

ALEKSANDR BOGDANOV'S TEKTOLOGY: A SCIENCE OF CONSTRUCTION

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Russian Darwinism developed without Malthus – without the struggle for existence. There is a remarkable link connecting the understanding of the Russian Darwinists of “natural *podbor*” as ‘fine-tuning’ by nature and Bogdanov’s concept of tektological ‘*podbor*’ (‘assembling’) as the universal mechanism of the construction of any organization. Bogdanov’s conception of the universal phenomenon of ‘organization’ as an expedient combination of active elements, and his attempt to construct a collective tektological ‘personality-organization’ possessed a conceptual creative power and influenced the work of the Soviet Constructivists. Conceptions of ‘assembling’ similar to those expressed in Tektology provided Constructivists with a scientific rationale, projects and terminology for their experiments in a new ‘production art’. They constructed expedient and functional art objects from a tektological point of view - as organizational art objects.

...the symbols and formulas of the Glass Bead Game combined structurally, musically, and philosophically within the framework of a universal language, were nourished by all the sciences and arts, and strove in play to achieve perfection, pure being, the fullness of reality (Herman Hesse, *The Glass Bead Game*)

“Furor tectologicus”

Rephrasing René Descartes, Aleksandr Bogdanov once said of himself: “I am organized therefore I exist.” He viewed the phenomenon of “organization” as a focal and creative point of the universe and *Tektology* as a universal science of organization of a better world and humankind. He admitted:

“I have some kind of disease – *furor tectologicus* – as soon as I see a task which is difficult to solve, or a combination I do not understand – so immediately appears the insurmountable aspiration if not to solve it, then to determine in principle its solution, and so for me nothing is sacrosanct.” (Bogdanov 1913: 211–212).

*Tektology: Universal Organizational science*¹ (1913–1922) signified the birth of a new science of organization (systems science in modern language) and a new cognitive model – a systems model.² It would come fully into existence only several decades later, in the middle of the XX century, with the development of Ludwig von Bertalanffy’s *General Systems Theory* (GST) and Norbert Wiener’s cybernetics.³ But the true beginning of the systems paradigm was for a long time forgotten until Bogdanov’s *Tektology* was rediscovered.⁴ The starting

¹ There is some disagreement regarding the date of the publication of the first part of *Tektology* (1912 or 1913). The original was not dated beyond the foreword (December, 1912) and Bogdanov himself occasionally referred to 1912. The definite date of publication (1913) is provided by the Knizhnaya letopis’ in Rossiiskaya knizhnaya palata - year 1913, No 32, page 4, entry number 19802.

² The term “cognitive model” was introduced by the Russian philosopher, Alexander Ogurtsov, in 1980 and developed by the Russian historian of science, Yuriy Chaikovskiy. See Chaikovskiy 2008: 225–227.

³ Bertalanffy had arrived at his basic concept by the end of the 1930s, but published it only after end of the war, having earlier believed that the scientific community was not ready to accept it.

⁴ *Tektology* was a unique conception of the general science of organization which brought into focus the systems notions of all main macroparadigms which

point of *Tektology* was the universally applicable idea of “organization” or “complex” as an expedient unity, a combination of elements - “activities-resistances” and a universal set of organizational laws for all complexes of the world. As Bogdanov stated:

“My starting point ... consists in that structural relations can be generalized to the same degree of formal schematic clarity as the relations of quantities in mathematics and on such basis organizational tasks can be solved using methods analogous to the mathematical”. (Bogdanov 1989: Book 2, 310).

This apparently purely scientific and innocent scientific doctrine gave rise to a great outburst of “proletarian” debates and influenced the development, shaping and interpretation of proletarian ideology and culture in early Soviet Russia. This is not surprising since *Tektology* was designed as a monistic organizational proletarian science and such a project was possible only in Russia and only at this time.

Bogdanov was deeply influenced by classical science and by the monistic tradition in philosophy. The idea of the unity of nature and of its simplicity was one of the first scientific and philosophical notions. It held that the diversity of nature was full of amazing and numerous analogies and repetitions – therefore there should be simple and universal laws of nature to explain all phenomena. The epoch of classical science was an era of aspiration for creation of “global formulae” – universal and simple monistic models and concepts of the world. For pre-twentieth science, the unity of knowledge was equal to monism of knowledge – by ascending to more and more abstract levels of existence it would be possible eventually to arrive at unified all-embracing laws of existence (as in the *Mathesis universalis* of Leibniz or the *Divine Calculator* of Laplace).⁵

This old monistic tradition was still very powerful during Bogdanov’s lifetime.⁶ As the influential German biologist Ernest

appeared at different stages in the development of the systems movement of the XX century. See Poustilnik 1998.

⁵ This idea was expressed in many ways in relation both to the simplicity of nature and the simplicity of its explanation (Ockham’s Razor, Fermat’s principle of the reflection and refraction of light, Maupertuis’ general principle of least action, Goethe’s protophenomena, etc.).

⁶ At this time scientists were still preoccupied with analogies between the simple and the complex, and with the construction of numerous simple models of nature. For example, the analogy of the cell with the crystal was highly popular. See a Russian translation by Przhibram, G. 1913. “Obzor mnenii avtorov o znachenii analogii mezdu kristallom i organizmom”, in *What Is Life. New in Biology.*

Haeckel⁷ put it, monism was an evident characteristic of the sciences and philosophical thought of the end of the nineteenth century. He believed that the approaching twentieth century would construct “a system of pure monism” and achieve the “long-desired unity of world-conception” (Haeckel 1900: XV&390).

Bogdanov designed his new science of organization in accordance with the monistic assumptions of his era – Tektology’s subtitle; *Universal Organizational Science* implied a monistic universal science. *Tektology* was to be a monistic science of world-organization, viewing and summing up the entire universe in terms of and through organization.⁸ Bogdanov’s ingenious scientific discovery – “everything is organization” led him to the conclusion that everything was only organization – being a “monist” he believed he had created a new monistic organizational science.⁹

As a Russian Marxist, Aleksandr Bogdanov was committed to the scientific reconstruction of society, which appeared to him to be the highest form of organization. Implementing Marxist-positivistic practical aspirations, Tektology was to be not merely a monistic organizational science but a science of monistic organizational experience. Tektology was meant to be a practical science, its formulae - “practical global formulae” were intended for the “practical mastery” of nature, and to be “a powerful instrument of the real organization of humankind into a single collective.” (Bogdanov 1989: Book 1, 110).

Tektological ‘*podbor*’ - the creative power

St.Peterburg: Collection 1, 19–47. We find this analogy in the first pages of Tektology. See Bogdanov 1989: Book 1, 72. For Bogdanov it was very important since it demonstrated the possibility of his general organizational approach.

⁷ Bogdanov took the term Tektology from Ernst Haeckel’s *Generelle Tektologie oder Allgemeine Strukturlehre der Organismen* (1866) expanding this term. In Greek, “tekton” means “theory of construction” and for Bogdanov “construction” was “the most general and suitable synonym for the modern notion of organization.” See Bogdanov 1989: Book 1, 112.

⁸ The German chemist Wilhelm Ostwald, Haeckel’s most important successor as a monist, attempted to develop the concept of “energetic monism”, based on the universal principle of energy. This gave to Bogdanov the idea of applying the notion of “organization” in a similar way.

⁹ Bogdanov identified three types of monistic world view in the history of society: religious, philosophical-abstract and scientific and considered Tektology to be the ultimate “scientific-monistic” worldview.

Russian Marxism had seen the revolution and class struggle as the way towards achieving a new social order. Bogdanov had an opposite vision; the idea of struggle did not fit in with Bogdanov's organizational and harmonic vision of the world. *Tektology* was an "all-human science" for the gathering together of man and of the world, to produce a scientifically organized collective by stage of self-organization without class struggle. The collectivistic organizational logic of *Tektology* was based on Bogdanov's biological worldview, fused with a Russian philosophical *Weltanschauung*, which had always been penetrated by ideas of the harmony of the world and did not accept the principle of struggle as the moving force of evolution.

Bogdanov introduced the term "complex" as "expedient unity" (*tselesoobrasnost'*)¹⁰ to denote a combination of elements or "activities-resistances" and interpreted this in terms of the biological concept of constant interaction with the environment and adaptation to it (Bogdanov 1989 Book 1: 112–125).

Following Darwin, Bogdanov conceived of development as the adaptation of a complex to its environment. The universal regulating mechanism of tektological development and its adaptation was '*podbor*'. Bogdanov believed his tektological '*podbor*' to be merely a logical extension of Darwin's principle of "natural selection" discarding the epithet "natural" (Bogdanov 1989, Book 1: 189–190). But this was not the case.

How far did Bogdanov really follow Darwin? Is his conception of selection really an extension of that of Darwin?

Darwin's theory of evolution "by means of natural selection" was greatly influenced by the English economist Thomas Malthus and his theory of population growth exceeding resources. Malthus's metaphor of the "struggle for existence" was the matrix for Darwin's theory of evolution based on competition. Darwin wrote: "Nothing is easier than to admit in words the truth of the universal struggle for life" (Darwin 1902: 77).

Russian naturalists perceived nature very differently from Western naturalists, seeing in nature not over-population but under-population. Russian philosophy with its humanistic and collectivistic

¹⁰ Bogdanov identified three types of "complex" - "organized", "disorganized" and "neutral" since an increase in the degree of organization ("organized" complex) was just one possible outcome of organizational processes; however, he was mostly interested in the "organized" complex.

tendencies believed in the best sides of both human nature and society. The same attitude was applied to nature. As the Russian writer and publicist Aleksandr Herzen put it, everybody has to have a place at nature's feast.

For Russian intellectuals, the constructions of Malthus were offensive and even repugnant, and contrary to the Russian humanistic tradition, which believed in high human moral ideals and strove for the improvement of human society¹¹. These intellectuals transferred the same negative assessment to Darwin and Darwinism. Russian intellectuals perceived Darwin's theory as being the concept of a ruling élite, for the benefit of the ruling élite. For example, the leading Russian biologist of that time, Nikolay Danilevskiy, described Darwinism as a "purely English doctrine", in which is included not just the features of the English mind but all the features of the English spirit (Danilevskiy 1885: 178).

In the first Russian translation of Darwin's *Origin of Species* (Rachinskiy 1864) Darwin's term "natural selection" was translated as "*estestvenniy podbor*" (*podbor* - "assembling" in re-translation). This fundamentally changed the meaning of Darwin's concept of evolution and removed its emphasis on competition and struggle for existence. As a result, Russian Darwinism developed without Malthus – without the struggle for existence. Russian Darwinists and intellectuals discussed Darwin's theory of evolution in terms of "assembling" or "choice" – as nature's choice of individual traits to uphold its divine and marvelous order; adaptation represented a kind of reciprocal "fine-tuning" or creative construction by nature (Chaikovskiy 1989: 121–141).

The correct translation of Darwin's term "natural selection" – "*estestvenniy otkhor*" appeared in Russia at the end of the nineteenth century,¹² but the idea of competition as a moving force of evolution was not really adopted. Most Russian thinkers, philosophers and scientists of different backgrounds and political views of the generation of Bogdanov believed that Darwin's concept of evolution reflected the negative influence of Malthus. Russian thinkers tried to create different theories of mutual aid in order to achieve "genuine

¹¹ As Todes has noted, Malthus was seen in Russia as a "hack writer" (Lev Tolstoi), whose doctrine was a "morally repugnant" (Beketov) expression of the secret desires of the wealth-producing classes (Kropotkin). See Todes 1989: 169.

¹² In the translation of *The Origin of Species* by the famous Russian botanist Kliment Timiryazev (1896).

Darwinism”. In 1902 the famous Russian anarchist and biologist, Prince Petr Kropotkin, devised an alternative concept of evolution: Mutual Aid as Factor of Evolution.¹³ In this work, Kropotkin wrote:

“I failed to find – although I was eagerly looking for it – that bitter struggle for the means of existence, among animals belonging to the same species, which was considered by most Darwinists... as the dominant characteristic of the struggle for life, and the main factor of evolution”. (Kropotkin 1914: 7).

Instead he found “a great deal of mutual aid where Darwin and Wallace see only struggle.” (1914: 9).

Kropotkin did not deny the existence of competition within the same species or Darwin’s concept of the “survival of the fittest”. But he believed that the “fittest” are animals that cooperate with each other. Kropotkin viewed human morality as a product of the solidarity and self-sacrifice that originated from the cooperative instincts of the animal world.¹⁴

It was in conformity with this Russian anti-Malthusian assessment and tradition, that Bogdanov wrote in *Tektology* that the principle of Darwin is a “scientific truth” and that the views of Malthus should be disregarded “as being fundamentally mistaken” (Bogdanov 1989: Book 2, 190) and he deliberately adopted the archaic, by that time, translation ‘*podbor*’¹⁵ since, for him, the term ‘*podbor*’ corresponded to genuine Darwinism. He believed he was merely expanding the relevance of the term in *Tektology*; but in a fact, tektological ‘*podbor*’ (“assembling”) – is not an extension of Darwin’s “natural selection”.

Darwin’s evolution works only through heredity in succession of generations. Darwin’s “natural selection” meant selective biological reproduction; each generation continues its evolutionary direction by taking the next evolutionary step. In Bogdanov’s tektological

¹³ Petr Kropotkin 1914. Kropotkin wrote his book as a response to Social Darwinism, particularly that of Thomas Henry Huxley (known as “Darwin’s Bulldog”) and his book *The Struggle for Existence in Human Society* (1988).

¹⁴ Another great example of Russian collectivistic thinking is the Russian religious philosopher Nikolay Fyodorov, the father of Russian cosmism. In *The Philosophy of the Common Task* he proposed bringing all people together in the global task of resurrection of all “fathers” by the “sons” through the application of science, in order to achieve immortality and the brotherhood of all generations in future cosmic humankind.

¹⁵ Bogdanov was familiar with the correct translation of Darwin’s term “natural selection” as ‘*otbor*’ since he was a student of Timiryazev and he applied the term ‘*otbor*’ in *Tektology* on several occasions.

organizational scheme the mechanism of *'podbor'* was applied to the development of any kind of organization, regardless of biological heredity.

The further and the most important difference resides in the systems character of tektological *'podbor'*, which, in this respect, is the direct opposite of Darwin's "natural selection". Darwin's "natural selection" meant the selecting-survival of individuals through the adaptation of one particular feature or another in the course of the struggle for existence. Bogdanov's *'podbor'* meant the assembling-creation of the organization through the concordance of its parts and expediency (Bogdanov 1989: Book 1, 113) without reference to the idea of competition. Tektological *'podbor'* creates the mutual correspondence of all complexes as parts of a single world-organism – in line with the understanding of the Russian Darwinists of "natural *podbor'*" as "fine-tuning" in nature.¹⁶

Tektological *'podbor'* appears as the universal mechanism of the construction of any organization and its expediency. In 2008 Chaikovskiy in his fundamental research on the theory of evolution devoted a special chapter to *'Podbor'* according to Bogdanov, where he discussed the importance of Bogdanov's *'podbor'* as the foundation the idea of the universal phenomenon of self-organization in nature (Chaikovskiy 2008: 363–370). Tektological *'podbor'* as the universal organizing principle assembling the complex through the concordance of its parts was taken up later in the work of the Soviet Constructivists, as we shall see.

"Tektological Socialism" according to Bogdanov

It was not so much the functioning of organizations, which interested Bogdanov, as the principles by which an organization as "expedient integrity" (*'tselesoobrasnost'*) was constructed. Organization figures in *Tektology* more as a process than as a state - the new "constructive" science was to be a science of the organizational laws that determine the construction of elements into an integral unity.

Bogdanov choose the category of "organization" not by chance. The philosophical term "organization" had acquired in Marxism a special meaning as "social organization". For Russian

¹⁶ The modern understanding of "selection" in the context of global evolutionism corresponds to Bogdanov's *'podbor'*. See Poustilnik 2008: 134.

Marxists the idea of the construction of a new rational social organization based on science was central – and science played a primary role in Bogdanov’s conception of scientifically organized humankind. But he viewed the science of the old world as full of contradictions, too complicated and fragmented, and therefore not suitable for the purpose of managing the “grandiose task...the triple organization - of things, people and ideas” the objective of which was to achieve a new social organization (Bogdanov 1989: Book 1, 106).

Bogdanov considered Marx to be the “great forerunner of organizational science”. As White has put it, Bogdanov’s concept of socialism as the “gathering of man” was close to the original idea of Karl Marx. Marx believed that socialism would create an integral human community, which would end the fragmentation of the human psyché brought about by the division of labour and specialization. Bogdanov conceived of the future collective in a similar fashion – all of its members would be able to transfer from specialty to specialty. Science would be available to everyone and the human collective would be able to control it. But for Marx, the future socialist society was to result from the inherent social nature of Mankind, whereas for Bogdanov it would result from the active self-organization of society (White 1998: 37–38).

Bogdanov’s answer was *Tektology* as the “socialism of science”. In his early work, *The Gathering of Man* (*Sobiraniye cheloveka*, 1904) Bogdanov formulated the task of changing “a fractured man” into “integral man” when knowledge would be the property not of an élite, but of all members of the collective. It was the hope of replacing the existing necessity of collective belief by the collective possession of knowledge that motivated Bogdanov in his path towards *Tektology*.¹⁷

The class struggle did not fit into Bogdanov’s organizational vision of a harmonious world. As he explained in *Problems of socialism*

¹⁷ In *Engineer Menni* (1912), Bogdanov’s second science fiction novel about “tektological society” on the “Red Planet”, Mars, he gives expression to his innermost aspirations; one of the protagonists asks “What must we do so that we ourselves can know and see, and not just constantly believe?” adding that “Modern “science is just like the society that has created it: powerful, but splintered...Because of this fragmentation the individual branches of science have developed separately and lost all vital connection with each other... Each branch has its special language which is the privilege of the initiated and serves to exclude everyone else.” See Bogdanov 1984: 186–187. On Bogdanov novels, see Shushpanov 2009: 259–281.

(*Voprosy sotsializma*, 1918) “the class struggle... ignores the organization stability of the social mechanism.” (Bogdanov 1918: 42). He goes on:

“According to the old notions, socialism first conquers and then comes into being.... We see things differently – socialistic development will be completed by a socialistic revolution.” (1918: 101–102). The creative implementation of a socialist, class-based order will bring the proletariat to a victory that will transform that order into an all-human order (*obshchechelovecheskiy stroi*).

Bogdanov completely discarded the notion of class struggle – now the construction of a new social organization could be achieved only through a long stage of cultural self-organization of the proletariat.¹⁸ Bogdanov designed a programme for this transition – the Programme of Proletarian Culture (Proletkult).¹⁹ At the core of the project of the *Proletkult* there was *Tektology*, the *organizational proletarian science*. To master culture meant to master *Tektology*, which contained all the organizational experience and knowledge of humankind. For Bogdanov, *Tektology* was the ultimate tool for the construction of new kinds of relationships between members of the social organization in the advance towards socialism.²⁰

When Bogdanov says *Tektology*, he means proletarian science, and *vice versa*. *Tektology* was a proletarian science that had simplified all sciences from an organizational point of view and so became *available to every member of the collective*, and not only to the educated élite. This science of organization was a proletarian science and a real instrument for the peaceful transition towards the unified human collective of the future. In Bogdanov’s own words, *Tektology* was an “all-human science” – an instrument for the organization of humankind into “single intelligent human organism”²¹ and the purpose of the *Proletkult* was to open the path towards socialism by serving as an enabling

¹⁸ This explains why he left active political life in 1911 and became Lenin’s most serious intellectual antagonist and rival.

¹⁹ On the Proletkult, see Sochor 1988.

²⁰ Bogdanov was obsessed with this idea. In 1918, at the First All-Russian Conference of the Proletkult, in his speech *Science and the Proletariat* (*Nauka i proletariat*) Bogdanov spoke of the need to master *tektology* as a means towards socialism (the Proletkult catered not for everyone, but primarily for the proletarian vanguard or proletarian élite).

²¹ Bogdanov tried to achieve “physiological collectivism” in practice, through exchange blood transfusions, seeing this as a way of eliminating the “weak link” of each organism and, most interestingly, of achieving an “outcome beyond the limits of individuality” (Bogdanov 1989: Book 2, p. 86). At that time many scientists believed in heredity via blood. See Krementsov 2011.

institution for cultural self-organization and the mastering of *Tektology*.²²

The Proletkult represented a fusion of Bogdanov's utopian aspirations – the scientific utopia of a universal monistic discipline that was capable of mastering any combination of elements and the social utopia of the construction of “tektological socialism”.

Project of Man and Project of Art

How did Bogdanov's view of the world via the prism of organization influence Russian intellectuals in the first decades of the 20th century? Vesa Oittinen in his preface to *Alexandr Bogdanov Revisited* has discussed the long history of Bogdanov's “rivalry” with Lenin and the powerful influence of this rivalry on the formation of Leninism and of early Soviet state ideology, cultural politics and art (Oittinen 2009: 7–20).

The post-revolutionary era in Russia witnessed the advent of a project to create a “new Soviet man”. This ideological construct, was no longer an individual but a collective proletarian. Many strands of this project were rooted in *Tektology*, which during the early years of the Soviet regime was used by Russian Marxists as a creative intellectual tool. Political leaders and the “proletarian” élite, both before the revolution and after, in their searching for a new men and a new society model, closely studied *Red Star* (Bogdanov 1908). Bogdanov's first science fiction novel about “tektological communism” on Mars. During the first years after the revolution Bogdanov was very popular; *Tektology* was a mandatory subject of study in the courses of Narkompros (the People's Commissariat of Enlightenment).²³ During the relative freedom of the 1920s Bogdanov was still able to publish and express his views and ideas.²⁴ The First *All-Russian Initiative Conference on the Scientific Organization of Labour and Production (NOT)*, 1921 opened with a presentation by Bogdanov: “Organization Science and

²² In the 1920s official Soviet Marxists distorted Bogdanov's notion of organizational proletarian science and used it to divide science into “proletarian” and “bourgeois”.

²³ See Udaltsov 1922: 82–83. The program of the Proletkult abandoned traditional authoritarian teaching and relationships and encouraged students to work as a collective.

²⁴ Particularly, in the journals “Gryadushchee” (The Future) and “Proletarskaya Kul'tura” (Proletarian Culture). Bogdanov was the editor in chief of “Proletarskaya Kul'tura”.

the planning of the economy” in which he advocated the development of Soviet economy according to tektological principles (the law of the least, the principle of equilibrium, etc.).²⁵

In 1924, in the journal *Under Banner of Marxism* (*Pod znamenem marksizma*) it was noted that one of the immediate tasks was – a close examination and criticism of *Tektology* from the standpoint of dialectical materialism (Veinstein 1924: 90) – indeed, critical reviews of *Tektology* appeared in this journal on a regular basis.²⁶ In 1930 in the journal *Revolution and Culture* (*Revolyutsiya i kultura*) it was emphasised once again that “the influence of Bogdanov’s doctrine...necessitates its serious and deep criticism”.²⁷ In the same year there appeared a critical review of the economist Bazarov, one of Bogdanov’s followers in economics, in which it was sarcastically noted: “What can we say about a naturalist who, on the grounds that a table has four “legs”, like a cow, would declare that a table is the model of a cow?” (Sobol’ 1930: 60).

Slava Gerovitch, in discussing the evolution of the Soviet notion of self, has pointed out:

“The “totalitarian model” of Soviet society traditionally considered “the cog in a wheel” as a central metaphor for the new Soviet man. This metaphor embodied the notion of the passive individual subsumed under the collective...” (Gerovitch 2007: 137).

Recently, however, scholars have begun to challenge the passive nature of the Soviet “totalitarian self”. They argue that the “new Soviet man” was not just a passive recipient of official ideology. He made active attempts to construct a new identity for himself, aspiring after the alluring ideal of the new Soviet man (Gerovitch 2007).

Proletarian collectivism was an essential feature of this identity and all aspects of a new “proletarian” life - and a necessary

²⁵ It is interesting that Bogdanov introduced the term ‘Soviet exhaustion’ (*Sovetskaya iznoshennost*), which he considered to be a consequence of the “enthusiasm of socialistic construction.” See Bogdanov 1928: 22.

²⁶ For example, tektology was evaluated as reactionary concept because it “interfered with the revolutionary tactics of the proletariat”(Veinstein *Ibid.*); the tektological principle of ‘weak link’ (*printsip slabogo zvena*) provoked the “Marxist” response that “our Party successfully leads the peasantry towards socialism, which is, “ from Bogdanov’s point of view is an impossible case” since for Bogdanov it is the “weak link” that determines development (Karev 1926: 43); Tektology “results in almost mystical concepts because of the mechanical transfer of models from one area to another”(*Ibid.*, 27).

²⁷ “Ob itogach i novych zadachakh na filosofskom fronte” 1930: 109.

precondition of the construction of a new proletarian art. Bogdanov's slogan of "organization" and organizational laws, and his attempt to construct a collective integral personality-organization possessed a conceptual creative power. As Susiluoto has pointed out, in Russia, systems thinking arose as a comprehensive challenge without proof, through philosophy and theoretical concepts and possessed a "utopian creative power to influence and change the entire world, now and at once." (Susiluoto 2009: 86).

Tektology as a science of the organization of rational combinations was a powerful and creative instrument, and its ideas were promoted and available to Soviet intellectuals, artists, and the mass membership of the Proletkult. Many links were forged between groups of the Proletkult and Constructivists after the founding of Constructivism in March 1921.²⁸

The Art Deco style of the early twentieth century was a celebration of the rise of commerce and machine art, and the human being was included in the universe of the machine and viewed as a technical system. During the early Soviet period, life was synonymous with art, and art became life. New "proletarian" art and "proletarian" art objects were to be imbued with the idea of a purpose that was understandable for the proletariat and clearly connected with everyday life and work experience.²⁹

The Constructivists were dedicated to creating art objects that would organize the new Soviet man in a collective direction towards socialism. They were seeking to create the projects and objects of proletarian constructivist art as a fusion of human being, technique, science and everyday life based on the principle of concordance of the parts, forms and materials.³⁰

Tektology provided Constructivists with a scientific rationale, and with terminology and models for their experiments in a new "production art". Bogdanov viewed expediency as being the universal principle of every form of organization, and that it derived from the inherent activity of all complexes:

²⁸ For example, Boris Arvatov taught at the Central Proletkult in Moscow.

²⁹ Aleksandr Rodchenko in writing about the new essence of proletarian items of daily life, referred to "the capitalistic world's "opium of things".

³⁰ Aleksey Gan designated the three principal elements of Constructivism as "construction", "faktura" and the "tectonic".

“Any practical or theoretical task comes up against a tectological question: how to organize most expediently a collection of elements, whether real or ideal.” (Bogdanov 1989: Book 1, 142).

For the Constructivists the conception of “organization” as an expedient combination of active elements was a powerful idea and stimulus. Tectological models demonstrated the practical ways for artists to construct an expedient complex of “production art” in order to fulfill the political command which required proletarian artists to deliver practical and functional proletarian art objects.

In 1922 Aleksey Gan published the groundbreaking work *Constructivism* (Gan 1922), in which he pronounced the slogan “labour, technique and organization!” and “expediency” was proclaimed as a formal artistic dogma and goal. As Tikka has pointed out:

“In line with the tectological thinking...the constructivist theorist Aleksey Gan...elaborated his “Tectonics” on the idea of “fluidity” (*tekuchest'*) as a formulation of the workers’ “active social force” (Tikka 2008: 222).³¹

Bogdanov spoke of the “worker-organizer”, the Constructivists – of the “artist- organizer” – both models implied collective work. Bogdanov conceived of *Tektology* as the ultimate tool that would contribute to the attainment of socialism. The Constructivists saw collective artistic labour as a path towards socialism. Bogdanov did not make a distinction between creation and labour – and the Constructivists focused on practical objects inspired by labour, technique and everyday life.

The Constructivist artist was an “artist-organizer”, an “artist-worker” – a member of the proletarian collective, organizing and creating an object of organized art in collective production.³² The product of constructivist work-art figured as an organized complex in Bogdanov’s sense of the term created by the proletarian collective and representing the proletarian collective as “workers-organizers”.

Tectological *‘podbor’*-“assembling” as a universal mechanism for construction, provided the Constructivists with a real method for constructing an expedient art-object by way of a “cinematic assembly”

³¹ The term “tectonic” (*tektonika*) was also used by Constructivists Varvara Stepanova and Alexandr Rodchenko. Varvara Stepanova in her lecture on Constructivism in 1921 discussed “tectonic construction” and the role of the artist as an organizer.

³² For example, Rodchenko asked his students to create the objects, which would organize the collective.

of the elements – in the manner of assembling by tektological ‘*podbor*’. In 1922 the Constructivist Dziga Vertov proclaimed:

“Cinema is the art of the fictional motion of things in space that meet the requirements of science”; ‘*kinochestvo*’ is “the art of organizing the necessary movements of things in space and time in a rhythmical artistic whole.”³³

In 1923 *The Council of Three* (‘*Sovet troich*’), led by Vertov, proposed assembling “visual events” into “a tectonic whole” “in a great craft of montage.” In this conception, the constructivist filmmaker would apply methods resembling tektological ‘*podbor*’ and tektological models as a means of creating organized film-construction.³⁴ As regards tektological ‘*podbor*’ – assembling – Tikka has drawn attention to the ideas of Sergei Eisenstein on the cinematic ‘assembly line’ and to his “notion of montage as a tectological method for organizing human experience” (Tikka 2009 op.cit: 229).

Conclusion

I have argued that there is a remarkable link connecting the understanding of the Russian Darwinists of “natural *podbor*” as “fine-tuning” by nature, Bogdanov’s concept of tektological ‘*podbor*’ as a universal principle of “assembling” in organization and, through what seems to have been the dissemination of his ideas, the concept of the “cinematic assembly” of the Soviet Constructivists. In my view this continuity can be attributed to the immanent collectivism of the Russian and Soviet *Weltanschauung*.

The conception of a new class of organizers of socialism as a “proletarian” collectivity – Bogdanov’s *Tektology* as organizer and Constructivist production art as organizer – were not acceptable to the Soviet political leadership since they did not integrate the leadership’s conception of Marxism into their organizational constructions and models. The fraught relationship between these two great Utopian projects of the XX century has yet fully to be investigated.

³³ See Vertov, 1922. Variant Manifesta “My”: http://vertov.ru/Dziga_Vertov/

³⁴ Dziga Vertov’s *Man with a Movie Camera* (1929) is a great example of Tektology-inspired constructivist cinematic technique in which organized film is placed at the service of the organized collective. Vertov included in his films moments of editing of the film, making explicit the process of construction.

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