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FACING THE MYSTERY: A PHILOSOPHICAL APPROACH¹

V. V. NALIMOV
BIOLOGY DEPARTMENT
MOSCOW STATE UNIVERSITY
MOSCOW, RUSSIA

Nalimov Vassilii Vassiliyevich, b. 1910, November 4.

Specialty: Applied probabilistically oriented mathematics and philosophy, Dr. of Technology and Professor of Mathematical Statistics and Theory of Probability.

Father--Nalimov Vassilii Petrovich, an ethnographer and anthropologist, Ugro-Finnish by birth, Professor, died in a prison of GULAG in 1938.

Mother--Nalimova Nadezhda Ivanovna, a surgeon (one of the first women-graduates of High medical school), was mobilized to the Red Army in the Civil War, and died working as a physician in a military hospital in the typhus epidemic in 1919.

In 1929-31--V. V. Nalimov a student of the Mathematical Department of Moscow University, which he did not finish due to the moral and political conflict with Komsomol Organization of the Department. From 1931 to 1936 he worked first in the All-Union Electrotechnical Institute, then in the Institute of Control and Measuring Devices, studying the problems related to photoelectrical effect. The first paper was published in Germany in 1933.

On October 31, 1936, Nalimov was arrested and sentenced to five years imprisonment in GULAG which transformed into almost 18 years of repressed status.

After hard work at wood-cutting and gold-fields, in autumn, 1941, he was fortunate to get to the laboratory of the metallurgical plant, and in 1943 was appointed chief of the laboratory under a conditional discharge.

In 1949--arrested for the second time, Nalimov was sentenced to exile for life in Kazakhstan, where he worked again at the laboratory of the metallurgical plant.

In 1954 Nalimov was released after Stalin's death.

In 1959, in the Institute of Rare Metals, he organized one of the first mathematical groups in our country that was engaged in processing experimental data using computers.

In 1965 academician A. N. Kolmogorov organized in Moscow University the Interfaculty Laboratory of Statistical Methods, and invited Nalimov as his assistant director.

In 1975 Kolmogorov's laboratory was dismantled, and Nalimov became the head of the Laboratory of Mathematical Theory of Experiment in the Biological Department of Moscow University.

¹Prepared for the Russian Philosophic Dictionary soon to be published in Moscow.
(*Editor*)

He still belongs to the staff of the University, occupying the position of a scientist-in-chief.

His main aspiration and striving is an attempt to elaborate a philosophical background of a probabilistically oriented world outlook. Most important outcome of the work he thinks to be:

1. Creation of a national school of mathematical methods of experimental design.
2. Formulation of the conception of Scientometrics, including the coining of the very term.
3. Elaboration of probabilistically oriented model of language, consciousness and evolution viewed as a self-organization process.
4. Critical analysis of the situation in modern science.
5. Elaboration of philosophical approach to the problems of global ecology.
6. Elaboration of the integrated world outlook based on Plato's philosophy (as an attempt to return to the philosophical classics). Formulating the premises for the mathematical model of consciousness. Constructing the probabilistic logic, exempted from the law of the excluded middle. The model is justified by its heuristic power. Here Nalimov appears to be close to the school of intuitionistic mathematics (particularly L. E. J. Brouwer) which favors intuitive constructions.
7. Raising the problem of "scientific" in science to show that modern science fails to meet the requirements to be "scientific" as it was formulated in the past.

Principal positions by Nalimov are:

1. Philosophy has to be developed in close relationship with science. Most ideas with philosophical background come from such fields of science as mathematics, physics, cosmogony, biology and non-traditional psychology.
2. At the same time there should be preserved the connection with classical thought rooted in ancient Greek and Eastern conceptions of man and Universe.
3. Philosophical conception should be based on axioms (premises).
4. It is natural to apply to mathematical constructions, as human consciousness is provided with the ability to contact the world through mathematical forms and categories such as space (with a variety of geometries), time (according to the present conceptions), number (which nature is non-material), probability, and attached to it--spontaneity and freedom.
5. There is a Mystery in the Universe--unfolding our knowledge; we do not destroy it but expand and deepen its image. After all, science is exposing but an elaborated Un-knowledge, which looks now much more serious than it was in past times.

Nalimov thinks his main achievement is the elaboration of a probabilistically oriented theory of consciousness--an axiomatic system, based on the formula by Bayes, previously used only in mathematical statistics (see Spontaneity of Consciousness). Premises to the point are the following:

- (1) All potential meanings of the world are primordially given (same way as fundamental constants are given in the physical world).
- (2) All meanings are initially correlated with the linear continuum of Cantor (otherwise, the meanings of the world are compressed the way numbers on the real axis μ are).
- (3) Compressed meanings represent the unpacked (unmanifested) World--semantic vacuum.
- (4) Unpacking (emergence of texts) is realized through probabilistic weighing of the axis μ --different measures are ascribed to its different intervals (the metric of the scale μ is assumed to be initially given and remaining unaltered).
- (5) Any change in the text--its evolution--is linked with a spontaneous emergence in a situation y of the filter $\rho(y/\mu)$ that interacts multiplicatively with the initial function $\rho(\mu)$. The interaction is given by the well-known formula by Bayes:

$$\rho(\mu/y) = \kappa\rho(\mu)\rho(y/\mu)$$

where the distribution function $\rho(\mu/y)$ determines the semantics of a new text emerging after the evolutionary impetus y ; κ is a normalizing constant. In our case the Bayesian formula acts as a syllogism: from the two premises $\rho(\mu)$ and $\rho(y/\mu)$ necessarily follows a text with new semantics $\rho(\mu/y)$. In Bayesian syllogism, in contrast to the categorical syllogism by Aristotle, both the premises and the corollary are not atomic but probabilistically fuzzy, and at least the second premise is of a conditional (conditioned by the situation y) character, but not a categorical one.

Bayesian formula (theorem) is traditionally used for calculus of a posteriori events through a priori probabilities. Nalimov generalized it, ascribing new logical meaning to the statistical formula. Now it is possible to speak of syllogism by Bayes-Nalimov and consequently of a new logic.

Bayesian logic, applied to working out the problem of consciousness and culture, allows:

- (a) to comprehend and evaluate word polymorphism of ordinary (everyday) language; it is due to semantic polymorphism we are free from the consequences of Gödel's theorem while narrating something;
- (b) to explain varieties of text comprehension (just to name the history of Christianity's abundance of ideological conflicts);
- (c) to describe the emergence of texts;
- (d) to grasp such hard notions as nirvana, freedom, spontaneity, triunity of time (according to Heidegger), etc.;
- (e) to view the human Ego as a specific--self-interpreting text;
- (f) to introduce the notion of multi-dimensional personality (each of us is at least two-dimensional due to permanent inner dialog);
- (g) to show that multidimensionality yields to both creativity and pathology;
- (h) to introduce a notion of hyperpersonality--a transpersonal structure, not localized in a single body;
- (i) to analyze the problem of transcendency--going beyond the limits of personal consciousness;
- (j) to make a semantic account of biological evolutionism;
- (k) to accept the idea of ubiquity of at least weak forms of consciousness.

Thus we can state that such semantic manifestation as space, time, number, probability, spontaneity, are inherent in the Universe and independent of the presence of the observer.

Geometrization of semantic manifestation promises the hope of bridging between consciousness and physical reality through super-unified field theory.

The elaborated conception allows raising a question of the meaning of the Universe. The answer may be worded this way:

Meaning (purpose) of the Universe is in unfolding of all the potentialities initially given (imparted) to the World. The purpose of a human life (being) is to partake in this process. Our historical misfortunes are no more than experiential faults inevitable in the evolutionary process.

It is noteworthy to mention that intellectual and scientific independence of Nalimov was supported by academician Kolmogorov who endowed him with the right to be a free thinker in science: "Nalimov is a scientist of such a rank who may do what he wants." Nalimov thinks that during his upbringing in the '20s-'30s, when interested in science, he also was keen on the ideas of religious and philosophical movement of mystical anarchism. Esoteric education under their guidance lasted for about 10 years and was interrupted by the arrest.

He describes this in his memorial book, Rope-Dancer, which is planned to be out by the end of 1994 in Russian. Some chapters were published in the philosophical journal Put' (Pathway), 1993, No. 3.

The works by Nalimov, especially recent ones, are quite complicated due to their interdisciplinary character. He is sure that most troubles of modern situation are rooted in the alienation from the Culture, which is not experienced as an integrated wholeness but fragmentarily. (He wrote on the topic in the journal of higher education, Alma Mater, 1993, No. 2.) His contemplation has resulted in the conclusion of the necessity to educate first culture vultures, conscious of human function in the Universe, and then --specialists in different branches of science and technology.

V. V. Nalimov assumes that philosophy nowadays should challenge over-technologization of Culture and release it from decrepit mechanistical conceptions.

Most books by Nalimov are published abroad. Three of them were out only abroad, not licensed for publication in Russia (before *perestroyka*).

PUBLICATIONS BY PROFESSOR V. V. NALIMOV IN ENGLISH AND GERMAN

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6. Space, time, and life: The probabilistic pathways of evolution. Philadelphia, PA: ISI Press, 1985, 110 pp. Not published in Russian.

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2. Nalimov, V. V., & Mul'chenko, Z. M. Measurement of science: Study of the development of science as information process. Washington, DC: Translation Division, Foreign Technology Division, United States Air Force Systems Command, 13 October, 1971, 146 pp. In Russian: Наукометрия. Moscow: Nauka, 1969, 192 pp. The book was also issued in Poland, 1971, and in Hungary, 1980.