ATLANTIS PRESS

Advances in Economics, Business and Management Research, volume 82

International Conference on Management, Education Technology and Economics (ICMETE 2019)

Intuitive Knowledge and its Types

Alexander V. Bondarenko, Victor N. Bondarenko
Ufa State Petroleum Technological University
Ufa, Russia

Zinira F. Abrarova, Olga B. Mayatskaya, Zifa G. Ishembitova
Bashkir State University, Ufa, Russia
Ufa, Russia

***Abstract*—Intuitive cognition and transformation of reality is one of the insufficiently studied philosophical topics, in which the central place is occupied by the theoretical and methodological problems of studying intuition, as well as the question of the relationship between the scientific and artistic forms of it. Their consideration will contribute to a modern understanding of scientific and artistic creativity, identifying the place and role of intuition in it.**

Keywords—Non-logical cognition; Guesswork; Intuitive cognition; Intuition; Insight; Scientific intuition; Artistic intuition

I. INTRODUCTION

Scientific and artistic intuition, as the two most important forms of attitude towards the world and man, relate in their being in several ways, in which the ways of interaction between them are manifested. The correlation of scientific and artistic intuition can be traced to the similarity between them. Although, at first glance, it seems that scientific intuition and artistic intuition are very far from each other, but a more attentive approach to this problem allows us to reveal a number of essential common features between them [7].

American physiologist Walter Bradford Cannon in his article notes that, initially, the researchers rely during the discovery not only on the power of reason (by which they understand the process of discursive thinking), but also on the extralogical form of cognition (intuition), which manifests itself in the form of guesswork and insight [3]. After all, it was not for nothing that Albert Einstein pointed out: “If you are absolutely logical, you cannot discover anything” [8]. And here are the words of T. Wilder, directly related to the above-mentioned judgment: “Only by making a leap in uncertainty, do we feel our freedom” [8].

But, despite the hopes of scientists for the two above methods of obtaining information, the latter, i.e. intuition, does not always come to the aid of the researcher. This is confirmed by polls of scientists on this problem. Thus, 232 scientists stated that 33% of problem solving comes in the form of sudden guesses, 50% sometimes have flashes of “insight”, and 17% are even unaware of what it is. Such studies allow to get acquainted with the conditions that either favor or inhibit the process of intuitive knowledge.

The following factors are related to negative conditions: 1) mental and physical exhaustion, 2) irritation over trifles, noise, 3) household and monetary worries, 4) general depression, 5) strong emotional experiences, 6) as well as work under pressure, 7) forced breaks in work and even anxiety and fears associated with the expectation of such possible breaks.

The following factors are related to the favorable ones that stimulate the intuitive process of cognition: 1) interest in the topic, 2) a clear definition, 3) a strong desire to resolve the issue, 4) a large stock of accumulated information, 5) the facts should be organized, well systematized, 6) a feeling of freedom and well-being also belongs to positive factors, 7) reading and discussing with colleagues the articles on research and methods with the help of which the problem can be solved is another equally important factor [3].

In our opinion, the key condition for successful work of a scientist is the simultaneous rise of his spiritual and physical strength, i.e. so-called inspiration leading to brilliant practical results.

II. METHODOLOGY

The main general philosophical methods of work are dialectic, hermeneutic, synergistic and reflexive. The system, structural-functional and socio-cultural approaches are applied. General scientific methods are employed: analysis, synthesis, modeling, abstraction, idealization, comparison and generalization.

III. DISCUSSION

Here is a statement by the well-known Russian researcher of the problems of creativity N. Goncharenko, the author of the work “Inspiration and Intuition”, reflecting the essence of spiritual uplift: “Inspiration is the state when all the creative possibilities of a person are revealed with utmost power; all sources of energy are in full flow; mind, will, imagination, fantasy, as it were, rush in one direction, urging and stimulating each other. The pre-memory comes to life, the logic of thought and the magic of images intertwine intricately, unexpected visions arise, insights are born, and as if by the power of witchcraft all this is built into the words of a text that embodied the once premonition, conceived once, but now has become a reality striking with unintended perfection, the depth of ideas and the picturesque images of the author himself. ... These states deplete spiritual forces, but they give enlightenment ”[1].

During inspiration, "the influx of feelings is sometimes so fierce, the soul is eager to express itself with such energy that a person feels the powerlessness of words" [1]. During a spiritual ascent, “the work of intuition reaches such an unprecedented rise that it often becomes unconscious for a person in search, and as a result, the fruits of intuitive work sometimes turn out to be unexpected for him. Moreover, in such situations, some scientists and writers noted that the results obtained as a result of the search are in many ways superior to their potential and that the solution found simply defies any explanation.

Thus, for example, A. Blok said in “The Twelve”: “It is bigger than me and bigger than myself. This is the present ” [1]. “And, really,” Goncharov wrote, “a lot has appeared unconsciously; beside me, someone sat invisibly and told me what to write.” “I would say,” notes Graham Green, “that the main characters emerge from the depths of our subconscious: when we write, it controls creativity, helps us. And these heroes can take control of a book, pick it up from the hands of the author ...” [5]. “Someone dictates, and I write it down,” pointed out A. Schnittke [1]. And here is what Norman Mailer - a modern American writer – wrote about this: “For me, the creative process is always a mystery... There is something supernatural about when ideas are born in the process of work that I never thought of at first. ... I still do not know where all these images originated from in my imagination ”[1].

Interesting statements on the inspiration by Academician V. Vernadsky: “But there are other moments when you rush forward strongly and bravely, when you see, you understand everything that seemed previously incomprehensible and unattainable; then you feel some kind of living force in yourself, you clearly feel your connection with everything that was and lived before, that worked on the same path, you feel a clear, incomprehensible, inexpressible by words connection with what will work on the same path much later. .." [1].

But all this is impossible, if there is no main thing - love for the case being studied. Thus, Ampere noted, "... a person deprived of a certain love for science cannot succeed, since he is unable to make the right choice" [5]. Despite all this, the researcher in the process of scientific discovery is not exempt from heavy hard work, because "Any assumption, no matter where it comes from, must pass the strictest test and critical examination before it is admitted to the realm of truth" [3].

After all, “if there are no grounds (previous cogitative activity), a “ground” on which the “seed” of the clue should fall, then there will be no result” [2]. It is quite appropriate here to cite the following words of the distinguished composer I. Stravinsky: “An outsider imagines that creativity needs to wait for inspiration. This is a deep misconception. I am far from completely denying inspiration. On the contrary, inspiration is the driving force that is present in any human activity... But this force is driven by effort, and effort is work” [1].

The statements of famous scientists who have made themselves world-famous for their discoveries are the confirmation of the words about the great role of the intuitive moment in cognition. Venezuelan scientist Fernandez-Moran, known for his research in the field of electron microscopy, believes that scientific thinking has many forms, but "their common denominator is spontaneity and even irrational origin, because creative imagination cannot be explained and it is impossible to penetrate the secrets of intuition" [3]. But this is what the famous physicist Albert Einstein thinks about it: “Only intuition is in essence a true value ... This is a supreme, even supernatural gift, the only one capable of shedding light of truth on the innermost secrets of being, inaccessible to feelings wandering across the surface of things, nor the mind, bound by the disciplinary regulations of logic. This is an amazing power that easily and simply transports us across the gap that has developed between the condition of the task and its solution” [4].

IV. RESULTS

American mathematician M. Klein also notes the greater importance of intuition by the example of mathematical creativity, giving it a paramount place compared to logic: “If intuition is a master, and logic is just a servant, then this is the case when a servant has a certain power over his master. Logic restrains unbridled intuition. Although... intuition plays a major role in mathematics, yet by itself it can lead to overly general statements. Proper restrictions are set by logic. Intuition rejects all caution - logic teaches restraint. True, adherence to logic leads to long statements with many reservations and assumptions and usually requires a lot of theorems and proofs, step by step overcoming the distance that powerful intuition flips over in one leap. But to the aid of the intuition, which bravely seized the fortification located in front of the bridge, it is necessary to send out military guard, otherwise the enemy may surround the captured territory, forcing us to retreat to the initial positions”.

Some scientists say bluntly that mathematics is just as creative as painting, for example. The formation of a real artist includes such stages as: learning (i.e., mastering the classical academic writing technique), and based on the knowledge gained and the technique of painting pictures, the artist expresses his own vision of the world, i.e. this is the stage where he personally shows his talent on the canvas. During the first stage, the artist, who may already have his own original style, should still master the basics of an academic school: “Actually there is almost nothing creative in this technique - this is mainly a set of strict rules and regulations.” But, mastering only the technique, the artist will not be able to create anything worthwhile without investing his soul in this work. That is, he, of course, will be able to draw something beautifully using the obtained knowledge, but how to make this tree hook on the soul? Only a creative intuition, artistic genius help the artist to implement the plot conceived in his head so that the picture takes on life”.

Future mathematicians also need to initially acquire knowledge in their field, i.e. to study laws, theorems, axioms... In addition, it is necessary not only to obtain knowledge, but also to learn how to apply it correctly. But in order to create something new, in order to solve a non-standard task, we need the help of creative intuition. After all, from a large number of laws and theorems it is necessary to choose those that work - will serve as the key to solving the problem, and now this is a matter of mathematical genius, as already mentioned, creative intuition.

Researcher Yu. Semenov indicates that "classical "pure" mathematics cannot be reduced to logic ...".

In general, we note that in mathematics, the intuitive moment “helps to comprehend the connection between the whole and the parts,” far ahead of logical reasoning. The main function of logic is to analyze the finished evidence, as well as to divide it into separate elements and groups of such elements. Intuition, in turn, carries out the synthesis of elements into a single whole, and also, which is important, from individual parts into much larger blocks.

According to A. Litvinova: "Attempts of machine modeling of human activity are secondary to the intuitive activity of man, based on the synthesis of parts and the whole".

Thus, the comprehension of mathematical proofs and reasoning cannot be attributed only to logical analysis, because such an important point is also necessary - as a synthesis based on intellectual intuition.

A significant role in determining the place of intuition in mathematics belongs to the so-called intuitionism, the founder of which is considered to be a Dutch mathematician, logician, science methodologist L. E. J. Brouwer (1881–1966), and further development of this was found in the works of the German scientist G. Weil and the Dutch scientist A. Geyting.

The significance of intuitionism lies in the fact that it had a great influence on: a) maintaining a constant interest in the problem of intuitive thinking in a mathematical environment; b) served as a kind of catalyst in the study of the phenomenon of intuition; c) significant examples of obtaining mathematical results of fundamental importance on an intuitive basis were developed.

Next, we shall present the key areas in which intuitionism has made a significant contribution to the development of the theory of mathematical intuition:

- Development of mathematical intuition in its relationship with the most significant methodological installations of intuitionism. As well as Kant and Schopenhauer, Brouwer noted the importance of supralogical (apodictic) intuition in mathematics. Moreover, the substantiation of mathematics by Brouwer was based on the praxeological intuition of numbers that does not have anything in common with empirical intuition, but which has the utmost certainty.

- The large role of intuitionism can be traced in the development of ideological and methodological aspects of the problem of intuition in mathematical knowledge in general.

- The views and ideas of intuitionism are further developed and spread, they are increasingly turned to when analyzing the judgments of famous philosophers. If we turn to the phenomenological description of Husserl, the idea of a sequence that is central to the concept of number is an essential feature of the intuition process.

- The concept of intuitionism had a great influence on the formation of the methodological guidelines of many prominent scientists.

- The Brouwer interpretation of the concept of intuition contributed to the emergence of Popperian "epistemology without a knowing subject," based on the concept of a “third world”.

- The concept of Brouwer strongly influenced psychological theories about intuition.

V. Conclusion

Thus, after analyzing the statements of famous scientists and artists, one can say that intuition played a large role in their creative processes. Intuition, as one of the highest methods of human cognition, which removes sensory and rational levels by itself, is also manifested in the process of transforming reality as such a method. Thus, it carries in itself a direct and integral comprehension and assimilation of reality.

Scientific and artistic intuition have basically the same positive and negative factors of their formation and development. The following dominate among them: unconscious spontaneous processes and sleep; inspiration; hard work effort; the creative potential of carriers of intuition and their genetic predisposition to it.

The decisive role of intuition is clearly visible both in scientific and artistic creativity, which is determined to a decisive degree by its place in science and art.

In scientific and artistic intuition, rational and irrational moments are very differently related: in scientific discoveries the rational component is often dominant, and in the achievements of art - the irrational.

Scientific intuition in most cases acts as a peculiar form of intellectual intuition, and artistic intuition - sensual intuition. In scientific intuition, the choice of initial postulates and axioms occupies a special place, and in artistic creativity, artistic intuition dominates all the main stages of its development.

The role of scientific intuition is great in the choice of new research methods by scientists, as well as in the direct generation of scientific truth. If scientific intuition moves mainly from the individual to the general, then the reverse process is inherent in artistic.

In modern scientific discoveries, intuition is often dominated by the contribution made by the collective, the community of scientists, and the personal contribution of an art representative to artistic creation.

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