

The Essence of Risk and Features of Risk Situation

Nikolay N. Gubanov

National Research University
Bauman Moscow State Technical University (BMSTU)
5/1, 2nd Baumanskaya Street, Moscow, Russia 105 005
E-mail: gubanovnn@mail.ru

Nikolay I. Gubanov

Tymen State Medical University (TymSMU)
Odesskaya str., 54, Tymen, Russian Federation 625 023
E-mail: gubanov48@mail.ru

Ekaterina Shorikova

Tymen State Medical University (TymSMU)
Odesskaya str., 54, Tymen, Russian Federation 625 023
E-mail: gubanov48@mail.ru

Boris Zemtsov

National Research University
Bauman Moscow State Technical University (BMSTU)
5/1, 2nd Baumanskaya Street, Moscow, Russia 105 005
E-mail: zemtsovbn@mail.ru

Abstract—The essence of risk is revealed, which refers to the actions or inactions of a person or a social group in conditions of uncertainty and awareness of the possible danger, as well as the knowledge that success will lead to the intended benefits, and failure – to the intended damage. The following types of risk are identified and described: justified and unjustified (adventurism), active and passive, disinterested and mercenary, big and little, real and imaginary, autorisk and hetero-risk. The concept of “risk threshold” is explained, which means the limit of the perceived danger, after which the risk action is abandoned. The relationship between the concepts of "risk", "faith", "danger", and "reliability" is revealed. The inevitability and progressiveness of risk in the development of new facilities and new types of activities is shown.

Keywords—*risk; types of risk; risk threshold; scale of risk; the inevitability of risk; danger; reliability*

I. INTRODUCTION

Almost all areas of human life are concerned with risks. It can be said that they can happen to a person at almost every moment, in all spheres: professional activity, preservation of health, personal and public affairs, during recreation, entertainment, sports, business, and military affairs. Social groups and society as a whole are at risk in the use of technics and technology, in diplomatic and political decisions. People began to understand the problem of risk and unreliability in the era of the Great Geographical Discoveries when the commerce, navigation and usury were developing. To date, in the context of globalization, the risks from the individual, inherent in the best case to a separate group of individuals (guilds, merchants, seafarers), have grown into global, inherent in the whole society. Now the intensity and diversity of risks is growing at such a rapid pace that scientists began to talk about risk as an integral feature of modern society that could lead it to destruction and death. Scientists, businessmen, politicians realized the need to form a system of social adaptation to risks, which should include the following components: providing society with

reliable information about the arising risks; creation of expert groups for risk assessment and forecasting; developing methods of protection against the negative effects of risks; learning behaviors based on multi-factor assessment of risk attitudes. The purpose of the article is to uncover the nature of risk, identifying its types and characteristics of a risk situation.

II. THE ESSENCE AND TYPES OF RISK

The definition of risk is given by V. Dahl in his dictionary: “Risk is a courage, bravery, resoluteness, to risk is to take pot luck. Risky business is wrong, doubtful, dangerous. To take risks is to do something without the right calculation, to be exposed to an accident, a known danger.” [1]. These statements contain five features of risk: 1) the choice in the conditions of an uncertain situation (dubious case, action without analysis); 2) the perceived danger in case of failure; 3) courage; 4) the hope for the best; 5) the implicitly feature: there may be benefit if the action is successful. Good luck is a coincidence of circumstances, which is accidental and independent of a person, and which has helped the success. If people have the same type of behavior, then they should be identically lucky by the law of averages. But it seems there are people who are lucky more than others. Maybe the increased activity helps them to take an occasion. S.I. Ozhegov defines risk as “the possibility of danger, failure, action at random in the hope of a happy outcome” [2]. Here the second, forth and fifth features of Dahl are noted, and the first feature is presented implicitly.

A.V. Shaboltas writes: “Risk is understood as an action performed in the conditions of choice in a situation of uncertainty, when there is a danger in case of failure to be in a worse position than before the choice” [3]. G. Behmann and V.G. Gorokhov understand risk as “a solution in which we are talking about possible damage, the occurrence of which is uncertain today, but more or less possible or impossible” [4]. The first and the second Dalh's features are presented in the last two definitions. Since the complete awareness is unobtainable, and the uncertainty of future

events is not completely removable, the risks in our lives also can't be eliminated fundamentally. Risks are the inevitable products of a decision-making mechanism. The successful risk is accompanied by feelings of satisfaction, joy and delight, unsuccessful – by a feeling of bitterness, and with a very large loss – by a sense of repentance and even a pursuance of suicide.

The risk behavior can be divided to active and passive. Active one is characterized by the fact that person himself initiates risky actions, at the passive – that the person yields to pressure from others, for example, the student starts to smoke and drink alcohol under the influence of older students, or a woman engage in sexual intercourse under pressure from an authoritarian partner or blackmailer [five]. Depending on the moral values of the person and the possible benefits, one can distinguish between the disinterested and even heroic risk and the selfish risk. The deeds of valour of Soviet soldiers are of the first type, the actions of criminals examples – of the second [6].

The large and small risks can be allocated depending on the magnitude of the possible benefits and damage. The magnitude of risks is usually characterized by the concept of "intensity." An intensity scale is proposed, showing how badly a group can be affected. At one end of the scale there is "tolerable intensity," at the other, "deadly intensity" [7]. Two more types of risk: the risk of a person with direct consequences for himself and the risk with consequences for other people. In the first case, the risk-taker himself gets the possible benefit or damage (auto risk), in the second case, the immediate consequences relate to other people (heterorisk), for example, the doctor's actions in an uncertain situation. There may also be a risk without law violation and with a law violation.

May the risks be divided into real and imaginary? So, many scientists write that genetically modified products create imaginary risks and people should not be afraid of them. Sometimes they talk about known and unknown risks. Such a division is not reasonable: what is called unknown (latent) risks are threats, not risks. A threat in modern psychology is a factor that can damage the interests of the person (his physical, economic condition, etc.). Danger is the value characterizing the attitude of the threat to the person's willingness to resist it. Thus, the threat becomes a danger when it is impossible for a person to resist it. And the danger generates risk when its probability is assessed and an action is performed under conditions of this danger.

It is necessary to distinguish risk from self-sacrifice and heroism, when a person deliberately goes to his death, as Alexander Matrosov, Nikolay Gastello and many other war heroes did. A situation when a person was not aware of the threat, but suffered (for example, from a meteorite) cannot be also attributed to the risk. Such a situation should be qualified not as a risk, but as an accident. In addition to an accident, there may be a lucky strike: for example, a person accidentally found a treasure. And risk is a situation when 1) there is an awareness of a threat; 2) actions under conditions of uncertainty; 3) probabilistic knowledge of the magnitude of the possible benefit (gain) or damage (loss). Therefore,

our whole life is associated with threats, and with risk, when a person knows about a threat, represents the magnitude of danger and makes a choice: to perform an action or not; suggests: if I do this, then either I win or I lose. The risk can be both action and inaction, for example, refusal from surgical operation in case of a serious illness, refusal from property insurance, failure to follow recommendations for a healthy lifestyle, evasion of environmental protection.

The tree mentioned features refer to any kind of risk. Other features relate to special types of risk: courage - to auto risk, only one luck expectation (an accidental coincidence of favorable circumstances) - to an unreasonable (unjustified) risk (adventurism). Summarizing what was written above, the following definition can be given: risk is the actions or inactions of a person or a social group in conditions of uncertainty and possible danger, as well as the knowledge that success will lead to the intended benefits, and failure to the intended damage.

III. CHARACTERISTICS OF RISK SITUATION

One of its important characteristics is uncertainty, by which is meant the impossibility of accurately predicting the results of activities due to a lack or unreliability of knowledge. Human, technical, natural, and social uncertainties can be identified. Based on the above mentioned, it can be concluded that the risk is based on the presence of threats and dangers, the probabilistic nature of human activity and the uncertainty of the situation in its implementation. The outcome of a risk situation is ambivalent - it can be positive or negative. The risk includes the possibility of not only one, but also another version of events.

The concept of "risk threshold" is important – the "risk threshold" is the limit of perceived danger, after which a person refuses from the action. In this case, the estimated damage is higher than the possible benefit. For example, when two teachers were carried before justice in one university for illegal gratification in the amount of 10–12 thousand rubles, the illegal gratifications from students at this university almost immediately ceased [8]. Everyone realized the size of the damage (criminal punishment, dismissal from work, loss of reputation), which is incompatible with possible benefits. The difficulty in making decisions about risky behavior is that most often the size of the danger is unknown. This difficulty is heightened by the growing distrust in all spheres of life. It is also impossible to calculate accurately the probability of an unsuccessful action. Knowledge of the risk size is always hypothetical.

N. Luman introduced the concept of "catastrophe threshold": risky behavior only makes sense when it does not fit the threshold beyond which misfortune (however improbable it may be) would be perceived as a catastrophe. The definition of a "catastrophe threshold" is hampered by the fact that it is perceived differently by those who make decisions and those who are affected by these decisions — for example, it's one thing the assessment of the risk of a catastrophe on a factory by the experts as improbable, and the other - the assessment of this risk by people living near

the factory and not forgetting the fundamental possibility of materialization of the improbable events [9].

There is the concept of “risk group” - a group of persons most exposed to any danger associated with special behavior or living conditions. For example, people exposed to bad habits are in risk group for many diseases. The use of the term “risk group”, especially in medicine and sociological research, implies a generalized definition of populations in which certain types of risky behavior are widespread and which are most vulnerable in terms of certain medical, social risks or environmental influences. Actions, inactions that increase the probability of illness, accident or tragedy, are called risk factors (eg., smoking, overeating, starvation diet, overtraining, hypodynamia, alcohol overuse, indiscriminate sexual relationships, outing at night at empty streets, rudeness, leaving children without supervision, credulity, contacts with dubious individuals, use of faulty equipment, uncontrolled medication). The term “healthy lifestyle” is often used, which refers to the avoidance of risky health behavior.

The concept of “risk scale” has also been introduced, by which the size of a group of people at risk is meant. Risk in scope may be personal, local or global. Global risk can affect not only all humanity, but also our descendants [10]. V.S. Efimovskiy considers risk at the following levels: mega level (human society as a whole), macro level (specific society), meso-level (social group), micro-level (individual personality). At the same time, some social groups may artificially reduce their risks, shifting it to other groups and societies, for example, moving the production of dirty products outside the urban environment or to other countries, and as a result, there is environmental degradation in rural areas or in developing countries [11].

Social philosophy treats all analyzed factors and processes related to risk situations as probabilistic [12]. Depending on the expected probability of success, the magnitude of the possible benefits and the magnitude of the possible damage, one can distinguish a justifiable (reasonable, acceptable) and an unjustified (unreasonable, unacceptable) risk. The greater the possible gain and probability of success, the more justified (attractive) the risk becomes, and the greater the possible loss is and lower the success probability is, then less justified is the risk. Unreasonable risk is adventurism. The risk is often calculated by multiplying the degree of damage by the probability of damage. The probability can be considered as an objective value if it is associated with repetitive events and therefore has a measurable frequency of occurrence. An objective risk assessment is impossible in the case of single or new events, for example, tests of new equipment, as well as of very rare events that do not fit the possibility of their statistical evaluation in the current period of their consideration (for example, astronomical and geological phenomena), [13]. If there is an alternative choice of one or the other action, and the benefit and security contradict each other, then the risky person can ignore the danger and choose the benefit, and the cautious one - on the contrary, the security. For example, a risk taker puts money in a bank with a high interest, and a cautious one - in a bank with a low

interest, but more reliable than the first one. Every person faces a choice of one of two options of action more than once during the life: less attractive, but more reliable, and more attractive, but less reliable, entailing possible negative consequences. The division into justified and unjustified risks does not coincide with the division to unselfish and mercenary risks. Both disinterested and mercenary risks for its subject may be justified or unjustified, for example, for a doctor and a criminal element.

It is very difficult to determine the rim between justified and unjustified risk, it is difficult to consider both its capabilities in an uncertain and unpredictable situation, and changing and unforeseen features of the action object and the environment. A.V. Shaboltas says that risky behavior should be replaced by safe behavior, it would be better to say “cautious behavior” [14]. In many cases, this is what one should do or strive for. One should avoid damage, of course, if it is possible. However, the risk has not only negative, but also large positive potentials.

The risk is inevitable with the development of new facilities, new types of work, new equipment, the use of new drugs and methods of treatment, new sports and entertainment, the realization of economic reforms, diplomatic and military actions. And the reason for this, as it has been already noted, is the uncertainty of the situation caused by a lack of knowledge about the object, about its capabilities and about the consequences of actions. When people try to open and master new perspectives of development, they always face risks. The risk has a controversial nature: on the one hand, it carries danger and causes fear, and on the other hand it potentially contains benefit and satisfaction, even the joy of creating something new. Therefore, risk is one of the necessary drivers of social progress, and progress would be impossible without risk [15]. If people did not take risks, there would be no voyages and discoveries of new lands; exploring the Arctic, Antarctic, Earth's interiors and the depths of oceans; international trade; rail, road and air transport; military heroism, flights into space and much more. And how many wonderful people - travelers, geographers, sailors, geologists, pilots, motorists, submariners, cosmonauts, scientists, engineers, doctors - died while reclaiming the new! Humanity strives to avoid risks, but it cannot do without them and without victims. Accepting risk is a payment for progress. The function of risk in private life and in society is the psychological support for the developing new facilities and mastering new types of activity [16].

The love of thrill, competition, novelty and the risk caused by them has bioevolutionary origins. The human race could not develop and spread around the Earth without the need for novelty and obsession with the development of the unusual. Hunting, war, production of technical inventions, which men were primarily engaged in, were impossible without risk. But excessive despair may not contribute to the population survival. Therefore, the propensity to risk is unequally distributed among different individuals, sexes and at different ages. As is known, females are more valuable for the population than males. With the death of females, the population is reduced, firstly, by the number of these females,

and secondly, the growth of cubs decreases. With the death of the males, the population is reduced only by their number, and the cubs will be born according to the number of females. Therefore, in all species, females are more resistant to all adverse effects (temperature, radiation, infection, hunger, stress, etc.), they have lower mortality and longer life expectancy in comparison with males [17].

Since the risky behavior is often finished by the death of his subjects, populations in which the propensity to take risks was more inherent to men, survived predominantly during the biosocial selection. Their death in unsuccessful risky situations was less harmful to the population than the death of women. The death of the male sex individuals served mainly as a pay for the population development. Risky behavior is reinforced by the corresponding hormonal processes - high secretion of testosterone and adrenaline - especially inherent in young men. They are much more willing than women to take risks in conflict situations, in sexual behavior, while driving vehicles, accidents, gambling, financial decisions, etc. With the help of risky behavior, men hope to improve their social status. Risky behavior can be viewed as a signal used in marital relationships. The propensity to risk is determined by the desire of the individual to increase his self-esteem: people who are involved in risk, are estimated by others as more attractive. "Women more often preferred men who showed risky behavior as potential sexual partners" [18].

Women find risky situations more stressful and heart-pounding than men. Therefore, they try to avoid them. But why not all men are risky? Indeed, there are cautious and even very cautious among them. The image of "The Man in the Case" – the teacher Belikov, who had a very high level of anxiety, extraordinary caution, and usually said: "Something may happen" – by A.P. Chekhov was created not for nothing. It would be disadvantageous for the population if all men were risky: in very dangerous and catastrophic situations, the presence of cautious people is necessary and justified. Cautious men balanced risk taking ones in the course of biosocial selection. Since the formation of married couples occurs by chance, in general, the human population most likely has a normal (Gaussian) distribution of people according to risk level: the greatest number of people has an average risk level, and there will be less and less a person with more or less riskiness as it moves away from average. This distribution of random variables is represented by a bell curve, for women it should be shifted to the left, since the average level of risk appetite is lower than that of men. According to A.G. Niazashvili, "a pronounced tendency to prefer or avoid situations of risk is relatively rare and ranges from 7 to 10 percent of the sample. Representatives of "overly cautious" or "highly risky" types form extreme, border groups in the continuum of diverse, variable ways of personal behavior" [19].

The success of a risky activity depends on external circumstances and the reliability of the calculation of actions by the subject of the risk. For example, in the winter of 1911-1912 the Norwegian and English expeditions led by R. Amundsen and R. Scott, respectively, almost simultaneously went to the South Pole. For both expeditions, the risk was

enormous; it threatened the participants with death. A number of experts consider that the Norwegian expedition was better thought out and prepared than the British. In particular, Scott's mistake was in the use of snowmobiles, which quickly broke down, and, along with dogs, Manchurian horses, which quickly died from the cold. Therefore, due to the lack of huskies, the Scott's people had to carry the load themselves with a weighting of up to one center for each, which exhausted them. Amundsen used only dogs. There were also very adverse weather conditions on the Scott's route. As a result of the combination of all causes, the Amundsen expedition returned to the ship safely after reaching the pole, and the Scott expedition died on the way back from the pole. By the way, Amundsen admitted the possibility of the death of his expedition. Knowing about the imminent arrival of an English expedition at the pole, he left a letter to Scott in a tent at the pole with a request to transfer the message to the King of Norway about conquering the pole in case the Norwegians died on the way back. In 1928, Amundsen himself died in the Arctic, participating in the rescue of the U. Nobile expedition after the crash of the airship "Italia".

IV. CONCLUSION

In conclusion, we would like to note that some authors identify risk and danger, and some - risk and reliability. So, E.A. Samsonkina and V.N. Mykha wrote: "In modern Russian society there are the following types of social risk: unemployment; marginalization; forced migrations; crime; deep stratification of the population by income level; low standard of living, disadaptation and low level of adaptation potential of the country population, etc." [20]. The factors listed above are not risks, but dangers. In our opinion, risk should not be identified with danger. Danger is a perceived threat to something that is valuable for a person (his life and the lives of others, their health, property, reputation, future generations, the environment, etc.). And danger, of course, is extremely important to study. But, in order to avoid confusion, it is not necessary to identify them with risks. Danger is one of the conditions of risk. Its magnitude, together with the probability of an unsuccessful outcome, determines the magnitude of the risk. There must be an awareness of the possible danger counteraction, a situation of uncertainty and action in this situation for the occurrence of a risk situation. Therefore, safety cannot be considered as the opposite of risk. Security is the opposite of danger, that is, the absence of an insurmountable threat. And caution is the opposite of risk. Caution is a waiver of activities that can cause damage; refusal of risky behavior. The risk contains danger, and caution is intended to ensure safety. As a risk, caution may be justified and unjustified [21]. The justified caution let the person to avoid the damage from actions, and unjustified prevents the use of favorable opportunities to obtain benefits. Apparently, the most successful in life are those who manage to combine two opposites - risk and caution, i.e. they feel when it is possible to take risks, and when it is better to proceed with caution.

L.L. Lopez suggests that the reliability is opposite to risk [22]. Reliability, of course, is associated with risk, but it is

inaccurate, in our opinion, to consider it as the opposite of risk. Such an opposite, as has been noted above, is caution. And reliability (the analysis of upcoming actions, people's behavior, the functioning of technology, the prediction of environmental changes, and possibly other factors) affects the magnitude of risk and the success of activities. Small reliability creates a big risk, increases the likelihood of damage, and vice versa: greater reliability reduces the risk and increases the chances of success. In the description of the Arctic expeditions, mentioned above, Amundsen's analysis was more reliable than Scott's. This was one of the reasons for the various outcomes of these risky expeditions.

So, the risk has a contradictory nature: it carries in itself both the possibility of mastering a new reality and receiving benefits, as well as the possibility of damage and even disaster. The actual problem of the emerging field of knowledge - riskology - is the development of ways to distinguish justified and unjustified risk, as well as measures for prevention or neutralization of the negative consequences caused by risky activities.

REFERENCES

- [1] D. Dahl, "Risking (risk)," Explanatory Dictionary of the Living Great Russian Language by Vladimir Dahl in 4 volumes., Ed. 2, vol. 4. Moscow: Russian language, 1980, p. 96
- [2] S.I. Ozhegov, "Risk," S.Ozhegov's Russian Dictionary. 22nd edition. Moscow: Russian language, 1990, p. 678.
- [3] A.V. Shaboltas, "Risky behavior," Psychology / Ed. A. Krylov, 2nd edition. Moscow: Prospect, 2009, p. 503.
- [4] G. Behmann and V.G. Gorokhov, "Socio-philosophical and methodological problems of handling technological risks in modern society (Debates on technological risks in modern Western literature)," Philosophy Questions, no. 8, 2012, p. 134.
- [5] N.N. Gubanov, N.I. Gubanov and L.G. Cheremnykh, "The Science of the Risk Essence and Characteristics of a Risk Situation," Humanitarian Gazette, no.11(61), p. 4, 2017. DOI: 10.18698 / 2306-8477-2017-11-483.
- [6] N.N. Gubanov, N.I. Gubanov and A.E. Volkov, "The science of risk determination and mental responses to their occurrence," Humanitarian Gazette, no.12(62), p. 7, 2017. DOI 10.18698 / 2306-8477-2017-12-498.
- [7] N.N. Gubanov and N.I. Gubanov, "The essence of risk and its types," Research and development. Socio-humanitarian research and technology, vol. 6, no. 4, pp.79-85, 2017.
- [8] N.I. Gubanov and N.N. Gubanov, "Criminal behavior: biological, social and personal conditionality," Vestnik slavianskikh kultur – bulletin of slavic cultures-scientific and informational journal, vol. 48, no. 2, pp. 53-66, 2018.
- [9] Luhmann N., "The Concept of Risk," TESIS, no. 5, pp. 135-160, 1994.
- [10] N.N. Gubanov, N.I. Gubanov, I.V. Denisova and T.V. Yablochkina, "The contingency nature of risk behavior and its determination," Humanitarian Gazette, no.12 (74), p.1. DOI 10.18698 / 2306-8477-2018-12-580.
- [11] V.S. Efimovskikh, Risks in modern society: a socio-philosophical analysis. The dissertation of the candidate of philosophical sciences. Ufa: Publishing house of the Bashkir State University, 2009.
- [12] N.I. Gubanov, N.N. Gubanov and A.E. Volkov, "Criteria for the truth and scientific knowledge," Philosophy and Society, no.3 (80), pp. 78-95, 2016.
- [13] N.N. Gubanov and N.I. Gubanov, "Mental Responses to Risks in Modern Society," Proceedings of the International Conference on Contemporary Education, Social Sciences and Ecological Studies (CESSES 2018). Series "Advances in Social Science, Education and Humanities Research", vol. 283, pp. 1003-1007, 2018. DOI: 10.2991/cesses-18.2018.220
- [14] A.V. Shaboltas, "Risky behavior," Psychology / Ed. A. Krylov, 2nd edition. Moscow: Prospect, p. 505, 2009.
- [15] M.B. Oseledchik, V.Yu. Ivlev, M.L. Ivleva, "Knowledge as a non-equilibrium dynamic system," Proceedings of the 2nd International Conference on Contemporary Education, Social Sciences and Humanities (ICCESSH2017). Series "Advances in Social Science, Education and Humanities Research", vol. 124, pp. 1-5, 2017. DOI: 10.2991/iccessh-17.2017.1
- [16] N.N. Gubanov, N.I. Gubanov and Yu.D. Granin, "S.A. Lebedev. Scientific method: history and theory," Voprosy filosofii, no. 8, pp. 213-217, 2018. DOI: 10.31857/S004287440000751-1
- [17] V.Yu. Ivlev and M.L. Ivleva, "Philosophical Foundations of the Concept of Green Economy," Proceedings of the International Conference on Contemporary Education, Social Sciences and Ecological Studies (CESSES 2018). Series "Advances in Social Science, Education and Humanities Research". vol. 283, pp. 869-873, 2018. DOI: 10.2991/cesses-18.2018.192
- [18] A.V. Yanyhbash, The relation of risky behavior with the psychological characteristics of the individual. Abstract of the dissertation of the candidate of psychological sciences. Moscow: Publishing House of the Institute of Psychology, Russian Academy of Sciences, 2013, 2013, p. 10.
- [19] A.G. Niazashvili, Individual differences in risk appetite in various social situations of personal development. Abstract of the dissertation of the candidate of psychological sciences. Moscow: Publishing House of Moscow University for the Humanities, 2007, p. 20.
- [20] E.A. Samsonkina and V.N. Mukha, "Social risks in modern Russian society," Actual issues of social sciences: sociology, political science, philosophy, history, no. 41-42, p.58, 2014.
- [21] V.Yu. Ivlev, N.D. Lepskaya, "Modalities and logic," Proceedings of the 2017 2nd International Conference on Contemporary Education, Social Sciences and Humanities (ICCESSH 2017). Series "Advances in Social Science, Education and Humanities Research", vol. 124, pp.79-86, 2017. DOI: 10.2991/iccessh-17.2017.18
- [22] L.L. Lopez, 'Between Hope and Fear: The Psychology of Risk,' Advances in Experimental Social Psychology, vol. 20, p. 255–295, 1987.