Approach to computer implementation in architectural curriculum

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This paper examines traditional teaching methods in architecture and identifies opportunities which are offered by computers for changing the teaching process. Introduction of CAAD to the teaching schedules unquestionably and explicitly uncovered a need of changes within the whole schedule of study. In this paper we will submit the thesis that the problem does not lay in how will CAAD be incorporated into the architectural curriculum, because it is the CAAD that has the potential to become an integrating factor of architectural curriculum.

Introduction

1.We often speak of changes in design process due to an application of computers.
2. But we more often speak of lack of changes.
3. We hope that in near future it will be possible to witness full integrity of design and tools applied in it.
4. We have to teach students a lot of subjects in order to help them be creative.
5. How do we teach our students? - like in the XIX century.
6. What is the students reaction on such methods? - they ignore our efforts.
7. Why? - because in age of dynamic visual pictures we propose them classic ways of teaching.
8. New media demands new process and new process demands new media.

Evolution of teaching

Nine years ago I sent a very optimistic paper: „Four easy Questions" at ECAADE Conference to Aarhus. In this paper I have written: „Should we teach CAAD? - Yes, but Why? The answer to this question is clear too. Question three - When? - at the 5, 6 and 7 semester. (...) How to teach CAAD? We should teach how to use professional computer programs and not programming." (Asanowicz 1989) Sentences cited above concerned general problems of CAAD training. In Munich in 1991 I presented the methodology of this training process. Nevertheless I wrote „....we should not teach the technique of CAD but how to design using a computer as a medium." in fact we used a computer as a drafting machine. Students made a project of „Holiday house for two". They found the idea in traditional way, using pencil and sheet of tracing paper, and made the drawing using the AutoCAD - the floor plan at the fifth semester and the 3D form at the second semester. (Asanowicz 1991) In the result of this CAD is understood as a Computer Aided Drafting and our students were using the computer as an expensive pencil - we are teaching drafters. Figure 1 presents this traditional architectural curriculum.

All subjects of this curriculum are not connected with each other. Of course at higher courses students were taught more complicate subjects, knowledge of which they had been collecting at beginners' courses, but co-

ordination between this subjects is very general. In this model CAAD is being considered as a typical element (discipline) of architectural curriculum, the same as history, construction or urban planning.
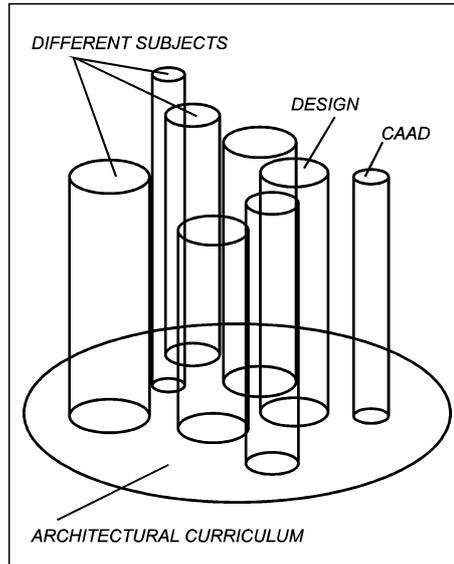

Figure 1. Traditional architectural curriculum - CAAD (Computer Aided Architectural Drafting) as a separate subject of architectural curriculum

Now, as a result of application of informative technology in many areas of architect's activity the question arises: To what extent can CAAD be integrated to the architectural curriculum? We started analysing this problem in Lund. One of the aspects of this problem is computers' using in designing. Development of hardware (computer, 2D and 3D scaner, computer tomograph) as well as a software (understanding not only as a computer programs but as a new methodology) gives us possibilities to create architectural form in different way. In recent years in many schools stress was put on using computers not as tool for calculation but in a creative way. In these schools neither AutoCAD is being taught nor another kind of software. Computer is treated as a medium, which lets students explore different spaces of architectural design. It is an extension of our creative possibilities. While traditional tools enable architects to work only on objects, the computers gives them access to the processes and sources of creative activity. They could use it at early design stages for searching of idea.
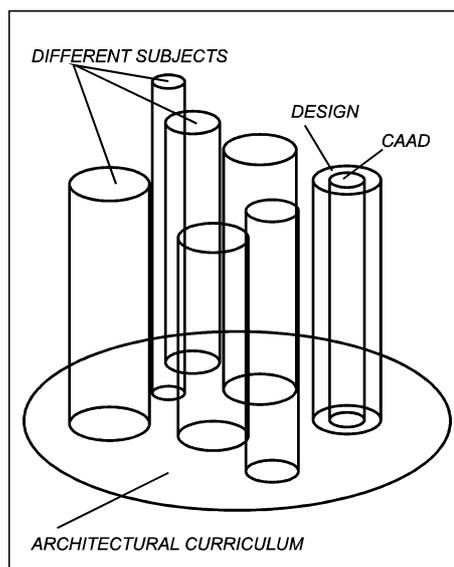

Figure 2. CAAD (Computer Aided Architectural Drafting) integrate with Design

This kind of computers' using is not excessively different from the one presented in the first model if we are analysing all curriculum, but in result, the creating of the second model of architectural curriculum is possible. (see figure 2) In this model CAAD is really included in Design, but it is still separate from different disciplines.

Computers technology successfully connected with design shows the possibilities of computers application in another curriculum subjects. This is the result of development in information technologies (multimedia, computer animation, virtual reality) too. In effect we can create a third model where each subject includes some elements of Information Technologies (IT). (See figure 3)
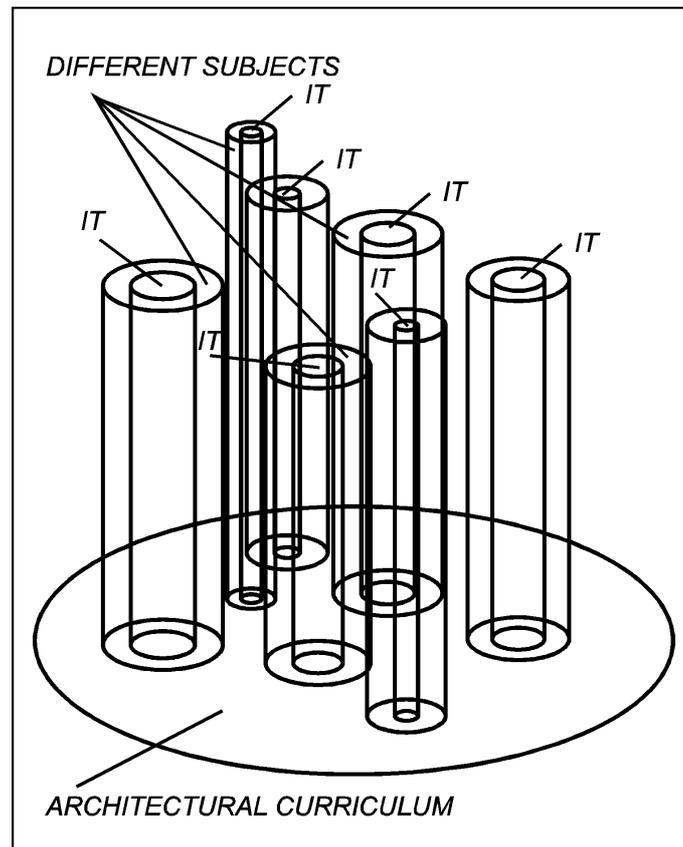
Figure 3. Information Technologies in different subjects of curriculum

In the history of architecture computers can be used for analysis and presentation of towns' development (P.Alkhoven - The Changing Image of the City) or for analysis of architectural styles (R.Stenvert - Constructing the Past, Computer-Assisted Architectural-Historical Research). In engineering construction - simulation of construction deformation under different basic load is possible. In urban planning computer can be used not only as a calculator of areas of different town's parts but for a simulation of town's life (as in SimCity 2000 - to all well known computer game). And at last - in design - it can be used in a whole designing process - from the idea to the production of design documentation.

This kind of using of computers changes teaching methods in all subjects of architectural studies, but it doesn't change a curriculum as a whole, because the situation in this model is the same as in the first two models - no connection between separate subjects of curriculum.

I think that the question „To what extent can CAAD be integrated into the architectural curriculum?" can be transformed and formulated as follows: How will the architectural curriculum be affected by implementation of IT? As I have written in my paper at ECAADE Conference in Lund - „That seems not to be possible to deliberate the position of CAAD in architect's curriculum as it is in case of other disciplines being taught at architectural schools or faculties. Introduction of CAAD to teaching schedules unquestionably and explicitly uncovered a need for changes within the whole schedule of study." (Asanowicz 1996)

I would like to present two theoretical models of architectural curriculum in which computers and Information Technologies play main role. The first model is presented below.
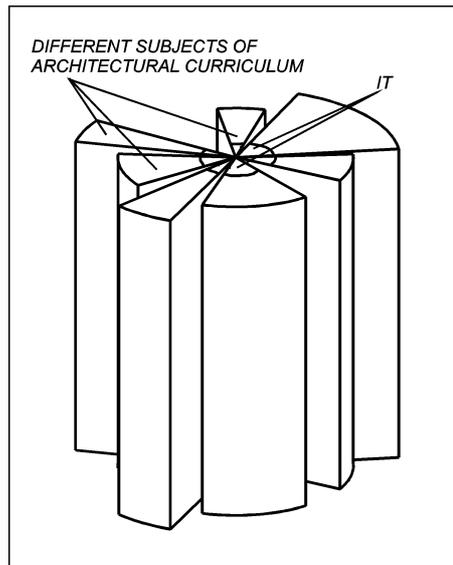
Figure 4. IT as an axis for architectural curriculum integration

       This model is a result of the third's model transformation. The main idea of this transformation is that Information Technology, as an element which exist in all subjects of curriculum, can play the integration role. The IT is an axis around which all architectural curriculum subjects are grouped. Thanks to this a chance for communication between separate subjects can be potentially possible. Unfortunately in the model presented above, Information Technology itself doesn't enable this communication, because IT is attached to separate subjects, and isn't treated as a whole. If we assume that Information Technology could be an environment for all subjects, we can create a more appropriate model to requirements of new architectural curriculum. (see figure 5)
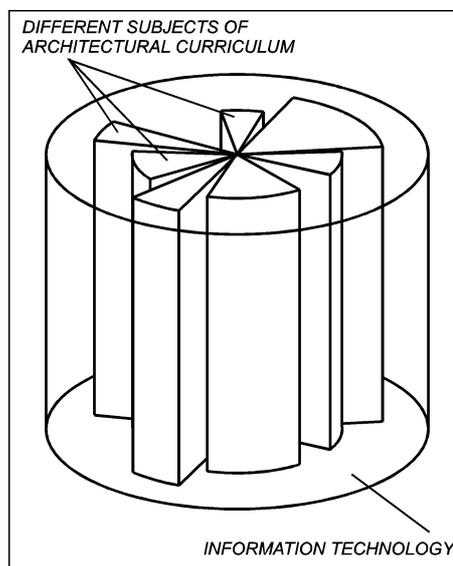

Figure 5. IT and full architectural curriculum integrating

       What is new in this model? Between all subjects of curriculum contact and exchange of information will possible. Medium for this will the Cyber-Real Space, which is a fully realistic space, defining the area in which our creative activities will take place. (Asanowicz 1998) It will be possible when our thinking about Information Technology will change. Works undertaken at different schools of architecture show that it will be possible soon.

References

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