

## ARTICLE

# CONSCIOUS CHOICE OF THE SCIENTIST PROFESSION AS A STRATEGY FOR THE BIOGRAPHICAL TRAJECTORY OF YOUNG GENERATION OF RUSSIANS

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## ABSTRACT

The article considers the features of the formation of an informed choice of scientist and researcher profession. Based on the study results conducted by the in-depth interview method, we analyzed the biographical trajectories of research scientists living in the city of Naberezhnye Chelny (Russia). We identified the reasons that have the greatest impact on the degree of conscious choice of the scientist profession, such as the presence of a role model (standard scientist); dynastic principle; social environment; internal need for the extraction of new knowledge. We discovered the main trajectories of the choice of research directions of future scientists and researchers: straight; winding; cyclic; sinusoidal (wavy). According to the study results, it has been concluded that the biographical trajectories of scientists and researchers are a chain of informed decisions when the most optimal one is chosen from a variety of options. The uniqueness of the choice of such a profession as a scientist is in fact that this type of activity acts as a catalyst for new spirals of scientific and technological progress. Awareness of the choice of a particular activity field by a person indicates his/her inner maturity.

## INTRODUCTION

An individual always faces the problem of a certain choice within the framework of a life path. The choice concerns both every day and vital tasks involved in the formation of a common collective image of a personality: social status, role, profession, place of residence, appearance, friends and much more. The modern world makes ever-changing and increasingly complex demands that should be met by the society members. However, there is a problem of awareness of the choice of certain actions, the process of which is constantly accelerating.

The choice is the adoption of one decision from many options available [1]. The causes of human choice are investigated in psychology, economics, sociology and many other sciences. Awareness is a relatively new concept in the modern social sciences; it is defined as continuous tracking of current experiences, that is, a state in which the subject focuses on the experience of the present moment, without being involved in the thoughts about past events or the future [2]. The study of awareness of choice in science among the scientists is of particular interest. Before we proceed to the direct description of the subject features, we should pay attention to the very interpretation of the term "scientist". A scientist is a person engaged in the systematic knowledge acquisition activities that describe and predict the natural world. In a more limited sense, a scientist may be considered a person who uses the scientific methods of reality cognition in various fields of knowledge. A person can be an expert in one or more areas of science. The term "scientist" was introduced into science by the theologian, philosopher, and historian of science, William Wivel in 1833 [Oxford English Dictionary, 1989]. The problems of science sociology were studied by such authors as R. Merton, [3], M. Mulkay [4] et al. In this article, we will consider the issues of awareness of the choice of scientist profession as a strategy for building the biographical trajectory of the young generation of Russians.

## METHODS

The authors made a study in one of the mono-industrial cities of Russia - Naberezhnye Chelny, using the qualitative methodology - narrative biographical interviews (N = 15). The informants were the scientists and researchers of the city of Naberezhnye Chelny. The biographical interview was aimed at exploring the basic life and career strategies of the informants.

## RESULTS AND DISCUSSION

An important condition for a young person to choose the scientist profession is the innovative potential of a particular region in which an individual life. According to Gordon, the innovation potential is a system of interrelated components, but, above all, it is the most important basis for economic growth [5]. The training of qualified personnel is an important part of the formation of innovation potential, an integral part of the city's economy, contributing to an increase in its competitiveness in the domestic and international arena. The main directions of work on the formation of the "ideological" potential should include stimulation of the creation of domestic innovations, since a fairly large percentage of innovations are of foreign origin, in particular, based on borrowing patents, which increases the outflow of funds abroad [6]. Hence, people who are able to create innovations and choose the life trajectory of a scientist are of particular value.

### KEY WORDS

*informed choice,  
scientist, researcher,  
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An important condition for the development of the scientist's personality is the formation of a fundamentally new type of higher education institution - a third-generation university, which is a multi-disciplined, intensively developing educational, scientific and innovative complex that adapts to the requirements of the external environment, produces scientific and technical innovations, and is focused on meeting consumer demand at the specialized markets. Such a university, located at the intersection of research, education and innovation, largely holds the key to a knowledge-based economy and knowledge society, being the main institution providing interaction between the academic and economic worlds through such structures as science and technology parks, technology transfer centers [7].

The city of Naberezhnye Chelny, which has become the object of our research, has a pronounced industrial orientation (automobile industry) due to the fact that the largest enterprise of the city is KamAZ (city-forming enterprise), where more than 40 thousand people work. Therefore, the need for highly qualified specialists is growing steadily in the city to meet the needs of a developing industry. The needs are partially met by local specialists, and partially - by visiting specialists. The city is also actively developing high technologies, the process of which has been accelerated due to the creation of an IT park on the municipality territory.

In order to identify the specifics of intrapersonal attitudes that contribute to the choice of a scientist's life trajectory, we conducted narrative biographical interviews with the representatives of the scientific community of Naberezhnye Chelny. According to the results of these interviews, the following factors that determined the choice of such a strategy were identified:

1. The presence of a role model (standard scientist). Many informants indicated that, to a certain extent, they were influenced by some role model in the person of an authoritative scientist: "My scientific career started phenomenally, because Makhmutov Mirza Ismailovich was appointed my supervisor. One can say that he is one of the most outstanding teachers of our time. If in the XIX century it was Ushinsky, then there were several of them in the XX century, and Makhmutov was one of those people. Now, after two decades, I realize this and understand it even more. Firstly, my supervisor was one of the founders of the theory of problem-based learning in Russia. This theory was so qualitative that it was adopted both on a theoretical and applied level, it could be used in the schools. Secondly, it is relevant even now, as it allows going beyond the framework of ordinary education ... My supervisor has occupied the post of the Minister of Education of the Tatar ASSR for 18 years. This is a completely outstanding personality" (female, 45 years old, Candidate of Pedagogical Sciences).
2. For a number of scientists, these were their immediate supervisors, for others - one of the greatest scientists in their field, whose persona admired them: "For me, the key point in choosing the researcher profession was the moment when I read a book about Nikola Tesla. His dedication and devotion to science inspired me so much that I realized that I would connect my life with technology" (male, 36 years old, Candidate of Technical Sciences). Here, the mechanism of the unconscious copying of some life strategies of the scientists worked out. Then there was a sign of choice awareness, when the informants focused on their own feelings at that moment.
3. The dynastic principle was traced among those informants who had one of their direct or indirect relatives involved in the research or inventive activities: "I have four generations of my family who have a higher education. My father and grandfather were teachers. Both of my uncles were the rectors of the pedagogical institutes". (female, 45 years old, Candidate of Pedagogical Sciences). To some extent, the mechanism of social genetics worked out, when the informants repeated, to a certain extent, the career/life path of their own parents/relatives. There was a transition from an unconscious program (when consciousness absorbed information about a possible choice) into the process of conscious choice (such informants understood this already after a certain time, as a result of self-reflection).
4. Social environment. The environment of a potential scientist: friends, acquaintances. The environment in which his/her personality was formed. A lot of research has been devoted to the influence of the environment (in the field of psychology, sociology, philosophy), however, the studies were conducted in the field of neurobiology, where it was proved that the environment changes the human brain. (Including the formation of neural connections, different parts of the cerebral cortex). Eagleman argued that the human brain changes throughout life (the so-called plasticity of the brain is formed), which allowed making an informed choice. The brain changes under the influence of many factors: professional activity, hobby, environment. "The shape of bulges and pits in the human brain is the same for all people in general, but smaller details reflect individual differences indicating where you were and who you are now. Family, culture, friends, work, every film watched, every conversation with another person — all this left some imprints in your nervous system" [8]. The informants noted that their parents or teachers directed their interest in the right direction: "My school history teacher was ultimate teacher. Initially, I was interested in physics and mathematics and was even going to enter the Faculty of Physics and Mathematics, but her lessons, full of dynamics and life, and talking with her about various historical events inspired me to study history. Mathematics remained a hobby, and history became a matter of my life" (female, 51 years old, Doctor of Historical Sciences). Some scientists noted that their friends, who were interested in something, had an influence on them: "Before adolescence, I was not particularly fond of anything. I could not find myself. I had a friend who

passionately loved history. Later, this passion was passed on to me, I have no longer conceived my life without history" (male, 46 years old, Candidate of Historical Sciences).

5. Internal need for the extraction of new knowledge. Knowledge is the result of cognitive activity. The informants had some interest in the extraction of new knowledge from early childhood. Such people begin to read encyclopedias and special literature in the fields of their interest, try to do some small research or experiments, if possible, before the others. "As far as I can remember, I have loved reading math books since childhood. I liked to operate with different numbers and carry out calculations in my mind. I received my first education in thermal physics, I even studied a couple of years at the post-graduate school and worked in the laboratory, but something went sour, and I devoted my life to sociology. In my opinion, I was taken to the post-graduate school of the Russian Academy of Sciences precisely because I could count well" (male, 77 years old, Doctor of Sociological Sciences). Such features are dictated, to a greater degree, by such personality quality as curiosity, which can be traced in young children. The need for new knowledge and their independent extraction, with due attention, increases with age and leads to the conscious choice of the researcher and scientist career. [9]

The choice of the research path formation strategy also revealed several trajectories:

1. The direct trajectory is inherent in those respondents who consciously chose a certain direction either before entering a higher educational institution or this attempt has been made during the course of training (if a potential scientist has not previously been engaged in research activities). Such informants are characterized by the continuity of such activities, there is a tendency to deepen the study, to search for the deepest layers of scientific knowledge: "As a child I was very fond of mathematics and wanted to become a math teacher in the future, later I became very interested in computer science, therefore I got an education in economic cybernetics. Mathematics has always been with me, although my activity has not been associated with science for a long time. When I returned to science, my supervisor inspired me to this, I combined my experience, my interest in numbers and economics, and defended my thesis. Now my life is firmly connected with the economic calculations" (female, 50 years old, Doctor of Economic Sciences). (It can be combined with the "role model of a standard scientist" that has inspired the informant to research in a particular area). If an interest in a particular direction has manifested itself in childhood/adolescence, then there is some experience in conducting research, experimentation, and ability to analyze before entering the high educational university.
2. A tortuous trajectory is observed among those informants who have gone through branching: they faced some confusion when they realized that they did not like the chosen direction anymore. The so-called pendulum mechanism was launched, which contributed to the constant fluctuations in the selection process. A large amplitude of oscillations was characterized by radically opposite directions of research. "At first I was engaged in thermal physics and even worked with installations in the laboratory, but then I was brought to sociology. I studied language processes, studied scientists and many more different features. At one point, I became interested in economics. When I was 76 years old, I defended my doctoral thesis in sociology. I still want to defend my PhD thesis in economics" (male, 77 years old, Doctor of Sociological Sciences). As the pendulum was stirring up, the internal uncertainty of the informants grew: "My life is like a roller coaster. At first I received a technical education, then a psychological one. I have defended my PhD thesis in sociology, and I am writing a doctoral thesis in economics" (female, 46 years old, Candidate of Sociological Sciences). Some scientists and researchers observed from 4 to 10 oscillations. The amplitude was reduced in proportion to the scientist's understanding of what research direction he/she was consciously interested in.
3. Cyclical. To a certain extent, some informants observed a return to the old direction. There are two possible options: a full return to the original research after many years of scientific activity (when the first topic has completely exhausted itself, according to the informant); combining two directions into one (for example, economics and geography into economic geography): "In my youth I was very fond of geography, but I failed the entrance exams for geographic department. From hopelessness, I received an economic education. Around this time, I met a man who showed me the beauty of the economy and encouraged me to defend my Ph.D. thesis in economics. However, the interest in geography has not disappeared anywhere, it has been transformed into a passion for economic geography, whereon I am writing a doctorate thesis" (male, 51 years old, Candidate of Economic Sciences).
4. Sinusoidal (wavy). The oscillations between the two directions with the approximately equal intervals of time. The reasons for the oscillations include new perspectives of research in this area, a weakening of interest in one of the areas, a forced interruption of research in one of the areas due to certain factors. (In one way or another, this type of trajectory can be observed in most scientists). In the end, two directions may be transformed into one. [10]

During the study, it was noted that the scientists and researchers observed the transition of one trajectory to another in some cases. In some aspect, this is due to the personality-psychological factors of individuals, on the other hand, the influence of the external environment.

Thus, biographical trajectories of scientists and researchers are a chain of informed decisions, when the most optimal one is chosen from a variety of options. The uniqueness of the choice of such a profession as

a scientist is in fact that this type of activity acts as a catalyst for new spirals of scientific and technological progress. Awareness of the choice of a particular activity field by a person indicates his/her inner maturity.

## CONCLUSION

Thus, the study showed that, in general, Russian society has the necessary potential for innovative development not only in major metropolitan centers, megacities, but also in mono-industrial cities. The analysis of materials of biographical interviews revealed the following factors in choosing the strategy for building a professional career of a scientist:

- presence of a role model (standard scientist);
- dynastic principle;
- social environment;
- internal need for the extraction of new knowledge.

The choice of the research path direction also revealed several trajectories:

- straight;
- winding;
- cyclic;
- sinusoidal (wavy).

The conscious choice of the scientist's life strategy, the development of such a trajectory can be implemented quite successfully in Russian society, in general, and in the region we analyzed, in particular. The respondents believe that it is necessary to support the science workers, creating the necessary conditions for their development. Practice shows that there can be no question of any development without the right conditions. In fact, not entirely favorable circumstances in the field of science encourage the so-called "brain drain", which is one of the reasons hindering the development of this industry.

At the present stage of development, Russian society is still under the influence of resource-extracting industries, since most of the revenues come from this field, but, as you know, such a "raw materials economy" cannot be effective in the long term, even though Russia takes the first place in the natural resource reserves. The resources are exhausted with time, moreover, the Russian Federation has very strong competitors in this field; there is a strong dependence on exchange reports on oil and other types of natural resources. In such circumstances, it is necessary to take steps to reanimate the Russian economy and make a transition from a mining to a producing economy. The development of the knowledge-intensive sector can increase the prestige of the Russian economy, wherefore, in our opinion, development in the following areas is necessary:

- financing and supporting projects of young scientists and inventors, a simplified system for obtaining patents;
- development of public-private partnership in the field of science and innovation;
- an increase in the number of scientists, an opportunity for their development in our country;
- access to the world market of innovative technologies;
- stimulation of the personal choice of the life trajectory of a scientist by the representatives of the younger generation, with the help of professional orientation mechanisms, development of an individual grant support system, formation of internal motivational mechanisms.

## CONFLICT OF INTEREST

There is no conflict of interest.

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## FINANCIAL DISCLOSURE

None

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