Capturing Design Behavior

Design behavior usually refers to designers’ activities while engaged in work towards producing a design proposal. This may mean team or individual work, at any phase of the design process. Capturing and documenting design behavior necessitates evidence from the process itself, i.e. design sessions, which can be collected by observation and recording (audio/video), and post hoc interviews with participants. Data thus collected, along with by-products of design sessions (sketches, notes) can be submitted to analysis. In the design thinking research literature a prevalent research methodology is what might be by now termed ‘classic’ protocol analysis, along the lines proposed by Ericsson and Simon more than two decades ago [1]. Many of the studies undertaken pertain to short-term design sessions (not exceeding two hours), in the early stages of conceptual design. In ‘classic’ protocol analysis verbalizations are analyzed: they are recorded and transcribed into a protocol which is then parsed into speech units. Those units which may be short or somewhat longer – depending on the nature of the study – are then coded, using schemes of categories that befit the aims of the study. Various statistical tools may be used to analyze the quantitative results the coding yields. In a design session in which an individual designer works alone, verbalization is prompted by asking the person to think aloud. Cross et al. [2] published a collection of protocol analysis studies using protocol analysis variants, all pertaining to the same two design protocols.

Linkography

Linkography was developed as a notation and analysis system based on protocols, see e.g., [3]. Unlike ‘classic’ protocol analysis, it concerns itself not with coding but with links among the speech units into which a protocol is parsed (by extension, it may also deal with other units or longer sequences of speech. For example, ideas extracted from a protocol). In many studies the unit of speech is a design move – the smallest step made by a designer, as a result of which the state of the design situation is at least somewhat transformed. Since design problems are generally ill-defined and ill-structured, protocols of conceptual design phases reflect a particular activity, particularly in creative problem solving. Linkography is particularly useful in comparisons, e.g., between processes by different designers in the same task; different phases in the same process; different predefined groups of designers, for instance experts and novices. It has also been used to compare communication parameters such as interactivity in tutorial conversations between teachers and students in studio sessions; the ratio of idea generation by students in a studio setting; creativity in idea-generation sessions of design teams; and the effect of different sources of inspiration on creativity and fixation. Linkography variables have been correlated with design productivity and creativity and appear to be useful in micro studies of cognitive behavior and reasoning processes in the context of design and design education. We presume that this method has the potential of illuminating matters of verbal communication in general, particularly in creative problem solving.

References