

SFB/TR 8 Spatial Cognition / IQN Video Conference

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The Space in DesignSpace

'We shape our buildings, thereafter our buildings shape us.' (W. Churchill)

The profundity and significance of the above statement by Churchill may be regarded to be Design 101: we organise empty space by building-up structures and artefacts of our everyday existence into something of a desired *form* (e.g., a balanced room, a visually pleasing scene), *function* (e.g., easily navigable) and *semantic connotation* (e.g., of a 'place'). These aspects are rather mainstream within the philosophy of design, and are implicitly understood by designers. Yet, contemporary architectural design – with its methods, tools, and paradigms – regards the eventual products of design activities as isolated *'frozen moments of perfection'*. Specifically, even within state-of-the-art design tools, notions of *semantics, structure, function, behaviour* and *user-centred design* are yet to come to the fore. In a way, the world of Computer Aided Architecture Design (CAAD) still rests on *points, line-segments* and *polygons*.

In project [DesignSpace] we are concerned with the spatial informatics that would underlie the foundations of next-generation architecture design assistance systems. As an enabling and demonstrative vehicle, we strive to develop DSim, a consolidated Design Assistance Tool, keeping in mind that:

1. Contemporary CAAD systems have evolved the way they have in the last 20 years because of a strong interplay of technological limitations, industry and market forces, and professional mind-sets and paradigms: this will not change in the short-term.
2. There is no need to develop a radical new CAAD system; this should be done by the industry players!
3. What is needed is the externalised representational and computational apparatus, very much like a cognitive prosthetic, that builds on, and co-exists with, a conventional CAAD framework. The aim of the externalised cognitive prosthetic should be to empower the professional designer who is adept at conventional CAAD-ish practices and methods.

In this colloquium, we focus on the theme of *structure and function*, and present some problem instances and initial results in the project. We especially highlight assistive capability in spatial design as a means to reduce *design malfunction* (e.g., errors, functional failures) by *iterative design validation and verification*, and also to ensure that functional requirements of a design are met when the design is deployed in reality. Practical real-world problem solving, and conformance to Industrial Standards and Design Tools will be emphasised.

Project [DesignSpace]: www.sfbtr8.spatial-cognition.de/designspace.html

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