

Virtual Modeling and Multimedia Presentation as the Basic Principles of CAAD Education in Warsaw School of Architecture

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Virtuality versus reality in the teaching concepts is one of the most important issues in our traditionally and professionally oriented school. Computer modelling techniques and interactive presentations as a communication media used to express students sophisticated aesthetics intentions in conceptual design are the subject of our peculiar interest. The goal of our study is to find out how students may use virtual tools to communicate the design ideas.

Keywords: Computer Modelling, Interactive Presentation, CAD Education

Introduction

In the past, many Schools of Architecture focused on the mastering of skills used in preparation of the hand made models as well as free-hand sketches, as the main presentation techniques in design education. This traditional method of teaching based on individual work in a small master's design classes in which students design by free sketch and model building methods, which are at the same time creative methods and communication media, was expensive although, efficient in preparation of students for their professional activities.

At the Faculty of Architecture in Warsaw, CAAD had been introduced and successfully developed since early 90-ties. In continuation of traditional approach, „designing through modelling“ computer's model making was introduced as the basic idea of CAAD education and brought new possibilities to the profession. The concept based on the gradual increase of tasks complica-

tion level. It is based on the “fragmentary methods” – which aid traditional techniques and lead to final project realization on the so-called complex models. However, introduction of the “complex models” (parametric and object oriented) remained in the preliminary stages due to technical problems (hardware and software) and student's lack of interest in parametric modeling. They were mainly interested in the photorealistic visualizations (renderings), animation and other visual aspects as the final illustration of their design.

Designer – Information relationships

It appears to be very important to implicate the students as to how essential is the role of the information in design process. From this perspective, it is important to place attention onto different roles Architects' tasks. Each of the tasks has its specific conditions and requires separate con-

sideration. The Architect is the *author of information* – the person who creates the ideas and formulates them. He is also a *sender of information* – the person who expresses and delivers. Students should consider the fact that both roles are clearly different. They should also notice that there is a *receiver of information*. This can be Architect himself, other foreseeable address or the wide range of addressees. This shows the context within which we introduced virtual modeling and multimedia presentation in the curriculum of CAAD, since Architects can be the *author, sender and receiver* of information.

Virtual models

Traditional models are often limited and fragmentary. The simplified representation or interpretation of reality usually describes physical, geometric and esthetic features of the object or building, yet without information processing, data access and manipulation they are almost useless in the whole design process, building and exploitation, e.g. for facility management purposes.

CAAD brings design concept based on the building, analysis and transformation of virtual models. They offer much wider possibilities although they are still created by various independent programs and therefore still have a coherence problem. Virtual models have the ability to contain the most complete design information. They can reflect similarity of appearance, functions or rules acting within the original. The essential issue for the designer is to formulate relations between model and its physical reality - model may be created based on the objective or subjective knowledge of the real object. It may also reflect requirements and rules submitted to the original. Virtual models become the information medium itself for all participants of the design process, development and exploitation of the building. Usefulness of this information is dependent on the reliability, legibility, exactitude

etc. However, the most important requirements are the easiness and efficiency of access. Achievement of those aims is possible due to the use of technique of *distracted modeling*. This became possible because of the Internet connections.

The component parts of the distracted model may be any object – partial models, collection of data, analyzing applications and others, each of them stored in the different place of the network. Internet brought the revolution, which redefined the meaning of the personal computer itself through the way of its utilization. Effective use of Internet leads to the new style of management and organization of work. Internet created a strategy: *client-server*, which indicates uniform environment or computer applications, distracted processing and data. This strategy considers visualization as a principle task for personal computer. It supports the application of virtual worlds created by personal computers with the updated information stored on the servers. I also assume that data processing is the realization of different rules in connection with the other participants of the design procedure.

Since our present the students, are going to start practicing Architecture in the next few years, it is our duty to be ahead of the tendencies and improvements of the computer modeling technologies. We should be able to give the students necessary background for their future needs. In the area of computing, the advancement is much faster than in many other fields. It is difficult to predict how exactly it is going to develop, although some directions are clearly visible:

Information management: The models become more „intelligent“, they allow for the faster retrieval of data and more integration between different aspects of information.

Presentation: Probably it is the most spectacular area. The changes are currently the fastest and promise a lot of improvement in the future. It

is also here that the virtual modeling usually becomes fascinating to the students.

Concept design: It is the area with most questions and therefore allowing for the most innovative ways of thinking. This area may become the key issue in the nearest future, when the virtual modeling becomes really the most frequently used design tool and the computer will be as common as the pencil now.

Multimedia Interactive Presentation

There are two important classification criteria for the techniques of presentation. In relation to the medium: *mono-media technique* - with the help of a single tool, and *multimedia technique* - that connects all forms into uniform message. In relation to the user: *self activating* - where the user is the passive observer and *interactive* - allowing an active, selective manipulation of information.

Traditional forms of presentation are usually single media. Of course, it is possible to create multimedia presentations using traditional tools, but preparation and presentation requires a full scope of tools and techniques, which are usually not universally accessible.

In presentation aided by computer techniques, various media are merged into one inseparable whole, with the help of an appropriately set up computer and programs. The multiplicity of media that can be utilized should also be noted. They are by no means limited to the basic picture and sound, but can encompass digitized drawings or graphic presentations, drawings executed with the assistance of a computer, computer simulations (renderings), computer animation, digital video pictures, or any combination of each of the above. Forms of pure sound may also be discussed in a similar way: narration, sound scenery, synthesized and natural sounds, and their combinations.

Interaction is of great importance due to the possibility of user adjustment to the scope of

delivered information in accordance with the user's own, concrete needs. This way, the presentation can contain all vital information about the design, which can be investigated selectively with the optimal access to the chosen information. The same volume of information presented in a classic manner would certainly prove impossible to be absorbed by someone who is only interested in a single element. The fact of interaction itself is also an important factor in the proper examination of the design. It forces the viewer to demonstrate activity, and thus interest in the presented design. Thanks to the general access to the global Internet, the multimedia presentation of any kind can be easily delivered and shown at any place on Earth. This is much more effective and simpler than any other type of traditional presentation.

All aspects of the usage of multimedia in presentations can be summarized as follows:

- Possibility of linking various kind of information
- Allowing for easy and on-line access to the information
- Ease of editing
- Interactivity
- Easy-to-read and easy to transfer

Conclusions

The potential for the information contents of the virtual models as well as the possibilities of multimedia, interactive presentation places them in the centre of the Architectural Education. In addition, Internet seems to be the best instrument to combine them both. It is difficult now to predict all consequences of virtual modelling and interactive presentation in the context of universal access to the global network.

The expectations lead us to look for the solutions for the system integrators based on Internet. We need tools which help us to design on the bases of virtual modelling, effective creation of the websites provides an unique, added-value,

rich interactive experience. We need solutions that not only provide access to the data or services from multiple sources, but also help to manipulate and interact according to specific needs or expectations. To serve clients best, Architects need software solutions and innovative processes for 3D visualization and behavioral based interactivity. Such solutions have to be the part of the design process, giving control over time, cost, production and delivery of even complex projects expected by the clients.

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