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I teach the following disciplines at the Faculty of Fine Arts: Perspective, Graphic Design, Three-Dimensional Computer Graphics.

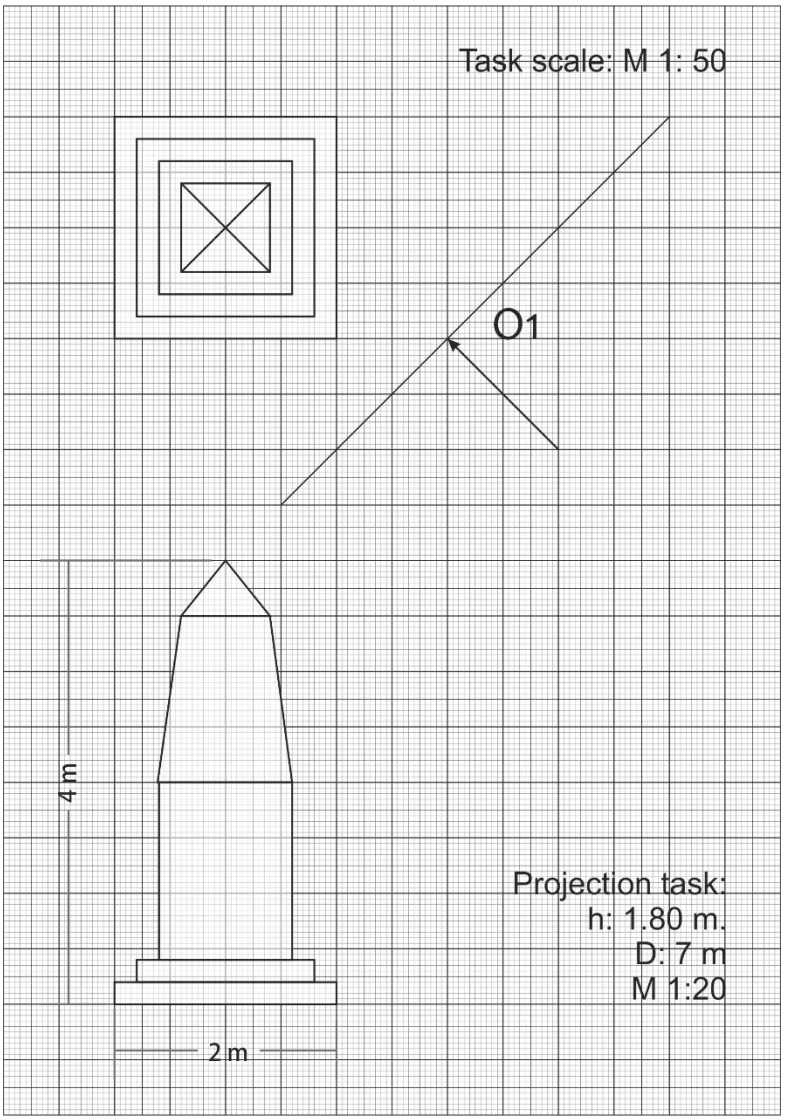
I have always tried to explain to students why it is important to study the science of perspective. The main reason for me is the development of imagination. Looking at our surrounding reality at a deeper level and exploring the causes of the way we perceive. In this way you acquire the ability to draw objects without having to look at them, which means you represent them. From there, you also have the ability to see ahead or in perspective.

Generally, a small number of students in the Faculty of Fine Arts are able to master of the knowledge I am trying to pass on. The reason is that most of them are trying to be impulsive, and on that logic, the perspective is something too far from their art ideas. But as I said above, the real task of learning in perspective is to learn to see ahead so you can predict what is your place in the great sea of art.

I teach Perspective the way I was taught. My first lecture includes a comparison of events that have influenced the development of art on the one hand and on the other the sciences. I focus on methods of building a perspective projection that are the result of the quests of renowned artists who worked during the Renaissance.

Subsequently I proceed with the examination of the perspective system by a method called constructive perspective, with one and two points and how the individual elements function.

Specific tasks are given to the students and the way they should interpret the condition reading is explained. For the first tasks I offer a solution, and for some of them I have also prepared video lessons that can be seen on my website www.kosev.com and in this case http://kosev.com/index.php/en/for- students / 12-for-students / 35-task-obelisk-2


Task scale: M 1: 50
O1
4 m
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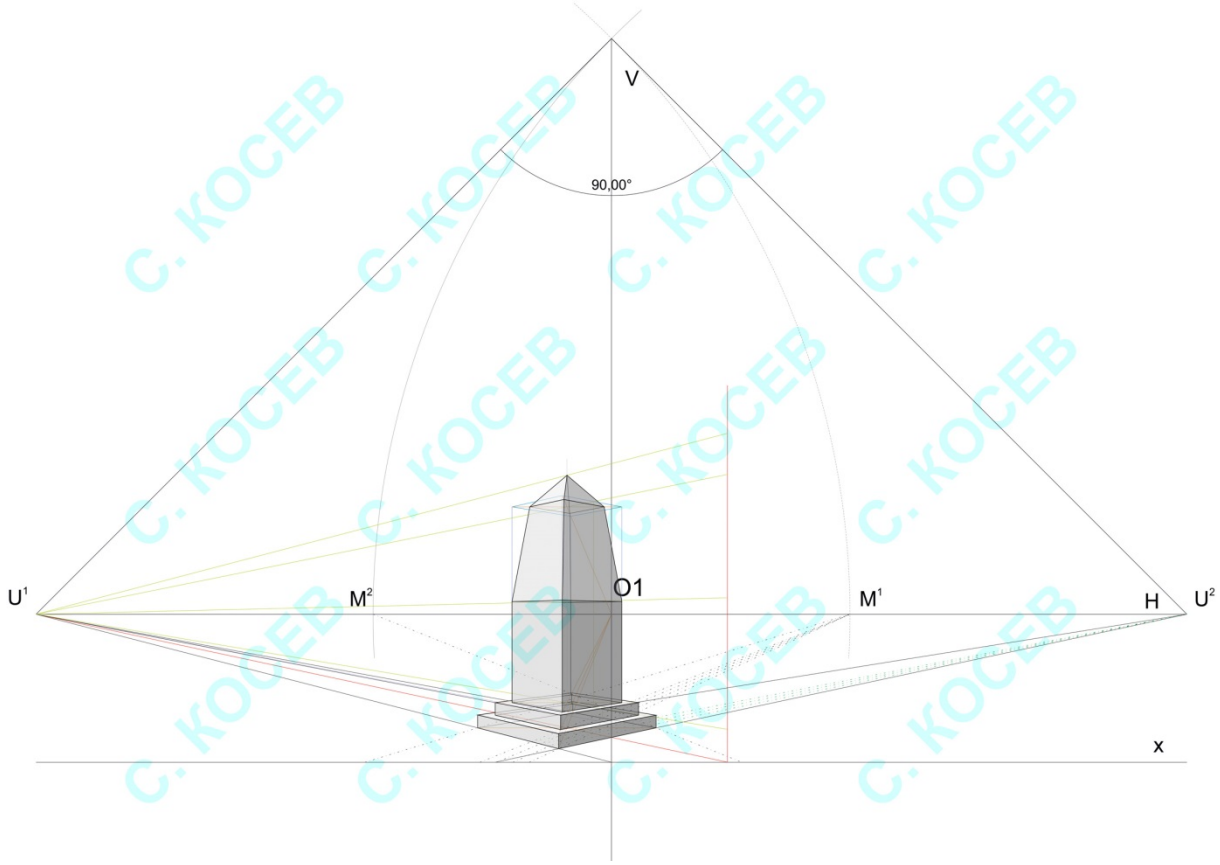
Projection task:
h: 1.80 m.
D: 7 m
M 1:20



The lectures are accompanied by exercises that are led by an assistant. Several tasks are given under similar conditions in order to acquire knowledge.

Perspective is studied four semesters, including the following subjects through out the period: building a perspective projection with vanishing point; building a perspective projection with two vanishing points; perspective projection of inclined planes; perspective projection of curves and volumes with circular cross sections; shadows from parallel beam source; shadows from point beam source; mirror projection; building a perspective projection with three vanishing points; illumination in perspective projection with three points of contention;

I have a number of publications on the subject of perspective, but the fundamental are my two books: PERSPECTIVE DRAWING - THE SYSTEM OF PERSPECTIVE DRAWING AND 3D COMPUTER GRAPHICS (http://kosev.com/index.php/en/publications/monograph-1) and PERSPECTIVE DRAWING - DESIGN, REALIZATION AND APPLICATION USING 3D COMPUTER GRAPHICS (http://kosev.com/index.php/en/publications/monograph-2).

BOOKS SUMMARY.

The objective of the present research is, through analysis of the causes for and the historical context of the emergence of 3D computer graphics, to demonstrate its applicability as a powerful tool of Fine Arts.

The study consists of four chapters. The first chapter presents a historical survey of the development of the communicative, aesthetic and psychological functions of art. It traces the variety of approaches and ideas of authors who treat basic aspects of the emergence of 3D computer graphics.

Chapter Two presents a comprehensive compare/contrast analysis of the methods of representation of the surrounding world, namely the constructive perspective and the 3D computer graphics. It studies the cause-and-effect relations of these methods, while simultaneously defines their common characteristics and traces the influence of the earlier constructive perspective on the development of the three-dimensional graphics. Here I also study the mathematical theories that provide the algorithms for calculation of the perspective and orthogonal projections in the computer graphics.

Chapter Three studies some issues of the light and the shadow as well as the methods of their rendering through the means of 3D computer graphics and the constructive perspective. Spatial presentation of the light-and-shadow interplay in each work of art is one of the most important factors contributing to the understanding of that work. This calls for the special attention in studying of the techniques of light and shadow rendering through the above mentioned methods and their interdependence and overlapping.

Chapter Four demonstrates the ability of 3D graphics to reproduce complex optical phenomena, which up to now have escaped the realm of constructive perspective, due to the inapplicability of the traditional drafting methods to the study of such phenomena.

Within the course of study and analysis of the 3D computer graphics and its relation to Fine Arts, I construct a methodology for people, occupied in artistic activities and implementing their ideas with the aid of computer graphics. Through the wide scope of themes involved in the analysis, the methodology in question becomes interdisciplinary in character.

I highlight the importance of comprehension of constructive perspective basics for it is a corner stone of three-dimensional graphics. I also discuss some aspects of interchangeability of 3D computer graphics and constructive perspective. This facilitates the utilization of 3D graphics in the study of optical phenomena that are of interest for the perspective.

In the first one I analyze the methods of creating perspective projection on the one hand, through the means of constructive perspective as well as in computer technologies.

In the second book, I discuss in more detail the work with three-dimensional programmatic environments. One of the aims of this study is the

application of three-dimensional computer graphics for the study of complex perspective phenomena such as: refraction of light through transparent and translucent materials with a different refractive index; reflection in curved mirrors - anamorphosis; perspective projection through a convex lens; multiplier reflections etc.

In my work with students, despite the difficulties, I also see their readiness to acquire and apply knowledge related to perspective. Such is the case with the student Plamen Kondov. Here I present his course project which finalizes his activities in perspective at the end of his second year.

Here is the time to say that the students have the option to take an exam or to do a course assignment, latter is much more interesting but time consuming.

Plamen did not cease to use his knowledge accumulated in the Prospective classes and continued to apply it to many of his next projects, as can be seen here.

THREE-DIMENSIONAL EFFECT ON TWO DIMENSIONAL SURFACE BY REFLECTING IN MIRRORS - PRACTICAL PROJECT

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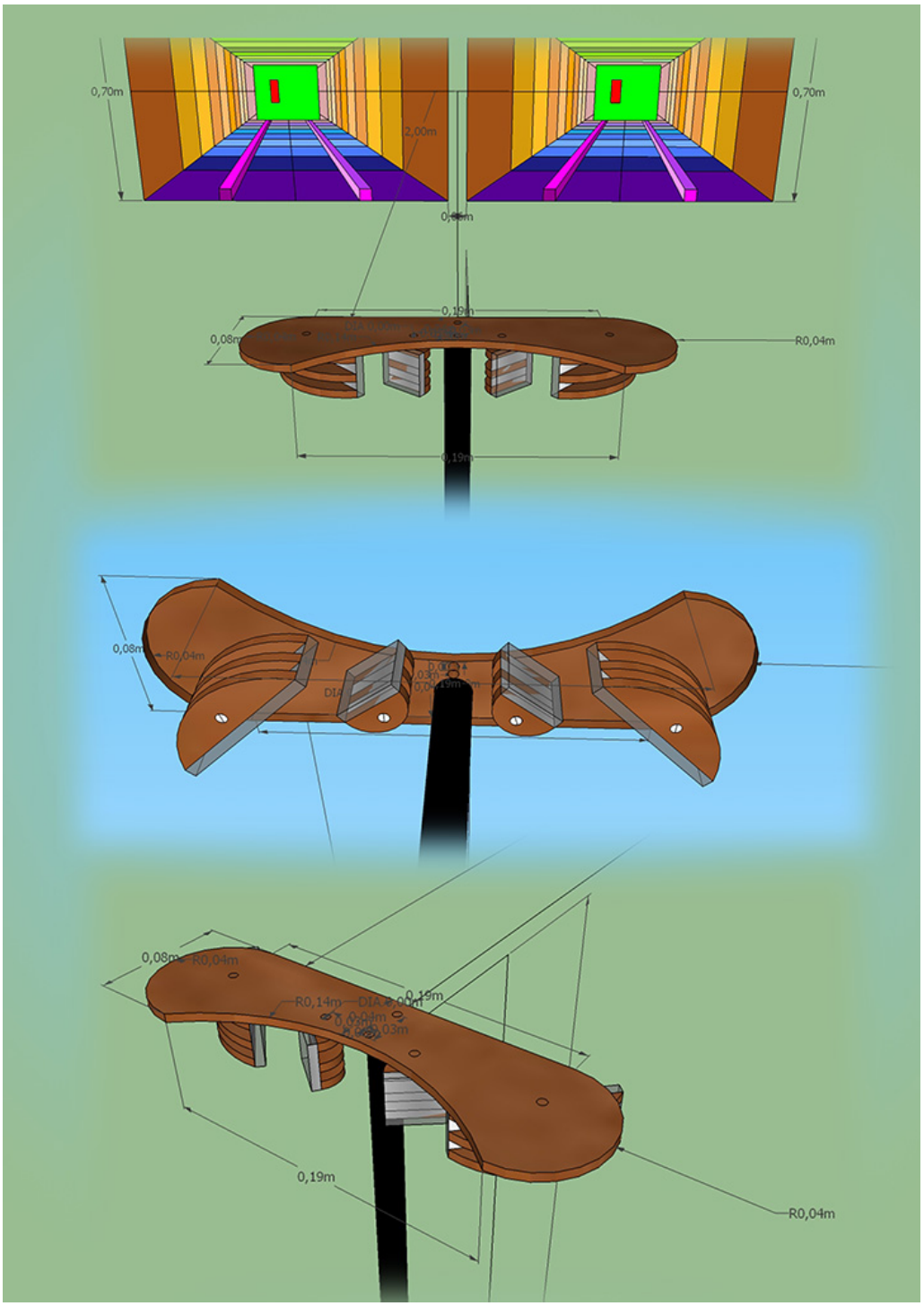
Project manager:
Assoc. Prof. Dr. Svetoslav Kossev

We know that the perspective system is made exactly to achieve a realistic picture in a two-dimensional plane, but the image still remains two-dimensional and the difference is obvious. This system lacks the displacement of the left and right eye view, which makes the picture three-dimensional. At the center of this system is only the one eye point of view. Hence the conclusion that if we have an image constructed through the perspective system for each eye - left image for the left eye and right - for the right, and we can imagine them in such a way that the left eye can only see the "left image "and the right - just the" right image ", we will achieve a three-dimensional effect.

How can we capture each image in the eye? Here the mirrors come to help. The idea that light can be directed is also used in submarin optical cables and eyepieces. Using properly placed mirrors, we can direct the light from each picture into the desired eye, thus achieving the desired 3D effect. There is another problem - how do we position the mirrors so that each eye can see the desired reflection? Here comes the idea that something like "mirror glasses" can be used, and the mirrors will not be aimed directly at the eyes but will be at a certain angle. There is another problem - if only one mirror is used for each eye,

the image obtained from the eye will be mirrored, so we need two mirrors for each eye so that the picture can be reversed and returned to its original state. There is another question - how big are the mirrors and how far away are the eyes so that the picture is seen only from the eye? I solved this problem – the mirror standing in front of the eye is of a size approximate to the eyeball and at a distance not more than the tip of the nose. In this way, it is visible only by the eye it stands on. For the mirror glasses design, I have two options, one for images no larger than 35 / 50cm and the other for larger images. When drawing paintings with this new method it must be borne in mind that they should depict the same object of the same size and the only difference is that the point of view shifts to the left or to the right.

I have made lots of paintings in this way and the results are really fascinating. It is very interesting when you mix impossible perspective whit 3D effects, the result is really mind dazzling.



More detailed information on this and other projects can be found at http://kosev.com/index.php/en/for-students/student-works/plamen-kondov/59-three-dimensional-effect-on-two-dimensional-surface-by-reflecting-in-mirrors-practical-project