

DOCUMENTS

Rein Vihalemm: ‘On Stages of Cognition’¹

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In all epistemological² studies one has to employ, in one way or another, the concepts of “sensuous and rational knowledge,” “empirical and theoretical knowledge,” “essence and phenomenon.” But, unfortunately, the logical relationships of these concepts are not understood unambiguously, which prevents many epistemological issues from being examined with sufficient theoretical clarity.

The author of many articles and dissertations on the categories of essence and phenomenon, V. S. Nikitchenko, considers the process of transition from phenomenon to essence in cognition as a transition from sensuous knowledge to rational knowledge. He does not single out the problem of empirical and theoretical knowledge. Nikitchenko comes to the conclusion that in sensuous knowledge there is some element of the rational, and rational knowledge is to some extent visualized. He also notes that not all thinking can lead to the cognition of a deep essence, as evidenced by empirical definitions in science (Nikitchenko, 1963).

N. K. Vakhtomin, another researcher of the categories of essence and phenomenon, does not demonstrate the relationship between the concepts of sensuous-rational knowledge and empirical-theoretical knowledge either. He proposes to distinguish between content and form in the process of cognition: in the first case, it is the transition from the phenomenon to essence, in the second case, from sensations to thought (Vakhtomin, 1963, p. 122). Vakhtomin arrives at the following conclusion:

although a characteristic feature of the relationship in question is that the transition from phenomena to the essence of an object is associated with a

¹ Original: Vihalemm, R. (1966), ‘O stupeniakh poznania,’ *Tartu Riikliku Ülikooli toimetised / Uchenye zapiski Tartuskogo Gosudarstvennogo Universiteta. Trudy po filosofii X*, vihik/vypusk 187, str. 13–27.

Editorial note: Due to the political circumstances of the Soviet Union, authors were obliged to refer to Marxist classics in their writings. Those references are retained in this translation for historical accuracy.

² Translator’s note: In the original text, Vihalemm has used the word ‘gnoseological’.

transition from sensuous contemplation to thinking, there are also deviations from this general rule, when not only senses, but also thinking deals with phenomena and the essence of the object is not revealed (empiricism), or when the phenomena do coincide with the essence of the object and the essence of the object receives immediate sensuous representation³ (Vakhtomin, 1963, p. 126).

This conclusion, as well as that of Nikitchenko, can be characterized, in our opinion, as “empirical” and rather superficial. (Vakhtomin’s assertion that the essence and the phenomenon can coincide to the point that sometimes it is possible to *immediately* reflect the essence by sensuous contemplation, seems to us simply incorrect. The essence of the phenomenon is *always* mediated, since the essence and the phenomenon exist in unity. That is, essence *never passes* into immediate appearance and vice versa. This means that the essence can never be known immediately, but only through the immediate phenomenon, or being, and vice versa, phenomena can be *cognized* as a phenomenon only through the essence. We will return to this issue later).

Many authors⁴ believe that the division of the process of cognition into sensuous and rational stages is erroneous and we can speak only of stages of empirical and theoretical cognition.⁵ For example, Yu. P. Vedin writes: “sensations and perceptions, as sensuous images of the material world, can’t be used to make assertions about things. Sensations and perceptions do not compare, do not match themselves with things, they only “show” us things.” (Vedin, 1964, p. 10) Vedin believes that it is impossible to talk about sensuous *cognition*, since the attribute of cognition is understanding, comprehension, interpretation of reality, and “cognition from the very beginning is sensuous and rational.” (Vedin, 1964, p. 15) Purely sensuous cognition is a fiction, and in this case, this means empirical cognition in its simplest form (Vedin, 1964, p. 16).

In general, we can agree with these statements, but we will try to show that there is sensuous and rational *knowledge*, as well as empirical and theoretical

³ On the meaning of the term ‘reflection’, see Vakhtomin, 1963, p. 119.

⁴ See Kopnin, 1961, pp. 165–170; Bogdanov, 1964, pp. 94–97; Smirnov, 1964, pp. 23–24; Vedin, 1964.

⁵ Kedrov interprets this question as follows: “the cognitive structure of the subject presupposes two main forms or stages of cognition: (a) empirical cognition associated with the activity of the senses that carry out immediate communication with the subject; and (b) rational or abstract-theoretical cognition, connected with the activity of thinking; these two stages, or forms, interact and mutually transition into each other and determine one another in a subject with a developed consciousness” (Kedrov, 1963, p. 181).

knowledge. Misunderstandings can arise in connection with the meaning given to the term ‘rational’. In our opinion, it is necessary to distinguish between the categories of ‘sensuous’ and ‘rational’ (in the process of thinking and cognition) from the categories of ‘sensuous knowledge’ and ‘rational knowledge’. ‘Sensuous’ and ‘rational’, as categories, express two necessary aspects of thinking. Since cognition is possible only through thinking, that is, cognition and thinking (and in thinking, sensuous and rational) are in unity: one exists through the other. Nevertheless, one can speak of sensuous *knowledge* or rational *knowledge* when we have *relative* independence in the process of cognition (thinking). We will also try to show that sensuous and rational knowledge, understood this way, are not identical with empirical and theoretical knowledge.

Friedrich Engels’s position that “the [most] essential and immediate basis of human thinking is the *change of nature by man*, and not nature alone as such, and the mind of man developed according to how man has learned to change nature” (Engels, 1939[1883], ‘Dialectics’)⁶ has been confirmed by many studies and is generally accepted (see, e.g., Leont’ev, 1964). The pursuit of the development of thinking and cognition should be based on this position. (This also explains the need to highlight *approach* and *method* in the study and development of thinking; see Ladenko, 1964). It is well expressed in the scheme of the “square” (as a representation of thinking) by Shchedrovitskii (1962). This scheme also illustrates the sensuous origin of the entire content of our thinking, the unity of the sensuous and the rational.

Let us first try to understand the correlation between the concepts of ‘cognition,’ ‘thinking’ and ‘knowledge.’

Cognition is a specialized type of labor (Shchedrovitskii, 1962, pp. 85–86). Alteration of nature by man (which is already the simplest kind of labor) and the *development* of thinking from the very beginning (including the appearance of thinking) *presuppose each other*. And since thinking is a *reflection* of being, the starting point in thinking is man’s alteration of nature.

“The way in which consciousness is, and in which something is for it, is knowing,” wrote Karl Marx (1959[1844], Third Manuscript). Knowledge is acquired through thinking (although not only through “pure” thinking), and awareness of this knowledge being knowledge—is cognition.

⁶ Translator’s note: The original source is *Dialektische Logik und Erkenntnistheorie. Von den “Grenzen der Erkenntnis”* (Chapter ‘Dialectic’), p. 498. This and all the following quotes from Marx and Engels are taken directly from an English translation.

There is an analogy (roughly speaking) with the process of production. Paraphrasing Karl Marx's famous statement about the process of production, we can say that the act of thinking, in all its moments, is also an act of cognition, but if we consider thinking and cognition as the activity of one subject or separate individuals, then they serve as moments of the process in which thinking is the actual starting point, and therefore the dominant moment. (Marx, 1999[1859], Part I).

Thus, it turns out that man's alteration of nature, as well as thinking and cognition, have existed in dialectical unity since the moment of the origin of man, but they are not equal in rights: a change in nature is primary to thinking, and thinking is primary to knowledge and to cognition (and all these moments—as in production—arise simultaneously. That is, when there is no cognition, there is neither knowledge nor human thinking). Thinking arises when rationality “joins” the sensuous (when consciousness arises). The *rational* is the non-sensuous in the sensuous, *an abstraction on the basis of practice from something sensuously concrete*, that is, the emergence of the non-sensuous *mediated* in the sensuous).

The emergence of the rational moment is the emergence of the first *knowledge* and the beginning of cognition. The arising of knowledge is the arising of *ignorance*, the arising of the known and the unknown.

To understand the logic of cognition, one must also bear in mind the following necessary conditions for its development:

- 1) The development of cognition, like any other development (if it is progressive development), proceeds from the simple and the most general to the complex: the subsequent stage must be based on the previous one in strict succession.
- 2) Cognition must, by necessity, begin with the *result* of the development of the object of cognition (by the moment of its cognition), i.e., from a complex whole. And besides, it is necessary to take into account that by studying the more developed phenomena, one understands the previous one and the process of development, which was pointed out by Karl Marx (“The anatomy of man is a key to the anatomy of the ape” (Marx, 1999[1859], Part I, section 3)).

Thus, the directions of development of the process of cognition and the directions of development of the cognizable process (its “history” before its cognition) are opposite (but in the end, of course, the actual process is cognized; otherwise the process is not cognized).⁷

⁷ See Vazulin, 1964; Bogdanov, 1962, pp. 195–196, 214–215; 1964, pp. 116–123; Vakhomin, 1963, pp. 37–39; Kedrov, 1964a, pp. 25–40; 1964b.

Cognition always begins with a gradual awareness of the specific situation by immediate social practical activity (under the influence of a change in nature by this activity).

It should be emphasized that in contemporary scientific cognition it is not only the sensuous and the rational that exist in unity, but also the empirical and the theoretical. But cognition *by necessity passes successively sensuous, rational, empirical and theoretical stages in its development* in the process of man *changing nature*, in the cognition of a *new change*, unknown in this process.

Let us now try to illustrate the stages of cognition with the help of a diagram.

We propose the following diagram:

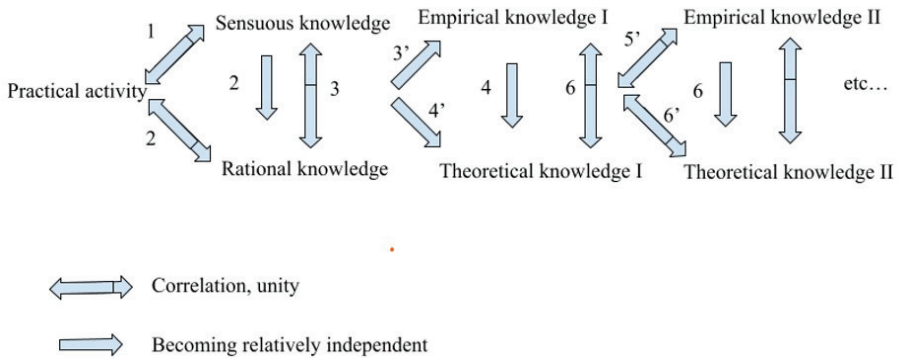


Diagram 1

It should be emphasized from the very beginning that we are dealing with a *dynamical* diagram. ‘Practical activity’ (in Diagram 1) also includes all the knowledge of a given stage in the development of cognition up to the moment under consideration (and we can choose for analysis any moment in the history of mankind when the cognition of some new phenomenon—in the sense of its appearance for the first time in the field of cognition—has just begun). In other words, practical activity is always carried out on the basis of already existing knowledge (for example, theories, if one considers such a stage where they have already been developed). Practical activity assimilates all stages of cognition, being at the same time both their source and their basis. The “initial” practical activity (the starting point in the cognition of some new phenomenon) develops in such a way that each stage of cognition (of the phenomenon under consideration) corresponds to its “own” practice.

The first stage of cognition (sensuous knowledge)

At each stage of development of cognition there is the known and the unknown, knowledge and ignorance. Cognition moves from the known to the unknown. What is known at one stage of cognition turns into the unknown (into the uncognized, new, becomes a problem) for the next stage, and so on. The first known (the first *knowledge*) in the cognition of the *new* can only be its sensuous reflection. However, this sensuous reflection, as already noted, is *cognition* only when it is comprehended. The initial comprehension lies in the fact that something new is being discovered in practical activity.⁸ Knowledge about ignorance arises and the sensuous designation of such knowledge. (The emergence of knowledge and ignorance denotes the emergence of comprehension of reality, i.e., its cognition: moments appear that are absent in a simple reflection of only a specific situation).

Let us note that, for example, a theoretically foreseen phenomenon, although its sensuous representation occurs, perhaps for the first time, is not completely new, as it is obtained on the basis of knowledge, it is a *consequence* of the theory. Explanation and *foresight* of phenomena are the *cognition* of phenomena at the theoretical level. In the cognitive process such phenomena can arise, of which the first knowledge is only a statement of their existence in a sensuous representation, phenomena that are not a consequence of what is already cognized. The cognition of such new phenomena passes (one way or another) successively through all the above stages. To assert that there is no sensuous stage in cognition (in the sense stated above) is to assert that we already have or can foresee sensuous representations of absolutely all possible phenomena (which appear in the process of man *changing infinite* nature!), to assert that there can be nothing unknown in this aspect anymore (this is a kind of absolutization of necessity and denial of accidents).

The fact that any new sensuous reflection at the present stage of cognition arises in the unity of the sensuous, the rational, the empirical and the theoretical (and *through this unity*) does not yet turn a *new sensuous reflection (the first knowledge*

⁸ At this stage, the abstraction of the properties of objects occurs mainly by immediate identification on the basis of social practice: properties and aspects of objects are singled out in order to determine the unambiguity of the practical result (see Gorskii, 1961, pp. 176–216). Gorskii notes: “Relationships [...] are more immediately related to the practical activity of a person than properties [...] It is precisely the changes in the properties of the initial objects that arise as a result of the establishment of some kind of relationships between these objects that make us always abstract these properties in their initial form in objects, considered outside of interactions.” (Gorskii, 1961, p. 203)

about a new phenomenon) into something non-sensuous (as we have seen, it makes no sense at all to speak about purely sensuous *cognition*). The only source of cognition is living contemplation—such is the *cognitive structure of the subject* (Kedrov, 1963, p. 181). Further cognition of the already isolated new phenomenon also occurs in close connection with practical activity ([1] in Diagram 1) and is some kind of knowledge only in this activity and in relation to the already known (to a greater extent only as the unknown). Cognition, the identification of new positive knowledge, occurs through visual-figurative thinking. This does not mean that abstract-logical thinking is absent (although one can consider such a stage in the development of cognition where it is still impossible to talk about abstract-logical thinking at all⁹), but that *new* knowledge is still available only in a *sensuous-concrete* holistic form. Abstract-logical thinking, all available knowledge, and so on, serve only to fix the description of a specific situation. (For example, at this stage we have knowledge of cases of telepathy in everyday life. Apart from descriptions, there is nothing to assert about them.)

The second stage of cognition (rational knowledge)

A repetition of immediate experience is gradually fixed in visual-figurative thinking. Lenin's view on this is well known: "Man's practice, repeated a billion times, anchors the figures of logic in his consciousness." (Lenin, 1919, p. 203) So it was in the history of mankind, but even at the present stage of *cognition* of the logic of the *new*, the unknown, cognition presupposes a repetition of the practical situation. Only then there can be a "separation" of thinking from the situation of practical activity, and rational thinking can arise; the rational moment in thinking becomes relatively independent ([2] in Diagram 1).¹⁰ (This does not mean that before there was no relatively independent rational thinking at all,

⁹ See Sagatovskii, 1962, about the development of visual-figurative thinking. See also Mikhailova, 1963.

¹⁰ At this stage, abstraction occurs not by immediate identification, but through a relation of equality and also abstraction of relations (Gorskii, 1961, pp. 219–276). What emerges is knowledge (mainly knowledge of relations) that is relatively indifferent to specific properties and, after the selection of properties, are the next most variable parties in the relationships established in practice between objects, which are determined by their immediately perceived properties. Therefore, one has to abstract those new moments to further determine objects outside of interactions (and to characterize specific situations by these moments). And since this new side of phenomena is mediated by already abstracted properties (a figurative definition of objects according to these properties), then knowledge about this side can become relatively independent, abstract, not immediately related to specific objects (unlike properties that are *knowledge*, the definition of objects only regarding a particular situation).

although such a stage in the development of cognition can also be considered).

However, the second stage is still based on practice—immediate life experience—and knowledge is reliable only within this framework ([2'] in Diagram 1).

So far, one can see further than practical experience only with the help of *conjectures* ([3] in Diagram 1). Sagatovskii correctly notes: “Reflection without experiment, which was characteristic of the ancient period, preceded experimental research not by chance, because in order not to conduct experiments blindly, it was necessary to construct some preliminary hypotheses¹¹ to establish a connection between a new subject and a system of already established knowledge”¹². (In our diagram this is represented in such a way that through [3] there is a transition to [3']. [3] and [3'] are to some extent “of the same order”). This speculative knowledge is fixed not in concepts but in “names”. (Sagatovskii, 1962, pp. 112–113) At this stage, the concept of new phenomena does not yet arise (there was a period when concepts were completely absent).

The third stage of cognition (empirical knowledge)

At this stage, a *conscious expansion of practice* (changes in nature, changes in object) becomes possible, since at the previous stages the empirical object of cognition has been clarified. This is the beginning of the science that goes beyond everyday practice. Instead of “names,” *empirical concepts* emerge on the basis of experiment¹³.

If sensuous knowledge is, as we have seen, the comprehension (on the basis of practice) of the action of things (phenomena, environment) on our feelings (or rather, the comprehension of reality on the basis of this action), then at the empirical stage the influence of things on each other is clarified (on the basis of the experiment and available knowledge).¹⁴

¹¹ These are conjectures, not hypotheses, as shown in Kopnin, 1962.

¹² See Sagatovskii, 1962, p. 113. Gorskii (1961, pp. 291–303) calls the method of abstraction, through which these conjectures are obtained, abstraction by means of hypotheses.

¹³ See Sagatovskii, 1962, p. 114. There are two stages in the development of concepts: (1) empirical, and (2) theoretical concepts. For the development of concepts, see Kedrov, 1956; 1962; Il'enkov, 1960; Sukhotin, 1962.

¹⁴ At this stage, apparently, the principles of all the main methods of abstraction are used (see Gorskii, 1961, pp. 291–303), but specific and the highest principles are *idealization* (Gorskii, 1961, pp. 276–290) and the *establishment of mathematical dependence* (Gorskii, 1961, pp. 303–313). It all occurs on the basis of experiment.

The stage of empirical cognition is the period of “anatomization” of nature, the period of dividing the whole into parts. Qualitative and quantitative *experimental* methods of research appear (Kedrov, 1945; 1946). Formal logic and the inductive method dominate. At this stage, theoretical reasoning does not yet become relatively independent and has no immediate cognitive value.¹⁵ *Empirical laws* are being discovered (in fact, only recurring connections between things) but are given only *imaginary* explanations (this is discovered later). That is, their theoretical interpretation does not actually add anything. Concepts are also only empirical.¹⁶

At this stage, in the process of generalizing empirical data, only *the specific* (i.e., *particular regularities*) are achieved¹⁷. Generalizations do not cover *various laws* and contradictions. Different empirical (inductive) laws remain *isolated*. Directly *opposite views* emerge: as opposite sides of a single phenomenon are revealed, a “bifurcation” of a whole occurs (Kedrov, 1964a, pp. 40–62; 1963, pp. 199–212).

But even in empirical laws, in fact, there is already a unity (though still *unconscious*) of the qualitative and quantitative aspects of the process (measure). And through the cognition of this unity there is a transition to the next stage, to theoretical knowledge, to the sphere of essence ([4] in Diagram 1).

Galileo, for example, was the first major representative of empirical science. He combined rational cognition with experience. As Kedrov writes:

Galileo not only solved the epistemological and methodological task of distinguishing between appearances and reality, but in close connection with this, he also began to work on another incomparably more complex task of scientific cognition, involving the elucidation of the relationship between the essence and phenomenon in the field of natural sciences, especially mechanics.” (Kedrov, 1964c, p. 82)

This appearance seemed to be a reality *from the perspective of everyday practice*. Speculative thinking was based on the extrapolation from everyday practice and on such phenomena that were not immediately related to this practice (this was possible because the rational moment of thinking that arose on the basis

¹⁵ As Engels noted: “Exclusive empiricism, which at most allows thinking in the form of mathematical calculation, imagines that it operates only with undeniable facts. In reality, however, it operates predominantly with out-of-date notions, with the largely obsolete products of thought of its predecessors.” ((Engels, 1939[1883], ch. VI)

¹⁶ In the history of natural sciences, for example, theories of phlogiston and caloric, “explanations” with the help of various forces, and so on emerged at this stage.

¹⁷ On the specific in cognition, see Kedrov, 1958, pp. 214–235, 253–274.

of everyday practice became relatively independent but the results of such reflections were not subjected to practical control).

The logic of cognition at the empirical stage is essentially the inductive logic of Francis Bacon.

The fourth stage of cognition (theoretical knowledge)

At this stage, *theoretical* thinking becomes relatively independent ([4] in Diagram 1), the nature of empirical *concepts*¹⁸ is studied and the essence of laws¹⁹ is fixed in *theoretical* concepts²⁰. Hypothesis becomes a form of development of science (Engels, 1939[1883]; Kopnin, 1962). In the generalization of empirical data, the *universal* is achieved; *various isolated* laws are united in *one* law and *various opposing* views are united in a *single* theory (Kedrov, 1963, pp. 199–212; 1964a, pp. 40–62). But at this stage, the *essence* of the *theories* obtained is not yet revealed (a theory cannot be derived from another general theory because another such theory simply does not yet exist).

While the previous stage is predominantly analytical, when the whole is divided into parts, then theoretical cognition is synthetic. It is the cognition of the interconnection of the parts in a whole—the structure. Instead of the problem of the “composition of the whole”, the problem of *structure* (and elements) occurs²¹. The structure can no longer be known at the empirical level (as it was possible to know the composition). Because the structure is in the sphere of essence, it is possible to know it only indirectly by theoretical interpretation using *theoretical concepts* (the empirical only shows the structure). At this stage, it turns out that the things (parts of the whole) obtained by analysis are not isolated, but *relations* and *connections* are cognized as their essence,²² and things

¹⁸ Theoretical thinking is dialectical (in the beginning it is spontaneously dialectical). Engels wrote: “dialectical thought [...] presupposes investigations of the nature of concepts themselves” (Engels, 1939[1883], Notes: Dialectics).

¹⁹ For a relation of concepts ‘essence’ and ‘law’, see Khadikov, 1964.

²⁰ See Kedrov, 1956; 1962; Il’enkov, 1960; Sukhotin, 1962.

²¹ In Kedrov (1960) it is shown how the problems of properties, properties–content, content–structure, structure–properties subsequently emerge (see also Kedrov, 1965).

²² Khadikov correctly notes: “in its connections with other things, the object does not remain identical to itself [...]. The essence itself is a set of connections and relations. Materialistic dialectics does not dissolve the sensuous objectivity of things in relations, but, on the contrary, “objectifies” the relations between things and thereby “melts” the impenetrable boundaries between them” (Khadikov, 1964, p. 282).

become *elements of the structure*²³ (since the structure and elements are cognized simultaneously).²⁴

The logic of the theoretical stage of cognition is expressed, albeit in a mystified form, in the dialectical logic of Hegel (1770–1831), and many problems of the theoretical stage had already been posed by Kant (1724–1804) (see Kopnin, 1963).

In the forming of theoretical knowledge, there is an analogy with the emergence of rational knowledge. Rational knowledge is based (in the second stage—[2] – [2']) on everyday practice (this concept is, of course, relative) and before experience it is possible to see beyond everyday practice only by means of conjectures [3]. Theoretical knowledge is based, at first (in the fourth stage [4] – [4']), on the *primary* (pre-theoretical) empirical material (the material of the first empirical stage of knowledge—[3] – [3']). And theoretical knowledge is its *generalization* (predictions made on the basis of the theory²⁵ *within the essence of the primary empirical material*²⁶—[4'] are reliable and receive practical evidence). So far, one can see a stage further only by means of hypotheses and conjectures [5]. To turn these hypotheses and conjectures into reliable knowledge, fundamentally new facts must be discovered [5']. It is already mediated, secondary (in relation to cycle [3'] – [4] – [4']) empirical material, which is a further conscious extension of practice and also needs a new theory [6], and so on.²⁷

The transition to a new stage of cognition ([5'], [6], and [6'] in Diagram 1) to the sphere of essence of the second order is already the cognition of the essence

²³ See Valt, 1963, pp. 45–46; Vihalemm, 1965, pp. 77–78 for a distinction between the concepts 'element' and 'part'.

²⁴ In the history of natural sciences, the first to demonstrate relative independence of theoretical thinking was John Dalton, who (first theoretically) proposed the law of multiple proportions (Kedrov, 1949).

²⁵ Hypothesis is also a kind of theory, see Kopnin, 1962, pp. 141–142.

²⁶ The development of science at only one stage of cognition, the ever-increasing breadth of the coverage of phenomena, can be called extensive. For example, Omelianovskii (1964, p. 4) writes that the development of classical physics is extensive.

²⁷ For example, the periodic law of chemical elements, discovered by D. I. Mendeleev, expresses the chemical essence of these elements and is a generalization of knowledge of chemistry of that time. Mendeleev's theoretical prediction of new elements was based on the periodic law (and this was a direct proof of the law). Kedrov shows that, relying on the same periodic law, "Mendeleev comes close to predicting not only the convertibility of elements, but even the phenomenon now known as the mass defect. However, it was all just speculation." (Kedrov, 1959, p. 256). (Later, Mendeleev even denied the convertibility of elements, revealing the metaphysical side of his thinking). These conjectures turned out to be correct only after the discovery of new facts and theories of physics following the discovery of the physical essence of the periodic law (Kedrov, 1959, pp. 256–266).

of things not only as their *mutual* relations and connections (so to speak, the “upper layer” of the structure (Vihalemm, 1965/2021)), but also as relationships and connections of their *occurrence*, that is, the *possibility of mutual* relations of these *things* (the “bottom layer” of the structure (Vihalemm, 1965/2021)). The essence also turns out to be changeable and relative (Kedrov, 1964, p. 86). At this stage, the essence of the theory of the fourth stage is revealed. It becomes possible to *theoretically* derive statements of the theory of the fourth stage from another, more fundamental theory (the principle of correspondence (Kuznetsov, 1948) and the principle of micro-reduction (Schlesinger, 1963; Shvyrev, 1964)).²⁸

Let us now try to show on the general diagram the sequence of the most general categories (which we have already used) in the movement of cognition from phenomenon to essence (after all, categories are also stages of cognition (see Sheptulin, 1964).

In our opinion, this diagram looks like this:

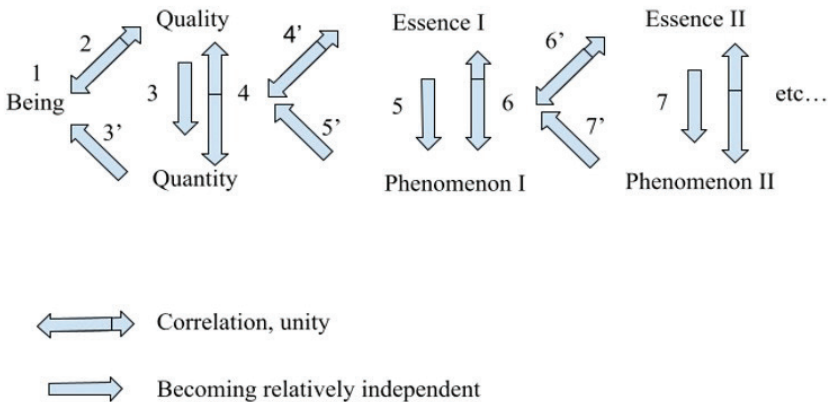


Diagram 2

Cognition shifts from a statement of being to a qualitative definition, the abstraction of properties ([1] – [2]). Then it becomes possible to abstract even the purely quantitative aspect of objects ([3]). Instead of defining the objects and their being through properties (qualities), the study of the being of quantity begins (“the ring” closes with [3’]). At the empirical stage of cognition ([3’] in Diagram 1), the categories being–quality–quantity seem to emerge secondarily,

²⁸ In the history of natural science, the transition to this new stage took place, for example, at the turn of the 19th–20th centuries (the discovery of the electron, radioactivity, etc.). See Kedrov, 1964b, p. 86.

they are now determined experimentally. First, the experimental qualitative side—property is studied (here the properties are already considered as relations of things)—then the quantitative side (quantitative properties are revealed) and the property–composition problem arises (Kedrov, 1960; 1965). Quality is determined through composition, the unity of quality and quantity (measure) [4], and the transition to the essence occurs²⁹ ([4] – [4’]).

The view that cognition moves from the phenomenon to the essence is often understood in our literature in a way that the phenomenon is *cognized* first, and then the essence. In our opinion, such a departure from Hegel (and Marx) in understanding the sequence of these categories is factually and logically unjustified.³⁰ Although cognition begins with phenomena, the latter cannot be cognized *as phenomena*, but are cognized *as immediate* being and its determinations. In the sphere of essence, as Hegel (1816) pointed out, everything is mediated. A phenomenon becomes a phenomenon only *in relation to essence*. And the first definition of essence—the essence of its immediate being—is appearance. The essence, determined through appearance, is revealed already at the empirical level of cognition (and conjectures arise already at the rational level), as we have seen ([3] – [3’] in Diagram 1).

Cognition (discovery) of the essence occurs at the theoretical level of cognition ([4] in Diagram 1). After the discovery of the essential aspects of the being of the essence ([4] – [4’]), we begin a comprehensive study of its manifestations ([5]), and its phenomena is found in the immediate being ([5’]) (Nikitichenko, 1964; Vakhtomin, 1963, pp. 127–173; Kedrov, 1964b, p. 46). (The diagram also shows that the essence does not pass into immediate being. Rather, it is mediated by the phenomenon). In the beginning, the manifestation of the essence is used to discover the essence itself, but now we proceed from the essence in order to discover its manifestation. To act otherwise is neither logically nor actually possible. The transition from the essence to the phenomenon corresponds to the achievement of the unity of theory and practice ([4’] in the first diagram, and practice already contains [1] – [2] – [2’] – [3’] at this stage). In this process ([5] – [5’]) the unity of essence and phenomenon ([6]) is revealed and a transition through their reality happens (here emerge the facts that are not covered by this

²⁹ See Kedrov, 1964; 1965 for a dialectical approach to the history of natural science from the perspective of applying the categories of quality and quantity.

³⁰ Nikitichenko’s article (1964), as well as Vakhtomin’s work (1963), specifically draw attention to the fact that it is the cognition of the essence that is the first one. Bogdanov (1962) uses the following sequence: appearance–phenomenon–essence and ascension from the abstract to the concrete.

essence and its manifestations) to an essence of a deeper order ([6']), and so on³¹. Accordingly, in Diagram 1—in the unity of theory and practice, what is not yet known is also clarified, new hypotheses emerge, etc. ([5]), and new empirical material is discovered ([5']). Transition of [6] in Diagram 1 corresponds to [6'] in Diagram 2; [6'] in Diagram 1 corresponds to [7] – [7'] in Diagram 2.

The being from which the transition to the essence of the second order takes place ([1] – [2] – [3] – [3'] – [4] – [5']) is not, strictly speaking, *immediate being*, but also contains cognized phenomena, although not of a given essence. But for a given essence, i.e., for an essence of the second order, *all* phenomena are not cognized, and therefore the transition to the essence of the second order nevertheless occurs from *immediate being*. As the history of natural science shows, the path to the disclosure of the essence of a higher order often occurs independently of the essence of the first order and begins before its disclosure (Kedrov, 1960). And only later, in the process of cognition of the manifestations of the deep essence, it turns out that it is a deeper essence of the essence of the first order. A first-order essence turns out to be a special case of a deeper-order essence. Manifestations of this deep essence are mediated (refracted) by the essence of the first order. (Kedrov, 1964a, pp. 14–21) (The principle of correspondence and the principle of micro-reduction are of great cognitive value; see Kuznetsov, 1948; Shvyrev, 1964).

In this transition of cognition from one stage/category to another, it is important to emphasize that we are dealing with dialectical and relative categories. The actual content of a category becomes clear only after exhausting all possibilities in one cycle and moving on to the next cycle (after clarifying the boundaries on both sides). Not all stage-categories are isolated from each other, and the proposed diagram is an image of a process of “functioning distillation.” For example, the actual content of the essence of the first order is clarified only after the transition to the essence of the second order, etc. It should also be borne in mind that each subsequent stage (as in the first and second diagram) is also a concretization of the development of the previous one (since development occurs according to the law of negation). This means that, for example, at the stage of essence, it acquires further definition and quality, and so on (the essence itself is also a certain quality, etc.).

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³¹ Extrapolation of laws plays an important role in clarification of a sphere of action of the essence of the phenomenon, see Asatryan, 1962

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