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## Teaching of Computer Presentations in Architecture and Graphic Design at Faculty of Architecture in Ljubljana

### Poduka kompjuterskog predočavanja arhitekture i grafičkog dizajna na Arhitektonskom fakultetu u Ljubljani

#### Key words • Ključne riječi

computer drawing	kompjutersko crtanje
computer graphic	kompjuterska grafika
computer software	kompjuterski software
presentation of archit.	predočavanje arhitekture
to draw architecture	crtanje arhitekture

#### Abstract • Sažetak

Last 12 years of teaching technique in computer graphics at Faculty of Architecture in Ljubljana confirmed that this kind of education becomes more significant than other skills of architectural and graphic presentations. Work of an architect is today impossible without 2D and 3D presentation, animation and other computer possibilities to work faster and better. This paper is based on research work through many years of teaching techniques in computer graphics and computer presentations of architecture at Faculty of Architecture in Ljubljana.

Tijekom posljednjih 12 godina poduka kompjuterske grafike na Arhitektonskom fakultetu u Ljubljani potvrdila je da ova vrsta naobrazbe postaje važnija od drugih načina arhitektonskog i grafičkog predočavanja. Danas je rad arhitekta nemoguć bez 2D i 3D predočavanja, animacije i drugih mogućnosti koje kompjutor pruža za brži i bolji rad. Ovaj članak se zasniva na dugogodišnjem istraživačkom radu u poduci tehnika kompjuterske grafike i kompjuterskom predočavanju arhitekture na Arhitektonskom fakultetu u Ljubljani.

## 1. Introduction / Uvod

Since 1985, the Faculty of architecture at University of Ljubljana<sup>1</sup> has tried to introduce computer in education and teaching techniques. These first experiments were very modest of course, more individual contribution of some enthusiastic professors than mass movement with clear target, program and principles. Computer was something new, so exciting and different from all the other means of architecture presentations. Closer investigation of this appearance could show quite easily that we were not yet prepared to realize the real value and ability of using this new machine and its software to present or to study and understand architecture and graphic design.<sup>2</sup>

The skepticism as a result of 10 years' experiences proves in some aspects and instances to be true. Computer can turn against architecture and also against architects when we use it in a way that it can help to create architecture instead of being only a tool to present architecture.

## 2. Presentations of Architecture / Predočavanje arhitekture

The need to present architecture is well known for many years in architects' circles, even more it has been always very important in obtaining orders for projects. This is the reason of teaching these skills of presentation at the Faculty of Architecture in Ljubljana.

Our students are taught many ways to present and express architecture:

- technical drawing
- architectural drawing
- freehand drawing
- freehand sketching
- drawing and color
- graphics
- modeling
- computer drawing...<sup>3</sup>

Introducing of the computer into teaching technique wasn't very popular at the beginning. Application of the computer was already very successful on many other fields (technical disciplines, multimedia, management and some others), architecture software were at that time uneasy to use, working with them very complicated and taking up too much time. The experience from that time is that there was a lot of interest besides all handicaps particularly among students population, much less among teachers. But this few of us were enough that computer did not disappear as a tool from our means or ways of architecture presentation and graphic design. Drawing 2D projects, 3D projects and animations, graphic and design projects became more and more popular in all methods of presentation architecture, design and graphic. The operative practice even demanded knowledge of working with computers to obtain jobs. The most common demand at international and even state competitions was that they are presented as computer drawings and animations. The answer to all these facts at Faculty of Architecture in Ljubljana were efforts to give graduates as much as possible education on computer drawing and computer graphics.<sup>4</sup>

<sup>1</sup> Faculty of Architecture in Ljubljana was established in 1919 as a Department of architecture at Tehnical Faculty at newly established University of Ljubljana

<sup>2</sup> Computers and its software were at that time rather uneasy to use, more complicated than comfortable and simple to use as a presentation of architecture

<sup>3</sup> All these skills are taught from 1<sup>st</sup> to 3<sup>rd</sup> year of study at Faculty of Architecture in Ljubljana

<sup>4</sup> At Faculty of Architecture in Ljubljana are used following software applications:

AutoCAD (Autodesk)  
 ArchiCAD (Graphisoft)  
 AcadBAU (CTB Buchholz)  
 ALLPLAN FT (Nemetschek Gmbh)  
 Speedikon (IEZ Gmbh)  
 3D Studio MAX, 3D Studio VIZ (Autodesk Kinetix)  
 Corel DRAW (Corel Corporation)  
 QuarkXPress (Quark)... etc

### 3. Teaching to Draw Architecture /Poduka crtanja u arhitekturi

The question is when is the right time to begin with the teaching of computer drawing? To put this paper into a proper frame one must start from the fact that all students know how to use computer from their secondary schools. The answer to this question can be realized by experiment. We started teaching computer drawing from the first year, then from the second and at last from the third. Results were carefully analyzed, tested and compared with the results of exercises at other presentations of architecture and graphics. All these experiments were performed at main subject Projecting and Composition at Studio which is a traditional teaching method at Faculty of Architecture in Ljubljana.<sup>5</sup> It has been developed from ancient Plečnik's exclusiveness, passing several experiments to nowadays compulsory form of real life simulation, that is the working environment and method characteristic for architectural profession.<sup>6</sup> Results of the comparison are very complex but can be interpreted and simplified in a short form:<sup>7</sup>

- Teaching to draw architecture and graphics should be from simple to complex, from freehand and technical drawing to computer drawing.
- Teaching composition (and all other subjects) is also from simple to complex.
- Therefore some simple rules must be observed:
  - students should not be allowed to draw with the help of computer too early, at least not before they learn to draw in other mentioned techniques
  - this rule should be observed at all teaching subjects and with all teachers except at subject about computers
  - students are highly recommended to use computer in all other fields but drawing architecture and graphics
- The proper time to decide which and what technique of presentation architecture and graphics is one going to use in future is somewhere in 3<sup>rd</sup> year of study.<sup>8</sup>

Why not before? The experiences and results are from beginning to nowadays dual, negative and positive. The result varies from student to student, from generation to generation but very few understand that the problem of creating architecture and designing graphics never depends of the means of its presentation. Student of architecture and design must build up a system of values, a system of art and aesthetic elements, the rules of composition, technical knowledge... at first, just to make a frame to start thinking about the ways of presentation architecture and graphic. The most common thinking that computer is going to substitute and eliminate architect as a participant in creation of architecture and graphics is absurd as far as we are prepared to believe that computer is only a tool, a modern and very efficient way of presentation graphic and architectural problems. But computer can turn against architects and against architecture if it is not used in a proper way. Even more, sometimes when it becomes a sign of prestige, an act of exclusiveness, a consequence of fashion, computer drawing leads to plain, sterile, poor, unclear and insufficient pictures of architecture and graphic design. When computer drawing becomes purpose to itself is the time for

<sup>5</sup> The subject Projecting and Composition is the only subject which is taught from the beginning in 1<sup>st</sup> year to the end of study at diploma work and is performed in Studio by teaching professor - Mentor.

<sup>6</sup> This tradition from Plečnik's time means a collective work of students from the beginners up to 4<sup>th</sup> year and diploma workers as the highest level in a Studio which means that they work together in the same drawing room.

<sup>7</sup> Complete results are attainable in Archives at Faculty of Architecture in Ljubljana, Slovenia.

<sup>8</sup> This decision proceeds from experimental work with students at Projecting and Composition within 15 years of teaching of architectural presentations and graphic design by computer.

alarm, there is no content but empty, sterile, unfinished picture without value.<sup>9</sup>

In all these years, from the beginning to nowadays, students were always interested in this new way of presentation or we can say that they were looking forward for something new, a new way of "making" architecture and graphic. It was not easy to persuade them that this was not the proper way to create, to design but only the method to show the others artists' creations.

At the Faculty of architecture in Ljubljana are used all standard everyday programs for nonprofessional work and all available CAD software. We are using software from simple to complex, from 2D to 3D, from 3D to animation, from simple hardware, printers and plotters, to more complicated hardware and software possibilities.

The need for being top value expert is expected on all levels of architectural and graphic practice. Our experience about the number of graduate students that need computer drawing in their business is below one half.<sup>10</sup> And below one half is interest of students for this kind of education as they appear during the study of architecture, design and graphics.

Experience from the past, when the computers were not so efficient and software too complicated and uneasy to use, to nowadays when the computers became highly efficient and software so useful and accessible, capable of serious and professional work, nothing changed in essential view of application computer in presentations of architecture and graphic design. The dilemma, sometimes even fear and on the other hand enthusiasm were present all the time. There were and there are now arguments for and against the use and application of computer. The most common arguments against computer is that it is unnecessary and dangerous invention to architects and designers and to their creative work, the computer is more obstacle then help.<sup>11</sup>

My experience in all these years, in practice and at faculty as a teacher, is that application and use of computers is indispensable, as far as we take computer as a tool, a new and perfect means of presentation architecture and graphic. We know that our graduates need knowledge and skill of using computers, for everyday's working with texts - new way of typing, for drawing and presenting architecture or graphic designs.

<sup>9</sup> There are too many examples of this topic and the problem is much more serious that one can admit.

<sup>10</sup> It is very important to explain that only a little more then one third of graduate students at Faculty of Architecture remains in projecting sphere.

<sup>11</sup> This is one of most harmful statements, unfortunately often used as definitive argument against any use of computer in architecture and graphic design.

<sup>12</sup> Proof for this statement are demands of architectural studios who are looking for new architects, students of architecture... when they need people for their projects and all of them should be able to draw and present architecture by computer.

## 5. Conclusions / Zaključci

This paper is dealing with experiences about teaching computer presentations of architecture and graphics at Faculty of Architecture in Ljubljana. The results of this teaching are our graduate students and their success in the field of professional work.

The conclusions are:

Mastering and application of the computer (as hardware and software) is indispensable. As a mode of life for all to-days, modem people. Architecture and graphics is no exception of course. Computer is one of important parts in projecting and designing process. One can not imagine any serious work without the help of computer.<sup>12</sup>

Computer shall never substitute or eliminate architects and designers in creation architecture and graphic. Computer is only a

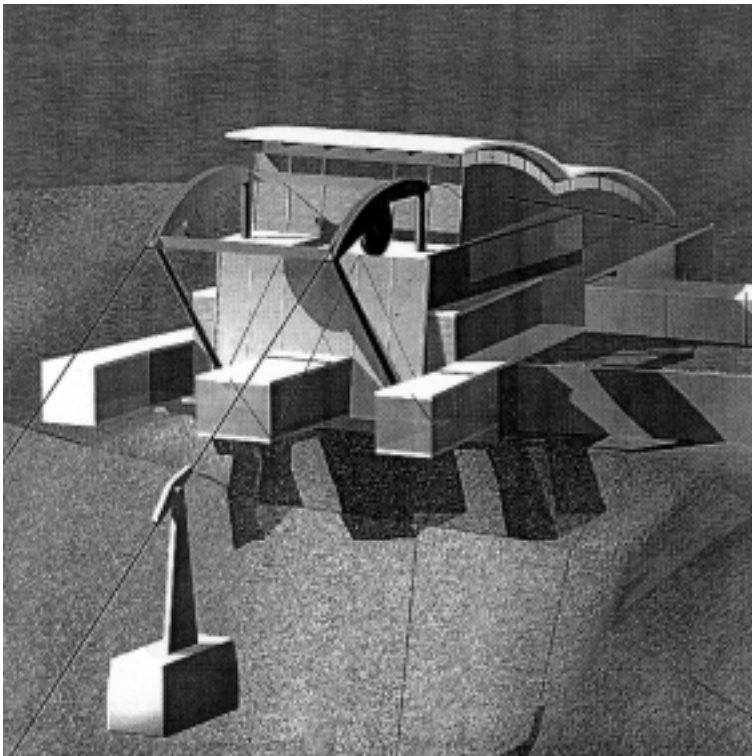
perfect tool and perfect media for drawing, graphic design and their presentations.

Computer can turn against architecture and architects, also against graphic and graphic designers when it is not used as a tool but cocreator of architecture and graphics. Some students like to think that one can create good architecture by computer only. Creating architecture via computer is one of greatest mistakes and misunderstandings of its aesthetic component. This problem is more evident by less creative students, who think that computer can replace their talent to be a good and successful architect or designer.

The answer to the question when is the right time to start the teaching of computer drawing is: not too early, as this drawing is the last, highest level of architecture and graphic presentations. The researches at Faculty of Architecture in Ljubljana expose that it is not before 3<sup>rd</sup> year of university study. Before this stage can produce negative personal trends in development of creative capabilities. In spite of all these dilemmas about negative effects all kinds of computer presentations are indispensable, so is also teaching computer drawing and computer graphics. Application of computer presentations is one of many ways to present architecture and graphics.

■

Examples of Student's Works at Faculty of Architecture in Ljubljana /  
Primjeri studentskih radova na Arhitekotskom fakultetu u Ljubljani



**FG. 1.** Skilift Vogel in Bohinj - Slovenija (Diploma work, 3D computer presentation)

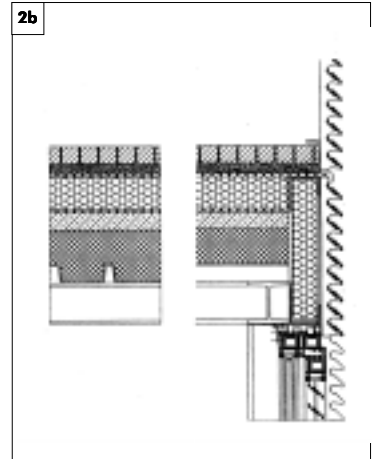
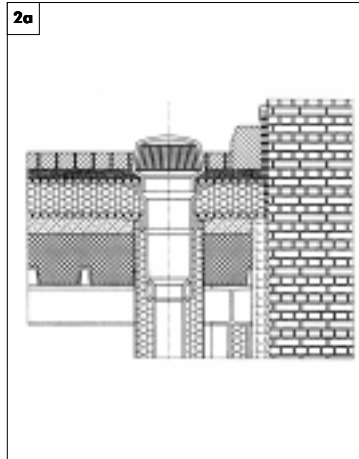
Source • Izvor  
Archives at Faculty of Architecture in Ljubljana

**SL. 1.** Skilift na Vogelu, Bohinj - Slovenija (Diplomski rad, 3D kompjutorska prezentacija)

**FG. 2a,b** Family house, details of elevation sections (works of students of 3rd year)

Source • Izvor  
Archives at Faculty of Architecture in Ljubljana

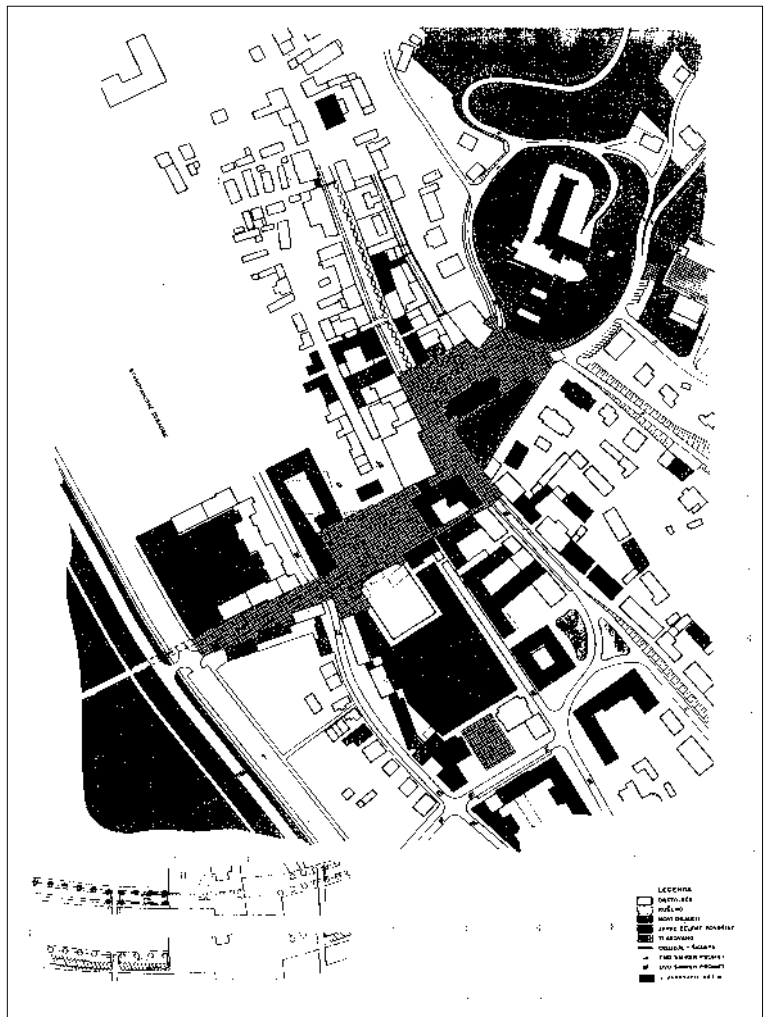
**SL. 2a,b.** Obiteljska kuća, detalji presjeka (rad studenata 3. godine)



**FG. 3.** Urbanistic and architectural workshop "Lendava" - Slovenia (urbanistic 2D plan of the city of Lendava)

Source • Izvor  
Archives at Faculty of Architecture in Ljubljana

**SL. 3.** Urbanistička i arhitektonska radionica "Lendava" - Slovenija (urbanistički 2D plan grada Lendave)



**Sažetak • Summary****Poduka kompjuterskog predočavanja arhitekture i grafičkog dizajna na Arhitektonskom fakultetu u Ljubljani**

Tijekom posljednjih 12 godina poduka kompjuterske grafike na Arhitektonskom fakultetu u Ljubljani potvrdila je da ova vrsta naobrazbe postaje važnija od drugih načina arhitektonskog i grafičkog predočavanja. Danas je rad arhitekta nemoguć bez 2D i 3D predočavanja, animacije i drugih mogućnosti koje kompjutor pruža za brži i bolji rad. Članak se zasniva na dugogodišnjem istraživačkom radu na poduci tehnika u kompjuterskoj grafici i kompjutorskom prikazivanju arhitekture na Arhitektonskom fakultetu u Ljubljani. Istraživane se dvije suprotne teze:

- kompjuter je tek jedan od mnogih načina predočavanja arhitekture i grafike
- kompjuter je novi način stvaranje arhitekture i grafike.

Istina leži između ova dva stajališta, jer kompjutor osigurava bolju i višu kvalitetu arhitektonskoga i grafičkog crtanja, osigurava novu veze između projektanta i naručitelja, omogućava novu suradnju među projektantima... Međutim, kompjutor nikada ne može stvarati grafiku i arhitekturu. On će uvijek ostati sjajno oruđe u polju modernoga i stručnoga grafičkog i arhitektonskog projektiranja.

**Igor Kalčič**

## Biography • Biografija

Professor **Igor Kalčič**, Ph. D., Arch. Eng., teaches human habitation and the use of computers in architectural design at the Faculty of Architecture in Ljubljana. He is actively engaged in research and architectural design.

Prof. dr. sc. **Igor Kalčič**, dipl. ing. arh., nastavnik je na ljubljanskem Arhitektonskom fakultetu gdje predaje problematiku stanovanja i primjenu kompjutora u arhitektonskom projektiranju. Aktivno se bavi znanstvenim radom i projektiranjem.

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