

Behavioral Studies Colloquium, Spring 2017

May 16, 2017

Speaker: [Yesol Park \(PhD Candidate\)](#), Chair of Cognitive Science, ETH Zurich (hosted by Prof. Dr. Christoph Hölscher)

Title: Architects' spontaneous hand gestures augment graphic representations for user anticipation in design

Abstract: Architects need to think about geometrical and functional features and relations simultaneously (Suwa & Tversky, 1996). During design, graphic representations such as floor plans, section drawings, or three dimensional visualizations are essential to facilitate insight, inference, and problem-solving. However, each external medium only partly presents the relevant aspects of a task. This requires designers to imagine and infer other features absent in the medium. While design thinking has been studied primarily based on verbal design protocols and paper-based sketches, this study observes gesture during design activity, to investigate what information architects read off external design media and how this relates to their thoughts. We expect gesture to complement and partly compensate for the limitation in external design media, especially when user-centered aspects are involved in a design activity. For the purpose of present study, two coding steps are devised for protocol analysis in architects' design interviews: (1) designers' intention based on speech, and (2) the referent for each gesture. First, the verbal protocols are divided into small units, called segments, to determine whether each segment has a geometrical or a functional focus. Second, each gesture's referent is coded into one of four categories: "depicted elements", "spatial relations", "functions", and "knowledge". The major dichotomy here is between visual information and non-visual information.

The present scheme has confirmed that architects' design intentions and gestures can be systematically detected and linked to two different aspects of design thinking. Thus, gesture primarily refers to non-visible aspects in external design media when designers focus on functional aspects. From a research point of view, this suggests that gesture can augment architects' reasoning, especially on aspects not explicitly present in the design medium. Future research will develop experimental settings to confirm the connection between design intention, external medium and gesture activity.