

The Physical and the Digital In Designing Architecture – Do They Really Meet?

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This paper tries to point a problem of separation of design thinking from the tools and media, which represent it. This separation concerns digital tools of architectural design.

Keywords: Digital environments, design thinking, creativity, separation.

One can state that an essential confusion is being more and more often perceived in the field of computer applications in architectural design. This confusion concerns the problem of understanding of the real and the digital in the context of tools and media employed in the design environments. On the one hand, more and more sophisticated digital tools are being developed. They mostly try to locate all the processes and media of design in digital environment, in all its possible forms. It is a very new, exciting and inspiring sphere of both – programming and design activities. However, at the current level of technical development, we face an uncomfortable duality or contradiction. The development of the digital design software packages, which are present on the market, proceeds, but within the tough limitation of the accessible interfaces (monitor, mouse, keyboard). They make the design process very indirect. In short, the record of the design decision must be processed, in order to be represented. The ‘process of processing’ (digital transformation of the input), indispensable to make a graphical representation on the screen, with the indispensability of the screen is the essence and the heart of the problem.

On the other hand, ‘manual’ design methods

‘from’ the physical design environments, enabling very direct record of design decisions, especially on the level of preliminary, conceptual design, are still in use. They seem to be natural, easy and have one general advantage: being physical, they do not need any special transformation to relate them to physical architecture design (as it is still the main focus of architecture as a domain). Computers are used for drafting, and for data management, as it is required by the construction industry.

The main hypothesis of the paper is:

the gap between the digital and physical design environments grows. The domains of ‘physical’ and ‘digital’ design environments are in most cases more and more polarized. Design thinking separates from digital tools and media. It becomes a psycho–technological problem: when the digital domains extend the understanding of what is real, and thus (through conscience) may influence design thinking, then at the same time, the representation of thinking in most cases separates from the designer – he needs extension, help, technical support.

So it is a gap between design thinking and its representation. It reminds philosophical disputes of the problem of presence and representation.

Digital design environments (CAD software) are not becoming more natural, because:

most of them do not change the nature of the design process to make it more creative in a new way; so they do not enforce creativity; creativity enforces by the critical human interpretation of all the accessible media; a 'thin red line', a 'creative edge' appears when all media meet;

they make the process even more indirect, because of the growing difficulty of their usage; many architects, who do not have time to learn new software routines need help of technical drafters or modelers to record their ideas; the problem of the accessible interfaces (software menus and hardware devices) is a core issue here;

An approach to solve the problem in a small area of the design activities was made on the educational level. The course of architectural composition, co-developed and co-conducted by the author is consciously realised in two almost parallel 'streams'. One stream is traditional, manual and focuses on sketching and making of physical models, which are the designed answers on several design tasks. Second stream is digital – and focuses on making the same exercises with a use of computer modelling. The modeling is intended to be as intuitive as possible. It is assumed that the physical work is not to be easily compared with the digital – because they can 'meet' only on purely conceptual levels. These levels are in fact separated and 'conditioned' by the features of each of the environments.

However, purely 'digital' design occurred possible and creative, when the task and digital tools were accurately suited to each other. In execution of conceptual design tasks, a basic 3d modeling becomes a medium, where design thinking is directly represented by the model produced in 'real-time'. The dialog between the designer and its media is possible, when they are suited to each other – then synergy appears and results in creative and valuable works.

Looking from the other side, the mentioned gap results from the disproportional development of machines – which is fast, and humans, who develop slowly. Maybe next generation of designers, who actually grows with computers at their hands, will have it as a natural and familiar extension. As Evans writes: 'The computer needs to model the person and the task both over time and in real time, so that it can provide appropriate support' (Evans, 1999).

References

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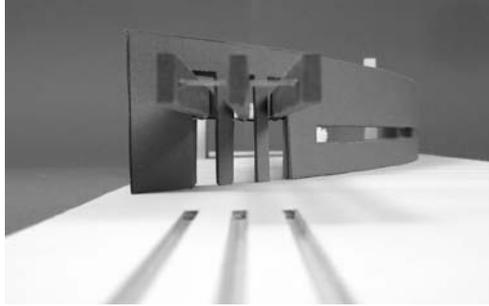
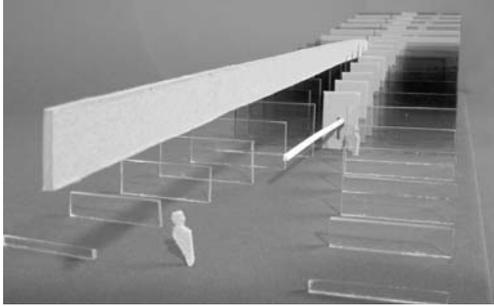
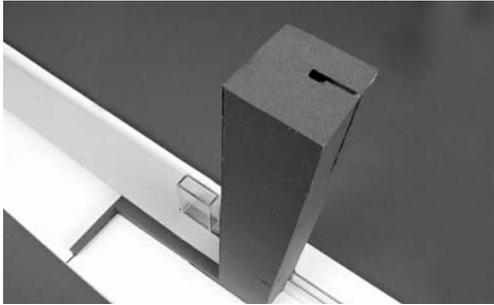
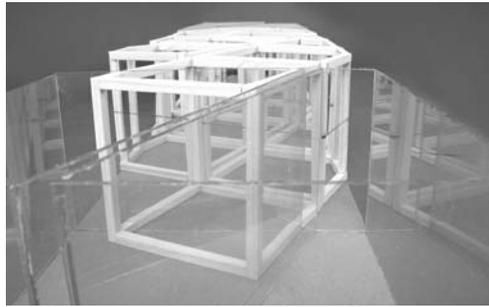
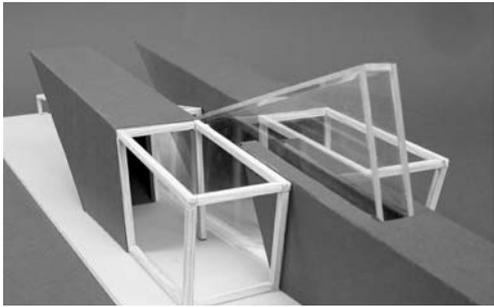


Figure 1. Physical Creations of Architectural Spaces

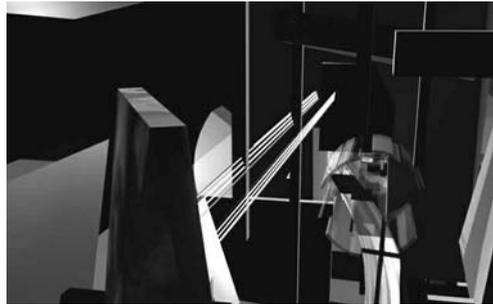
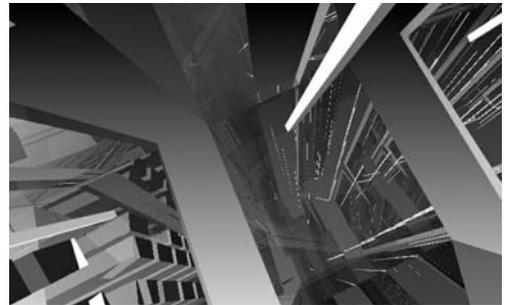
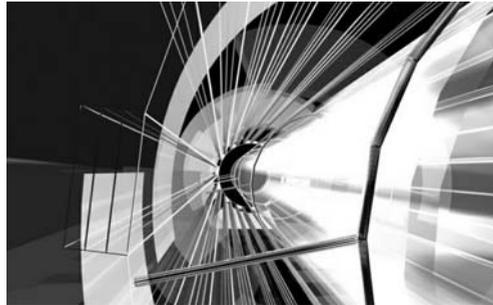
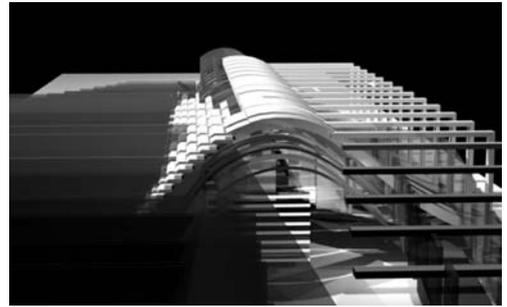
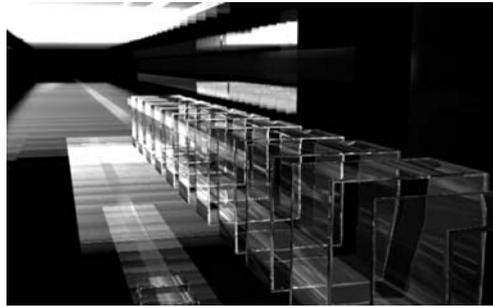


Figure 2. Digital Creations of Architectural Spaces