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SOCIO-ECONOMIC DEVELOPMENT OF MODERN UKRAINIAN SOCIETY AGAINST THE BACKGROUND OF EUROPEAN TRANSFORMATIONS

ISBN 979-8-89238-624-1
DOI 10.46299/979-8-89238-624-1

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Monograph

2023

UDC 330.3

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Levchuk K., Bogatchuk S., Bogatchuk V., Belkin I., Makarov Z. Socio-economic development of modern Ukrainian society against the background of European transformations. Monograph. – Primedia eLaunch,Boston, USA, 2023. – 177 p.

Library of Congress Cataloging-in-Publication Data

ISBN – 979-8-89238-624-1
DOI – 10.46299/979-8-89238-624-1

UDC 330.3

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ABSTRACT

The collective monograph is devoted to the study of trends in the development of modern Ukrainian society. The research uses an interdisciplinary approach, which allows analyzing various aspects of the development of social processes in Ukraine and obtaining socially significant scientific results.

The subject of Kostyantyn Levchuk's scientific interests is the study of the activities of public organizations of Ukraine in the first half of the 90s of the 20th century. The economic crisis contributed to the strengthening of the social vector in the activities of public organizations. Legislated social guarantees were not fully implemented, which prompted public organizations to use various forms and methods aimed at protecting vulnerable social strata in the context of the crisis.

The practical and law-making activities of the most significant public organizations are analyzed: the Red Cross Society of Ukraine, organizations for the protection of the rights of veterans and victims of the accident at the Chernobyl nuclear power plant.

Svitlana Bogatchuk's scientific research covers the period of Soviet collectivization of the Ukrainian countryside in 1932-1933, which became one of the most terrible pages of our history. Many scientific works are devoted to the study of this problem. It was analyzed that the greatest losses during the Holodomor period of 1932-1933 were observed among the peasants of Ukraine, although there were also deaths among the urban population. Huge child mortality is a direct consequence of Stalin's policy of collectivization. The Bolshevik authorities hushed up and denied the fact of famine in Ukraine.

Ihor Belkin's scientific research is focused on the study of the process of marketing planning of entrepreneurial activity. The modern global practice of managing campaigns that have achieved significant economic success shows numerous examples of the application of planning one's own economic processes. On the other hand, as the analysis shows, when companies do not apply planning, they mostly face bankruptcy problems. With the development of market relations, the planning of

economic processes at enterprises requires more and more attention. In our country, the first business plans appeared at the beginning of the 90s of the last century, however, with the development of the market economy and the spread of international cooperation, the need to develop a plan is becoming more urgent. Nowadays, planning is becoming a mandatory process, which is necessary to improve the methods of calculating the economic efficiency of management decisions and the feasibility of investment investments.

In the work of Zorislav Makarov, the methodological legitimation of randomness in scientific knowledge is proposed by explicating the possibilities of the activity approach to its study. In particular, as a result of the analysis of the relationship between rationality and randomness in the structure of general scientific methods, cognitive and sociological sources of randomness in the pragmatic scientific method, stochastic parameters in the post-nonclassical dynamics of scientific knowledge, as well as subjective and objective prerequisites for the post-nonclassical emancipation of rationality and determinism were revealed. At the end of the study, the status of humanities and natural sciences in the perspective of post-non-classical integration is outlined.

The content of the collective monograph corresponds to the research direction of the Department of History of Ukraine and Philosophy of Vinnytsia National Agrarian University. The monograph is the result of the initiative topic "Research of trends in socio-economic development and consolidation of Ukrainian society in the modern history of Ukraine". State registration number 0122U001425. Head of subject, Doctor of Science, Professor K. I. Levchuk). The monograph uses: socio-philosophical approach, historical-genetic method, statistical analysis, sociological and economic research methods.

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4.1 Introduction

If we ignore the historical and philosophical problem of the ancilla theologiae, as well as the Hermetic implications of early mathematical science, the starting point of our research can be the basic position of M. Weber's theory of social action, that science models its forms in accordance with the values of society. If, for example, the natural type of economy of the Middle Ages determined in science predominantly the replication of what was already known, then the emergence of capitalist relations determined the production of new knowledge as an independent goal of science. Its prerequisites are well known: industrialization of labor, urbanization, democratization and consumerization of society, desacralization of morality and politics (N. Machiavelli, T. Hobbes), formalization of law.

And the values of free enterprise, maximum efficiency and expanded production found their expression in the category of goal-orientedness as a rational template for assessing and measuring any activity that has lost its traditional goals (consequences). "‹…› This society is characterized by the emergence of a new type of organization, with the help of which the methods of economic production and indicators of its efficiency - money and power – were scaled up and thereby strengthened in special areas ‹…›" [1, p. 276]. Purposeful rationality (Zweckrationalitaet) is one of the "ideal types" of the organization of human activity, which is distinguished by the subordination of interested social actions to normative agreements, as opposed to the moral and value principles of traditional society (Wertrationalitaet), which are now "bracketed" as a factor of uncertainty. Subsequently, it becomes dominant in the search for the defining principle of rationality, and the degree of the latter, even in spiritual life, is assessed based on the optimal ratio of elements of the ideal structure of expedient behavior, onto which deviating (disturbing) empirical and generally irrational semantic connections are then superimposed [2].

The close connection of such an organization with the experimental-technological attitude to nature as an "object" of one-level actual existence is obvious, when object-

transformative activity is subject not to aesthetic-expressive, but to conscious pragmatic ordering. And this is not simply the subordination of the result to a point of view: it assumes a procedure for correlating the factors of purposeful activity according to one of the general characteristics, initially "cost", and subsequently specified by the ideal(s) of scientific knowledge, thereby ensuring the structural homogeneity of reasoning, and for the human subject as a whole – self-control [3]. At the same time, they are distracted from those "substantive" properties of factors that cannot be comprehended solely in the context of the goal, since and to what extent they do not correspond to the formal language of a given system, which presupposes their calculation and increment within its boundaries. This, according to M. Heidegger, is evidenced by the etymology of the Cartesian cogito: will, feeling, actions and passions have any relationship only in the picture of conscious representation, which produces thinking as the "contraction" and technical operation of heterogeneous data. "To represent here means: to independently put something in front of oneself and certify what is presented as such. This certification cannot but be a calculation, for only the calculability of what is represented guarantees a known and constant confidence in it" [4, p. 57]. In the idealization carried out in this way, a mathematically articulated goal selects factors according to their optimality, and the establishment of a causal connection with the goal gives the factors the meaning of a "means"

With such an identification of reason and "purposeless expediency", scientific methodology itself arises as "the self-legislative power of the spirit over nature" [5]. However, in contrast to the epistemological "ideal of method", the everyday practice of scientific research, especially as the share of collective work increases, distances itself from the original goals. The structure of subject-transformative activity is reduced to the "means – result" scheme, ignoring the complex relationship between the result and the original goal, left to the virtual prescriptions of the scientific ethos [6, p. 51-58]. The obviousness of such a cultural-institutional genesis of methodological monism was pointed out by T. Adorno and J. Habermas in the famous "dispute around positivism" (Kulturismus-Debatte) with K. Popper, N. Luhmann and G. Albert, when the fruitfulness of sociological methodology, devoid of specificity, was defended

Geisteswissenschaften, but supported by the epistemological tradition of German idealism and Marxism.

4.2 Legitimation of chance in scientific knowledge: possibilities of the activity approach

It is with the original three-member structure ("goal-means-result") that the activity-based epistemological approach is associated, supplanted in post-Soviet philosophy of science by more specific epistemological concepts. In addition to a certain anti-Marxist ideological deconstruction, a serious reason for this castling can be considered the reorientation of our philosophers to the phenomenological concept of consciousness dominant in the West. The first of its advantages is the elimination of the problem of the identity of being and thinking, which is in good agreement with the current trend of resubordinating consciousness from transformative determinants to linguistic and communicative practices. On the other hand, the postmodern absolutization of this trend turns out to be consonant with the dialectical idea of consciousness mediated and becoming in acts of self-alienation.

According to V.A. Lektorsky [1], the prospect of the activity approach at the turn of the 21st century owes precisely to postmodern radicalism, largely caused by and directed against the Cartesian concept of self-evidence of consciousness. The fact is that in the course of such criticism it will be necessary to rediscover many developments of the activity approach in the editions of neo-Hegelianism, Marburg neo-Kantianism, pragmatism, the Frankfurt School, J.-P. Sartre or the late L. Wittgenstein. But the main thing is that their forgotten categories allow us to organically formulate the postmodern situation in the language of epistemology and philosophy of science.

In particular, if we compare this situation with the recent non-classical one, when the problem of "bringing to necessity" the results of purposeful cognitive activity arose, then post-non-classical science is already experiencing the problem of the "necessity" of purposefulness as such. When the (quasi-)naturalness of a cognitive goal is split into its relative "projects," activity-based rhetoric can provide a general epistemological

support for the reproduction of scientificity in the dynamics of cognitive practice. It cyclically combines in one scheme a "living individual" – a subject of cognition with its inherent needs and sociocultural conditions for their implementation – and the collective forms of determinants (means and goals) and results of a scientific institution. In the ideological plan described by M. Horkheimer, T.V. Adorno, M. Foucault, subjects who prevent successful schematization began to be transferred by the Enlightenment into a new and anomalous category of "Other", similar to the Fichtean "not-I". In general, she expressed a deistic negation of any reality outside the "I" [8]. After the discovery by G. Hegel of the category of "self-other", creative categorizations of what does not belong to the subjective "I" began to be established, up to the distinction "I am Another" with the recognition of the "identity" of the Other [9].

In general, if the goal is considered not only in the practical, socio-economic, but also in the cognitive, epistemological aspect, then it turns out to be, in a certain sense, recursive knowledge – with feedback between the result and the means of active transformative activity. After a number of stages in the implementation of this activity, it can be reconstructed and systematized regarding the extent to which these results correspond, for example, to the idea of reasonableness and naturalness [10]. In many ways, reconstruction and its evaluation are subordinated to the configuration of a successfully achieved goal, which, being thus explicated for the first time sets a common feature and formal language for subsequent rationalization.

In some cases, there is a certain manipulation of reality behind this – if not in the subconscious form of "causal attribution", then in the order of linearization of a motivated random search [11]. "If we take the field of psychology beyond the study of creativity, then in this field the decision-making mechanism corresponds to the design. Frozen uncertainty (in the face of a relatively even distribution of various motives for action) is sometimes overcome by a purely random and at the same time insignificant factor. Only later, when the moment of decision-making goes into the distant past, does a person systematize the choice he once made, reinforce it with many reasons, and ultimately cannot even imagine that he had any doubts about this. Such clearly

stochastic aspects of decision-making can have the consequence of the transition of this vaguely indefinite plan into a thematic decision" [12, p. 70-71]. With sufficient reinforcement of the unconscious randomness of such decisions by the needs of social legislation, there are grounds to transfer them (by analogy with private technical-experimental reducing legislation) into the category of laws – "natural-historical" or "socio-historical".

However, in the official version of F. Bacon, we are talking about a certain organization of cognitive activity: "the most accurate interpretation of nature is achieved through observations in appropriate, purposefully staged experiments. Here feeling judges only about experience, while experience judges nature and the thing itself" [13, p. 23]. The experimental purposiveness we are talking about here is really intended to defamiliarize or elevate the imperfection of everyday connections and sequences. However, the desire to democratize and generalize this skill in the context of the authentic epistemology of the New Age led to the mathematical formulation of cognitive goals in idealizations. The latter thin out the nomenclature of determinism to the "formal cause" of future Newtonian laws of motion (legere motus), and qualitative material bodies to their selective models: "‹…› we reduce the diversity of the world, and thereby simplify it and at the same time something about it (about the world as we imagine it) learn. For "to learn something about the world" is the same as "to discover (or create) some kind of order in it" [12, p. 173].

At the same time, in idealizations the quasi-legal pedigree of scholasticism is realized with its Averroist invention of truth freed from truth: the selective generality of the model no longer expresses the whole, but only legalizes the particular through experiment. "An experiment, in contrast to a simple random experience or observation, begins to be interpreted as a kind of artifact, as a special creation of artificial conditions in which a phenomenon, torn out of natural connections, could reveal some pattern (the stability of its existence)" [14, p. 31]. The worldview belief in the existence of such a being ("natural essence"), uniformly revealed in phenomena like ideal legislation in the elements of social life, did not allow us to identify the dissection of scientific facts with a violent influence on natural processes.

Soon after the subordination of the laws of motion by I. Newton to the unified theory of gravitation and the epistemological abolition of the transcendental Legislator by D. Hume, idealizations in Kantian reflection reach the status of categories of reason as such invulnerable to external criticism, "‹…› since otherwise observations made by chance, without advance drawn up plan, will not be bound by the necessary law, ‹…› to draw knowledge from nature, but not like a schoolchild to whom the teacher tells him everything he wants, but like a judge forcing a witness to answer the questions he proposes" [15, p. 85-86].

Moreover, the well-known regulatory idea "as if" (des Als Ob) in relation to mutual creation, and hence the interreducibility of subjective categories and objective laws, has the prospect of experimental justification – in the artificial arrangement of "proximate" causes and effects. As a result, the experimentally and mathematically legitimized autonomy of the Book of Nature from Nature itself led, according to K.A. Svasyan, to the "degeneration" of science itself into scientific and technological progress: "‹…› it was necessary to literally accept the purest symbols of differential calculus as reality in order to achieve fabulous results, say, in ballistics or mechanical engineering ‹…› with as little understanding and knowledge as possible essentially, as many "interpretations" as possible ‹…›" [16, p. 398].

According to the scheme of Nietzsche's aphorism "winners do not believe in chance," this knowledge, on the one hand, logically follows from its "foundations" as a result of the random contradiction of the current scientific representation and subjective (internal or external) values, and on the other hand, it reformats all previous knowledge (then it would be more accurate to call it "information" or "signs" awaiting their interpretation into "knowledge" – comprehended by one of the subjects, one of the ways) into the articulation of means that necessarily reproduce the goal. This was almost understood by G. Helmholtz, the author of the physical principle of least action: wanderings (side lines, zigzags, retreats), viewed from the height of achieved knowledge, could still, in his words, teach the young scientific generation a lot... However, his lessons are effective only in comparison with the only true method in which G. Helmholtz believed in the spirit of his time [17].

A striking example of this spirit is the alchemical rationale for the first successful treatment of syphilis reproduced by the famous Canadian methodologist J. Hacking. The treatment with mercury compounds, established empirically from the practiced iatrochemical series, is "scientifically" justified by Paracelsus through the "sympathy" of the mineral and commercial Mercury, since this disease was usually "caught" in the markets [18]. Thus, being an anticipated concretization of values, the subjective context of the goal simultaneously actualizes the objective context of the referent [19, p. 361]. This is why "foundations" are used – axioms, constants, functions that outline the conditions of possibility of a subjective beginning, so that both mutually positing contexts turn out to be only part of the original chaos, virtually present on the periphery of scientific discourse [20, p. 135-137].

This image of science was originally by Ch.S. Peirce as a subjective slice of chaotic primary reality according to the developed discourse is the ultimate expression of the tendency of technical-model mediation of scientific reference. Provoked by quantum mechanics, which ambiguously merged the subject and object of observation, it found confirmation in genetics and bioinformatics, in which content (message, hardware) merges with form (carrier, software) [21, p. 47-59]. From such syncretism, often denoted by the phenomenological concept of "flesh" ("organic matter"), theory is formed as an "invention of the intellect", intended to master a complex and unique nature according to the standards operating in the minds of scientists [22, p. 314-352]. Due to their fundamental implicitness, the final scientific representation is burdened with the additional requirement of social interpretation and personal experience, widespread ignoring of which leads to linguistic redundancy of intrascientific communication, divergence of goals and means of cognition, and "disembodiment of the flesh".

In postmodern reflection, which reveals the general genealogy of logical and political-legal subjects, as well as natural law and natural law, this trend appears as a consequence of the crisis of "a priori" as the original integrity of a thing and a sign, an individual and society. This is where the criticism of the educational narrative of social progress for the development of natural possibilities, organized in modern language by

functional dependence, comes from: just as the alienation of the intellectual elite from social goals leads to the decentration of the figure of the subject, the relativization of goals in the means (idealizations) of knowledge leads to the decentration of the law of nature. Then the deconstruction of integrity is compensated by a moderate hermeneutic strategy with value-neutral tasks of establishing or revealing possible similarities. Their linguistic design first levels out the phenomenal difference of all things into "chaos", then relying on the model-statistical perspective of the scientific and technical ability to identify "subjective law" and "objective regularity".

Thus, recursivity makes the Cartesian distinction of subject and object, rather, a methodological regulator and ideal of real scientific activity in its structural aspect, and Weber's goal-oriented rationality – one-sided. Purposeful rationality in this (retro)perspective is intended to give scientific research activity the status of truth: so that unambiguous and economical actions are guaranteed to lead to a result (theory) that in general form contains the same relations as the referent. To do this, cognitive activity should be mediated by an arsenal of epistemological means, methodological principles and rational criteria, which will constitute the final goal of scientific activity itself [23, p. 180].

But the classical ideal of a universal subject for the desubjectivization of science into a "detached cognitive relationship" never required a critical analysis of the source, substantive grounds and goal-setting formulation, since it was put forward precisely as an alternative to the institutions of power consecrated by ethical-religious teleology. Being a simulation of a transcendental personality, the subjective characteristics of such a scientist are limited to expedient actions regarding natural objects, but not the goals of their own development in a certain context of social relations. "‹…› Actions can vary so much depending on the circumstances and the requirements of civil law that at one time they can be considered fair, and at another - unfair, and what was considered reasonable, at another moment becomes unreasonable. The demands of reason remain unchanged and do not change either the goal, ‹…› or the means, that is, precisely those virtues of the soul, ‹…› none of which can be destroyed either by custom or civil law" [24, p. 316].

Thus freeing his activities from the moral and ethical dimension, he takes a position of power in relation to nature, subordinating it to his goals. The imaginary independence of scientific methodology is reinforced by the attributive criterion of the creative novelty of the knowledge being discovered, thereby outstripping any goals and moral consonances or dissonances. Whereas a creative attitude would consist in finding new modes of existence and understanding of nature through setting its own goals [25, p. 119]. Traditional axiomatic, inductive, hypothetico-deductive methods are focused in this regard on the rational development of new subject areas (types of objects), but are abstracted from cognitive goals due to their implied transcendence.

This creates a problem that, to a first approximation, looks like a linguistic discrepancy between the procedures for rationalizing research activity and the acts of its goal-setting: being professional means (available to those initiated into terminological metaphors, axioms and practical skills), the normatively organized first in an expanded context can turn into paradoxical characteristics of the second. “The isolated content of the cognitive act is taken over by the law immanent to it, according to which it develops as if spontaneously. Since we entered into it, that is, we committed an act of abstraction, we are already in the power of its autonomous legality, or rather, we simply are not in it - as individually responsible active ones. Like the world of technology, which knows its immanent law, to which it obeys in its unbridled development, despite the fact that it has long deviated from the cultural goal that comprehends it, and can serve for evil, and not for good, as ‹…› in its internal weapons are improved by law, becoming a terrible destructive and destructive force from the original means of reasonable defense” [26, p. 11].

Its first example can be found in Plato: “every work, once written down, is in circulation everywhere – both among people who understand, and equally among those who are not at all supposed to read it, and it does not know to whom it should speak, but with whom not” [27, p. 187.]. A clearer example is the reasoning of D. Merezhkovsky: “So, I ask: isn’t asceticism, the mortification of the flesh, according to the teachings of Christ, only a means, the purpose of which is purification, enlightenment and, finally, the resurrection of the flesh? Didn’t historical Christianity

replace the end with the means to such an extent that, finally, the means became the only, all-consuming and self-sufficient goal?" [28, p. 512].

In Soviet methodology [29], such a situation of "depressurization" of activity was considered based on a more general thesis about the dialectical nature of socio-historical laws with their supra-individuality and inertia of social forms relative to the reactivity of the results of conscious actions according to the interests of antagonistic classes [30]. With the transfer of the source of contradictions to the incommensurability of paradigms, this potential discrepancy does not lose relevance and is perceived as a dialectic of two types (levels) of rationality: "closed" logical-methodological (corresponding to Weber's "goal-rationality" or neo-positivist "logic of scientific research") and "open" philosophical- methodological (goal-setting rationality).

Apparently, they can be considered as one of the applications (continuations) of the Hegelian dichotomy of "external" and "internal" purposiveness, which goes back to the Kantian distinction between mechanical and organic determinisms [31, p. 185-192]. And for the latter, in turn, one can look for a prototype in the medieval opposition between Aristotle's causal and Platonic illumination types of self-knowledge [32, p. 51–73] or the Aristotelian distinction between dianoetic (φρόνησις) and ethical (ήθος) virtues.

The first can be considered a derivative of a broader goal-setting rationality, since it generally expresses - in laws, principles, criteria – a sequence of successful actions (means) for standard (typologized) situations (conditions, goals), which are set by leading scientific disciplines and material practice in general. Here the Cartesian analogy with the forge's right would be appropriate: "after all, this method is similar to those of the mechanical crafts that do not need outside help, but they themselves instruct how to make tools for them": a block of ore instead of an anvil, a cobblestone instead of a hammer, sticks for something like forceps, etc. – for making real anvils, hammers, tongs, etc. in the first place [33, p. 103]. "Here is the universal law at work, according to which form is the hardening and consolidation of content ‹…› Only then can necessity be discovered in its appearance" [34, p. 122].

This dialectic covers, in its universal cyclicality, on the one hand, testing the

measure of rationalization of the representation of reality ("context of discovery") and, on the other, testing the measure of extrapolation and value interpretation of rational structures in the implementation of special disciplinary functions ("context of justification"). Each of these situations is accompanied by random phenomena, the significance of which in modern science can be decisive.

Irrespective of such dialectics, scientific-cognitive activity and its subject, taken autonomously as paradigmatically objectified, do not make it possible to comprehend the dynamics of science. If we consider the dynamics of science a priori to be a stochastic process, full of breaks in the "first" and "proximate" causes, attention is directed to the conditions for the construction of new foundations. For example, from the point of view of postmodernism, such reflection goes into a limitless expansion of the context in which the meanings of the sign system become completely indefinite, irreversibly deformed, schizophrenic and conceptual, but brought to metaphorical and syncretic rationality secondary - by social means of legitimation. The "open" type is focused on going beyond the achieved goal-setting horizon, which often trivializes or problematizes the rational (re)construction of foundations.

Successful reconstruction of logical connections between fundamental ideological "goals" and specific scientific methodologies makes it possible to distinguish between epistemological and ontological accidents in order to thus gain elementary freedom of scientific and cognitive activity. Let us first show this using the material of traditional general scientific methods (axiomatic, inductive, hypothetico-deductive, pragmatic), since they are based on theoretical assumptions about the source, purpose and possibilities of scientific knowledge [35].

4.3 Cognitive activity in the structure of general scientific methods: rationality and chance

It is known that the initial motive for independent reflection on science is mastery of the universal scientific method. In any case, the origin of the philosophy of science dates back to one of the historical points of awareness of such a motive (F. Bacon – R. Descartes, W. Windelband – G. Rickert, the Vienna Circle). At the same time, after

criticism of the neo-positivist program, it is customary to consider any of the variants of the Method as a utopia - based on subject-theoretical, cultural-historical, intuitive-psychological, logical-linguistic or socio-pragmatic [36]. Today this is expressed in the active revision of theoretical and methodological approaches (which include systemic, activity-based, communication, phenomenological, deductive, inductive, etc.) and, as a consequence, in the lack of a generally valid program classification of methods. The authors who claimed certainty on this issue (G. von Wright, K.G. Hempel, R. Carnap, E. Nagel K. Popper) remained in the depths of the twentieth century, and more modern ones (E. Agazzi, L. Laudan, V.V. Nalimov, J. Hintikka, V.S. Shvyrev, B.G. Yudin) mainly appeal to situational models with game and pragmatic elements.

In other words, at the level of rational regulators, extra-cognitive aspects of scientific knowledge are increasingly gaining ground, and the correlation of ideas about chance and rationality is moving from predominantly negative connotations between them to positive ones. In particular, in the post-non-classical type of rationality, the antagonistic "chance" "necessity" in its concrete scientific explications such as "order", "law" began to be perceived only as a certain limiting case. The problem, however, is that the identified extra-cognitive aspects and their rational regulators have almost no effect on the fundamental relationship between the theoretical and the empirical. Despite convincing examples of comparing the formal structure of pragmatic models of "understanding" with a respectable "explanation" in science [37], the cognitive value of their content remains negligible, and the qualitative certainty of accidents is "invisible" [38, p. 119]. The prospect of a probabilistic revolution requires both an ontological interpretation of random phenomena and an explication of the corresponding tendencies and their heuristic possibilities in the context of the structure of the scientific method.

In the case of sign systems that have the form of logical-mathematical conventions, a set of applications ("interpretations") sets the semantic field of the sign system through consequents and particular models and, ultimately, provides extensional self-reference of the original formal structure ("full explanans"). "Such theories explicate the specific terminology of their own language, declaring certain

initial provisions of their theories to be true (and thereby their laws). The laws of such theories also include all the consequences of the initial provisions (what exactly can be recognized as a consequence is usually specified in one way or another)" [39, p. 239]. At the same time, the constructs of the deductive-axiomatic method are not subject to substantive interpretation, but are intended to problematize individual subconstructs within the horizon of accepted conventions for consistency, simplicity, and mutual consistency.

Such a "metatheoretical" verification of a scientific system constitutes, as M. Bunge showed, only the first stage in a purely conceptual (non-empirical) plan for the development of a theory. In an explicit and complete form, it merges with the "Duhem-Quine thesis," which also requires intertheoretical testing of constructs with access to the level of philosophical and ideological prerequisites [40, p. 286-303]. This Euclidean model and ideal received new life thanks to the global scientific revolution of the early twentieth century, when alternatives and contradictions of empirical interpretation were transferred to a secondary or even "metaphysical" problem (as in the case of wave-particle dualism).

As you can see, the threat of reducing the certainty, necessity and unambiguity of scientific knowledge forces scientists to sacrifice, first of all, "reality" (the configuration of the phenomenal field) and a living direct connection with it. As a result, "the more common view among physicists is that science is a branch of formal mathematics or perhaps applied mathematics and, therefore, it is highly reliable ‹…› the value of science lies in its stability" [41, p. 127]. However, this stability in relation to the dynamics of experimental and sociocultural conditions (meanings) is achieved here by permanent self-reflection - testing, revising, and improving one's own virtual potentials developed for future use. A "pure" mathematician thinks exclusively in the plane of the ideal, constructing new concepts and ideal "worlds", without relying on natural reality and empirical data. He creates new concepts and ideal structures, often focusing on the ideals of simplicity and generality [42, p. 183-184]. For example, a new way of operationalizing a particular mathematical formalism may initiate a generalization or revision of the original conventions to eliminate the detected

axiomatic uncertainty. This is how logical-mathematical discursivity, or rationality, is assessed in the deductive-axiomatic method.

Although most scientific theories are precisely constructive tools and are intended to represent a certain picture of complex phenomena based on simple free assumptions of the mind [43], in natural science, according to the philosophical remark of A. Einstein, they acquire reliability only in correlation with accurate empirical data [44, p. 326]. Moreover, the procedures of representation, as shown by the philosophical and methodological understanding of the deductive-axiomatic method, according to the principle of the hermeneutic circle, are complexly mediated by not always explicit interpretive principles as ways of expressing and implementing initial ideas (references). According to J. Baudrillard, "things appear to us only through the meaning with which we endow them, we lack a radical, direct apperception of the world, we constantly perceive objects through a kind of filters" [45, p. 171].

Bearing in mind their incommensurability, P. Feyerabend used the expression "natural interpretations" [46, p. 202-215]. However, despite the widespread support for such anti-referential concepts [47], his Nietzschean "permissiveness" is usually reduced in degree, simply implying that representation can have a richer content than just adequacy, "mirroring." Analysis of its variability suggests rootedness in the subject, history, cultural canons: "‹…› we see as we draw, or through forms of representation, means to assert that perceptual activity is now mediated not only by biologically developed species-specific mechanisms of perception, but also by historically changing "the world" created by the practical and theoretical activity of man" [48, p. 192]. R. Rorty takes an even more restrained position: "we will be epistemologists if, having an excellent understanding of what is happening, we nevertheless want to codify what is happening in order to expand the understanding, strengthen it, convey the understanding to others, or provide "foundations" for it. We must be hermeneutics when we do not understand what is happening, but being honest enough, we admit this circumstance ‹…›" [49, p. 237].

Towards the boundary rational conditions of possibility formulated in the deductive-axiomatic method, the inductive method offers phenomenological

hypotheses of subconstructs ("laws"). At the same time, "conditions of possibility" [50] receive individuation, verification and clarification of the limits of applicability, and phenomenological hypotheses, being derived from individual particular truths, are reformulated "from similar to general" (according to I. Kant, to "comparatively universal"). Since the establishment of connections between the conceptual apparatus of a theory and specific data and task conditions is very diverse and relies largely on "productive imagination" [51, p. 24], it is not easy to determine the leading side here.

According to E. Wigner, a physicist "knows the final conclusions – experimentally discovered phenomena – and would like to find out from what assumptions these conclusions follow. The solution of such an "inverse" problem involves the need to overcome many ambiguities, but despite this, and perhaps because of this, it is especially interesting" [42, p. 237]. In philosophical terms, the Aristotelian opposition between "πρότερον τῇ φύσει" and "πρότερον τῇ πρὸς ἡμὰς" is continued here: "‹…› knowledge a priori was the discretion that comes from knowledge of causes to the onset of action, while cognition a posteriori, on the contrary, is discretion, which, by virtue of a well-known rule, leads back from the knowledge of the effect to the existence of the cause" [52, p. 483].

The information of a hypothesis in inductive inference logically follows from a preliminary experimental statement only in a probabilistic manner, the reliability of which is calculated through the frequency of their feedback. In attempts to harmonize with the "conditions of possibility," their rationality is assessed and consequences are derived that are applicable and verifiable on a new territory of possible experience for phenomenological generalization. Various forms of absolutization of this method, developed mainly in the 19th century (G. Kirchhoff, E. Mach, L. Boltzmann, etc.) in continuation of Newton's "hypotheses non fingo" arise during the formation of a new disciplinary foundation as an antithesis to theological, metaphysical or mathematical speculations. Then the main source of development of phenomenological explanans is seen in the inventions of the empirical level of methodology and epistemology (innovations of observation, measurement, experiment, recording, classification, induction).

From the standpoint of modern anticumulativeism, the phenomenological hypothesis here is unable to update theoretical knowledge and performs only an interpolation explanation. “No matter how timid the researcher may be, he must interpolate; experience gives us only a certain number of individual points: they must be connected by a continuous line ‹…› this is a real generalization. This is not enough: the drawn curve is constructed so that it passes between the observed points - near them, but not through them. Thus, experience is not only generalized, but also subject to correction, and if a physicist wanted to refrain from these corrections ‹…›, then he would have to express very strange laws” [53, p. 92]. Therefore, the predictive function mainly falls on the hypothetico-deductive method of increasing knowledge.

Within the framework of the hypothetico-deductive (deductive-nomological) method, an expanded reproduction of the original structure is assumed - with an external reference (for example, the language of observation). Since we are now talking about the development of knowledge, then, as with any study of the determination of development, it is necessary to find out the factors responsible for changes and, no less, for the stability and orderliness of this process. Here there is a temptation to use the concepts of driving and stabilizing selection put forward by I.I. Schmalhausen in the context of the theory of evolution and which today acquire general scientific status [54]. Then the hypotheses (laws) are correlated with the objective (empirical) field as living organisms (species) with their habitat, and the field (environment) acts as an independent variable. Creative innovations of the syntactic component of the hypothesis in this analogy coincide with genetic mutations or recombinations, and epistemological models (standards) coincide with vital expediency.

According to what the empirical research is mediated by (law or hypothesis), the hypothetico-deductive method is credited with the ability to extensionally increase the set that makes up the explanandum (“normal” or applied science) or to initiate a revision of the accepted conventions of the system of scientific knowledge (P. Suppes, P. Achinstein , M. Bunge, D. Sneed, et al. [55]). The openness of the system is facilitated by explication in an experiment, text, survey, etc. tacit knowledge, as well as the relative autonomy of the technical side of empirical research (M. Polanyi).

Examples of fundamental scientific experiments by G.Kh. Oersted, W. Roentgen, O. Hahn – F. Strassmann [56] demonstrate that the expansion of nomological knowledge into new areas and phenomena is accompanied by heuristic contradictions with technological knowledge: "any dissemination of a theory leads to the need for technological development of new research methods and procedures, which sooner or later theories get out of control, giving rise to various kinds of anomalous effects" [57, p. 76]. And in the concept of "constructive realism" (R. Geer, J. Hacking) this serves as the [main, decisive] criterion for the objectivity of scientific knowledge.

Thus, in scientific creativity, discrepancies are revealed between cognitive practice and the articulatory capabilities of language, including those examples where the object of knowledge is the language itself. The subject perceives this discrepancy as an epistemological accident and is focused on eliminating it: "science is the enemy of accidents". However, serious obstacles await this orientation: after all, the object of knowledge is snatched from a complex or even unique network of relationships. It is necessary to rationally comprehend this "universal connection" with the help of simplifications, idealizations, formalizations aimed at representing only essential connections, relationships of factors. As R. Carnap showed, there are no definite rules regarding the selection of essential factors when performing scientific research, and this problem also applies to instrument calibration procedures [58]. And yet, the prevailing belief in the scientific community is that although scientific knowledge always begins with the knowledge of accidents, "the movement of knowledge from phenomenon to essence corresponds to a similar movement from observation, observation of the accidental to the knowledge of the necessary, which is hidden behind the accidental just as the essence is behind phenomenon" [59, p. 83].

How, in contrast to the random "driving selection" of empirics, does its "stabilizing selection" work? This expression, in the spirit of evolutionary epistemology, is understood as abstracting from the continuum of interactions those relations that, through the "watering can" ("grid") of analytical and experimental means, will form the structure of the object under study based on the discourse of the adopted program and the "metaphysical plan of the world" [41]. For example, the

possibilities of the existence of a micro-object are determined and signified into the term wave or the term particle. “A stabilized set of rules governing the connections between the subject and the object of knowledge... can be viewed using the metaphor of a “membrane” – scientific influences coming from the object of knowledge are passed through and transformed into the “body” of knowledge, and all others are not allowed into scientific production and remain unattended” [60, p. 203]. That is, we are talking about searching only for predicted facts. The new properties and dependencies discovered in this way are ultimately perceived as components of a larger categorical nomological structure, for example, in the style of Hegel’s “Aufhebung”, formal inclusion, compatibility or theoretical reduction. At the same time, the accepted conventions of the scientific knowledge system are tested, clarified and instrumentally applied to solve specific problems.

For the dominant instrumentalist philosophy of science, it is obvious that the relationship between the given functions of empirical research in the hypothetico-deductive method is determined by the presumption of “stabilizing selection” [61]: the nomological structure is hypostatized in the context of real conditions. At the same time, being, on the one hand, a reification in reality of a linguistic-symbolic structure, and on the other, a function of conditions, such an empirical-analytical connection is doomed, if not to arbitrariness, then at least to unconscious accidents. This is already noticeable in the established names of strategies for tightening hypostatization - “rules of empirical interpretation”, “rules of correspondence” (R. Carnap)... Regardless of the method of implementing the principle of objective truth implied here, the fixation of real conditions will always be selective (“a precisely calculated dose of hypocrisy” P. Medawar), which means to submit to value-target prerequisites, usually leveled in the scientific-normative apparatus as logical-methodological rationality. “‹…› It is impossible – contrary to the misconceptions of physicalists – to imagine a state of affairs “as it happens” without adding anything of one’s own. At least we add a goal on our own, establishing that the “event” should be considered in relation to such and such circumstances. So, for example, it is possible to calculate the entropy of a gas in a vessel, but this is not entropy “in itself,” but in relation to the observer, since it is the

observer who sets the parameters of correlation to the circumstances. Knowing the pressure and temperature of a gas, as well as its molecular weight, we can calculate the average speed of an individual molecule and the number of its collisions with others per unit time. The trajectory of this molecule will be representative of the entire volume of gas. At least that's the impression it gives. But a physicist who thought that he had "true" information about this gas and that he could now predict its future states would be wrong. He would be wrong, for example, if the gas is uranium hexafluoride and if the pressure brings the molecules together in such a way that a random fluctuation in the density of neutrons in the gas can at any moment (due to an increase in their multiplication coefficient) lead to a chain reaction of nuclear decay and, therefore, to an explosion. The error follows from the default assumption made by the physicist that the set of gas states he takes into account in his measurements is "true" if he knows which molecules are representative of the entire volume. However, to predict the states of uranium hexafluoride, it is necessary to use a completely different set of states and a different terminological apparatus, in which such concepts as the neutron multiplication factor, nuclear absorption profile, critical mass, etc. should appear. Thus, if we wish to obtain information about a certain "state of things," then it is necessary to add in relation to what this information should be obtained: is it only about past states, about their retrospective? Or only about a certain "momentary" state? Or perhaps also about future states, about forecasting?" [12, p. 103-104].

The activity of cognition is readily recognized, but poorly understood. "The very immediate consequence – that in the knowledge of facts they are not only adhered to as conditions, but also eliminated as obstacles - seems paradoxical. In the name of what is this being done? – there is a question about cognitive values. Values are not invented or proven: our answer can only be a reminder or clarification" [62, p. 87]. But this intuition can be accepted only by finally overcoming classical essentialism, which in reflective terms is far from a complete process. One of the first examples of such a relationist style of thinking was provided by A.N. Whitehead: "a physical thing is a certain combination of space-time and the conditions existing in given parts of space at given moments of time - a combination expressing some general rule, formulated in

terms of mathematical relations" [63, p. 559]. If we use Kantian terminology, "‹…› in experience we are not given things "in themselves," but only their manifestations in certain conditions. But we assume the existence of things "in themselves" regardless of these conditions and put forward theoretical hypotheses regarding these things" [58, p. 225].

It is known that in the dialectical tradition of German idealism, such an approach was discredited as (neo-)conditionalist, that is, reducing qualitatively different factors, levels, causes and grounds to equal "conditions" [64, p. 121-122]. In Soviet dialectical methodology, excerpts from neopositivists (and then K. Popper or P. Feyerabend), following the example of V.I. Lenin, were compared with famous quotes by O. Comte, J.St. Mill, E. Mach as a continuation of the relapses of Humean-Kantian subjective idealism: "‹…› a cause is the complete sum of the positive and negative conditions of a phenomenon taken together, the totality of all kinds of accidents ‹…› the presence of which invariably entails a consequence" [65, p. 110].

Indeed, supporters of experimental science, in their anti-speculative impulse, periodically want to reduce reality to "perceived" conditions (or to "conditional" sentences in the case of linguistic reduction), thereby missing the abstract structural relations of nomology, on the one hand, and the theoretical methods of cognition of any nomology, on the other side. However, as V.M. Rozin, the division in nomology of "natural forces (processes)" and the "conditions" that determine them is not universal and rather corresponds to the new Galilean science, which describes the laws of nature in the representation of an engineering mechanism. "‹…› Among the parameters characterizing these conditions, the natural scientist, as a rule, identifies those that he can control himself ‹…› At the same time, he begins to consider the essence of free fall in two ways: as an idealized case of "a body falling in emptiness" (that is a certain conceivable case of a body falling, when the resistance of the medium is completely eliminated) and as factors distorting the idealized process (one factor is the friction force of the body on the medium, the other is the Archimedean buoyant force)" [66, p. 228-229].

Similar to the system of scientific knowledge that includes this law, "real"

conditions receive a formal hierarchical expression based on the measure of significance and content - for example, “specific”, “non-specific”, “accompanying”, “random” [67]. Based on the results of reflection of the hypothetico-deductive method from the perspective of the world picture, “stabilizing selection” can be supported by ad hoc hypotheses that mark certain conditions (dictating alternative nomological structures) as anomalous, unnatural and subject to elimination, for example, in an experiment. “‹…› We are not obliged to consider empirical data as indisputable authority. The purpose of science is to explain empirical data, but we can declare these data false, interpret them only as some approximation of the facts in order to make them compatible with our theories, etc... ” [41, p. 157].

In case of detection of contradictions between value-goal premises, the justification of the interpretation of the hypothesis carried out in this way is regulated (along with formal procedures, such as reductio ad absurdum or semantic interpretations) by a prediction procedure in which the designated conditions act as independent variables, so that the representation of the nomological structure during the initial empirical study, it is carried out based on the statistics of the co-presence of the necessary conditions. Further, for example, experimental studies can reveal the degree of clarity, relationships, magnitudes, time sequence of conditions and their controllability [68].

Consistent variation of conditions, if the nature of the system under study allows for stabilization of all its independent variables, ensures the establishment of certain functional connections. However, after the establishment of a probabilistic style of thinking in non-classical science, functional prediction acquires a dimension of relativity, since it simultaneously acts as a way of legitimizing a certain paradigm for solving puzzles [61, p. 222, 258]. The metaphysical (Aristotelian) expression of these correlations is known as “causal explanation,” and the functional relationship of the variables is known as “causalism.” “Cause” and “effect” must be used as pure concepts, that is, as generally accepted fictions, for the purpose of designation, agreement, and not explanation. In the “essence of things” (An-sich) there is no “causal connection”, “necessity”, “psychological unfreedom”: there “action” does not follow “cause”, no

"law" reigns there. It is we, only we who have invented reasons, sequence, mutual connection, relativity, compulsion, number, law, freedom, reason, purpose; and if we invent, mix this world of signs into things as something "in itself," then we act again as we have always acted, namely, mythologically" [69, p. 256-257].

In continuation of the thought of F. Nietzsche, postmodernism considers the "cause–effect" connection as one or another expedient abstraction derived from real determinants - desires, forces, will... – but overshadowing them, giving rise in its original anthropological context to the problem of (self-)identity. According to J. Deleuze, the genealogy of such [first-order] causes is also of little help, since they appear in a rather autonomous signified form. Thus, scientific discourse does not operate with causes, but only with consequences – consequents, assigning some of them as antecedents [70].

4.4 The Pragmatic Scientific Method: Cognitive and Sociological Sources of Randomness

As the analysis has shown, the above-mentioned modern problem of redundancy and alternativeness of the criteria of rationality is confirmed and specified at the operational level of basic scientific methods. Being thus cross-cutting and essential, it nevertheless does not receive a meaningful formulation in them and is qualified as an increase in the uncertainty factor in science. On the one hand, it was compensated in the same way as the uncertainty of goal setting after the establishment of a democratic institution of science – by placing the uncertainty factor "out of brackets".

Just as in modern times, in order to legitimize the freedom of private goal-setting, but in order to avoid the relativization of "eternal truths" and the unpredictability of "self-other" in the results of goal-setting, it was disciplined by goal-setting, now the latter is declared only φρόνησις ("wisdom of the head"), requiring regulation with side τεχνη ("wisdom of head and hands") – the normative behavioral aspect of scientific rationality. As an authority, he demanded the ordering of cognitive activity according to controlled logistic criteria. This is how alternative paradigms [of the normative behavioral component] arose, which, while the logical component is common, are

opposed to each other on the basis of subject-substantive, linguistic, operational, and other relativism. Moreover, due to the rejection of the epistemological level of rationality in favor of a purely epistemological one, the facts of cumulativeism, the connections of academic generations and the arguments of historical and scientific progress were transferred to the department of a completely homeless [due to the dogma of the value neutrality of science] axiology.

On the other hand, cultural-historical, intuitive-psychological and socio-pragmatic cognitive models increasingly declared to reconstruct this uncertainty do not achieve the status of an equal general scientific Method – obviously due to a priori subjectivity and the quantitative non-articulation of values as such, and therefore a contradiction to the entire methodological spirit of Zweckrationalitaet. “The impossibility of a “scientific” justification of a practical position – except in the case where the means of achieving a predetermined goal are discussed – follows from more compelling reasons. The desire for such justification is fundamentally meaningless, because the different value orders of the world are in an irreconcilable struggle” [71, p. 725]. The recognition of these models is associated with a modification of the deductive-axiomatic method with its constructs developed for future use, when they are expected to have a random resonance with metascientific factors. In such paradigmatic periods, alternative languages for the purposefulness of constructs are reduced, and scientific creativity is likened to the random aimless selection of nature in the leading evolutionary concept of tychogenesis [72].

Since in it human freedom is limited only to “cognition and replenishment of necessity,” this naturalistic analogy is easy to continue into the technicist concept of creativity, where the object “in itself does not have development, it acquires development through new forms of its reconstruction, through the development of knowledge about it” [73, p. 97]. In its most general form, it corresponds to the cybernetic idea of scientific creativity as a self-organizing system of information processing processes by functional control subsystems: the control subsystem reproduces constitutive ideas and defines and selects new ideas, and the controlled subsystem generates a continuum of new ideas. Hence V.I. Gnatyuk, successor of the

idea of "technocenosis" by B.I. Kudrin [74], quite reasonably notes that any designer only effectively adapts (translates) the continuum of capabilities of technical systems to the continuum of technical requirements and tasks, and the organization of these spheres as such should be considered very spontaneous [75].

Most of those who criticize these models of creativity, primarily because there is no place in them for the subjective dialectic of the social and personal, nevertheless, due to the integral dialectical nature of determination and hence the weak predictability of the mediation of scientific and technological progress itself, are forced to resort to similar statistical schemes of explanation. "General trends of change are formed spontaneously, as a result of the interaction of many variables. This statistical nature of scientific and technological progress, caused by the unpredictable pressure of practice and culture as a whole ‹…› is not the logic of the development of scientific theories or technology in themselves, the objectified results of cognition and design ‹…›" [76, p. 174].

Indeed, in a non-classical experiment of large diffuse systems, the problem of taking into account and controlling the conditions (factors) of their functioning is more often resolved by the method of randomization, regardless of the nature of their determination and the corresponding restrictions of the rules for determining the law of large numbers "‹…› so that they can be considered as random variables and, therefore, taken into account statistically" [77, p. 50]. However, a priori certainty and stability in the set and subsets of conditions ("rules") found in a scientific experiment leaves this kind of "game approaches" still in the paradigm of goal-orientedness. The need to resort to statistics is caused by the fact that the results of technical goal setting, being materialized, acquire the status of ontology (value-target indifference), which allows them to be used as situational means for creativity. Meanwhile, with these tools (experimental technology, language, empirical field...) initial values are implicitly accepted, causing a potential discrepancy between goal setting and expediency both at the civilizational-ecological level and within the meaningful life context of individual scientists, "‹…› because everything systems, all levels of the creative "I" are aimed at acquiring new knowledge. Therefore, their interaction always takes the form of a

dialogue, which begins and develops at all levels of creativity" [78, p. 282].

An alternative approach based on existential material (attempts to control life, death, love...) assumes a transcendental source (factor) of instability of conditions, perceived in turn as symbols, which are subject to theoretical expediency as "concrete". In addition, even in an objectifying representation of natural or social reality, the subject is not limited to a quantitative statement of conditions, but qualitatively comprehends their phenomenal field and projects one of its poles in the direction of satisfying his needs [79]. As a result, his value projections must be subjected not only to empirical or theoretical testing, where the element of chance only indicates the incompleteness of data or calculations, but also to ethical testing for anarchism or compatibility with collective values. "No matter how we act, it requires the presence of certain values in advance. You cannot choose a method of action without preliminary assessment. Even behind such a science, which does not want to evaluate anything, but only asserts that "this is how things are", even behind it there is still an act of evaluation. The act that gave existence to this science itself as a given specific sphere of possibilities" [12, p. 21].

In Soviet methodology, this factor was attributed to the random conditions for specifying the basic prerequisites for the emergence of a scientific innovation, reducing the phenomenon of discovery to the vicissitudes of acquiring a style [80, p. 275]. Since "necessarily, only the possibility of a different, alternative to the traditional view of the object of study is created, if this does not contradict the laws of nature" [81, p. 43], the subject-substantive and individual-value determinants of the living subject of creativity are considered only in the context of the social Subject, in which objectified thinking and "second nature" (primary goals and secondary conditions) become indistinguishable. The secondary importance of value prerequisites and creativity in their implementation, noticeable in dialectical-materialist epistemology, today looks archaically consonant with the positivist program of eliminating "metaphysical" prescriptions. In addition to a reaction to the mythological perception of creativity as a non-discursive (intuitive) subjective-psychological process, externally expressed in novelty, both of them are nourished by the outdated and methodologically paradoxical

context of the synthesis of empirical cumulativeism and hard determinism with its rejection of the probabilistic nature of the transition between empirical descriptions and theoretical prescriptions.

Without canceling the resulting probabilistic nature of fundamental discoveries, noted at that time by V.A. Yakovlev, in today's image of scientific rationality, based on the value conditionality of theoretical representations, the creative project and, in general, the life activity of the subject of scientific knowledge are given a more significant place, which can be demonstrated using the pragmatic method. In it, the objective nomological structure turns out to be only derived from the actual explanans – the subject himself, who, through the corresponding axiomatics, the principles of prohibition (the reliability of which in themselves is tested in the axiomatic method) projects its values onto reality, insofar as it corresponds to the teleological meanings of human activity. "In our opinion, modern science and philosophy simply put forward the classic dichotomy "objective / subjective"; scientific knowledge emerges in such a way that the level of objective knowledge cannot be separated from subjectivity, from the "human factor", from special knowledge" [82, p. 235]. Yu.O. Melkov, using the material of scientific fact in post-non-classical science, shows that the degree of their latency, caused by the unconscious motivation of the scientist, is already manifested in the way they determine the pre-interpretation of any empirical research, which is fraught with a breakdown in the logical connection between the empirical and theoretical.

However, the fundamental axiological load of facts can be analytically presented at different levels – from human cultural universals (archetypes) to the preferences of a scientific school – which are by no means removed in the personality of a scientist. By creating a situation ("concrete-historical a priori", "life-practical attitude", "practical meaning"), in which the conditions for the possibility of explanans are set, they loop the structure of the pragmatic method so that even when unfolding the initial intuition of discursive-cognitive values, the subject of cognition realizes them primarily as epistemological or methodological biases. Then the formulation of the problem, the substantive stage of the selection of hypotheses, the justification and

testing of the new theory - the entire formal structure of the scientific method – will require some kind of situational hermeneutics (in the spirit of "concrete reflection" by K.O. Apel and J. Habermas), restoring the degree of contradiction between the learned values and means of their implementation. In this sense, the emerging priority of humanitarian understanding within scientific rationality again disqualifies the privileged research position of the ("Archimedean observer"), now denying him universal cognitive means.

The space for research maneuver will be made up of alternative theoretical schemes, means of description, special pictures of the world, and research programs that are always present in the cultural space ("the third world" of K.R. Popper). For example, Aristotelian and Galilean physics, which originate from the sociocultural values of perfection and freedom ("activity"), respectively, assume in their laws different status and causes of movement, but coincide in the erroneous interpretation of the ideal form of its trajectory [83].

Circular motion for G. Galileo is the only ideological element that he did not dare to subordinate to a new synthesized physical and mathematical expediency, obviously under the influence of counter-reformation sentiments that actualized transcendental creationist values. The basic procedures of mechanistic idealization in order to avoid ideological conflicts are declared by G. Galileo to be a purely methodological normatization (and not an axiological act), although its criteria are precisely ideals pursuing worldview values. However, it was justified by nothing other than the analogy of the new mathematized "optics" of natural science and divine thinking on the basis of their apodicticity. "We can simply say that Galileo created the concept of "scientific values" in the course of his achievements, that it was simply amazing and that the question of whether he was rational in doing so is irrelevant" [49, p. 245]. The final affirmation of the value of freedom after G. Galileo secured in mechanism the idea of an immanent causa sui, and with it the truth of another – rectilinear – trajectory of inertial motion. But the same outdated peripatetic teaching about the perfection of circular rotation, with which G. Galileo could not break, allowed his contemporary W. Harvey to come to the discovery of blood circulation circles, softening the elimination

of the hierarchies of the heart, liver and brain in the human body.

In the arsenal of concepts and logic of the Kanto-Laplace system of the world, two lines of argumentation can be distinguished that correspond to two national systems of values and mental images. If for I. Kant the world is formed from nebulae of crowding particles, then the French "parade of planets" is derived from different climates and temperatures of the liquid medium of the Universe. "And the abstract system of Laplace, according to its axioms, is in the same continuum, in the same worldview - no, more precisely, in the worldview, for the worldview is more consistent with the Germans (Welt-anschauung) – with Baudelaire's Parfums éxotiques ("exotic smells"), with boire and drink ("drink") of the All-Thirsty (Pantagruel) from Rabelais, with chaleur ("heat") of Camus, that in "The Stranger" there is the root cause of the loss of mental "equilibrium" (French équi-libre - "balance" - consists of the roots: equus , eqal - "equal" and libre – "free", so the slogans of the French Revolution are potentially contained in Pascal's treatise "On the Equality of Liquids") ‹…›" [84, p. 24]. Similar connections can be traced between the world of F. Bacon and the cosmos of W. Shakespeare, the sonata form with the development (Durchführung) of Beethoven and the mathematical analysis of K. Gauss and others – whenever scientists take up a theory that describes the holistic image of any sphere.

Thus, the new task of the philosophy of science is associated with lifting the moratorium on the reverse value deidealization of the scientific method (here it is appropriate to recall the first principle of pedagogical science, which focuses on the fact that any educational content automatically also performs educational and developmental functions). Then the classical form of cognitive activity will be seen as a real deduction and specification of initial values in a non-trivial ordering of events that the subject is trying to master; laws of nature – as forms of power, and experiment – as a verifier (falsifier) of the power status of laws, and not their correspondence to reality [85, p. 117].

So far, inconsistencies arising in scientific practice are classified as anomalous, significantly irregular events. However, like the Fichtean "not-I," they can serve to express and clarify subjective values in theoretical form and be considered, contrary to

their own essence, as a natural prototype of the objective mode of values. In this sense, scientific progress will be seen not so much in the accumulation of scientific knowledge, but in the coordination of subjective values as mental structures and objective reality as a representation of its empirics – "thinking" and "being".

For classical natural science, this is how a pragmatic goal arises, which determines the perception and transformation of scientific objects, and at the level of reflection - their purposeful rationality in the activity criteria (efficiency, economy and optimality) of the corresponding cognitive means. The proposed secondary subordination of its Wertrationalitaet will simply mean completing the criteria for identifying the subjective side ("thinking") in the enlightening spirit of common sense ("common sense"). "This is a very important and fundamental point in understanding the nature of the methodology: the products and results of methodological work are basically not knowledge tested for truth, but projects, design schemes and instructions. And this is an inevitable conclusion as soon as we ‹…› begin to consider, along with cognitive activity, also engineering, practical and organizational and managerial activities, which in no case can be reduced to the acquisition of knowledge. And it is natural that methodology as a new form of organization of thinking and activity should cover and remove all the named types of mental activity" [86, p. 96].

4.5 Stochasticity in the post-nonclassical dynamics of scientific knowledge

As already noted, the leading way to overcome Kant's problematization of the "possibility of representing reality" in the West has become the analysis of language. In our axiological context, of interest are the studies of the transcendental language game of an ideal communicative community, or the transcendental pragmatics of K.-O. Apel. The fact is that the linguistic condition for the possibility of natural science, according to K.-O. Apel, consists in enriching the semiotic relationship ("... – sign – object") not so much with a "concept", but with the position of the interpreter, who, in turn, is in a relationship of sign communication with other interpreting subjects. Then transcendental pragmatics will appear as a scientific specification of the more general literary and cultural-symbolic studies of M.M. Bakhtin, G. Gachev, U. Eco, R. Barthes,

M. Foucault, V. Iser, J. Derrida, the relationship "author – text – recipient" with conceptual conclusions about the "death of the author", "decentralization of the text", "creation by the reader" yourself", etc. If we take them in the original personal dynamic context, then the conclusion of the successors of Marx's idea of social production is no less relevant that "to understand the dialectics of cognitive and value, first of all, the methods and ways of forming the subject itself that exist in society and science must be realized scientific activity" [87, p. 187].

In the context of post-non-classical science, the pragmatic method is complicated by a dual understanding of the subject and his values. On the one hand, he is an individual of a certain scientific community (semiotic group), normatively reproducing the logic and sociocultural meaning (goals) of scientific research, on the other hand, he is an enterprising "lone theorist", perceiving them through the prism of logical-methodological rationality as a simulacrum sign. The collective Subject ("collective researcher") [88] consolidates in the cognitive aspect ("wisdom of the head") of logical-methodological rationality scientific ontological assumptions and idealizations [89], prescribing selective perception of the totality of conditions of existence or observability of an object ("theoretical load of facts", or "ought" in the Kantian tradition).

However, as W. Quine showed, scientific knowledge is not only closed to its own ontology. The meanings of the terms are also determined by the expanded linguotheoretical context of the theory, so that the connection between phenomena in the theoretical description becomes a theoretical construct, probabilistically related to reality [57, p. 75]. Therefore, to justify the collective translation of idealizations, it has always been assumed that a set of conditions is not only typologizable, but also ontologically stable. With sufficient maturity of the scientific discipline, this greatly simplifies the organization and regulation of cognition for the individual scientist, endowing reliability with insufficient or random empirical data and articulating personal intuition in conditions of epistemological uncertainty into rational forms - similar to the "stabilizing selection" of the hypothetico-deductive method [90].

Ideally, this could correspond to the structural-functional paradigm of the Weberian

T. Parsons and the stabilization sociological theory in general, where the social goals (values) of interaction are completely internalized into personal means (conditions) [91]. Being derived from the statistics of successful actions of a specialized community of subjects with objects, the normative behavioral aspect ("wisdom of the head and hands") of logical-methodological rationality provides the individual scientist with the basis for working with hypotheses and publicly accessible communication on the control and choice of such actions through elementary criteria of rationality (accuracy, rigor, simplicity, breadth, etc.). Therefore, data have scientific meaning only if, in Kantian fashion, they are "embedded" in valid analytical categories. For example, a particular verification of the hypothesis of a quantitative law is based on the general assumption of symmetry of mathematical conclusions in the system of the hypothesis and functional connections in the experimental system, which must be continuous and analytical [92].

Analysis of such manifestations of logical-methodological rationality leads a number of authors (D. Bloor, B. Barnes, K. Knorr-Cetina) to a sociological interpretation of scientific representation and the logic of scientific research (science studies) in addition to the traditional explanation for the sociology of science of the genesis of scientific problems [93]. It is believed that the pragmatic motivation of a scientist, determined by shop-floor relations, is much more significant than the cognitive component of his activity, so that in general (in a cross-cultural retrospective) the logic of scientific research, with all its possible external standardness, turns out to be less than rational.

Indeed, the research of an individual scientist acquires the status of rationality as the original goal-setting is presented and communicatively reproduced, which is explicated in post-non-classical science and relativized by postmodernism as the pragmatic agonism of language games in the spirit of the "element of thinking substance" by M. Cavendish [94]. Already in the 1940s, they began to discuss the normative behavioral aspect of the rational activity of scientists, since goal-setting, amorphously covering external factors, determines the choice of problem and methodology, incomprehensible to the logical structures of a "lone theorist".

Further, in the cognitive aspect of K. Popper's "conceptual framework," the rationality of goal-setting appears as a retrospective "style of thinking" ("episteme"), when shifts in the perception of reality and methodological standards are realized not so much due to the previous history of the "logic of scientific research" as to the upcoming value a vacuum usually filled by motley cognitive projects and social preferences. Finally, in terms of the content of the main scientific forms of knowledge, the value-target component is least obvious for the sociologically "weak" program of scientific axiology, which is limited to the first two aspects, since it requires a rethinking of the nature of the connection between the empirical and theoretical levels of scientific knowledge in their historical and cultural conditionality and order.

In particular, in projects of representing unique objects using generalized logical means, the empirical interpretation of theoretical constructs takes on a new dimension: observation conditions, designation rules and assignment of meanings to elements of a formal syntactic structure can vary not only under the influence of pluralization and dynamization of the theoretical framework, but also from the situational side pragmatic rules of empirical interpretation, which in their selectivity are similar to idealizations of the cognitive component of logical-methodological rationality. "Rationally based aspects of scientific activity are, as it were, immersed in a force field of value commitments and beliefs that directly express the relationships between people and only thereby their attitude to the object of knowledge" [95, p. 90]. Thus, the task of commensurating axiology and scientific rationality is outlined through the generalization of the normative behavioral component of rationality to the level of cultural values, since it justifies the entire set of pragmatic proposals.

In reflexive plan, this forces us to reconsider one of the constitutive oppositions of science – formalization / reference to tradition and (or) practical orientation – and move from the ideal of simplicity of theoretical abstraction to the epistemological ideal of the complexity of interpretation of any scientific term, since they acquire the status of a symbol involved in several connotatives at once systems (elements and operators). "A symbol is not knowledge, no; symbol follows cognition; True, sometimes he gets ahead of him, like an illicit and imperfect premonition, good only for words for benefit

and need, and then he, instead of taking root in knowledge, stops in front of knowledge, obscuring it, like a dark screen ...” [96, p. 453].

The fact is that the analytical connections of scientific knowledge can only be established with a sufficiently rich code organization of its sign system: the representation must reveal alternative subject-semantic distributions of descriptions. As they conceptually develop, a cybernetic perspective emerges for differentiation along categorical levels in order to recognize among them the “protocol” controlled and “interpretive” control subsystems. Thus, together with the functional expression, the original goals receive ontological justification (for example, in the form of “dispositional propositions”), but become invulnerable to rational criticism, which requires a “horizontal” comparison of goals and means. Therefore, L. Laudan contrasts this collective “hierarchical” model of scientific rationality with his “network” model. According to it, the historically revealed linguistic incommensurability of the theoretical and empirical, the underdetermination of theory by empiricism and the value incompatibility of goals, means and interpretations do not indicate a linear deepening into the determinants of scientific rationality, since its substantive, methodological and axiological levels do not actually cancel each other out, but emerging in them, contingencies and contradictions require cross-justification. Before systemic laws of similarity are discovered between them, the interpretation of scientific terms in terms of their goals and/or means is ambiguous, involving a subjective context to correlate alternative levels and methods of description.

Although the interpretation procedure “dilutes” rational analysis with experience and intuition, only then does the extrapolation of means that successfully reproduce similar goals acquire a rational and not a purely methodological character for the future, fraught with the substitution of values and results in the spirit of Aristotelian μάτην [97, p. 95]. “‹…› A theory of rationality requires very little more than that our cognitive goals should reflect our best beliefs about what is and what is possible, that our methods must correspond in some way to our goals, and that our explicit and implicit values must be synchronized” [98, p. 340].

Since the awareness of ends depends largely on internal intellectual experience and

is not subject to such logical verification as their implementation through a specific configuration of means, they were usually assumed to be derived from the universal human mind, justified by the perspective of the "omnipotent mind" of P.S. Laplace for a stationary Universe. Thanks to Kant's establishment of "a certain collective unity for the purposes of rational actions" [5, p. 105], it coincides with the ultimate goals of human existence and universal rational foundations on which any scientific argument can be closed: "and if the hidden utopia in the concept of reason was visible through the random differences of subjects in relation to their repressed identical interest, then by reason functioning in the harness of goals only as a systematic science, identical interest is equated precisely with differences" [5, p. 109].

If we accept this Frankfurt version of the ideological premises of Kantianism, then it is quite natural to accept the conclusion of W. Windelband, "that the only thing that distinguishes science from an individual story is that instead of the personal interests of the individual, it makes the principle of choice and connection between facts values that have a universal and necessary meaning" [99, p. 43]. Traditional deductive and inductive methods are precisely oriented towards such one-sided conditioning in the nomological structure, when "the coordination of the universal and the particular is no longer hidden in the intellect, which perceives the particular as just a case of the universal and the universal as just a side of the particular with which it allows itself comprehend and use it" [5, p. 109]. Then, from the fundamental foundations, a theoretical representation of actual phenomena and cause-and-effect relationships can be derived.

In fact, here we are talking about the Platonic paradigm of expediency, in which each scientific object is considered as an individual, goal-oriented towards a certain intelligible idea (class), just as the theory of motion refers to more advanced abstract mathematical relations [100, p. 292-307]. Through the efforts of the founders of European classical science, "ideological" relations acquire a quantitative structure and form an autonomous research field with the prospect of non-trivial interpretation and deduction of new phenomena and laws [101]. Thus, according to G. Galileo's plan, transcendentally justified idealization makes it possible to cover in a mathematized

nomological structure an exhaustive spectrum of linearly ordered individual modes. Then the representation of an object can be reduced to a quantitative description of "how?", that is, to the articulation of empirical (natural or expedient) conditions, and it can be uniquely brought to all transformative possibilities corresponding to a given idea.

This certainty and clarity of methodological norms of classical scientific rationality was achieved at the cost of strong idealizations (simplicity, linearity, stability, balance, closedness). Through these "adaptations of reality", the laws of existence of natural systems were able to obtain a strict mathematical expression of dynamic changes. Accordingly, the logical and methodological generalization of successful cognitive actions with such systems also tended towards a priori unambiguity and intersubjectivity. The mastery of new phenomena by mathematics – self-organization with the nonlinear dynamics of qualitative changes characteristic of open systems – initiated a new methodological norm of relative uncertainty and unpredictability of scientific description.

The dilemma of the ancient immanent and medieval transcendental concepts of nomology, which was resolved in the first global scientific revolution by a methodical combination of the empirical and theoretical, in the modern context reveals that the guarantees of the necessitarian law were provided by the hermeneutic leap of dynamic reductionism or statistical generalization of elements. And if in non-classical science they discovered the ambiguity of such correspondence, then in post-non-classical science they state its subjectivity. Among the derivatives of the Platonic paradigm, not only the norm of classical scientific rationality of a rigidly deterministic description was discovered, but also the interpretation of the subject of cognition as an enterprising personality subject to "sublation" in the canon (criteria) and organon (method) of the Absolute subject, objectified in scientific objects and logical-methodological rationality.

After the discreditation of the divine guarantees of knowledge and after the spread of the collective production of scientific knowledge, the theoretical object began to be considered as an objective mode of values of the existing community of scientists. In

postpositivism, which revealed this dependence only as a historical change in epistemological standards, N.R. Hanson proclaimed the possibility of manipulating scientific representation both at the level of empirical conditions and in relation to qualitative theoretical explanation. The fact is, in the positivist tradition, the predictive capabilities of scientific "truth" are usually focused on the quantitative side of phenomena, while the discovery of the limits of its applicability, in fact, often leads to a re-explanation of the very nature of phenomena. For example, the transition from one paradigm to another, regardless of the degree of correspondence or incommensurability of their rational standards and predictive merits, is accompanied by a change in the holistic vision of the world, switching the gestalts of perception of objects from "duck" to "rabbit". Using this textbook example of D. Yastrov, T. Kuhn says about standards that "they are created during the game according to one set of rules, but their perception requires the development of another set of rules" [61, p. 79].

In this case, the development of scientific knowledge becomes discrete and incommensurable, permanently fraught with the substitution of basic idealizations and the corresponding ontology, and in the sphere of scientific knowledge itself no less than in the sphere of its social applications. Hence, in postpositivism, the need arose for a theory of their rationality. "Such a "good" theory should provide scientists studying the mechanisms of development of scientific knowledge with clear methodological guidelines and criteria for the selection and systematization of empirical material supplied by the history of science, to highlight the "truly scientific", rational components in it and filter out the "non-scientific" ones irrational moments, determined by the personal likes and dislikes of the creators of science and the accidents of the historical situation" [102, p. 106]. Here, non-classical (M. Heidegger, G. Gadamer, J.-P. Sartre) projects for overcoming the neo-Kantian dualism of scientific disciplines, or the problem of "fact/values", find their implementation and continuation. The latter, being an axiological analogue of epistemological foundations, are intended to express the situation of alternative descriptions obtained as a result of "normal" and "abnormal" ("counter-normal") studies.

At the same time, a change in the qualitative description, meaning a movement of

the theoretical framework and the corresponding empirical field, can have not only relativistic consequences. Historical subjectivization has both historical continuity and an approximative tendency to displace the "metaphysical" component, ultimately ensuring an increase in the accuracy and flexibility of the connection between theory and reality. For example, Popperianism, trying to overcome the paradoxical nature of epistemological catastrophism, softens its falsificationist criterion of demarcation, suggesting the probabilistic elimination of "errors": it occurs during the period of growth of knowledge - between "assumption and refutation" - regardless of its methodological affiliation and software. Therefore, the nonlinear dynamics of a qualitative description can be combined (for example, according to the principle of correspondence) with the linear dynamics of E. Nagel or St. Toulmin, characteristic of "normal" science – a simple clarification of the subject area as a progressive extrapolation of the law from one end and elimination from the other. Then both of these dynamics will perform the functions of complementarity and approximation - in the context of goal-setting and logical-methodological rationality, respectively. And the outline of the subject area as a result of this combination of redefinition and clarification will acquire the properties of stochasticity. That is, the probabilistic description caused by the ambiguity in the scientific community of the canon of logical-methodological rationality is superimposed on the probabilistic nomology of a non-classical sense (when the constancy of properties and relationships is inevitably disavowed by the changing conditions of their manifestations in macro-existence).

Another – non-statistical – version of the interaction between the variability of theoretical frameworks and their empirical manifestations is provided by the research strategy of "case studies", which goes back to the abductive-descriptive method of the Badenians (S. Mainheim). Pursuing the goal of capturing the integrity of a single but typical object, the theories considered here from the very beginning claim only a limited ontology, partial rational validity, selective recognition and temporary justice, which allows them to be accepted as equivalent alternatives. The novelty of these "middle-level theories" lies in the nature of the relationship: the burden of an individual case with sociocultural and individual psychological conditions of existence is

compensated by disciplinary cooperation in the construction of its knowledge [103]. The totality of their incommensurable advantages outlines a dynamic subject field, "which contains not only existing, but also future explanatory theories: at the same time, facts that require interpretation are not "squeezed" into one concept or another, but are "covered" by the field of interaction of a variety of theories" [104, p. 156]. According to adherents of "case studies", such a scheme for the development of scientific knowledge positions non-classical science as complex and polysemantic, alternative and complementary in relation to the ways of interpreting reality.

The scientific-cognitive problem arises as an epistemological expression of a gap, a discrepancy between the subjective contexts of a single theorist (subject) and the scientific community (Subject). Otherwise, the cognizable thing will not carry non-objectified content that prevents it from being necessarily raised to the corresponding eidos by traditional methods. But in addition to intrascientific factors that problematize the possibility of "truth" by the subjective interweaving of theoretical constructs (idealizations, units, instruments) and their empirical manifestations, post-non-classical methodology uses another mediation of empirical-analytical activity – the situational resultant of various axiological intentions (from personal dissatisfaction to financial situation).

What in the Cartesian tradition was perceived as bad subjectivity - a foreign content subject to elimination or an artifact of scientific research – now acquires a positive status. The image of a more or less active, but dispassionate and reasonable subject of scientific knowledge is joined by irreflexive life-(culturally-)significant meanings and meaning-forming structures, suggesting the interpretation of scientific knowledge not only from methodological and epistemological positions, but also in the context of human understanding, experience, and interpretation myself. Another demystification of science seeks confirmation that during the search, the scientist is guided not only by scientific and cognitive premises, but also by the entire motivational and semantic sphere in the sense of the Aristotelian φρόνησις [105]. As a popular analogue of genetic mutations, its projects and intuitions, analogies and extrapolations then undergo a secondary justification, paradoxically aimed at such alienation from the theory or

paradigm used, which would be consistent with its rational standards.

The point is that, with all the advantages of a more accurate description of phenomena, prediction of new facts or consistent semantic agreement, the final argument in the context of justifying an innovation is still not logic or experiment, but the consent of the scientific community; not the rules that determine the choice, but the values that influence the choice [61, p. 79]. However, a lone theorist perceives logical-methodological rationality through his own pragmatics and semantics - as a simulacrum. That is, its linguistic context contains various random connotations, recognized as “individual” and ultimately dictating a different “order of mind” with different idealizations, in support of which there will always be marginal facts, and the scientific community will split into “empirical” and “ideal” "in the sense of Ch.S. Pierce and K.-O. Apel [106]. Moreover, ideological political circles are interested in the existence of dissident groups in the “empirical” scientific community, often in need of parascientific legitimation.

So that the developed purpose-determining rationality of the individual theorist will differ from the original (primary) purpose-determining rationality of the Subject-community as with the rationality “sub specie aeternitatis”. “In the process of communicative and cognitive activity, personal consciousness appropriates and assimilates “constant forms”, but in such a way that it simultaneously resists them, generating a new text and a new meaning from established elements. The author's consciousness always exists at the point of intersection of socio-cultural, historical and individual structures, and therefore realizes itself through unity with the common human world of experience, semantic structures and meanings, etc., existing before it and beyond it” [78, p. 257-258].

At the same time, it should be noted that the explication of value projects and their interactions by post-non-classical methodology is often dissolved in the explication of the tendencies of modern science towards the diversification of disciplines and the pluralization of theoretical language, for example, by the fact that the Collective Subject includes carriers of different “disciplinary knowledge” [88]. Therefore, postmodern reflection of this situation proclaims not only the rejection of a generally

valid picture of the world in favor of a simple set of denotative statements, particular models and pragmatic situational methodologies, but also the development of a goal-setting level of scientific knowledge, since it dictates theoretical alternatives. Just as they confused the 19th century, Nietzsche's program of "revaluation of values" is relevant today, so that the scientist himself willfully traces the entire chain of deduction (or compatibility) of knowledge instead of randomly shuffling the criteria of rationality or the policy of outstripping any criteria in the squatter's capture of new empirical fields.

But the metaphor "sub specie aeternitatis" is relative to the pragmatic sociocultural context that guided the goal-setting rationality of the Subject-community and was eliminated from subsequent logical-methodological rationality. The pragmatic scientific method serves precisely as "reasonable" reflection, establishing communication between goal-setting and logical-methodological rationalities regarding the coincidence of their meaning and functions. Expressive, technical and axiological means constitute implicit knowledge of the subjective context and, being in such a status subordinate to the goals of the Subject, constitute the subjective beginning of the knowable thing before it becomes an "object". It transforms the description of a thing into a description for the subject of perception, and the phenomenon into meaning. Thus, in post-non-classical science, the Natural, Technical and Socio-Humanitarian are procedurally synthesized with the perspective of education, in the spirit of Charles Snow, the "third culture" [107, p. 327-332]. We are talking about the institutional consolidation of integrative trends in science, when particular disciplines, reduced to universal structures of logical-methodological rationality and ontology of self-organization, are united in the context of resolving global problems of social practice.

The fact that the subject of cognition is now interpreted as a subject of communication between an enterprising individual and a collective Subject makes the rational "foundations" of scientific and cognitive activity a source of permanent randomness. Its consistent explication in the basic criteria of rationality, to the extent that they are used in modern scientific methodology, indicates a crisis trend in the

emancipation of the criteria of scientific rationality. The new meaning of this dilemma is the open choice between the stochastization of means and the relativization of the goals of rational knowledge.

4.6 Post-non-classical emancipation of rationality and determinism: subjectiveand objective prerequisites

Modern reflection of the categories of "reality," "truth," and "rationality" reveals that their applicability to scientific knowledge (theory) was justified to the extent that ontology corresponds to the attitudes of the generalized subject of cognition and made it possible to master phenomena and control processes. This classical goal-setting found its expression in the logical-methodological ideal of knowledge as generalized, that is, capable of grasping in thought any disorder of the conditions of individual existence and representing the object as such in its necessary properties. As a derivative of this ideal is the norm of classical scientific rationality of a rigidly deterministic description.

However, the sharp increase in the volume and significance of the "by-products" of expedient cognitive actions in relation to open systems forced us to return to the very definition and meaning of following a goal, which differs from the spontaneous flow of events "‹…› precisely by increasing the probability of achieving the goal, and this value allows us to judge its efficiency" [108, p. 194]. Therefore, the assimilation by the scientific mind of the chaotic element in this trend and the development of a theoretical representation of chaotic dynamics turns the classical criteria of rationality, oriented towards the elimination of all uncertainty, into a certain particular, limiting case. "Given its systemic complexity and hierarchy, methods based on the principles of irrationality are increasingly being used to adequately analyze reality" [107, p. 355]. As a more comprehensive and accurate modern scientific rationality, it proceeds from the primacy of uncertainty and ambiguity both in goal-setting experience ("the order of being") and in logical-methodological discourse ("the order of reason"). The first aspect expresses the social conditioning of linguistic meaning, the second - its permanent formation.

Hence, the role of the renewed principle of determinism consists not so much in the classical prescription of an ideal subject or methodological sequence, even if it is carried out "dialogically" – by means of the second Subject, given to the first subject in a reflexive act – but in determining the conditions for the possibility of creative freedom of purposeful activity. "Abandoning the idea of fierce competition of scientific knowledge and replacing it with the idea of dialogue, "communication of the mind", where all knowledge has value, since each new situation can open up a new, previously hidden, meaning in it, dictates a more loyal than before attitude towards non-formalized , imprecise, probabilistic forms of knowledge" [78, p. 258]. The rationality of cognitive means and scientific activity is then estimated with the help of probabilistic logic. For example, the rationality of the explanation procedure, which is pragmatically justified by the establishment of the quantitative structure of a certain class, is evaluated by the spectrum of the provided transformative possibilities of the phenomena of this class. However, since the reproduction of its quantitative structure can be subject to a non-linear regularity, the reinforcement of explanatory power by predictions will be probabilistic.

By rejecting the global predictability of rigidly deterministic methods of description in favor of probabilistic-statistical ones as more general, this emancipation leads to a formal rapprochement of modern scientific rationality and various types of spiritual and practical activity, traditionally considered non-rational ("anti-demarcationism"), unless they are parasitic on formal apparatus of advanced science. For example, the emancipation of the criterion of logical consistency transforms a countable cause-and-effect chain (in the form of which rationality, scientificity and physical determinism of the Newtonian scientific paradigm are identified) into a dynamic set of factors of causation, which ambiguously add up to the phenomenon of effect. Therefore, the ontological premise of determinism in modern science is increasingly given importance, if not to the psychological predisposition of the subject, then to just a syntactic construction [109].

Here we can draw an analogy with the qualitative determinism of folk signs of weather or prejudices, when a separate event is considered as part of a larger ensemble

and therefore gives reason to judge it and even influence it based on certain paired connections ("likes" and "dislikes") within it. Recently, this analogy has been taken seriously by philosophizing scientists, who find support for it in developed Eastern practices. "In China, for example, an impressive science was developed, but the task of knowing how a stone falls was never set out, since the idea of natural laws in the usual sense in which we consider them was alien to Chinese civilization. China viewed the universe as coherent, with every event connected to other events. Science today, I hope, will retain the analytical precision inherent in Western science, but will also be concerned with a global, holistic perspective, and therefore move beyond the fragmentation of classical culture" [110, p. 55].

In the context of postmodernism, this "exhaustion of ontology" means the abolition of Bacon's "Knowledge is power!" returning self-will to nature. J. Baudrillard concludes on this matter: "the world of objects has always been considered as an inert and silent universe, which is at our disposal because we produce it. But I understood: objects (objets) have something to tell us, and they say this by leaving the sphere of their use" [111, p. 12]. The object of science is less and less viewed as an a priori antithesis of the subject who comprehends and uses it as data. Rather, this is taken – the area of intersection of subjective goals and objective possibilities, which should be perceived as "extra-objective reality", and given the relativization of subjective goals - as an accidentally "given", that is, "substituted" (Dahinter-Gestecktes) [112, p. 224]. The conditions for the truth of the representation of such reality also do not go back to any transcendental fundamental principle, but are a certain convention of experts, the result of a scientific game, discussion [22].

The current scale and power of scientific and technological research, fraught with global consequences of its accidents, require taming the spontaneous spontaneity of such a reality. F. Bacon, too, in order to avoid dangers, extended his strategy to "human inventions," proposing to subordinate them to "the highest divine wisdom". After F. Nietzsche, it looks at least situational, acquiring objectivity only through the temporary concentration of "visual perspectives" [113, p. 491]. This problematizes the possibility of "taming" sociocultural factors, since they spontaneously format for us "natural"

prototypes of things, and then consciously - objective modes of subjective values ("reality-for-us"). If the latter are mastered and represented by methodological thought, then in relation to sociocultural factors the demarcation problem will have to be solved anew, since the elements of goal-setting ("values") contained in them in the expansionist strategy of Zweckrationalitaet acquire an inhumane random resolution.

The ontological referents (taken before their identification as objects of a particular scientific discipline) of post-non-classical science are open, nonequilibrium, self-organizing complex systems of an organic type, combining analytical procedures of mechanistic description and subjective historicism, characteristic of biology and the humanities. Their existence is presented as a permanent formation, in which the stages of order and chaos, the establishment and destruction of a nomological structure alternate.

Only the first of these stages, taken in isolation, can be mastered by the cognitive means of classical rationality as an epistemological aspect of classical determinism. According to the idealization of local autonomy and elimination of external forces, it should be verified by measurements in an inertial frame of reference, focusing on a complete dynamic description of all masses of the Universe. It turned out to be possible to scientifically rationalize this "universal connection" only by raising statistical causality to the basis of the description of objects. The laws of thermodynamics and kinetic theory are taken to express the structure of the "state of the system", extending its necessity, subject to linear functional calculus, to the frequency of each of its random variables. Thus, they remain within the same essentialist worldview, in which the explanation of measurement errors excludes the overdetermination (spontaneous or supernatural) of causes, or more generally, excludes agency.

Taken as a whole, the formation of a self-organizing system does not so much generate or experience as participate in the hierarchical infliction of intensive quantities. Methodologically, this is expressed in the principle of environmental friendliness - the property of a permanent exchange of a system with the environment, when the adaptive behavior of the structure and components of the system to the dynamics of environmental conditions appears in the form of a cycle that provides

alternative development trajectories. A significant role in adaptation is played by fluctuations – micro-foci of spontaneity, in which individual events can escape from the dictates of the law and even take on the status of a "first push" [114], inspiring a chaotic stage of formation and new macrostructures with corresponding trajectories.

Such randomness violates the classical ideas of law as a continuous substantial action of forces, which is initiated by the initial conditions of the environment and is subject to reproduction in the linear equations sub specie of a transcendental subject, and affects the ideological and methodological principles of rationality ("optimism", "ordered sequences") [115]. Therefore, the freedom of the researcher's transformative actions is now not only determined by the potential capabilities of the system and its environment, but is also guided by his workshop value priorities as parameters of order and personal ones as fluctuations. And ecology, on this basis of restoring the original integrity from the opposites of natural and social, epistemological and axiological, fundamental and applied, appears as the controlling parameters as an ersatz of the unconditional values of Bacon's "highest divine wisdom" [116]. At the very least, it is seen as a demarcation function for distinguishing subject-disciplinary complexes, when the holistic tendency of methodology leads to a sharp expansion of the boundaries of science.

Since the nomological structure here is mediated by the procedural selectivity of causes, the taming of randomness acquires a qualitative parameter: not so much the sophistication of the structure of its implementation and the values of the control parameter, but rather the study of past macrostructures of the system - to establish the dynamics of the nomology itself ("self-transcendence" by E. Jantsch) and the regulation of variant directions development of a post-non-classical referent.

True, these means, already seemingly established as general scientific ones, are being tested by this new class of changeable and unique phenomena and processes, as well as their sociocultural applications. Because of their ambiguous sensitivity even to factors of cognition that seem to have already been eliminated by all-pervasive scientific standards, such as subjective attitudes, objects of advanced science are often called "human-sized" [88]. Although the methods for describing such objects come

from physics, chemistry and, then, biology, axiological intentions receive a clear expression in comparison with the humanities. The last circumstance is of particular importance in connection with the discussed prospect of developing a paradigm of general scientific patterns of development of objects at all levels of material and spiritual organization.

4.7 Conclusions

The assimilation of special scientific data regarding evolving objects, being consonant with a number of models of (historical-materialist) institutionalization of the socio-cultural relativity of philosophical and ideological foundations and the socio-historical dynamics of scientific knowledge, contributed to the continuation of post-positivist criticism of the "static" image of knowledge. Resolving the problem of the dynamics of scientific knowledge requires overcoming its positivist dichotomy of determination by the "context of discovery" and the "context of justification," externalism and internalism. The consistent explication of real contingency in the canon of scientific rationality indicates a "dialogical" tendency in models of the growth of scientific knowledge: referents and methodological patterns of their knowledge should be perceived through a collective subject given to a single empirical subject in a reflexive act.

Based on the epistemological sources of randomness, the analysis of the structure of general scientific methods to reflect the value aspects of cognitive activity opens up the prospect of an independent pragmatic method capable of realizing the dialectic of cognitive and value in science. Attempts to accommodate fundamental random phenomena into epistemological norms contribute to the establishment of a constructivist approach to rationality, in which the traditional opposition of subject and extra-subject determinants of creativity is revised in favor of probabilistic models of the growth of scientific knowledge. Identification of this trend in the general context of the topics of scientific paradigms indicates alternative rational strategies for assimilating randomness and subjectivity in scientific methodology.

Starting from the classical theory of probability, the basic meanings of representation and randomness intensively interact in relation to the quantities of scientific description, and in the times of post-non-classical science they converge in an interdisciplinary trend along with the categories of finitude and infinity, absoluteness and relativity, being and becoming. It is established that through such opposites, interdisciplinary studies of self-organization and development contribute to the establishment of constructivist concepts in the foundations of scientific rationality.

Based on a historical and scientific review of the relationship between the natural sciences and the humanities in the perspective of methodological monism associated with the post-nonclassical project of nonlinear science, it is proposed to supplement the dominant methodological guideline of transdisciplinarity with the guideline of constructivism (“building virtual worlds”). Thus, the methodological legitimation of randomness in scientific knowledge is quite possible by explicating the possibilities of an activity approach to its study, analyzing the relationship between rationality and randomness in the structure of general scientific methods, which allows to identify cognitive and sociological sources of randomness in the pragmatic scientific method, stochastic parameters in the post-nonclassical dynamics of scientific knowledge , as well as subjective and objective prerequisites of post-non-classical emancipation of rationality and determinism.

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