Artistic and Industrial Institutions in Russian Education
Structure in First Quarter of XXth Century

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Abstract. The article tells about the formation of Russian design education in the XXth century. It focuses on the peculiar features and causes of its insufficient effectiveness in the historical context. It studies the dynamics of changes in the priorities related to the artistic and industrial education in Russia and the connection of these processes with socio-political transformations. The article identifies the role of constructivist artists in the formation and approbation of advanced design-engineering techniques. It emphasizes the interdisciplinary essence of the profession of a designer as a special kind of design activities, its organizing, consolidating and progressive origin in the sphere of industrial production and carrying out interdisciplinary studies. It discloses the essence of a new "engineer-artist" profession. It briefly describes the influence of the fundamental principle of design – projectivity, on engineering and design disciplines when the interaction of an artist, an engineer and an architect is achieved on the basis of design, arrangement and inventive art as well as production organization where science and technology form the basis for creative work.

1. Introduction
In Russia, the basis of training design artists for the domestic industry was laid by the beginning of the XX century. Mastering practical skills in the process of training was approved after the adoption of the "Policy on Artistic and Industrial Institutions" in 1902 [1]. In Russia, there were several educational institutions in this field: Stroganov Central School of Technical Drawing in Moscow, St. Petersburg Central School of Technical Drawing of Baron Stieglitz. Both schools gave general artistic education, as well as knowledge in applied arts. Besides, there were 5 artistic and industrial schools, 18 arts and crafts workshops, as well as artistic-industrial and arts and crafts classes and arts and crafts schools making up the lowest link of the artistic and industrial education [2].

2. Design as a Separate Type of Interdisciplinary Design Activities.
This article deals with studying the transformation of priorities for the artistic and industrial education in Russia, searching, creation and implementation of advanced design techniques identical to the development level of production and economy, as well as the influence of socio-political transformations on these processes. The scientific base of the article is presented by two groups of sources. The first group includes art criticism works, which studied the design object as a category of aesthetics. These are the works of E.A. Borisova and G. Yu. Sternin. The second group includes the works on the theory and practice of design concerning the research object. These are the works of A.F.
Hartwig, E.M. Glinternik, A.N. Lavrentiev, E.N. Shulgina, I.A. Pronina, N.I. Bryzgov, N.N. Kuzmin, G.V. Malyasova, N.A. Koveshnikova, E.E. Dokuchaeva, E. A. Borovskoy.

Many researchers pay attention to the fact that the artistic and industrial educational institutions in Russia have been reorganized many times and changed their departmental "residency" belonging either to the Ministry of Trade and Industry, like Stroganov School [3], or to the Ministry of Finance, and then to the Academy of Arts, like K.H. Reissig School [4], or were members of Public Free Art Workshops. In the beginning of the XXI century, the artistic and industrial educational institutions attached to the Ministry of Education and Science of the Russian Federation reaped the fruits of the reforms in the educational system, as opposed to "pure" art institutes founded by the Ministry of Culture of the Russian Federation. Such state of affairs creates an uncertainty of the future for the domestic design schools, constitutes a reason for their ineffective management, ignoring the specifics of their activities on the part of the founders and hinders the development of design as an industry in Russia.

Class restrictions to education, which lost their power in the end of the XIX century, still influenced the state policy in the first half of the century. In the beginning of the XX century in Russia, the status of a factory application worker was lower than that of a teacher, which influenced the choice of jobs by graduates of artistic and industrial institutions. For example, over the period from 1863 to 1895, Stroganov School graduated 507 people. 370 of them taught in educational institutions, 16 people continued their education in higher institutions, 55 people worked in factories, plants and workshops according to their specialty, 53 people were engaged in private drawing jobs, and 13 graduates worked in other fields. 73% of all the graduates found their vocation as a drawing teacher. And only over 10% worked at enterprises as "skilled draftsmen". Out of all the graduates of 1895, "nobody wanted to work at a factory, they took teachers' positions or are waiting for them" [5]. Besides, according to Hartwig: "The manufacturer needed a copyist but not a creative artist .... The spiritual needs had a better chance to be satisfied in the position of a teacher"[6].

The art and industrial educational institutions in the Russian Empire were in the shadow of their "elder brother" - the Academy of Arts, which administration denied the very affiliation of applied arts to art, believing that the art industry is a destiny of people with a low creative potential. Glinternik E.M. produces a documented decision of the academic council of the Academy of Arts in 1846 "... The establishment of an ornamentation school would open a source of new revenue to the artist, without causing any harm to the supreme interests of art. A great ….talent will hardly be engaged in ornamentation, while mediocre artists will find means for living in it".[3] For example, Stroganov School by the scope of the artistic activities and by the professional level of the graduated masters of decorative art went beyond the limits of a specialized secondary educational institution. However, it was functioning at the state level and according to the Charter of 1902 was legally considered to be an "inferior educational institution of category 3" [7].

The gap between theoretical and practical training was most successfully bridged in Stroganov School in Moscow. In addition to drawing classes, there were over 20 workshops and many branches throughout Russia there. The school introduced a diploma awarding the title of applied artist, which could be obtained upon completion of the general educational course and studying crafts in all the workshops [8]. Students moving from one workshop to another to work on their piece of art received various skills. Finished products were of a high quality, a large team worked on them. There was not such an amount of workshops and such a long period of training therein anywhere else in Russia. Even in the capital of the Empire, in Stieglitz School, students could demonstrate their creative achievements only in drawings [7]. The principle of joint theoretical and practical training was actively promoted by N.V. Globa, director of Stroganov School since 1896. He is associated with the organization of educational arts and crafts workshops based on traditional domestic crafts [1].

At the turn of the XIX-XX centuries, public attention was paid to the issues of the decorative and applied art. The reasons included: industrial needs, the wish to create a new material culture and new aesthetic visions [7]. Recognizing the commonness of Russian modernist style with the phenomena of the European art culture, contemporaries paid attention to its expressed national features born by the
social atmosphere of life of that time and its cultural tradition. Since the mid-1880s, the "national-romantic" trend of the modernist style, which was manifested in architecture, decorative and applied arts, painting, sculpture and graphics, later was named "neo-Russian style" [9]. At the turn of the XIX—XX centuries, the educational institutions, which gave artistic and industrial education, were focused on teaching decorative and applied arts. The reproduction of ancient and the invention of new ornamental compositions, which served as an ornament for products manufactured at art enterprises, formed the basis of professional training. The aspects of design and form making were neither included in the curriculum of Stroganov School in Moscow, nor in the curriculum of Stieglitz School in St. Petersburg [2].

The crisis of the methodological order was not only in Russia. World industrial exhibitions showed that technical products of machine production were inferior to products of the handicraft industry by their aesthetic qualities. Technical products were often shaped by engineers who solved utilitarian and functional problems. They ignored the solution of aesthetic and ergonomic problems. The attraction of architects to the form making of products did not give positive results, whereas they used architectural canons of order systems in the composition. Architectural forms came into contradiction with the dynamics of machines and mechanisms, and the use of architectural systems in the industrial form making proved to be unpromising. The artists of "art for art’s sake" invited to industrial enterprises did not understand the essence of the industrial form making, while the products of artists of the decorative and applied arts were expensive and not meant for a mass consumer. All this indicated that an expert in the field of industrial production was needed [10]. Only in the first quarter of the XX century, a system of abstract form making practices – propaedeutics, was established in the architectural and design education. The ideas and formal techniques of constructivist artists in the 20s were implemented in the form of training courses of the main department of VHUTEMAS. Similar processes took place in Germany - at Bauhaus School [11].

The first post-revolutionary years became a unique time in the history and culture of Russia - the era of breaking the entire existing state system and building a new one based on different grounds. The Russian Empire ceased to exist, and the world's first socialist state appeared on its ruins, the proletariat was declared to be the ruling class of it. The change of the system led to the "change of the generations": new social and age groups turned to be on the crest of the revolutionary wave. An important place in the reorganization of the society and the state was occupied by issues on the formation of new aesthetics, a new art and a new system of artistic education. The adoption of a new visual culture, as in the time of Peter I, was accompanied by a resolute denial of the achievements of the preceding period, a demonstrative break with the traditions and a forcible imposition of new benchmarks, which sometimes took the form of vandalism.

The concept of constructivism was formed on the post-revolutionary democratic rise as a social-functional utopia and a formal-compositional design system based on the exaggerated attention to the structure and design of graphic and spatial objects. Based on French impressionism and cubism, the Russian avant-garde in a short time created original variants of the world currents and completely independent concepts of abstract art - Suprematism, objectless creativity, constructivism, which was manifested most of all in architecture and design. The term itself comes from the name of a creative association of artists from the "Group of Constructivists", which appeared in February 1921. "The real design", after which they strained in their art, "appears only in real things, which operate the real space". They are inspired by technical structures: bridges, airplanes, airships - all the things, where the engineer acts as a designer, where the aesthetics of things comes from the appropriate use of the material. There appears a commonness of working methods of the design-engineer and the constructivist artist. According to constructivist artist Rodchenko: "The inventors are artists, and the artist is essentially an inventor" [12].

The reform of the artistic education was conducted under the guidance of the Department of Fine Arts of the People's Commissariat of Education and its head, avant-garde artist David Petrovich Shterenberg. One of the steps in building a new system was the dissolution of the Academy of Arts in Petrograd as "an institution deeply bureaucratic, rent from the general development of the national
culture, which has never enjoyed authority among the best part of the artistic world" [13]. Moscow becomes the capital of the state and the new center of artistic education. In 1918, the First Free State Art Studios (FSAS) were established on the basis of former Stroganov School of Art and Industry. In the hierarchy of priorities, the applied arts became more important for the state of workers and peasants than the "pure" easel arts [14].

The reform of the artistic and industrial education, which covered the regions of the RSFSR, required a technical base, expensive equipment and materials, while regional centers often lacked bare essentials. In most of the FSAS, the artistic and industrial education was represented by printing and decorative workshops, which did not require sophisticated equipment, or painting workshops, which were often the only viable direction in the regions. In 1922, a large-scale monitoring of regional schools and their division into higher, secondary and primary schools was conducted. As a result, only Moscow and Petrograd institutions preserved the status of higher schools - other FSAS were reorganized into art colleges taking into account the specialization formed therein [14].

In 1920, this FSAS received new organizational forms and name - "Higher State Art and Technical Workshops" (VHUTEMAS) and existed in this form until 1926-1927. Then, the "Higher State Artistic and Technical Institute" (VHUTEIN) was established on the basis of VHUTEMAS [9, p. 244]. In the 1920s, the methodical material of Moscow Stroganov School (the best drawings of students, guidance papers, minutes of pedagogical meetings) accumulated over the decades and stored in the curriculum office was taken to the cardboard factory as waste paper on the order of director of VHUTEMAS Ravdel E.V. and under imprimatur of Head of the department of Fine Arts of the People's Commissariat of Education Shterenberg D.P. [9].

VHUTEMAS-VHUTEIN (1920-1930) was a unique interdisciplinary art university, where original schools of design and architecture were forming in the polystyle artistic environment. The newest art and design concepts of the development of art and, partially, technology were tested here. Practically at each of the eight faculties - whether "industrial": of architecture, woodworking and metalworking, ceramics, printing and textile, or "pure": of painting and sculpture - there was an artistic and production-technological origin, for each of them in its proportion. Here are the names of some specializations: artist-technologist, engineer-artist. At the time of the dissolution in 1930, the educational and methodological baggage was enough to establish several industry universities: Polygraphic on the basis of the Polygraphic faculty, Textile on the basis of the Textile faculty, Architectural on the basis of the Architectural faculty, etc. [12].

A specialist in artistic and design disciplines in VHUTEMAS was trained in three directions: socio-political, artistic-design and engineering. The process of teaching design culture consistently passed through the following stages: comprehension of the universal form making laws (propaedeutic courses), design of concrete items and complexes, engineering and design mastering of the means and methods of implementing various projects in production. This logic led to the definition of the specific nature of the profession of an "engineer-artist". It defines the designer's profession, typical for the period of the 20s-30s: not just an engineer but an engineer of an artistic and design specialization possesses technical knowledge of a thing, he can use the form, design, technology, color and texture as artistic means at the creation of a cultural and consumer image. Engineering and technical training covered three types of training: practical classes in workshops, consulting by an engineer in the educational design process, insight into theoretical engineering and technical disciplines. The production workshops of former Stroganov School continued to operate within the walls of VHUTEMAS. Although the process of establishing the profession of a designer and techniques and training thereof passed through denying the training of a craftsman artist and his professional culture, the design skills necessary for the industry were imparted to the craftsman artist, whereas at that time there was no other basis for building new programs and teaching methods [12].

The diploma of graduates of the metalworking faculty in 1929 contains an inscription: "We do not need just a specialist but a special type of a new specialist not only able to manage production and carry out scientific studies based on the latest achievements of science and technology, but also able to be an organizer and a leader of the creative initiative of the masses." The results of the production activities of VKHUTEMAS-VHUTEIN graduates in the 30s showed that a broad technical training of
designers allowed to compensate for the lack of design-engineers in the industry, as well as heads and organizers of production. Due to a more comprehensive coverage of the production factors (technical, technological, cultural, aesthetic) and the ability to critically analyze the initial design situations, the designer could offer a more rational production process organization scheme, which was more convenient for workers [12].

Its students often went to the graduate school to technicians, technologists and engineers. The projectivity principle also covered engineering and design disciplines, where the mutual understanding of an artist and an engineer was achieved on the basis of design, arrangement and invention activities, as well as organization of production. The basis of the pedagogical system of the production faculties in VHUTEMAS was formed by the principle of the interaction between engineering-technical and artistic-design disciplines [12].

3. Conclusion
The interdisciplinary nature of design was realized and the premises for its correct positioning were created only in the 20-s of the XX century. In fact, the most professionally trained designer will be inferior both to a "pure" artist in the field of art and a certified engineer in the field of technical competence. Such "intermediate" position of the profession of a "designer" is a key to understanding the reason why his activities are perceived as ineffective ones. But it is necessary to evaluate his work according to special criteria, which are unacceptable both for the evaluation of a piece of art and a purely functional engineering solution. Even in the beginning of the XXI century, the understanding of the synthetic essence of the designer's profession presents a certain difficulty. Therefore, searching the place of design in the structure of national education, understanding the role of design in the development of industry and its contribution to the creation of the object-spatial environment of Russia's future are still in progress.

Acknowledgment
The work was supported by Act 211 Government of the Russian Federation, contract № 02.A03.21.0011.

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