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Importance of Computer Technology in Ornamental Interpretations of Paintings in its Function as a Part of the Process of Studying Architecture by Students

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Abstract: In this Article, the fact is considered that in current circumstances the process of learning painting technology in architecture is changing drastically due to the development of computer technology, as exemplified by the Institute of Architecture and Design of the Altai State Technical University. It is shown that in the system of contemporary architectural education, taking into account the developing electronic technology, it is possible to forecast and develop new methods of interaction with computer technology and painting related to architectural design. Part of the work is dedicated to mastering and applying computer software in the course of creating ornamental interpretations of fine art paintings at the stage of training architects at higher educational institutions as exemplified by works of students of the Institute of Architecture and Design of the Altai State Technical University.

Key words: Painting · Art · Computer technology · Architectural design · Innovative activity · New education programs

INTRODUCTION

In the practice of foreign education, there are examples of organic inclusion of computer specialties in the general education package, as well as examples of educational institutions oriented to developing artistic thinking in the world of information and teaching artists of a new type (Architecture School of Barcelona, Boston Film School, some other media schools and colleges in Germany, Australia, the USA and Canada) [1].

Methods of Research: In this article, the systemic and analytical research methods were used.

Main Part: Study of computer technology at the Institute of Architecture and Design of the Altai State Technical University in the specialty of Architecture starts in the first year with the Computer Graphics course unit. In the first year, students study the Photoshop and CorelDraw software and during subsequent years they proceed with ÀrchiCAD, Artlantis, AutoCAD and Sketchup first and then 3DMax and V-Ray. At the Fine Art Department of the Institute of Architecture and Design, the creative process of studying the drawing pictures from nature and, based on them, creation of ornamental transformations includes studying software for computer modeling, vector graphic and visualization of architectural objects. At the first stage, students study methods of realistic and abstract painting as well as creation ornamental transformations of paintings based on them using conventional manual techniques (gouache, appliqued ornament, acryl). Computer technology is involved in the creation of ornamental interpretations stage by stage, as the students learn fundamental laws of painting and special computer software. Simultaneous study of computer technology in design and painting complement and enrich each other and are the creative methods of teaching. This practice of architectural comprehensive design, which involves computer-aided painting method of arrangement of space of artistic technology in painting were integrated in the basic course of education at the Fine Art Department of the Institute as a constituent element of architectural environment.

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This practice allows to "associate different pieces of one's experience with each other and synthesize something new" [2].

During the process of creating fine art paintings, artists use methods that are typical of arrangement of architectural design space, because in easel and environmental fine art works, artists apply the technology of building various objects related to the architectural space. It is to be noted that both for architectural design and monumental painting, the essential condition is the creative ability of student's spatial thinking and his naturally given color sense required for projective thinking. At the restructuring of the education system as a whole, implementation of experimental authors' pedagogical practices and experiences in their function as a means of improving intensity and quality of education seems to be a particularly topical issue [3].

In the program of the painting course of students in architecture at the Fine Art Department, the method of mastering the tooling and the technology of computer painting in design development, which allows to accomplish in a more mobile and comprehensive manner such task as scenery of each particular architecture project, in which fine art is a constituent part of the synthesis of the color combination and interaction of the architectural space elements.

The other constituent elements of architectural design study are the replacing or adding each other classical form of fine art and electronic technology of computer painting being an integral process of the design and the fine art. The mobility of performance and variability of computer painting technology application at design development, which allow students to master and use not only the whole variety of styles of modern trends in architecture, but also the whole range of technologies accumulated by the fine art. Thus, the era of information is not only a new stage of development from the technological point of view, but also a special type of culture, communication and economics and maximum integration of the human into the common information space, which unites the world of nature, the society and the human into an integral system [4].

Creation of an imagery and reflection of style characteristics using computer painting technology of space arrangement, which is considered as an indicator of synthesis of artistic creativity in architecture, seems to be very important and emphasizes the role of painting as an important constituent element of architectural design, in which the artist plays a certain role in arrangement of the environment.

An important point in the education process is the learning computer 3D technology at creating ornamental interpretations of painting by students, which allows to approach the tasks of pictorial forms in painting, architecture, plastic and ornamental art of the designed environment at a larger scale.

The element of knowledge cannot remain constant. It must surely be permanently corrected taking into account new technological achievements, sociocultural factors, new requirements specified by the society with respect to education, etc [5].

Computer technology is very important in studying painting, as it allows interpreting visualizations of architectural constructions and synthesis of arts in the architectural environment, where monumental and easel painting creates a perfect unity with the real 3D space, creating a new structure of the original image. Therefore, computer technology is used in the teaching of students as a tool of approaching imageries and new technical characteristics of suggested by painters digital technologies, which are currently in demand with the contemporary design culture. The new creative methods of approaching tasks of painting are in line with complex computer capabilities of spatial 3D depicting with detailed elements of the design and substantial visualization of details' contrast. The study of computer-aided development of ornamental transformations is based on the classical principles of painting, which are the core of elaboration of a new approach to the technology of graphic arts. Analyzing the problem of universal interrelation of computer technology in design development and in painting, we can notice the rise of such priorities as functionality, accessibility, convenience of using technical electronic tooling in terms of its artistry. Electronic technology prevails in the design development currently, but still the trend of return of classical skills of easel and monumental painting exists as reincarnation of values of modern image and style concepts.

Artistic cognition and study of classical painting methods and, based on them, study of computer technology that combines art and architectural design interest students in architecture greatly. The principles of painting and computer technology influence all aspects of architectural design. The computer technology becomes the main and universal element of synthesis of arts in architecture and the core of style that emphasizes its specific beauty. The picturesqueness of the project arrangement on a plane can be revealed through consequential analysis of the artistic form of

ornamental computer painting, which can be imagined as expression of the algorithm of the project idea and project approach to spatial tasks. This algorithm allows to add more creative, innovative, personal character of space depicting, which initially was modeled in a painted ornamental picture and then transformed into the project design offer. Complex opposition of plainness and deepness of space allows to approach cross-disciplinary computer painting technology. Studying the methods of implementation of computer technology in painting, in their function as a trend of contemporary architectural design, students are to carry out artistic modeling of objects in various graphical layouts and their visualizations. One of the main and important qualities of computer painting technology in architectural design is its universal character, which is expressed as dynamics of color and ornamental exploration of the environment, its visualizations using project illumination status (day, night, twilight, illumination inside interior. etc.), which affects the color that causes the impression of 3D color experience of spatiotemporal and individual images. The universal character of computer painting technology is expressed through inclusion in the design environment of the architectural space of artistic monumental art works and ornamental forms that improve aesthetic quality and expressiveness of the project. The universality of computer painting at design development can also be traced in the process of visualization of architectural spatial solutions, connected with designing transit areas of street and their elements, landscape elements, at beautification, arrangement of lighting, etc.

In the course of study, computer technology in ornamental painting helps to create unique coloristic approach to building facades, areas adjacent to them with ornamental elements included, which furnish individual color characteristics to them. The significance of color at design development is unquestionable. In the process of design visualization, color enhances reproduction of the effect of dynamic development of the architectural cubage condition during various seasons and times of day, ensuring visual and emotional influence on impression of the architectural object.

To summarize, we can notice that image and style interdependency of design development and computer painting technology develop in the course of history dynamically and variatively. Architecture successfully assimilates ideas generated by artists. In the course of development of the design culture, periodical change of methods of artistic development and design thinking takes place [6].

Through identifying parallels in architectural design development and computer-aided painting, we can notice that, firstly, fine art can act as a coloristic spatial program, based on which the color scenario of design development is built and, secondly, the architect who works according to this project plan can use computer-aided painting as a new tool, which allows to individualize and visualize the project and as a new method of showing the creative nature of the author. This all is expressed by choosing relevant means and methods of space arrangement and approach to creative tasks related to finding the balance between technical capabilities and the emotional element, means and technology of conventional and computer-aided painting. Treatment of the computer painting art by students as a form of incarnation of artistic imagery, aesthetic ideal, harmony, in the context of design approach to the architectural object is especially important and topical. Among general features of computer painting technology in architectural design, we can highlight great variability, realism in visualization performance, transformation of pictures, strong ability in finding various combinations of constituent elements, adaptability to design synthesis of elements, at which standalone elements are united into a new integral object. Computer painting in design development acts as an efficient tool for building colors and reflecting lighting in 3D pictures and allows to develop at various levels, improve and complicate artistic tasks in space. New technology allows to view pictures in 3D format and create standalone elements as the result of synthesis of painting and architectural design, which elements are then integrated in the structure of the project, thus adding new qualitative characteristics of spatial relations that are common for both design development and computer-aided ornamental painting, which have common principles of space arrangement, common attributes and qualities of forms. E-culture presently covers the major part of cultural heritage of humankind [7].

Both Russian and foreign authors, including Marin Vlada [8], David D. Zhang, Mohame Kamel, George Baciu [9], Mark Garcia [10], considered the problem of implementation of computer graphics and technology into the education process.

CONCLUSION

Let us summarize the importance of computer technology in ornamental interpretations of painting at teaching students in the course of professional education

of architects, training design development within an experimental research at the Fine Art Department of the Institute of Architecture and Design of the Altai State Technical University. At designing specific architectural tasks, a student in architecture is required to approach also artistic and aesthetic tasks at the same time. Using computer technology for design development and painting, the student solves the problem of interpenetration of types of artistic activity and solutions of architectural space, conflict and unity of artistic and design, planar and spatial elements. Painting technology here acts as the creative part of the total of interrelations allowing to understand the integral unity of designing architectural space and helps to create harmonious proportions of the spatial environment. A student in architecture while learning the language of fine art interprets it through the shaping of architectural objects, marking the general principles of arrangement of architectural and painting space based on electronic technology, within a methodological and practical research and at that the junction of artistic values of fine art and visualization of the architectural design environment takes place.

RESULTS

At studying the chain between realistic painting and computer-aided ornamental interpretations of painting by students, we can identify several main tasks:

- Analysis of painting styles and approaches of retrospective art works that are relevant to the assigned training tasks;
- Stage by stage drawing paintings from nature in the context of image and style characteristics of assigned tasks on processing the artistic space;
- Creation of brief sketches of ornamental transformation, search for a coloristic, proportional, artistic and rhythmic approach to it, proportional matching of parts of the art work;
- Final sketch processing, identification of the structure of spatial and compositional approach to ornamental interpretation of painting that is relevant to the architectural image;
- Search for computer software that would be most relevant to the fulfillment of the sketch of imaginative ornamental solution;
- Search for visualization materials of the ornamental transformation (various types of paper, its textures, density, selection of colorants, test printouts);
- Completion (mixed technique or electronic printout) of ornamental interpretation using the selected computer technology.
- Application in the ornamental painting interpretation and methods of its fulfillment in architectural compositional and coloristic arrangement of the project, creation of 3D spatial picture or 3D dummy.

This method can be illustrated by term or degree projects, carried out using the methods of creating ornamental interpretations of paintings at the Department of Architectural Design of the Institute of Architecture and Design of the Altai State Technical University This approach allows to avoid duplication of ornamental interpretations of painting and use most efficiently the mastered coloristic and compositional principles of arranging ornamental painting through translating characteristics of various styles and the author's originality at design development. Computer technology allows to revise ornamental transformations in painting, enriches its palette and tooling of artistic capabilities from the modern design point of view, not only as a new tool, but also as a way of thinking.

The methodology of experimental approach to creating ornamental transformations using computer technology actively, which has been tested at practical sessions, confirms its project-orientedness and allows to treat it as a developing and teaching element of education of students in architecture. Computer technology in ornamental interpretations of paintings reveal the opportunities of self-development and are marked as a part of the whole process of architectural design study of students in architectural design of the Institute of Architecture and Design of the Altai State Technical University. Another positive quality of such training lies in the fact that during teaching at the Department, artists need to master, develop and implement new methodology and techniques of computer painting technology. Former students who have finished this education course become excellent specialists and pedagogues, able to teach both modern computer technology in painting and architectural design at the highest level of quality.

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