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## RATIONALIZING INTUITION: VKHUTEMAS AND THE PEDAGOGY OF SPACE, 1920–1930

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### RACJONALIZACJA INTUICJI: WCHUTIEMAS I PEDAGOGIKA PRZESTRZENI, 1920–1930

#### Abstract

My paper examines the development of the so-called “objective method” by a group of avant-garde artists, architects, and educators in the early twentieth century. An essential condition for both theoretical foundations and aesthetic canons of modernism, this method sought to translate contemporary science and visual abstraction into a coherent technology of “rational” knowledge. This knowledge, in turn, served as the basis for design pedagogy, introduced at radical institutions, such as Vkhutemas in Russia and the Bauhaus in Germany. The core curriculum at Vkhutemas, and, in particular the course called “Space,” was the first venture of its kind to implement the objective method on a mass scale. The principal elements explored in this curriculum – space and form – were a priori abstract, challenging existing academic conventions and forming what can be considered a new modernist order.

*Keywords: Vkhutemas, Bauhaus, Avant-Garde, Constructivism, Rationalism*

#### Streszczenie

W niniejszym artykule analizuję tak zwaną „metodę obiektywną” opracowaną na początku XX wieku przez grupę awangardowych artystów, architektów i dydaktyków. Stanowiąc niezbędny warunek dla teoretycznych podstaw i estetycznych kanonów modernizmu, metoda ta miała na celu przełożenie współczesnej nauki i wizualnej abstrakcji na spójną technikę „racjonalnej” wiedzy. Wiedza ta z kolei posłużyła za podstawę pedagogiki projektowej wprowadzonej w takich radykalnych instytucjach jak Wchutiemas w Rosji i Bauhaus w Niemczech. Podstawa programowa uczelni Wchutiemas, a zwłaszcza kurs o nazwie „Przestrzeń”, był pierwszym przedsięwzięciem tego rodzaju, gdzie metodą obiektywną wdrożono na masową skalę. Główne elementy omawiane w tym programie nauczania – przestrzeń i forma – były a priori abstrakcyjne, kwestionując istniejące konwencje akademickie i tworząc coś, co można uznać za nowy modernistyczny porządek.

*Słowa kluczowe: Wchutiemas, Bauhaus, Awangarda, Konstruktywizm, Racjonalizm*

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One year after the Bolshevik revolution, while still in the throes of the First World War, Soviet Russia instituted a sweeping educational reform, reorganizing, among other things, art, architecture, and design schools. In order to educate the newly empowered proletarian masses, Lenin's government established Higher Art and Technical Studios, collectively known as Vkhutemas (*Bxymemas*)<sup>1</sup>. Conceived as a *specialized educational institution for advanced artistic and technical training [and] created to prepare highly qualified artist-practitioners for modern industry*, Vkhutemas combined a fine arts college and a crafts school<sup>2</sup>. By merging eight departments: – architecture, painting, sculpture, and five “production” departments – woodworking, metalworking, ceramics, graphics, and textiles – the Bolshevik masterminds of the institution granted equal value to what had traditionally been considered the domain of art and techno-industrial expertise. From its establishment, the interdisciplinary school offered free education and accepted students from underprivileged backgrounds, regardless of their artistic talent or academic standing. While similar to the Staatliche Bauhaus in its “communitistic” spirit, Vkhutemas, with an enrollment of over two thousand students – more than ten times the size of the German school – was an unprecedented modern experiment<sup>3</sup>. The artistic training of hundreds of students, many of whom came from underprivileged backgrounds and often lacked basic education, was a monumental undertaking in itself. Yet its larger significance was in creating a new social order, in which design education would serve as a key building block for fashioning a new mass society (Ill. 1).

While often referred to as the “Russian Bauhaus”, Vkhutemas remains marginalized within the conventional history of modernism. This marginal position, I would argue, is largely disproportionate relative to the role the school played at the time of its existence. While Vkhutemas is routinely mentioned in the discussions of the Soviet avant-garde, its seminal place within the larger cultural landscape of the early twentieth century has not been accurately configured. Meanwhile, even a cursory look at the period publications and exhibitions in both the Soviet Union and the West reveals that the school's contribution far exceeded the scope of strictly pedagogical achievements. Rather, Vkhutemas is notable for advancing modern design during its formative period and for fostering a new aesthetic paradigm (Ill. 2).

The current state of knowledge on Vkhutemas remains limited due to a dearth of published sources, the language barrier, and the political confrontation between the West and the Soviet Union, which lasted for decades. The explosive nature of Vkhutemas is another reason behind its historical obscurity. Not only was the school short-lived – only lasting one decade from 1920 to 1930 – its international outreach was quite limited. Contacts with

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<sup>1</sup> Vkhutemas (Russian: Вхутемас), an acronym for *Vysshiy Khudozhestvenno-Tekhnicheskiye Masterskiye*, translated as Higher Artistic and Technical Studios or Workshops. Vkhutemas was an interdisciplinary design school in Moscow, Russia. It was founded in 1920 and closed in 1930. In 1927 the school was renamed *Vkhutein*, an acronym for *Vysshiy Khudozhestvenno-Tekhnicheskiy Institut*, translated as Higher Artistic and Technical Institute. In this text, the term Vkhutemas is used throughout. Svomas (Free State Art Studios), a precursor to Vkhutemas, was founded in 1918.

<sup>2</sup> V. Lenin, *Dekret Sovnarkoma ob obrazovanii Vkhutemasa*, (Sovnarkom Decree on the Establishment of Vkhutemas) (December 19, 1920). In *Complete Works of V. I. Lenin*, vol. 52 (Moscow: Izdatelstvo Politicheskoy Literatury, 1967), 17. My translation.

<sup>3</sup> In terms of numbers, in fact, Vkhutemas was rivaled only by the École des Beaux-Arts in Paris, which counted well over a thousand students in the 1920s.

the rest of the world were monitored and were few and far between. Ideological and language barriers were compounded by physical ones.

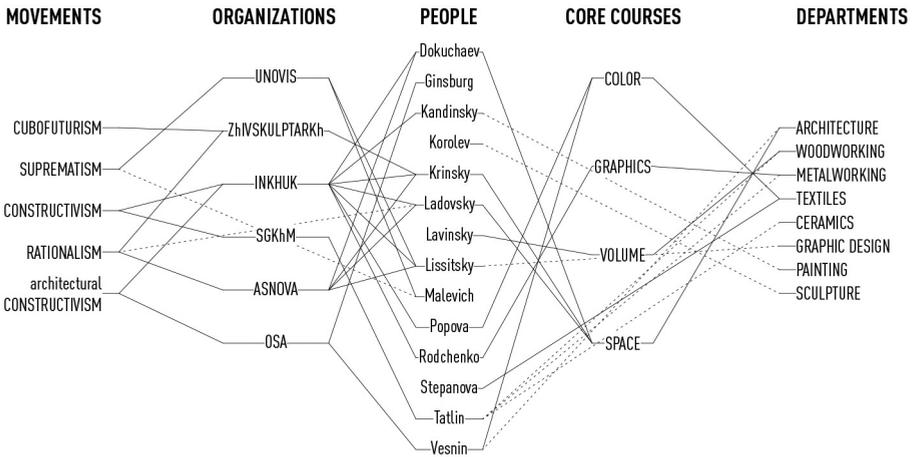
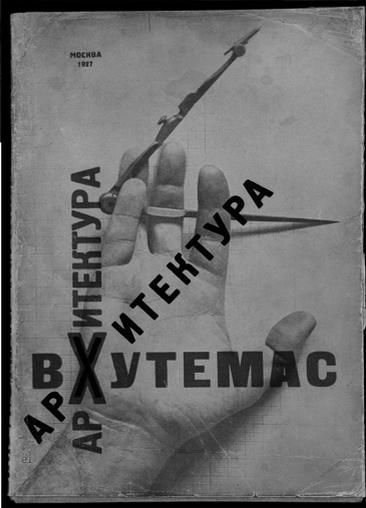
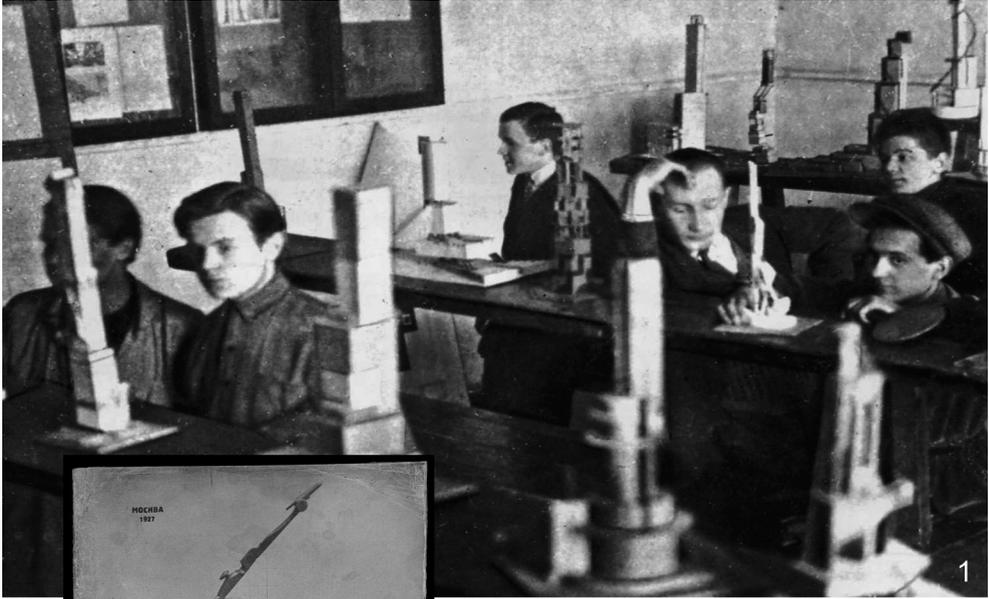
After the shutdown of Vkhutemas, its legacy was dismissed by Stalinist officials as “Trotskyist” and “formalist,” forcing those associated with the school into complete silence. As the Iron Curtain lowered, the national persecution was compounded by the international isolation of the Soviet Union, effectively cutting off its intellectual elite from the Western world. In Germany, too, the rise of the Nazi party had similar consequences, leading to the closure of the Bauhaus. Many of its members, however, were allowed to emigrate, thus giving them and their ideas a second life abroad, most famously in the United States. It was to be expected that the Bauhaus immigrants spread the fame of their school, but, naturally, not the memory of their Soviet colleagues.

Despite its limited legacy today, Vkhutemas was by no means unknown at the time of its existence. The school counted among its ranks such protagonists of the Russian avant-garde as Alexander Rodchenko and Varvara Stepanova, Alexander Vesnin and Lyubov Popova, El Lissitzky and Vladimir Tatlin, Moisey Ginzburg and Ivan Leonidov, Konstantin Melnikov and, perhaps the least known of all, Nikolay Ladovsky (Ill. 3). One of the events that put Vkhutemas on the international stage was the 1925 *Exposition internationale des arts décoratifs et industriels modernes* in Paris where its student projects received the grand prize – a testament to a pedagogy that was then barely five years old. Vkhutemas ideas and projects were broadcast by its remarkable faculty and students, most notably by Lissitzky and Kandinsky. The latter, in particular, played a formative role in his official capacity at artistic organizations set up by the People’s Commissariat of Education (Narkompros) during the first years after revolution.

Vkhutemas was, arguably, the first teaching institution to implement a systematic design training on a mass scale. The mandate for mass education was framed within the larger nation-wide project of the industrialization of the Soviet economy and the grounding of everything – from artistic to labour practices – in science. The school served as a platform for resolving the proverbial tension between “science and creativity,” which was central to Soviet culture. Vkhutemas faculty sought to decode the problem of creativity in a scientific manner by applying the conceptual apparatus of aesthetic theory, experimental psychology, theoretical physics, and even mathematics to the problems of art and architecture (Ill. 4). Continuous feedback between the educational process and testing performed at various “scientific laboratories” and the “methodological cabinets” at Vkhutemas led to an enormous leap in the development of both the theory and practice of modern space and form. Several research organizations affiliated with the school were dedicated to “scientification” of both existing and new art forms. Most notable of these was the Institute of Artistic Culture (Inkhuk) initially led by Kandinsky, which facilitated the transfer of knowledge from science and aesthetic theory to visual, spatial, and temporal arts (Ill. 5)<sup>4</sup>.

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<sup>4</sup> Inkhuk, an acronym for the *Institut Khudozhestvennoy Kultury*, translated here as the “Institute of Artistic Culture.” The Institute was a division of IZO Narkompros (Visual Arts Section at the People’s Commissariat for Education) and active between 1920–1924 in Moscow.



The educational system at Vkhutemas was based on the so-called “objective method” – an ostensibly universally valid approach – where the tenets of mass education were tested and practised. Conceived of as a bridge between art and science, the objective method addressed the challenges of both the rationalization of design pedagogy and standardization of professional practice. Vkhutemas faculty emphasized the link between design practice and the “scientific organization of labour” that was being carried out by the Central Institute of Labour according to Taylorist principles in these very same years<sup>5</sup>.

A core member of the Vkhutemas faculty and one of the main progenitors of the Soviet architectural avant-garde, Nikolay Ladovsky (1881–1941), remains a largely obscure figure. Notwithstanding his immense contribution to the discipline he is the least recognized of his contemporaries. Perhaps this is because the cultural flow – the avalanche of ideas unlocked by him – ultimately freed itself from his name (Ill. 6). Despite the continuous efforts to realize his projects, few were actually carried out before he fell victim to the political repressions of the 1930s. All the same, Ladovsky’s greatest achievement lay in architectural pedagogy and in developing a new model of collaborative design practice. He founded the first professional association for Soviet architects – Asnova<sup>6</sup>, as well as another for urban designers and planners – ARU<sup>7</sup>. As one of the major figures at Vkhutemas, Ladovsky harnessed and directed the immense creative energy of the post-war period. Indeed, one could say that his progressive design methodology served as an icebreaker for Soviet avant-garde architecture (Ill. 7).

Together with his colleagues – architects Vladimir Krinsky (1890–1971) and Nikolay Dokuchaev (1891–1944), as well as a collective of their students – Ladovsky developed a design discipline called “Space” (*distsiplina prostranstvo*). Referred to as architectural “propaedeutics” by Soviet scholars, the course Space was structured as a system of exercises developed to provide foundational training in architecture to hundreds of students. Its assignments were conceived in such a way as to provoke untethered solutions to three-dimensional geometric problems, such as articulation of a rectangular form (Ill. 8). A host of exercises dealt with addressing various objective physical phenomena, such as mass and weight, or mechanical forces, such as rotation (Ill. 9).

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<sup>5</sup> Central Institute of Labor, Tsentralnyy Institut Truda, or TsIT was founded in 1924 in Moscow by Alexey Gastev.

<sup>6</sup> ARU, acronym for *Assotsiatsiya Arkhitektorov-Urbanistov*, translated as Association of Architects-Urbanists was founded in 1928 in Moscow by Ladovsky, together with his former Vkhutemas students and some of the Asnova members.

<sup>7</sup> Asnova, acronym *Assotsiatsia Novykh Arkhitektorov*, translated Association of New Architects, Asnova was founded in 1923 by Nikolay Ladovsky and the first organization uniting Soviet Architects. Its members included Konstantin Melnikov, Ilya Golosov and El Lissitzky.

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Ill. 1. Vkhutemas students, Space course, exercise on Vertical Rhythm, c. 1924. Museum of Moscow Architectural Institute (MARKhI)

Ill. 2. El Lissitzky, cover for the school pamphlet *Vkhutemas Architecture*, 1927. Beinecke Rare Book and Manuscript Library

Ill. 3. Vkhutemas Faculty Network. Diagram by the author

Ill. 4. Exhibition of student work from the Course Color, Vkhutemas, 1920s. Museum of MARKhI



THE WORKING GROUP OF OBJECTIVE ANALYSIS

WORKING GROUPS

ARCHITECTS



SPACE



SCULPTORS



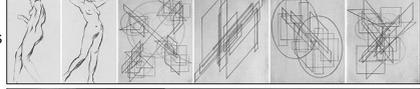
VOLUME



CONSTRUCTIVISTS



GRAPHICS



OBJECTIVISTS



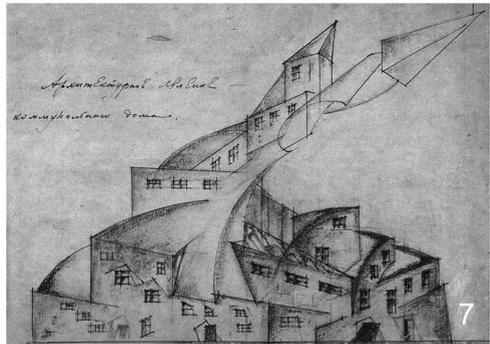
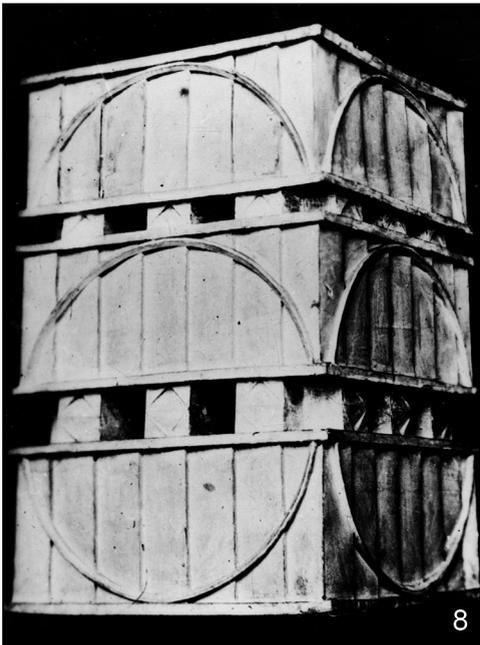
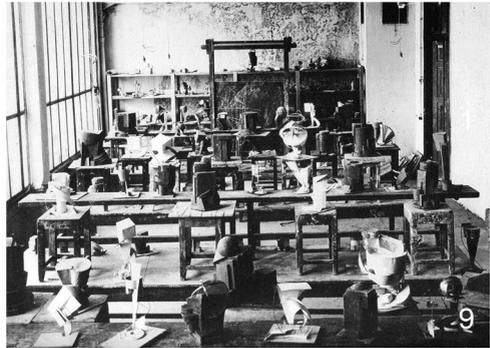
COLOR



INKHUK (Institute of Artistic Culture) 1920 - 1924

VKHUTEMAS (Higher Artistic and Technical Studies) 1920 - 1930

5



While Ladovsky's ability to bring out the creative potential in every student should not be underestimated, neither should the importance of standardizing the methodology itself. The challenge of educating "the masses" while simultaneously coming up with a new way of thinking about the discipline of architecture itself, required a coherent, well-designed program in which every exercise strategically prepared its participants for the next. Ultimately, the pedagogy of Space established a relationship between experimental psychology, aesthetics, and architecture. It also forged the connection between architectural education and modernism through the production of studio work (Ill. 10).

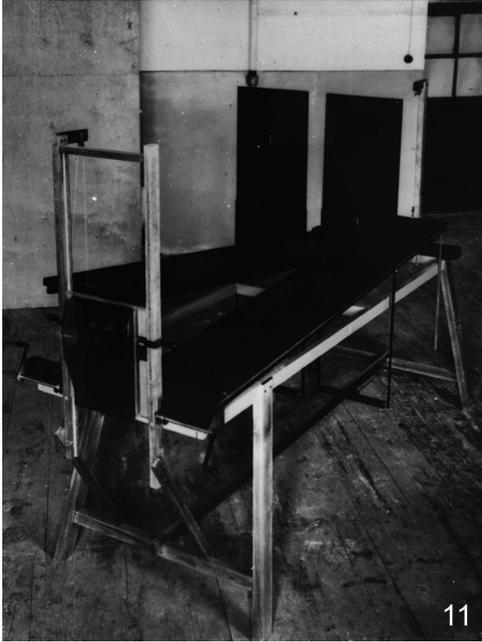
During Ladovsky's tenure at the school, from its inception in 1920 to its closure in 1930, key aspects of his approach to teaching a large student body led to proposing a universal system of laws governing architecture. The task of having to integrate a number of esoteric ideas about form and space into a functional curriculum resulted in developing not only experimental teaching methods but also a theoretical framework. As such, the course Space was rooted in Ladovsky's "rationalist" doctrine. The notion of "architectural rationality" was founded on the "economic principles just as is technical rationality." But while technical rationality was based on the "economy of labour and material," its architectural version lay in the economy of "psychic energy." Adhering to principles of architectural rationality would lead to conditioning and even controlling perception through shaping form and space. It would also lead to the production of the so-called "ratio-architecture" (*ratsio-arkhitektura*), which combined both technical and psychological economic principles.

These principles were captured in what Ladovsky called a "psychoanalytical method" – a version of the "objective" one – and were channelled through standardized instruction and experiments in "psychotechnical" testing using architectural form. In Ladovsky's mind such form was not exhausted by function or structure as it was for his more famous Constructivist contemporaries, many of whom also taught at the school. For him, instead, it had an agency of its own and was grounded in the timeless and ostensibly objective properties that the Rationalists sought to articulate and express. Indeed, in his view, the criteria for shaping these properties, or elements, lay in their capacity to facilitate the "utmost human need" – that of "orientation in space."<sup>8</sup> These deceptively clear slogans must be considered through the lens of the period's discourse on aesthetics and psycho-physiological sciences.

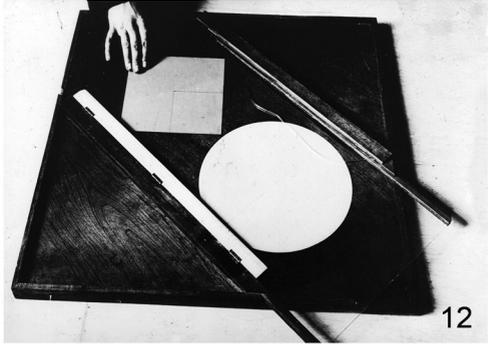
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<sup>8</sup> N. Ladovsky and El Lissitzky, eds., *Izvestiya Asnova*, (Asnova News), No. 1 (1926), p. 3.

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- Ill. 5. Emergence of the Core Curriculum from Inkhuk to Vkhutemas. Diagram by the author
  - Ill. 6. Nikolay Ladovsky with his Vkhutemas students and colleagues – members of Asnova, at the construction of Red Stadium, 1925. Museum of MARKhI
  - Ill. 7. Nikolay Ladovsky, Temple for Communication of the Peoples, Zhivskulptarkh, 1919–1920. Shchusev Museum of Architecture
  - Ill. 8. Exercise on the Articulation of Form, Student Viktor Petrov. Course Space, 1920. Author's collection
  - Ill. 9. Exhibition of student work from the Course Space, Vkhutemas, c. 1927. Museum of MARKhI
  - Ill. 10. Exhibition of student work from the Course Space, Exercise on the Articulation Mass and Weight, Vkhutemas, c. 1927. Author's collection



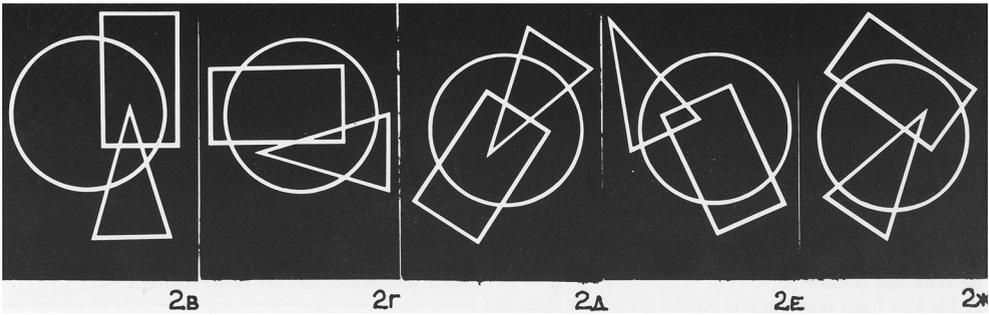
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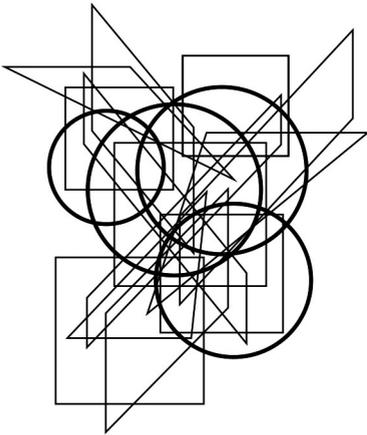
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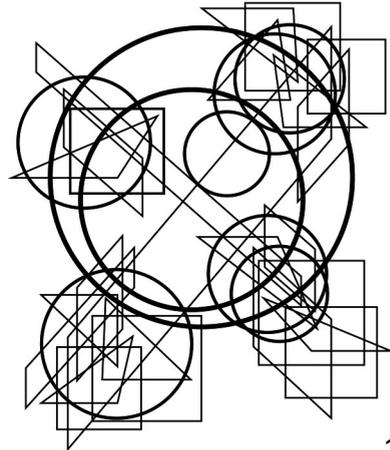
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14a



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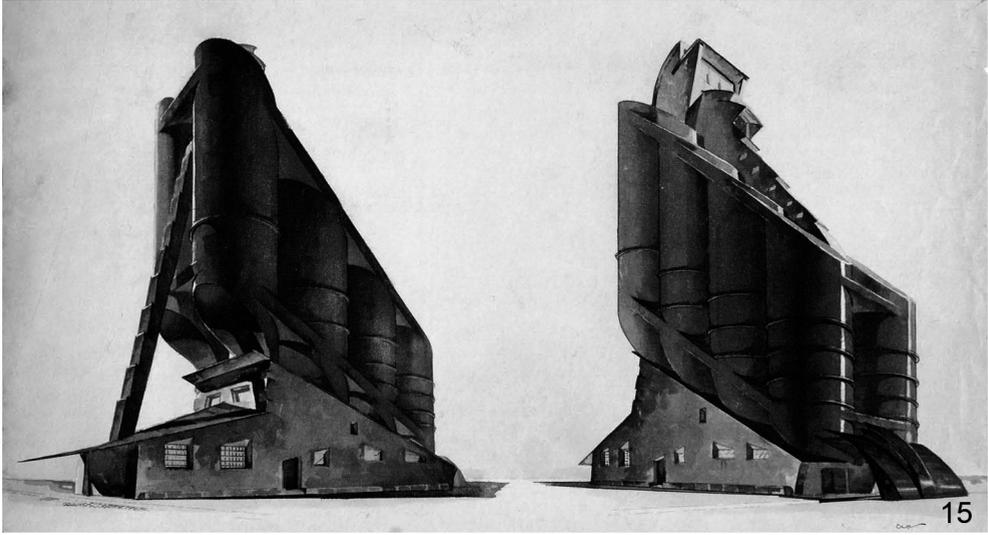
The pedagogical challenge lay not only in teaching large groups of students, but also in leveraging their diversity. As a result, education and experiment were closely intertwined at Vkhutemas and supported by various research facilities, including the Psychotechnical Laboratory, set up in 1927 (Ill. 11). In this laboratory Ladovsky and his colleagues tested the professional fitness of students and, in particular, their aptitude for spatial assessment, which they deemed essential to potential architects. The *number* of students involved was critical as well as it had to be large enough to improve the statistical significance of Ladovsky's psychotechnical study. In other words, the testing system that the Rationalists developed not only measured the students' aptitude, but it also turned them into subjects from whose responses the perceptual properties of space and form could be derived (Ill. 12). Their goal was to develop objective criteria for "a theory of architecture as a science" – something that is yet to be achieved<sup>9</sup>. Although these experiments were short-lived and limited in scope, Ladovsky and his colleagues managed to establish basic reciprocity between design pedagogy and scientific research (Ill. 13).

Rationalist methodology needs to be framed in relation to the Constructivist approach, in particular that of Alexander Rodchenko, who taught alongside Ladovsky at Vkhutemas. Rodchenko's core discipline "Graphics" with its series of constructed "initiatives" not only shaped the core precepts of industrial design, but also informed the essential aspects of modern architecture at large (Ill. 14). The fundamental difference between Constructivists and Rationalists however, cannot be understood solely through an examination of their respective teaching methods. Whereas modern scholarship often characterizes them as diametrically opposed, I tend to view them as competing but not mutually exclusive schools of thought. What united them was their emergence as reaction to classical orders as a dominant mode of historical architectural production. Like the Rationalists, Constructivist architects relied on pure geometric forms when developing their design solutions (Ill. 15). The polemic between the two stemmed from the Constructivists' claim that the Rationalist approach to architecture was overly intuitive whereas their own intended to produce utilitarian forms, based purely on function. The Rationalists, in turn, criticized the Constructivist approach as being overly "mechanistic." Paradoxically, I would argue that notwithstanding the utilitarian rhetoric of the Constructivists, their design methods were shared and that the originating syntax of their architecture emerged from the pedagogical experiments by the Rationalists.

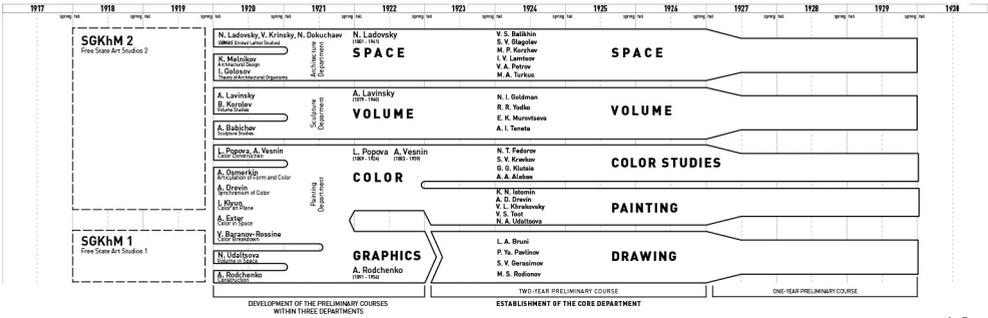
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<sup>9</sup> N. Ladovsky, *On the program of the working group of architects*, 1921, [in:] *Masters of Architecture about Architecture*, Moscow, 1975.

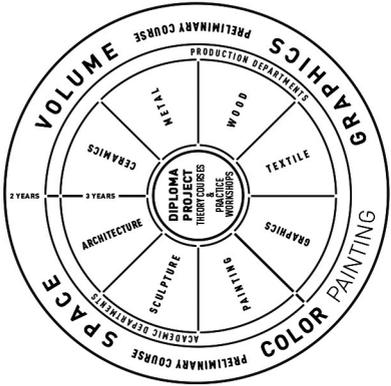
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- Ill. 11. Psychotechnical Laboratory, Vkhutemas, 1927. *Prostrometr* (space-eye-meter) Instrument. Author's collection  
Ill. 12. Psychotechnical Laboratory, Vkhutemas, 1927. *Ploglazometr* (plane-eye-meter) Instrument. Author's collection  
Ill. 13. Architectural Cabinet. Vladimir Krinsky, Viktor Balikhin. Vkhutemas, c. 1927. Museum of MARKhI  
Ill. 14. Alexander Rodchenko's studio, Exercise "Initiative," Vkhutemas, 1921. Redrawn by the author



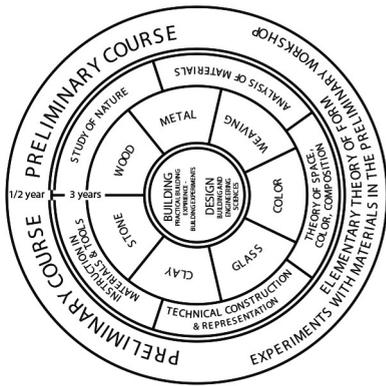
VKKhTEMAS  
Preliminary Course Structure



16



VKKhTEMAS  
Teaching Program Diagram, 1923



BAUHAUS  
Teaching program diagram, Gropius W., 1922

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Course Space offered one of the earliest alternatives to traditional forms of architectural training, namely the classical academic atelier and the system of apprenticeship at the side of a master. Originally developed for architects, Space quickly became mandatory for all Vkhutemas students regardless of their future specialization. By 1923 it had entered the school's core curriculum, alongside three other, parallel foundational courses: "Volume," "Colour," and "Graphics." This quartet of courses came to be known as the Core Division (Ill. 16). Its establishment as an independent academic unit was a strategic step in consolidating Vkhutemas' avant-garde leadership and solidifying its overall modernist vector. The core curriculum facilitated the exchange between the art, architecture and production departments at Vkhutemas, as training progressed from the basic course to a specialization. It became the backbone of the entire school, analogous to the Bauhaus *Vorkurs* (Basic Workshop). However, while at the Bauhaus *Vorkurs* focused on *elementary study of form and study of materials*, the core course at Vkhutemas was structured around abstract formal elements, such as *line* in Graphics and *form* in Space (Ill. 17).

In 1925 the Vkhutemas Core Division counted close to 500 students<sup>10</sup>. Studio instruction – the key practice of mass design education – was structured through standardized assignments. Step-by-step algorithmic operations would guide the students through a set of formal exercises, starting with the most basic tasks. Given a volume of certain proportions, for example, students were asked to express or counteract a mechanical force such as gravity (Ill. 18) or rotation (Ill. 19), thereby engaging both their creative intuition and analytical skills. This highly constrained system with no preconceived results was likewise stimulated by the process of collective production. The origins and sources as well as the implementation and failures of this historic effort to standardize the foundations of design pedagogy are reflected in the transformation of these assignments over several major periods of the school's evolution. Albeit cut short in 1930 with the shutdown of Vkhutemas, certain aspects of the course "Space" continued throughout the decades at the Moscow Architectural Institute, thanks to the publication of the textbook on architectural composition in 1934 (Ill. 20)<sup>11</sup>.

Methodology developed as part of the course Space advances our understanding of pedagogy as a vehicle for forging modern concepts of expressive form and dynamic composition. A precursor to the contemporary core-design studio class, one of the main contributions of the course was the introduction of a study model as both a design tool and a didactic device. While model making had long been an integral part of the architectural design process, it had traditionally been based on existent designs. The methods used in the Space course chal-

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<sup>10</sup> Selim Khan-Magomedov, *Vkhutemas*, vol. 1 (Moscow, 1995). *Osnovnoe Otdelenie*, translated here as "Core Division," is also referred to as "Basic Division," for example in Christina Lodder's *Russian Constructivism*.

<sup>11</sup> Vladimir Krinsky, and Ivan Lamtsov, Mikhail Turkus. *Elementy Architekturno-Prostranstvennoy Kompozitsii* (Elements of Architectural and Spatial Composition), Gosstroyizdat, Moscow 1934.

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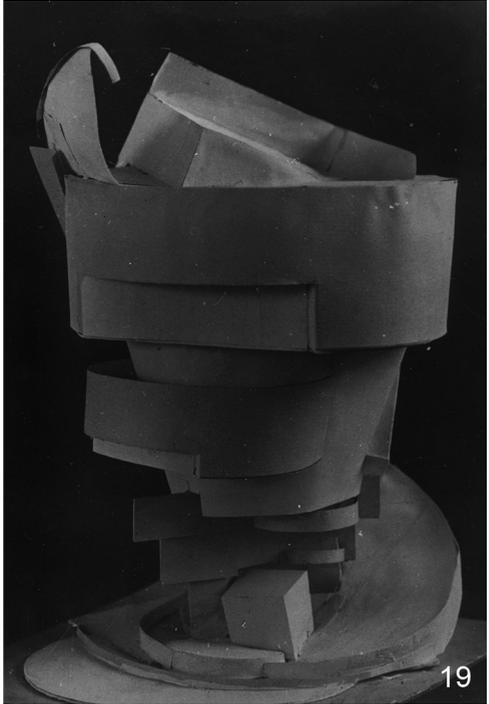
Ill. 15. Exercise on the Articulation of Geometrical Qualities of Form, Grain Elevator. Student Georgy Vegman, Vkhutemas, 1922. Museum of MARKhI

Ill. 16. Development of the Core Curriculum, Vkhutemas, 1918–1930. Diagram by the author

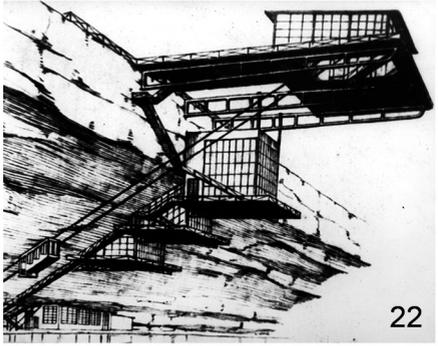
Ill. 17. Comparison of Educational Structure. Bauhaus Teaching Program, Walter Gropius, 1922. Redrawn by the author. Vkhutemas, Educational Structure, as if it were 1923. Diagram by the author



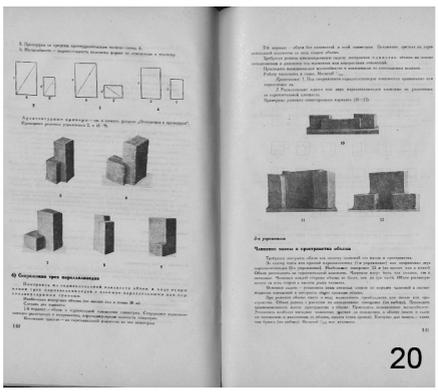
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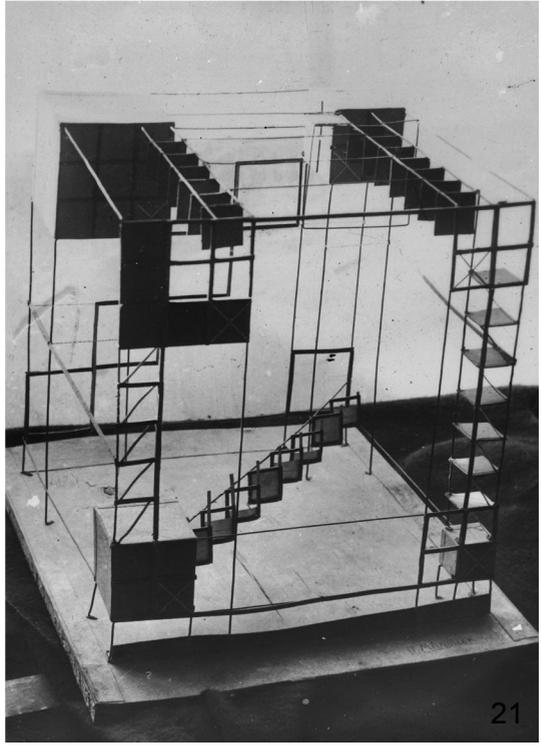
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lenged students to work directly in three dimensions, using clay or paper (Ill. 21). This approach invoked the Deweyan notion of experiential learning – of “learning through doing” and was instrumental for reshaping design education from an elitist academic practice into one accessible to many. When starting a model, students often had no idea of its final form; the result was part of the experience of making. Neither scale nor function were initially imposed on designs initially, so that in this respect the models were not unlike the “laboratory constructions” by other renowned Vkhutemas professors – Constructivists Alexander Rodchenko, Varvara Stepanova, Lyubov Popova, Alexander Vesnin, and Vladimir Tatlin. Only after exploring elemental principles of spatial form the students could move on to the design assignments with specific programs and sites (Ill. 22). The freedom to “suspend” such integral elements of architecture as scale or functionality allowed the students to avoid the typical tropes by decoupling conventions and treating architectural form as both strictly abstract and purely material.

The quest for a mass utopia, so prominent in Soviet culture in its early years, was central to Vkhutemas. The school’s enthusiastic collective of young people, working together in an interdisciplinary, laboratory-like educational setting, overcame the turmoil left by the First World War, substandard living conditions, and shortages of the most basic necessities, while producing a remarkable body of work. The numerous iterations of design exercises generated a rich repository of proto-modernist forms. An amalgam of futurist and conservative faculty, Vkhutemas fostered an atmosphere of intellectual and creative cross-pollination, where new ideas were forged in polemical opposition. The standard narrative of modernism would benefit greatly from paying closer attention to the school, which to this day has been relegated to a footnote in history especially when compared to the attention accorded the Bauhaus.

The pedagogical approaches developed at Vkhutemas raise a number of fundamental questions about design education, many of which still resonate today. What are the alternatives to the classical academic or apprenticeship-oriented approach to pedagogy? How can one teach something that has no precedent? How does a society go about teaching hundreds or even thousands of students of diverse background and varied ability? What is the role of collectivity in learning? What is the function of standardized assignments as compared to individual instruction in design pedagogy? How does the logic of experimentation apply to the educational process? Such questions challenge conventional understandings of pedagogy as a mere vehicle of knowledge transfer by recasting it as an agent for *generating* knowledge. They reframe the classroom as a primary site for design experimentation, thereby

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Ill. 18. Exercise on the Articulation Mass and Weight, Course Space, Vkhutemas, 1920s. Author’s collection

Ill. 19. Exercise on Articulation Form and Rotation, Course Space, Vkhutemas, 1920s. Author’s collection

Ill. 20. Vladimir Krinsky, Mikhail Turkus, Ivan Lamtsov, *Elements of Architectural-Spatial Composition*, 1934. Author’s collection

Ill. 21. Abstract Exercise on Organization of Space within a Cube, Articulation of Deep Space, Course Space, 1923–1930, Vkhutemas. Author’s collection

Ill. 22. Production assignment on the articulation of mass and balance. Restaurant on a Rock above Sea, 1922. Student Vladimir Simbirtsev, Ladovsky’s Studio, Vkhutemas. Author’s collection

Сравнения. Элементы плоскости решать по трем измерениям (возможно построение рельефа в образующей сеточки как подлинных элементов). Зритель расположен на горизонтальной плоскости на расстоянии, равном высоте решаемой плоскости. Композиционное построение решать по вертикальной и горизонтальной координатам.

Главная задача — решение сетки расположенных элементов плоскости на основе составной сетки (масса, пространство, величина, вид, число) методом сопоставления членов и решения общего единства плоскости. Прояснить возмещение веса в связи с плоскостью массы, ее расположением, величиной и порядком членовой.

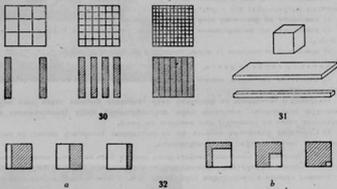
Работу выполнять в макете из плотной бумаги. Масштаб 1/10.

**Самостоятельная работа**

Построение ограниченных рядов по вертикали или горизонтали на массе, числу элементов и виду. В каждом направлении давать преобладающим одно из перечисленных свойств. Решать в макете из бумаги.

**Пояснения к 6-му упражнению**

1. Свойства пространственных форм (продолжение, ранее о свойствах см. п. 3 и 4 пояснений к 4-му упражнению).



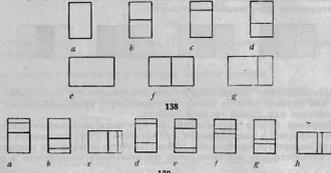
А. Масса — пространство как свойства форм рассматривается со стороны количественного соотношения ее (массы и пространства) в пределах данной формы.

Изменения соотношений массы и пространства в пределах данной формы происходят в следующих направлениях:

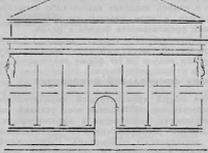
1. Изменения величины массы (схема 30).
  2. Изменения соотношений массы и пространства при сопоставлении предельных состояний (схема 31).
  - Б. Геометрический вид как свойства простейшей геометрической формы определяется соотношением форм по трем координатам.
- Определяемым равеством протяженности по трем координатам определяется объемность формы.
- Определяемым равеством протяженности по двум координатам при минимальной величине по третьей координате определяется плоскость.

В схеме 138, *b* и *f* вследствие полного равенства расположенных частей поверхности также не возникает соподчинения.

В схеме 138, *c*, *d* и *g* неравенство между расположенными частями создает основу для построения соподчинения по вертикали (различные верха и низа в отношении преобладания в схемах *c* и *d*) и по горизонтали (схема *g*).



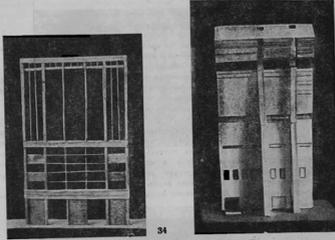
В схеме 139, *a*, *d* и *e* поверхность рассчитана последовательно на три части в убывающем или возрастающем порядке такой ритмической постройкой членения при закономерной связи их величин создается основу для построения единства и динамики поверхности в определенном направлении.



140. Палаццо Балдассарра (схема).

В схеме 139, *d*—*h* даны варианты перестановки в членении поверхности на три неравные части. В этом случае вследствие нарушения последовательности в членениях или большая или меньшая часть поверхности выделяется в отношении остальных ее частей, которые могут являться элементами композиционно ограничивающей поверхность. Выделяемая центральная часть может быть выражена как композиционно доминирующая.

В приводимом примере схемы фасада палаццо Балдассарра средняя часть является доминирующей, а нижняя и верхняя части — композиционно ограничивающими поверхностью фасада (схема 140).



Большим преобладанием протяженности по одной координате при минимальных величинах по двум другим координатам определяется линейная форма.

Указанные три вида (схема 31) являются предельными состояниями, между которыми могут строиться ряды промежуточных состояний.

В. Число *a* (или количество элементов) как свойства формы относится к более сложным формам, состоящим из нескольких форм.

Ряд числа строится в пределах от 1 до 4—5—6 (предела одностороннего построения числа разражения).

Число форм, превышающее указанный предел, менее читаемо и может быть противопоставлено ясно читаемому числу.

**2. Соподчинение свойств**

Для сопоставления массы с другими свойствами или направлениями — линейной, геометрической форм, числом элементов формы — необходимо иметь в виду, что то или иное состояние массы в пределах членовой зависит от того или иного состояния перечисленных свойств.

Вопрос сопоставления массы с перечисленными свойствами и смежными членения сводится к сопоставлению их состояний, изменяющихся состоянии массы. Примерами служат вышеприведенные чертежи линейной массы.

Поскольку изменение массы зависит одновременно от нескольких переменных, поэтому изменение переменных можно проводить по аналогии с приращением, уменьшением и в 5 пояснений к 4-му упражнению в отношении к величине, скорости и направлению их изменений.

Примерные решения (33 и 34).



141. Жилой дом Корбизе.

В приведенных выше схемах членения строится только в одном направлении — по вертикали или горизонтали. В этих случаях полного единства поверхности может не быть.

Соподчинение членений поверхности по вертикали и горизонтали дает возможность более полного развертывания композиции.



Членения по горизонтали дают возможность строить композиционное ограничение поверхности в той же направлении и выделять композиционно доминирующей части.

Одновременно членения по вертикали могут строить различные верха и низа (завершение по вертикали), их взаимное взаимодействие и соподчинение в расположенных частях поверхности.

К другому виду членений поверхности надо отнести членение ее введением замкнутой формы в пределах данной формы, как показано в схеме 141, *a*, *b* и *c*.

В данной схеме под введенными формами можно понимать также и сложные комплексные форм. В каждой из приведенных схем введенная форма последовательно рассчитывает данную поверхность по вертикали и горизонтали на две и на три части. Кроме того в данном случае возникает определенное соотношение между введенной и основной формой.

Такой вид членения дает возможность построения главной композиционно доминирующей части поверхности, где форма, членящая основную поверхность, может являться главной. Величина, вид и положение ее по отношению к гра-

converting mechanical learning into extemporaneous creativity and transforming a studio into a laboratory.

While the attention of scholars has for decades focused on the products of design practice, the most significant breakthroughs, were arguably those in the sphere of design education. Urged to channel visual ideas and formal discoveries into a coherent pedagogical narrative, the new generation of teachers – from Rodchenko to Ladovsky – developed a theoretical approach packaged in the form of student exercises. The open discussions within the avant-garde community were instrumental to the development of the groundbreaking curriculum at Vkhutemas, which became an operational manifesto of a new art and architecture.

By immersing ourselves in the fabric of Vkhutemas pedagogy we are able to discover the true philosophical contributions and actual working methods of the avant-garde – from an examination of the institutional setting, system of exercises, and research experiments, to collaborative design process. The ideas that were generated in the context of teaching ultimately offer the clearest explanation of the forms, buildings, and cities that we call modern.

#### PS.

Nikolay Ladovsky died in Moscow in 1941 under unknown circumstances<sup>12</sup>. His archives allegedly disappeared in the turmoil of the Second World War. Two years after the architect's death, his colleague Alexander Rodchenko noted in his diary:

*The projects Ladovsky did in plywood, which used to be in his studio, are now getting wet on his balcony. And he was a (big) name in architecture after all. Everything is turning to dust. (...) The poor dreamer Ladovsky died. His whole life, he intended to build his own, new [world]*<sup>13</sup>.

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<sup>12</sup> According to the artist Pyotr Miturich, who moved into Ladovsky's studio after his death, the latter may have committed suicide by hanging himself from a trapeze.

<sup>13</sup> A. Rodchenko, *Diary*, (May 23, 1943), in *Alexander Rodchenko: Experiments for the Future* (MoMA, 2005), p. 364.

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Ill. 20. Vladimir Krinsky, Mikhail Turkus, Ivan Lamtsov, *Elements of Architectural-Spatial Composition*, 1934. Author's collection