

TITLE

**Behavioural-, communicative- and collaborative aspects of tools for architects and structural engineers, a review**

NAME

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ABSTRACT

This paper presents the analyses of twelve interviews with structural engineers and architects integrated with a comprehensive literature review about the behaviour of architects and structural engineers when communicating and collaborating in the early phase of the design process. The focus is on *creating a tool* to deal with behavioural, communicative and collaborative problems of the actors involved when collaborating to design folding spatial structures.

After describing the types of tools architects and structural engineers use to communicate and collaborate, the *controversies* [Yaneva, 2012] between architects and structural engineers while designing spatial structures are structured in this paper. As the building industry currently can produce buildings as one-off's, 'prototypes' or 'products' in an industrial way, continuously or on demand, research into the use of 'instruments' in product design for the building industry, as described by for instance Smit, Lichtenberg and Oostra [2001], is analysed and integrated.

When the professional worlds of structural engineers and architects merge, as discussed by Bucciarelli and Schön [2007], problems in the design process, concerning the actors and the tools they use, are derived.

By analysing and interpreting various aspects of communication and collaboration in the interviews and literature, the relationship between behaviour of the actors involved and the design process is developed. Within that framework the use of prototypes, models and other tools in relation to communication and collaboration between the actors is analysed. This enables to *create tools* to design folding spatial structures taking into account behavioural-, communicative- and collaborative aspects during the early phase of the design process.