

From Matter to Form

The openness to contemporary achievements in science and art—invented by Vkhutemas—allowed the Rationalists to absorb theories and practices found in art history and aesthetic theory, psychoanalysis and applied psychology, philosophy of physics and mathematics. The notion of "empathy" (*Einfühlung*), which emerged as an operative framework of aesthetic theory in the late nineteenth century, was integral to formulating the psychoanalytical method of architectural form and space. The Newtonian dictum on the "economy of energy" built upon the phenomenological views of physicists was adopted to help rationalize the perception of spatial form, while the professional application of Rationalist principles appropriated practices of industrial efficiency, along with the "new field" of psychotechnics.²⁵

These links were the subject of active discussion in various academic circles and organizations, such as the Institute of Artistic Culture, the Russian Academy of Artistic Sciences (RAKhN), and at Vkhutemas itself. Russian intellectuals were uniquely positioned with regards to German artistic science (*Kunstwissenschaft*) in particular, as the important German texts on the subject had been translated almost instantaneously into Russian – most before 1914. After the Revolution this connection was enabled by many intellectuals, including Wassily Kandinsky, Alexander Gribachevsky, Vladimir Favorsky, and others.³⁶ In essence, Kandinsky's *Inkhuk* program, as well as his mission at RAKhN, was in part a translation of the principles of formal analysis in art history into visual arts.

These personal and scholarly networks allowed progressive Russian architects to draw on the scholarship of Western European theorists and scientists in formulating their own positions.⁷ The Rationalists used this scholarship not so much for its content, but rather appropriated its principles to develop analogous models in architecture. While there were traceable influences, there was also a large degree of independence and invention. At the same time, the avant-garde leaders were quite free in their interpretation and application of various philosophical and scientific doctrines – as long as they fit within the larger ideological framework of the Soviet state. History and theory were treated as raw material, a means to create new knowledge structures and cultural connections – as anything could be utilized for the higher purpose.⁵⁸

Towards Dynamic Form

The use and organization in the modern form of the spiral itself is already an enrichment of the composition. Just as the balance of parts—a triangle—is the best expression of the Renaissance, the best expression of our spirit is a spiral. The interaction of gravity and support is the purest (classical) form of statics; the classic form of dynamics is the spiral.⁵⁰

Ladovsky's Rationalist doctrine was grounded in a number of essential concepts that permeated the field of art history throughout the second half of the nineteenth century. Dynamism emerged as one of the most essential qualities of modern form, along with "dynamic functionalism"—a term coined by the German architect Erich Mendelsohn.⁶⁶ How to create a dynamic effect—this visual trope of modernism—can be seen

35 Simultaneously with this interdisciplinary cross-pollination Soviet art and architecture also had to be framed in terms of political doctrines, ideological dogmas, and hard-line social utopias.

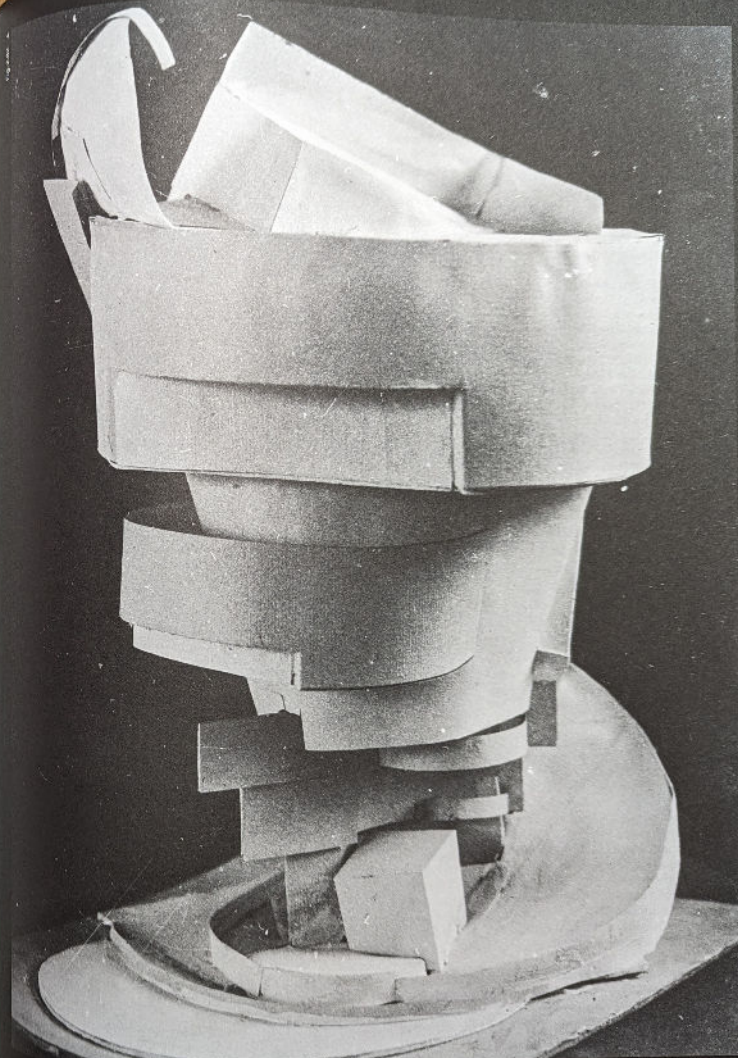
56 Alexander Gabrichkevsky was a student of Paul Frankl and Isaac Spielfrein, who, in turn, studied under one of the founders of modern psychology, Wilhelm Wundt (from the author's discussion with Jean-Louis

57 However, due to the deep ideological pressure in the Soviet Union and, as a result, the nature of scholarship, typically direct references and citations were not made. The period of active and open adaptation of Western European theories lasted throughout NRP until the rollout of the First Five Year Plan.

58 Discussions and publications of Ladovsky and his colleagues, in particular those dealing with the "foundations of architecture," can tell us a lot about the origins and influences of the Rationalist movement. Source material includes records of discussions at Zhivskul'skii tsiakh and at Inkhuak, as well as articles in periodicals, such as *Isvestiia Aznva*, *Arkhitektura Vostochnoiu, Arkhitektura i Vostoiki*, *LEF*, *Sovetskii arkhitektura*, *Arkhitektura*, and *Svetlozaria Moskvy*, some of which appear here in translation for the first time.

60: Kathleen James, *Erich Mendelsohn and the Architecture of German Modernism* (Cambridge: Cambridge University Press, 1997), 141.

Fig. 2.82 Exercise on the Articulation of Spatial Form (reversed cone based on rotation of the entire composition). Space course at Vkhutemas, Moscow, 1920s.



in projects where the user's movement is enhanced, as in Konstantin Melnikov's USSR Pavilion, or in El Lissitzky's Lenin's Tribune, which exploits a structural cantilever. Ref. 211. Most notably dynamic movement was expressed in the upward spiral of the Monument to the Third International by Vladimir Tatlin. Ref. 212. Art critic and historian Nikolay Punin describes this phenomenon in 1920:

The whole form oscillates, like a steel serpent, restrained and organized by one common movement of all the parts—to rise above the ground. To overcome matter, gravity desires form; the power of resistance is great and heavy; straining the muscles, the form is looking for a way out along the most elastic and fluid lines, which the world only finds in spirals. They are full of movement, striving, flowing and they are tight, like a creative will and like a muscle tense with a hammer.⁶¹

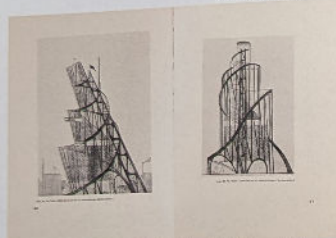
Yet, the notion of movement—as a codified, embodied sequence—was also important historically, for example in Classical architecture, while the expression of dynamism as a force finds itself manifested in the Baroque. It became critical, therefore, to define and deconstruct dynamics as inherently modern—whether it is about emulating movement in a building, about perceptual experience caused by spatial configuration, or about dealing with gravity and elevation.

While the immediate inspiration for dynamic form for the Rationalists comes from Cubists and Futurists, who were exploring similar ideas in painting and sculpture, the theoretical underpinnings of this phenomenon lay in aesthetic theory and modern science. In 1893, Adolf von Hildebrand published one of the more popular discussions about pure form in the visual and plastic arts, *The Problem of Form in Painting and Sculpture*, which would become a model for a whole generation of artists and art historians. The book was translated into Russian in 1914 by the future Vkhutemas dean Vladimir Favorsky, who was an enthusiast of the German sculptor Ref. 217.⁶² It was well known among the Russian intellectual elite, including Nikolay Punin and Ivan Zholtovsky (1867–1959), professor of the Architecture Department at Vkhutemas—both a mentor and an opponent of Ladovsky. Ladovsky's colleague Nikolay Dokuchaev even included the book in the reading list for his course on the Theory of Spatial Composition at Vkhutemas.⁶³ Hildebrand distinguishes between what he calls *actual* and *perceptual* form; in other words, form as such, and form as compared with its appearance to an observer. Refs. 214–216. Although all forms are filtered through human perception, an *actual* form is an autonomous “abstract and unchangeable” phenomenon, whereas *perceptual* form is a result of external conditions, such as light or shadow.⁶⁴ As Hildebrand writes:

Form is that factor in our perception, which depends only on the object. It is obtained either through movement directly or is inferred from the appearance and we term it the actual form. On the other hand, the impression of form which is aroused by the



Ref. 212 El Lissitzky, “Lenin’s Tribune,” Published in *Die Kunstformen / Les formes de l’art / The forms of art, 1914–1924* (Zürich/München/Leipzig, 1925).



Ref. 213 Vladimir Tatlin, Monument to the Third International, Petrograd, 1919. Pages from El Lissitzky, *Illustrated: die Rekonstruktion der Architektur in der Sowjetunion* [Russia: Architecture for World Revolution] (Vienna, 1920).

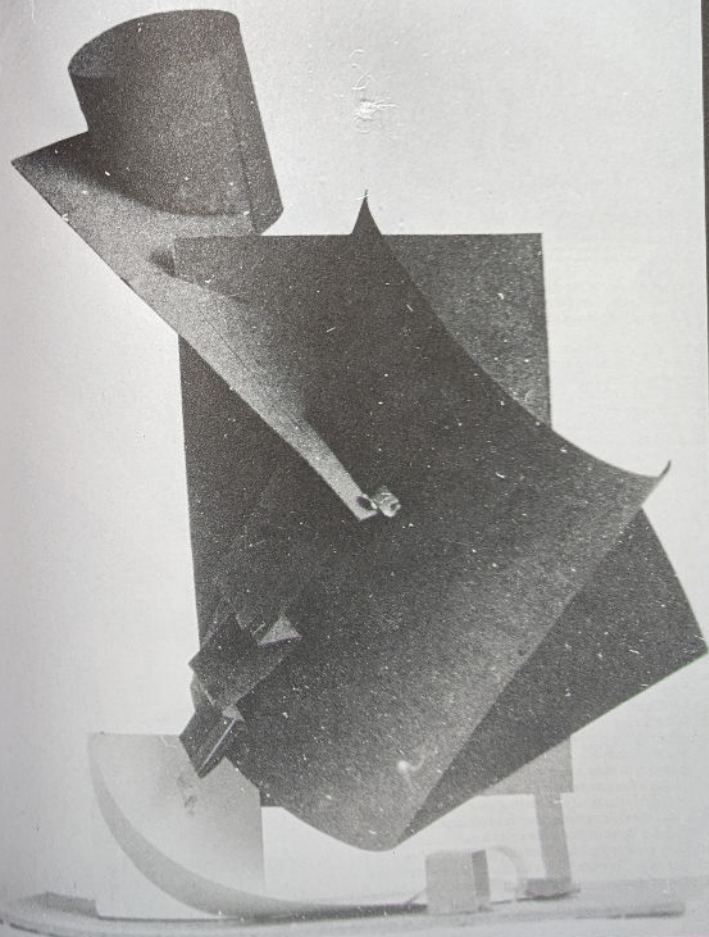
61 Punin 1920. Author’s translation.

62 Adolf von Hildebrand, *Problema formi i konstruktivno-izobrazitelnoye* [The Problem of Form in Painting and Sculpture], trans. V. A. Favorsky and N. B. Rozentfeld, Moscow: Muzaget, 1914. Originally published in German as *Das Problem der Form in der bildenden Kunst* in 1893. English edition: Adolf von Hildebrand, *The Problem of Form in Painting and Sculpture* (New York: Stieglitz & Co, 1907).

63 According to Anatole Reinherich (VIA, 1983). By various accounts, two versions of the course on the Theory of Spatial Composition were taught at Vkhutemas by the leaders of the two competing avant-garde movements Rationalism and Constructivism: one by Nikolay Dokuchaev and the other by Mossey Ginsburg.

64 Hildebrand 1907, 36.

Fig. 2.83 Exercise on the Articulation of a Spatial Composition (using mass and space), Space design of Vkhutemas, Moscow, 1920.





Refs. 2.14-2.16 Adolf von Hildebrand, illustrations for the Russian edition of *Problem der Form in der Malerei und Sculptur*, trans. V. A. Favorsky and N. B. Rozental (Moscow, 1914).

visual appearance of the object is always a product, not only of the object's actual form, but of the illumination, the environment and the changing point of view.⁶⁵

Contributing to the debate on theories of empathy, Hildebrand analyzes the nature of sculpture, arguing that three-dimensional form is a composite sum of different viewpoints registered from both a static and dynamic position in the moving observer. Different "readings" reflect changing vantage points, the "working over of many perceptions from one definite point of view."⁶⁶ In consequence, he proposed a version of a fragmented dynamic form as an extended view of spatial orientation, which "each of us must, in the nature of things, construct for himself in his dealings with the outside world." This idea became fundamental to the conception of Cubism a decade later.

Without consistent recognition of the "spatial attributes" of form, "orientation in the outer world is absolutely impossible," Hildebrand claimed. He thus advocated that "our general spatial ideas and the perception of spatial form [are] the most important facts in our conception of the reality of things."⁶⁷ Ladovsky, likewise, considered spatial orientation to be an "utmost human need." Perceptual form, Hildebrand noted, is a relational phenomenon—a result of kinesthetic perception defined in relation to changing environmental factors. It was this type of form or rather the appearance of form, that Ladovsky articulated in his pedagogy. For him, as for Hildebrand, "articulation" or the appearance of form meant the ability to guide kinesthetic perception or the trajectory of the eye by "properly relating the parts" of a composition.⁶⁸ In his Space course assignments, Ladovsky asked students to articulate a particular form as if it were viewed from either a fixed or a moving position.

Arguably the most challenging issue tackled by Hildebrand was the differentiation between conceptions of space as either the continuous ether or as a contained volume. Although "total space," he maintained, was omnidirectional and continuous, bounded space assumed the form of the "vessel" placed within it. He imagined this open space as "a body of water," thereby suggesting that it had physical substance and was not mere emptiness. Furthermore, because the "vessels"



Ref. 2.15



Ref. 2.16

65 Ibid., 18.
66 Ibid., 17.
68 Ibid., 38.

Fig. 2.84 Exercise on the Articulation of Deep Space (perspective of space on a rectangular plane). Space course at Vkhutemas, Moscow, 1920s.



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sunken into it were capable of defining "individual volumes" of this substance, he treated space as solid. This critical conceptual leap rendered space malleable inasmuch as it assumed the form of its container. As Hildebrand writes,

By total space we mean space as extending through all three dimensions, or in all directions. The essential factor in this is continuity. Let us imagine total space as a body of water into which we may sink certain vessels, and thus be able to define individual volumes of the water without, however, destroying the idea of a continuous mass of water enveloping all. In an artistic representation Nature must be expressed as just such a spatial whole if it is to contain that elementary impression which Nature makes upon us.⁶⁹

This line of thinking underlies the Rationalists' framing conception of space as differentiated mass. Years later, Ladovsky, for example, was to go further than Hildebrand by declaring that space, rather than stone, was "the material of architecture."⁷⁰ The notion of space as *matter* redefined the long-standing post-Enlightenment paradigm of architecture, shifting it from a classically ordered assembly into the realm of spatial form. Space was no longer regarded simply in terms of stylistic conventions, but was instead recast as a medium to be shaped or formed.

While Hildebrand considered both sculpture and painting to be representational and traditionally imitating external conditions, architecture, in his view, was a self-generating art with its own internal, "architectonic" logic. In order to introduce autonomy to the "imitative arts" of sculpture and painting, Hildebrand advocated for an "architectonic method" based on the idea of "unity of form." He writes,

Sculpture and painting in contrast with architecture are usually looked upon as imitative arts. This classification, however, expresses merely their differences and does not take into consideration their resemblances. Sculpture and painting are, indeed, imitative inasmuch as they are based on a kind of study of Nature.⁷¹

According to Hildebrand's logic, form neither represents nor imitates anything, but rather organizes physical matter according to a code of inherent laws. Classical order presumably taps into such a code, as do more general proportional systems and compositional principles. This "architectonic method" was fundamental to Ladovsky's conception of autonomous agency of architecture, who already in his discussions at Zhivskulptarkh proposed that architecture as an independent art form contains and organizes other visual arts, such as sculpture and painting.



Ref. 2.57 Adolf von Hildebrand. Cover of the Russian edition of *Problems of Form* (Problema formy i zbrovskul'turnykh iskusstv) [The Problem of Form in Painting and Sculpture], trans. V. A. Favorsky and N. B. Rozengold (Moscow, 1914). Originally published in German as *Das Problem der Form in der bildenden Kunst* in 1893.

69 Ibid., 47.
70 Nikolay Ladovsky, "O roli predstavleniya v arkhitekture i o kharaktere skulptury i zhivopisi" [On the Role of Space in Architecture and the Nature of the Synthesis of Architecture, Sculpture and Painting], *Zhivskulptarkh* (1920), in Bazukhin 1975, 344, 363. Author's translation.

71 Hildebrand 1907, 12.

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Fig. 2.85
Fig. 2.86
Fig. 2.87
Fig. 2.88
Exercises as illustrations of space on a rectangular construction of composition. Space course at Vkhutemas, Moscow 1928.

