

Natural History Knowledge and Social Processes

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Abstract—Natural History covered all the knowledge about nature throughout the classical antiquity and the Middle Ages. Divorce between the natural sciences and the humanities happened during the Enlightenment and Romantic period. During the Classic period of evolution of scientific knowledge natural history knowledge was firmly established as an important part of Earth science. Thinking of ties between historic process and changes in nature prompted researches to step outside the Earth. Works of Chizhevsky represent natural history knowledge as a necessary step of systematic understanding of natural and historic processes where the system conceived as a coherent bond integrating such components, as Cosmos, the Sun and planets of the Solar system, the Earth with its spheres, the mankind as a psychosphere and the man with his individual and world history.

Keywords—Chizhevsky; natural history knowledge; global history; social processes; forecasting

I. INTRODUCTION

Natural history knowledge originates in written sources of classic antiquity (Herodotus, Pliny the Elder) as a result of comprehension of processes characteristic of the natural world and significant social issues, tied up, however, with notable features of life of the human being belonging both to nature and society. The existing level of knowledge about phenomena and processes of the surrounding world in their connection with passions of the inner world of the human being contained an important rational kernel — the natural influences the social element, but the reverse could also be true. E. Durkheim in his study on suicide pointed out that a social fact sometimes materialized and became an element of the outer world. As an example, Durkheim looked at architecture and law. Modern studies demonstrate essential relationship of social phenomena and social structures with genetical modifications caused by historically persistent affiliation or severance of traditions pertaining to blood

relatives. Sociopolitical structure of society and a multitude of its parameters can be considered as facts of selection acting upon human populations and requiring genetic adaptation [1]. It is important to trace back changes in the understanding of "Natural History Knowledge" in the works of thinkers of the past and show its modern interpretation in the works of Chizhevsky.

II. DISCUSSIONS ABOUT THE NATURE OF NATURAL HISTORY KNOWLEDGE AND SOCIAL PROCESSES

Natural History covered all the knowledge about nature throughout the classical antiquity and the Middle Ages. Thomas Aquinas, Dante and other thinkers believed that cycles and periods of world history are governed by the influence of stars, and this influence could be subject to the will of God and serve as his tool in history, or — an idea gaining more and more wide acceptance — was a force pertaining to Cosmos. Intellectuals of the early modern period expanded the boundaries of the terrestrial nature towards heavens. Inspired by Newton, G. Vico (1668-1744) in his treatise "The New Science" proposed a theory of the upward advancement of humankind through advancement of separate nations. Searching for the foundations of this new science, he suggests the idea of recommencing "Circular Motion" of cultural progress.

I. Kant was yet thinking it's possible to carry out philosophical analysis of historic events on the presumption that manifestations of free will, human behaviour, like any other natural phenomena, were determined by universal laws of nature, and an attempt of philosophers to develop world history according to the plan of nature, directed towards perfect civil unification of humankind, should be viewed as facilitating this aim of nature [2]. Hegel continued along this line: Greece is [that form of] the Substantial, which is at the same time individual. The Universal, as such, is overcome; the submersion in Nature no longer exists, and

consentaneously the unwieldy character of geographical relations has also vanished. Spontaneous migrations of Greek tribes were one of peculiar conditions under which the state evolved. Another was the sea by which the foreigners arrived and established fixed centers in Greece by the erection of fortresses. Later the whole of Greece united in a national undertaking, viz., the Trojan War; with which began that more extensive connection, with Asia [3]. The Enlightenment revolted against authority and opened the way for revolution in methods of searching for knowledge. Romanticism proclaims ideas of human liberty and unlimited historical creativity. Nationalization of history took place. Historism was formed, at its core – replacing generalized analysis of the action of historic and human forces with individualizing analysis.

Starting from the middle of XIX c. natural science got separated from philosophy and later – from the humanities in general. W. Dilthey (1833-1911) in his extensive work "The Human Sciences" introduced distinction between natural sciences and humanities according to the subject. W. Windelband (1848-1915) in his work "History of Philosophy" (1894) came to a conclusion that there were two types of judgements we use — abstract-logical (description of nature or scientific picture of the world) and judgemental (pleasure or displeasure in the person's attitude towards the world). They come from separation of science into natural sciences and humanities. The outstanding feature of humanities is not a subject but a method of research. Cognition of the supposit consists of referencing the subject to universal values. Values are a priori forms of cognition. The law and the event will stay next to each other as incommensurable quantities of our understanding of the world. Such irreducibility is an intractable challenge but it forms the basis of autonomy of historical science.

H. Rickert (1863-1936) used this postulate as a foundation in his "The Limits of Concept Formation in Natural Science", pointing out that historic process is a continuous allusion to values. Values possess metaphysical existence. He identifies the object of historical cognition as a culture, and values with which cognition correlates — as cultural values — are what the person implements in history. The challenge to historians is to reveal guiding cultural values; however historians themselves are not always conscious about the rationale for doing so, because they are totally unaware of the logical structure of their science. They are sure that history is far divorced from any link to values [4].

Max Weber (1864-1920) concludes that criterion for scientificity is the same in natural sciences, history and sociology. It is a case of causal explanations. However any causal representation is fragmentary and partial in respect to reality (for example, economic reasons for the WWI do not explain all its events). Reality has no boundaries but sociologists and historians are interested only in specific events and their aspects. Phenomena of religion, money and corruption are researched insofar as they touch our cultural interests, and our cognitive impulse is oriented towards this segment of reality. As a result the historian works with those

aspects of events that could be understood only from a particular point of view [5].

This is also relevant to Marxism. In the preface to his work "A Contribution to the Critique of Political Economy" Marx thought it important to recognize that in the process of evolution there were moments when spiritual, cultural structures could act in reverse and influence the form of evolution. So not only actual economic factors but also cultural achievements form history. Later a German philosopher and sociologist Arnold Gehlen (1904-1976) pointed out important differences between the form of animal existence, tightly linked to environment, supported by instincts and adaptiveness, and the form of human existence, having "Open World" and thus freedom of choice. Wherein the environment is assumed for the animal, the human being possesses the cultural space.

According to W. Wundt (1832-1920) laws of historic development are simultaneously social laws inasmuch as they relate to specific forms of public life and thanks to the common nature of historic objects. The theme of the meaning and purpose of history opens slightly in the works of Karl Jaspers (1883-1969). The meaning and purpose of history are not discernable: unity grows from the meaning, to which history moves, and the purpose can be represented as hidden meaning, which nobody had in mind.

Polish sociologist Adam Schaff (1913-2006) showed that system of values avowed by an individual was decisively influencing his or her social relationships, forming the sense of life and social character. It is both the factor of stability and the factor of uncertainty. The human being is not a "Clean Slate", but a "Slate", written upon twice: with genetic and cultural codes, joined with complex ties, mutual relationships and even conflicts [6].

Troubled by the rift between two branches of science, which are at the foundation of European cultural crisis, E. Husserl and B. Russell attempted to present philosophy — a nodal structure of humanitarian knowledge — as a strict science. But they tried to do it using mathematical logic, abstracting from specific content. J. Moore in his work "Principia Ethica" criticizes views of realism, pragmatism, and utilitarianism on the nature of the good. He finds out that naturalistic fallacy comes from reduction of this notion to separate virtues with each of them always having specific social characteristic. These characteristics are realities, extraneous to morality. Wittgenstein, Heidegger, and Dewey followed, attempting to find way to make philosophy a science of foundations in explanation of both physical and social processes. They did much to get away from obsolete approaches. But even years later R. Rorty in his work "Philosophy and the Mirror of Nature" (1997) noted that together with Moore we could agree that a question, if the good had something in common with availability of necessary and sufficient conditions in order for something to be the boon, always remained open.

Nicolai Hartmann (1882-1950) formulated a notion that not only objects and natural phenomena, but ideas too were real. All layers of existence (inanimate and animated nature, psychic and spiritual) have their own categorical framework

and determination type. Just the same way as categories of any lower layer undergo modifications in a higher layer and return back enhanced in a specific new quality, lower determination types get modified and enhanced in the higher types.

The first issues of "Annales" scholarly journal (1929) showed the change of paradigm from mentalization of history to its sociological cover, analysis of environmental factors, geohistory, philosophy of geography, where the unit of geohistory is not a civilization but a notion of "Leconomie-monde" (world-systems), when the spaces themselves fill historical development of nations with peculiar logic (F. Braudel). Durkheim's idea of collective identity was resurrected [7]. As a result of the "Annales School" evolution world-systems approach no longer implies orientation towards civilizational foundations. More so, there is an appeal to test macrohistoric theory on territories, not predesignated for this purpose (Michel de Certeau, 1925-1986).

Two thinkers deserve special attention in this survey of European philosophical thought. Helmuth Plessner (1892-1985) believes there is no objective cosmos of ontological and axiological order. Essence of the human being is perceived only in his historical development, where he is constantly making his choices. The human being comes to understanding himself as a creature not only conditioned by history but also conditioning history. On the one hand, the human being is included into the environment, but on the other hand he is able to rise above it. Theodor Litts (1880-1962) thinks it wrong to separate the human being and the world in a way that they start to stand against each other. Initially the human being is presented with the world having no existing relationship "Subject-object". They mutually limit each other, belonging to each other. The entire development of the human being comes down to separating a subject and an object in a better defined way with richer results. Schism between the subject and the object is a later result of artificial alteration of the initial state of the world. The world and the human being mutually conceive each other.

Scientific analysis of social phenomena started in the middle of the XIX c. The prerequisite and foundation of social organization of the modern life of people is "Natural" sociality (biosociality) of the lifeworld and "Artificial" (culturally conditioned) sociality [8]. Growth processes of social movements are described as wave-shaped process of attracting followers, similar to concentric circles and the central core. Movements demobilize in a manner of an onion losing skin, starting with outer layers. Contrary to concepts of social disengagement of an individual the social identity theory asserts that an individual's perception of his or her place in the social world depends on allocating oneself to a certain social group through a sequence of complex steps. The points at issue are social categorization (comprehension of social surroundings as consisting of different groups), social identification and social identity itself as a full perception of belonging to selected group [9]. Dynamism of social phenomena comes from deep mutual relationship of objective-subjective continuum and micro-macro continuum,

because social reality lies at their intersection. G. Ritzer supposes [10] that macro-objective (society, law, bureaucracy, technology and language) relates to micro-objective (behavioral models, actions and interactions) and both of them relates to macro-subjective (culture, norms, values) and micro-subjective (perceptions, convictions, different aspects of social construction of reality). Taking decisions at the level of individual consciousness is always nonstandard creative act of thinking. Cognitive psychology discerns phases of formulation, illumination, incubation and evaluation. This is very similar to the law of intellectual rhythm by French philosopher Abel Rey (1873-1940): our cognition always fluctuates between convergent induction and divergent deduction. This fluctuation has limited amplitude: it goes from analytic to synthetic judgment, from induction to deduction, from association to dissociation, from generalization to abstraction. V.A. Kanke showed the existence of four-stage cognitive cycle: "Deduction-Adduction-Induction-Abduction", after which the cycle repeats itself. Physical and mental appear in their unity but each one is busy with its own task. The organism maintains the balance of determining external impacts and internal processes.

III. THE NATURE OF NATURAL HISTORY KNOWLEDGE IN CHIZHEVSKY'S WORK

A.L. Chizhevsky (1897-1964) (1897-1964) seamlessly combined deep knowledge in humanities and natural sciences. He owned planetary mentality (he was called "A Citizen of the World" in the memorandum of the First International Congress of biophysics and extraterrestrial biology, New-York, 1939). At 21 years of age he presented a doctoral thesis in the field of universal history and at the same time conducted in-depth research in ionization of gases (atmospheric air) and liquids (water solutions from human body and blood plasma), showing electrical exchange between them at quantum mechanical level. At 25 he finished to major works "Physical Factors of the Historical Process" (short edition, Kaluga, 1924) and "Electronic Theory. Genesis of Forms" (manuscript). At 42 he got a reputation of the leading biophysicist of the world. At 55 he concluded fundamental research in structural analysis of circulating blood. All his works are permeated by monism as a principle for evolution of nature and society, and energetics as a single substrate foundation of organic and inorganic world, able to appear as "Helotaraxia" (psychic acts of the human being, in his social activities).

Natural history knowledge in Chizhevsky's work [11] appears as a necessary stage of a systematic study of natural and social processes, where the system is represented by harmonious bond between such components as Cosmos, the Sun and Solar system planets, the Earth with its spheres — which suggests the possibility of psychosphere — and the human being with individual and universal history. This was the totally new approach, restoring fragile human ecological consciousness and introducing the idea of possibility of laws in development of historical knowledge [12]. The key to this was the natural history knowledge which the scientist understood totally differently than representatives of

classical natural science (natural scientists V.I. Dokuchaev, K.A. Timiryazev, historians H.T. Buckle, J. Draper).

Analyzing such aspects of the system, as solar physics, physicochemical consequences of solar disturbances impact on Earth spheres, quantum mechanical and neuropsychic responses of the human organism to the stair-step cascade of solar matter, Chizhevsky included cosmic factor into "Natural History Knowledge".

Little was done in this direction during the last 100 years. Looking at the stages of the so called "Dispute over Methods", N.S. Rozov [13] comes to the conclusion that social and historic sciences will not follow the example of natural science even in the more distant future. This pessimism is shared by American biologist and historian P.V. Turchin, Russian historians and philosophers V.M. Bondarenko, L.E. Grinin, N.N. Kradin, A.V. Korotaev, S.A. Nefedov, authors of original publications, which demonstrate possibility of rewarding dialogue between humanitarian and natural branches of historic knowledge. V.S. Stepin occupies a balanced position. He justifiably points out the common root of humanitarian and natural knowledge. American microbiologist Carl Woese made a bold generalization that biological evolution should be viewed as a physical phenomenon and researched using methods of solid state physics. American political analyst Alexander Wendt uses known analogies to work on quantum theory of solving international law problems. New line of thought forms at the intersection of economics and physics with the aim to expand our knowledge about the essence of economic processes [14]. The mankind enters the age of settling the Moon and Mars. Results of new research, undoubtedly, throw light on dark aspects of harmonious unity of the human being and his history with cosmic forces. Conscious history based on historic and social forecasting will become possible then. K. Hempel [15] looked at this problem, modern researchers V.V. Bushuev and V.N. Sokotuschenko [16], V.P. Maslov [17], M.S. Kalney [18] also start to pay attention to it. In particular, Kalney showed that methodology of historical forecasting was connected with understanding of "Drivers" of historic process. Also, finding out rhythms and cycles of historic development which are characterized by complexity, uncertainty, polyvariety of the results of nonlinear extrapolation, allows us to structure historic development. Combination of oscillatory and translational components of historic development makes up a peculiar analytical construct — evolutionary cycle. We need to learn their genesis in order to understand such objects. Chizhevsky established approaches to tackling these issues.

IV. CONCLUSION

The concept of "Natural History Knowledge" represents natural sciences and humanities — including modern and emerging scientific endeavors — in their genetic similarity [19]. For the first time in Chizhevsky's works the human being is presented as a cosmic and terrestrial — both biologically and socially oriented — being simultaneously. Chizhevsky introduces notion of a single substrate-energetic foundation of living, organic and inorganic substance. He suggests the possibility of forecasting solar-terrestrial

phenomena in their connection with social processes and proposes common units of measurement.

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