

B.J. Zhusupova

*Ye.A. Buketov Karaganda State University, Kazakhstan  
(E-mail: zhusupova2013@mail.ru)*

## Human's fractal

The relevance of the problem posed in this article is caused by the necessity to understand the essence of human in the situation of contemporary. And it is not just a cognitive issue. This is a guide to action, to solve the global problems of modern society, in which we find unknown trends. As it known, the problem of human was put in the early stages of philosophy and it is still being as a huge philosophical problem. The main reason of it is a indeterminacy of human nature, the paradoxes of human existence, the mystery of the human spirit; his non-linear, synergistic entity. Actual scientific world has came to the next paradox: expanding the area of its activity, science, despite using new instruments and methods, still can't exactly describe complex social phenomena, which certain include human's nature. The author proposes a new approach, a new method of the study of human — a fractal one, which is more relevant for the exploring. Fractal paradigm opposites to the classical linear system and it reflects the modern image of a human more accurately. The article proves the necessity to change actual paradigm of human research.

*Keywords:* cognitive, scientific, social, fractal, paradigm, synergetics, reductionism, postmodernism, heterology, human.

There is widely used the notion «fractal» to describe modern society in the social philosophy of post-modernism. This is a relatively new concept entered science in the 70s of the last century and was quickly spread to various spheres of scientific and non-scientific knowledge. For instance, numerous manifestations of fractal phenomena were found in plastic (spatial) forms of art such as fine art, music, architecture. Nowadays they are used knowingly and become relevant and in demand, while endowed with magical characteristics (such as installation art which are widely used by surrealists).

The etymology of the notion «fractal» came from Latin word «frangere» or «fractus» which means to wreck, break into pieces, divisional, broken and the literal meaning is a broken geometrical form or a geometric figure composed of several parts, each of them is like the whole figure, i.e. consisting of their own small copies. Thus, this geometrical form or figure has the property of self-similarity.

The founder of this theory is American mathematician B. Mandelbrot (1924–2010) who tried to measure the exact length of the England coastline and found out its indeterminate length since it is infinitely divisible. In order to determine the length accurately, it is necessary to measure every part including the crumbling ends of the Earth and shaggy moss on it, which ultimately gives infinite and indefinite length. It turned out that the whole shaggy coastline is composed of many of the same shaggy pieces. In other words, if classical science involved in the linear (ideal) objects, then non-classical science studied fractals (non-linear structures which are not linear at the low level, therefore they are internally infinite).

Thus, the fractal is self-similar, that is, consists of a small copies of itself and it is of a great scientific and philosophical interest. While trying to divide the fractal portion (of any size), we get a small copy of the initial form. Russian philosopher Mikhail Epstein wrote: «Answering the question «What does the cloud consist of?» the fractal theory says it consists of the smaller clouds, which in turn consist of even smaller clouds. Moreover, what does the flame consists of? The answer is it consists of the smaller flames, which are sharing and decreasing within themselves, but still blaze and suck out flame tip. As it is shown by a modern science, rocky coast, mountain chain, fluctuating flame, sea waves, clouds, snowflake, and a colony of mold are all fractal. Fractal is a self-similar dynamics reproduced at different levels of its division or multiplication. By looking at the pattern of wiry leaf, we can find that every single vein in it splits the same as the leaf itself, and the most delicate veins also fall under the same laws and form the same pattern. Fractal retains its structure repeating in each of its parts and in the parts of these parts, and changing the scale. It's not a mathematical fantasy; this is the only reliable way to describe the complex phenomena of our world (rough, winding, uneven, devoid of the ideal smoothness, which is attributed to the pre-fractal science)» [1; 25]. Hence, it follows the well-known paraphrase that a drop of water reflects the entire world.

Fractal principle is not an exception for humanitarian (including philosophical) knowledge, because the whole world around us consists of many small, tiny little world, which once again confirms the obvious idea of the unity of the diversity, idea of microcosm first suggested by the ancient philosophers. In philosophical

knowledge which postmodernists calls «philosophical discourse», the idea of fractal received the greatest relevance and viability. There is a geometric metaphor of the pyramid of life, which is composed of many small pyramids. In social philosophy society is often viewed as a large family (Confucius), a living organism (Al-Farabi), a manual car (La Mettrie), tree, roots, i.e. by analogy with the multiple elements that implicitly or explicitly by all means present therein.

Any notion has the fractal sign. For instance, in concepts of «heart» and «mind» each of them separately has the element of each other (both smart heart and mind because only like that they represent the system. Abai Qunanbaiuli wrote about this in «Book of Word».

One of striking example of a fractal is a human being. Human life is the most non-linear system from all existing systems and this is due to the presence of the spirit of liberty, freedom and unpredictability choice of thoughts, desires, and actions. Nowadays there are hot topics and open questions in the philosophy of existentialism, anthropology and postmodernism such as «What is the extent of the freedom?» and «What is the degree of skill of its usage?». By the way, Aristotle identified that human oddity has the ability to move, think and speak; people do not know how to use a priori and these skills have to be developed which makes physical training logic and rhetoric are necessary.

There is no direct linear correspondence between the age of the human soul and his biological age. This is clearly and definitely reflected in the age structure. The article of the famous Russian philosopher and cult urologist Michael Epstein «The age of philosophy» says, «If there can be a prolonged spring with frost and cold winds which are not turning into summer, so there can be a prolonged childhood... In every moment of life, man consists of all of his ages, just as every age goes through all other ages and contains them in itself. This is the fractal structure of human's personality, which responds to the fractal structure of the world creation and may fatefully respond to it by itself. Old age also has both childhood and maturity. Yet old age has anility» [1; 27].

Moreover, a person who is acting with the measure of the exact age and deprived of evidence of other ages is an inhuman. «He «wears» his age like a suitable suit under which there is not a living body, but just a plastic doll. One-aged man is a wax work exhibited in the Museum of the imaginary human age» [1; 28]. A person is interesting and natural when he 'carries' all ages at the same time; when there are the signs of adulthood and wisdom in the childhood, the adolescence and when there are still childishness, spontaneity and openness in the adulthood.

It is no coincidence that in social cognition appeared the concept of «ontogenesis» and «phylogenesis», which mutually penetrate each other and represent the inseparable unity of ambivalence. Thus the evolutionary development of mankind is considered by analogy with the evolution of the organism (hence, the ancient world is often called the childhood of mankind) and individual development of the organism is assimilated to the process of development of all mankind.

Fractal person manifests in everything: in its biological, physiological, mental, energetic, spiritual, and social structure. Therefore, there is the formula that declares there is whole person in each particle of human, and vice versa. Just as it is difficult to cognize a human, so it is hard to understand its components.

Fractal does not fall for linear development. Science explains the dynamics of the self-similarity of fractal, but cannot explain how the principles of self-organization. That is why man as a fractal is a complex self-organizing system. In this sense, fractal is a transitional, quasistable, potential state of a system, which has the characteristic of chaotic state and instability and gradually moves and evolves to a stable and regulated whole. It's probably similar to Hegel's pure being that in reality does not exist, but it already exists as a premise of real being which is still not steady but is already germinating. But Hegel's self-development process is strictly according to the law of Absolute Idea whereas fractal assumes chaotic self-development without the mystic. Hence the concept of a fractal is central to the synergetics (science about chaos and order of the transients, the evolution of complex and discovered non-equilibrium systems).

Our human intelligence is static; we perceive things around us as «instant photograph», as granted thing, rather than as a process of perpetual change. Stable immutable things is the extreme state of fractal. Moreover, almost all in nature consists of transitions from one state to another and the processes. This is one of the first thing Heraclitus understood by saying that «everything flows» (PantaRhei) and «you can not step twice into the same river». Thus fractal concept should be a new methodology of any knowledge and primarily philosophical one when not only laser processes, chemical reactions but also a human, society, language and thought are fractals. It is time to declare fractal philosophy, one option of which is synergetics. In today's chaotic synergetics has become the most demanded one. It becomes a scientific basis for the development of futuristic predictions of social development in the condition of high instability, uncertainty, incon-

sistency and chaos. The instability of social development exacerbated in XX–XXI centuries when so seemed small and insignificant actions of individual people started to lead to catastrophic consequences for society (especially in the field of inter-ethnic and inter-religious relations).

A major role for the development of the theory of evolving systems (which the synergetics with its concept of fractal is related to) had philosophical and pre-philosophical ideas of universality, self-similarity and the similarity of things to each other, the unity of diversity, non-equilibrium being, spirit being, and other notions of self-organization. The idea of universality was expressed by Laozi in ancient Chinese philosophy and by Heraclitus in Greek one, which also later was developed by Hegel, Darwin, Marx and many others. The idea of similarity of all things which had the common seeds of homoeomerics was suggested by Anaxagoras (in everything there is a share of everything) and by Leibniz in the doctrine of monads. The idea of the unity of harmony and disharmony in the things that is being understood as disequilibrium was the Pythagoreans in the theory of irrational numbers. Philosophers and religious idealists of the West and East developed the idea of a spiritual foundation of being.

About chaos and orderliness in the development of the world talked of Lao Tzu, Confucius, Heraclitus, Parmenides, Hegel in his teaching «Nothin», Schopenhauer, Nietzsche, existentialists, and many others. Laozi declares non-action principle, following the Tao — the natural course of things. Buddha calls to the middle («Middle way»), warning about a danger of absolutism of everything and the danger of falling into extremes. The philosophy of inner stillness was known in the mystical teachings of Hesychasm in the Russian Orthodox philosophy. About vectorial changes in the evolution of life (hence the schematic description in development), about goal-setting in world development were expressed by Aristotle, scholastics, Renaissance philosophers Fichte, Hegel, Marx, N. Fedorov, V. Solovjov, V. Vernadsky.

If in process of evolution, self-organization of the system (to which man certainly belongs) to identify the main stages of development, they will be 3: the beginning, middle stage and the end. The fractal will be precisely the middle stage, the primary phase of development as an unstable, transient process.

Man as a fractal is the process, hence his elusiveness, uncertainty, incompleteness, problematical character. If, for example, the nature and evolution of the animal at the time of birth can be set with a certain accuracy, the man is unpredictable and to determine what his essence is and what his future is impossible. Existentialism is based on this, claiming that the existence of man precedes his essence.

Starting with Heidegger, receives the relevance of the consideration of the «mystery» of human nature, as the mystery is not as a particular objective essence, but as vague «background», which allows to see entity. The man is standing in the lumen of being.

In the XX century, the world finally loses quality of solidity, becomes mosaic, it is increasingly difficult to man to associate himself with a certain, stable system of external circumstances. Max Scheler the founder of philosophical anthropology (1874–1928) wrote: «In our ten-thousand year history, we are the first time period in which the human being has become fully and totally «problematic»; the first time period in which the human being no longer knows who he or she is, but also does not know that he or she does not know» [2; 132]. Such mosaic of human existence certainly explains rapid fits and starts of scientific and technological revolution, in fantastically short period of time radically changing both scientific and social space around the man. Farther and farther we are retiring from book culture, which appeals to the orderliness, to the definiteness of human existence, in which the man is closed again, encrypted, undefined, ambiguous, multifaceted (try to decipher the sign, symbol). The depth and truth of the real human communication have been lost behind variety and diversity of the supernova of mobile communication, which served as a means of recognition, identification by man himself and other for himself for a long time. But what is it? The whim of the scientific time or the man's cherished desire to escape from reality, which He has tried to conquer for a long time, but has not found a way to do this? Maybe the virtual world is another trick of the universe, the illusion of freedom, peace, happiness, empty hope to find genuine yourself, your identity? Or maybe the man does not need identity? Freedom? And is it another phantom? Alternatively, maybe it is Fromm's escape from freedom. Questions are always open-ended.

The man tries to give the meaning to everything, a human meaning. According to Camus, a person is a problem for himself when asks a question about the meaning of his own existence, the boundaries of his existence, about the differences between of his own kind, of all living beings [3; 156]. On the one hand, problematizing basics of his own life, the man really becomes a human being. The Socratic «know thyself» is not an appeal to solution of some, though a difficult task, that is having the answer at the end of the book, it is the setting to asking this question permanently, on keeping it in the horizon of throughout life. On the other hand, Camus believes that is the reason the human discord with the world, which occurs when he tries to find

meaning in the world, to humanize it. Whereas the world is meaningless. Hence, the depression, anxiety, fear and in the end is absurd. There is an abyss between world and the man.

Absurd occurs because of people's desire to make the world understandable, specific, studied, and rational. People distinguish themselves from the world — that is the problem. They rebel and riot — is the clash with ignorance, it is opposition of the absurd. When hope fades, absurd goes away, appears the absurd man, which rebels against the very certainty. The uncertainty of the man is reflected in the society. So, Jean Baudrillard calls the modern society with its values which based on the «principle of uncertainty» [4; 19]. In such a situation, which J. Habermas calls «post-metaphysical pluralism», the formation of any moral and ethical values becomes difficult [5; 31]. It becomes clear relevance of axiological uncertainty aspects.

The problem of uncertainty, moreover, is revealed through communication with such relevant areas of human knowledge, as a prediction and prognostics. Uncertainty finds out itself in clearest way in a probabilistic model of future, openness of which often creates a state of existential terror, «Future Shock» (Alvin Toffler) [6; 203]. Furthermore, many believe that now a culture and civilization are in a critical state, near critical points of development. The uncertainty in these points is maximum, which gives the problem a special urgency. It is possible to highlight the uncertainty relationship with the phenomenon of marginality, because an ambiguous existential status of a person is largely a consequence of this phenomenon. Finally, one of the most pressing problems — is the problem of correlation in human existence of uncertainty with freedom and necessity. Precisely the ability to determine own existence is the first indicator of freedom in all currently existing ambiguous interpretations of freedom. The uncertainty is that arises during the implementation of existential possibilities, plays an ambiguous role.

On the one hand, it significantly is able to distort the very image of life, and on the other, if there was not uncertainty, manifested in the existence of man in the form of probability, «fan» of possible ways, of which the choice is carried out, there would be no freedom.

Principle of uncertainty in social cognition, regardless of its status (ontological or epistemological) indicates the complexity of social cognition, which is trying to reflect the specific object and subject of study, society and the man in society, undoubtedly are representing dissipative systems, taking advantage of synergetic terminology, i.e. non-equilibrium and open, complex fractal systems.

Acceleration in the rates of social development, globalization, intensification of social interactions, social contradictions and the conflicts makes more complicate to adequately explain complexity and an originality of the modern world, put traditions and the directions of uncertainty, even insolubility in the field of social philosophy. Moreover, similar traditions become not only components and consequence of the listed tendencies, but for comprehension and resolution of crisis of world outlook are methodological basis. In addition, the knowledge of the person and society in the light of this perspective, a way of further development of the society, and extent of possible regulation of the processes proceeding in him, production of the conceptual bases of social knowledge are timely and objectively caused. At first sight, the principle of uncertainty involuntarily rests against a problem of determinacy or an indeterminacy of social development that does social knowledge possible or impossible in general. However, if to use a linear paradigm of social research, the similar dilemma rises. If to apply other research paradigms, for example, post-modernist «rhizomorph» in which there is no aligning principle and a uniform code, or scientific synergetic then uncertainty in social knowledge as well as of social development accurately appears as their indispensable attribute, at the same time without calling in question and the more so without rejecting importance and a possibility of social sciences. And it is not the next smart paradox of human knowledge, but the instruction on specifics of object and a subject of social knowledge — society and its carrier of the person which comprehension of essence, and also existence of which hasn't reached not only the logical conclusion how many has acquired the bigger uncertainty is explicitly present in modern era. It more convinces us of fractal of the man.

The man as a fractal is incomplete, he in eternal process of search, formation. From there is the fact that the man «pulled out» from own life. He lives in the accelerating time or past, grieving about him and calling him often «kind», or future, laying on him great optimistic hopes. He does not live here and now. He is going to live all the time. Therefore, the end perceives as surprise.

Fractal of the man is obvious, doesn't raise any doubts, and the synergetic type of thinking is necessary. What means to think synergetic? Synergetic thought by the one who understands that: 1. existence — are not finished universe designs and a network of fractals — self-organization processes; 2. any difficult system is open for the outside world; 3. each system aspires to an attractor (stability); 4. Evolution is subordinated to the main parameters of an order. Synergetic is thought by the one who thinks in dialogue, a

polylog; who thinks by means of soft (flexible) thought forms; who remembers eternal becoming, but doesn't forget that «all in one».

The fractal image of the world has led to emergence of the philosophy of complexity and science about complexity. The so-called «science of complexity» in the West has arisen and develops in recent years. It did not become still rather strict discipline, and represents meeting of techniques, metaphors, intellectual receptions and philosophical views of modeling and studying of difficult systems. The central moment in this complex is need to predict behavior of the systems, which are not giving in to the exact description and modeling — for example, economic, social, natural. The concept «world picture» inherent in classical philosophy generates the concept «movie of the world» as live process of change of scenery. From the last non-standard attempts to overcome crisis of knowledge can be identified:

- 1) the science about complexity which has left synergetics;
- 2) the spiritual science connected with search of synthesis of science and religion;
- 3) refusal of the principle of a reduction;
- 4) refusal of a linear classical social paradigm.

An infinite variety, incompleteness, uncertainty are characteristic to complexity. Even between live and lifeless the side is erased. It is the world not become, and the world of eternal becoming.

### References

- 1 *Эпштейн М.* К философии возраста // Звезда. — 2006. — № 4. — С. 25–28.
- 2 *Шелер М.* Человек и история // THESIS. — 1993. — № 3. — С. 132–154.
- 3 *Камю А.* Размышления о гильотине. — Харьков: Фолио, 1998. — 864 с.
- 4 *Бодрийяр Ж.* Система вещей. — М.: Рудомино, 1999. — 224 с.
- 5 *Хабермас Ю.* Будущее человеческой природы. — М.: Весь Мир, 2002. — 144 с.
- 6 *Тоффлер Э.* Шок будущего. — М.: АСТ, 2002. — 557 с.

Б.Ж. Жүсіпова

### Адам фракталдылығы

Мақалада қойылып отырған мәселенің өзектілігі қазіргі заманғы жаңа ахуалда адам мәнін түсіну қажеттілігінен туындап отыр. Және бұл тек когнитивті сұрақ емес. Бұл бізге белгісіз тенденциялар байқалатын қазіргі заманғы қоғамның жаһандық мәселесін шешуге, әрекеттер жасауға деген басшылық. Белгілі болғандай, адам мәселесі философиялық ойлардың дамуының ертедегі кезеңдерінде қойылған және осы уақытқа дейін күрделі ашық түрдегі философиялық мәселе болып отыр. Бұл адамзат мәнінің ерекшелігіне, адамзат рухының құпия екендігіне, ерекше қозғалыстағы ұйымдасуына, адам тіршілігінің парадоксына байланысты, яғни сызықтық емес, синергетикалық және тіпті адамның айқынсыздығын дәлелдеп отыр. Қазіргі заманғы ғылыми әлем мынадай парадоксқа бетпе бет келіп отыр: өзінің қызметінің саласын кеңейте отырып, фундаменталды зерттеу нәтижелеріне ие болып, күрделі есептеулерді есепке алу арқылы, жетілген жаңа ғылыми аппаратураны пайдаланып, танымның жаңа әдіснамасын пайдаланып, ол сонымен бірге өте маңызды және күрделі феномендерді айқынсыз түрде сипаттап береді, оның ішіне сөзсіз адам кіреді. Автор адамды зерттеудің жаңа әдісін, жаңа тәсілін ұсынады – фракталды, яғни адамның күрделі, тепе-тең емес мәнін көрсетеді. Фракталды парадигма классикалық-сызықтық парадигмаға қарама қарсы және адамның жаңа заманғы бейнесін дәл бейнелейді. Еңбекте адам мен қоғамды зерттеудің парадигмаларын ауыстыру қажеттілігі туралы тұжырым жасалды.

*Кілт сөздер:* когнитивтік, ғылыми, әлеуметтік, фракталдық, парадигма, синергетика, редукционизм, постмодернизм, гетерология, адам.

Б.Ж. Жусупова

**Фрактальность человека**

Актуальность проблемы, поставленной в статье, вызвана необходимостью понять сущность человека в новейшей ситуации современности. И это не просто когнитивный вопрос. Это руководство к действию, к решению глобальных проблем современного общества, в котором обнаруживаются неведомые нам тенденции. Как известно, проблема человека поставлена еще на ранних этапах развития философской мысли и до сих пор является сложнейшей открытой философской проблемой. А обусловлено это неуловимостью человеческой сущности, парадоксами человеческого существования, движимыми особой организацией, тайной человеческого духа, что доказывает нелинейность, синергетичность и даже неопределенность человека. Современный научный мир пришел к следующему парадоксу: расширяя области своей деятельности, имея фундаментальные результаты исследования, оперируя сложными вычислениями, пользуясь новой научной аппаратурой, новой методологией познания, современная наука вместе с тем все неопределенней описывает очень важные и сложные феномены, в число которых, безусловно, входит человек, все менее точна в социальных прогнозах. Автор предлагает новый метод, новый подход к изучению человека — фрактальный, который подчеркивает сложную, неравновесную сущность человека. Фрактальная парадигма противостоит классической — линейной и точнее отражает современный облик человека. В работе делается вывод о необходимости смены парадигм изучения человека и общества.

*Ключевые слова:* когнитивный, научный, социальный, фрактальный, парадигма, синергетика, редукционизм, постмодернизм, гетерология, человек.

## References

- 1 Epshteyn M. *Zvezda*, 2006, 4, p. 25–28.
- 2 Sheler M. *THESIS*, 1993, 3, p. 132–154.
- 3 Camus A. *Reflections about a guillotine*, Kharkov: Folio, 1998, 864 p.
- 4 Bodriyyar Zh. *System of things*, Moscow: Rudomino, 1999, 224 p.
- 5 Habermas Yu. *Future of human nature*, Moscow: Ves mir, 2002, 144 p.
- 6 Toffler E. *Future shock*, Moscow: AST, 2002, 557 p.