spoken language (e.g., Goldin-Meadow et al., 2008). For our study, this also meant participants were unable to rely on spatial terms that correspond to the dominant FoR in their language. Additionally, using silent gesture forced participants to represent their conceptualisation of space within space. This, combined with the different communicative contexts we introduced, allowed us to investigate two core research questions:

1. Removed from spoken language conventions – how do Balinese participants conceptualise and communicate spatial array information?
2. How do participants adjust their strategies according to an increasing communicative burden?

The experiment in our study consisted of three parts of increasing communicative complexity. Each participant was asked to describe 24 stimulus pictures, first, in a non-interactive set-up to a camera (part A), then to an interlocutor in a director-matcher task (part B), and lastly, to the same interlocutor in another director-matcher task in which the meaning space newly included ambiguity (part C). The stimuli were a set of 96 photographs of various Figure-Ground constellations. In the pictures, the Figure object (a toy figurine) was positioned in four possible locations and with four possible orientations around the inanimate Ground object (inspired by a paradigm established by Levinson et al., 1992).

We have concluded the data collection from 24 participants at our Balinese fieldwork site at Universitas Udayana in Denpasar, Bali. Preliminary analysis of the Balinese data revealed that participants employed predominantly either mirror-image depiction or absolute translation of the spatial constellation of the stimulus pictures. Furthermore, we found that in part A, the single-participant non-interactive set-up, participants produced a high number of incomplete depictions that would not be sufficient to recognise the target picture. This number of incomplete depictions decreased rapidly for the interactive director-matcher task part B and even further for part C. Theoretical implications of these findings will be discussed.

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