

DIFFICULT ASCENT TO THE PEAKS OF SCIENCE

Academician Akif Ali-Zadeh is known in Azerbaijan and far beyond its borders not only for his unique scientific achievements in the field of paleontology and other earth sciences, but also for his extensive scientific and organizational activity as director of the Institute of Geology and Geophysics of the National Academy of Sciences of Azerbaijan (1976 – present, currently Institute of Geology and Geophysics of the Ministry of Science and Education of Azerbaijan Republic) and President of the Azerbaijan National Academy of Sciences (2013-2019). The initial stage of this activity (1976-1990) became a real school for the young scientist at that time, who was appointed head of the largest Institute in the system of the Academy of Sciences at the age of 42 (!).

There were no ordinary lessons and textbooks in this “school”, they were replaced by daily live communication with employees during which Akif Ali-Zadeh learned to listen to people and delve into their problems, no matter how insignificant they may seem at first glance, use any opportunities for providing them the necessary help and support, look for optimal ways out of occurring conflict situations, unite supporters around himself filling them with his inexhaustible enthusiasm, sparkle a favorable creative environment in the team, defend his position with arguments avoiding the use of dictate and volitional decisions, accept and analyze constructive criticism, admit and correct his mistakes and so on. This is how the talent inherent in today's leader of geological science of attentive and friendly attitude to the people around him was formed. His “philosophy of life”¹ was formed in such conditions.

It was a marvelous time, which is not by chance now called the “golden age of science”, because it was then that the most important discoveries were made in the world science and after it in the “great Soviet science”, which had a noticeable impact on the development of geological science.

It was necessary to intensify the creative process, concentrate the efforts of the team of scientists in priority (primarily interdisciplinary) directions, create new scientific schools and supply them with modern equipment, train new personnel, etc. in order

to stay on track with the ongoing changes. All these issues were constantly in view of the head of the Institute – Akif Ali-Zadeh.

It was not only a difficult but also a very interesting time whereas during this period Akif Ali-Zadeh was lucky to work with many luminaries of the geological science of Azerbaijan. He remembers his teachers: academicians Musa Mirzoevich Aliyev, Azal Jafarovich Sultanov, Aliashraf Abdulguseinovich Alizade, Shamil Abduragimovich Azizbekov, Gambay Asgarovich Alizade, Shafayat Farkhadovich Mehdiyev, Edhem Shakhlarovich Shikhlibayli, Mirali Saidovich Kashkai, Abdulhamid Yusifovich Khalilov and others with special warmth and gratitude noting their help, valuable advice, constant support and friendly attitude towards him.

But, in fairness, it should be noted that, there were also detractors among the people surrounding Akif Ali-Zadeh which (either out of envy or from other motives) created artificial obstacles on his path.

Definitely, any leader can take decisive and even tough measures against such people in such situations to stop their slanderous fabrications. But Akif Ali-Zadeh as a human of honor is not capable of this. “*Personal honor, he says, is determined not so much by the individual's ability to tolerate insults and offences as by his inability to insult and offend anyone.*”

This is how he has always been acting proving his ill-wishers his place and role in science on the obtained results among which we note the following: the discovery of a new family of belemnoids named after him – *Akifibelidae* (not many scientists receive such recognition!), determination of paleotemperatures in the Cretaceous basins of the Caucasus by the method of isotope paleothermometry, studying the mineral and geochemical composition of the Cretaceous belemnites in Azerbaijan, etc.

But the real test fell to Akif Ali-Zadeh in the early 90s of the last century, when the Soviet Union collapsed, established ties with the specialized scientific organizations of the former Soviet Republics that became independent states were broken, the amount of state budget funding of scientific research was sharply decreased, and the outflow of highly qualified personnel began and so on. During these

¹ Abbasova R. Philosophy of life (interview with Ak.A.Ali-Zadeh). “Kaspiy”, May 30, 2015.

troubled times, some pseudo-patriots appeared from somewhere and called for “closing the Academy as an unnecessary appendage of the Soviet past”. Akif Ali-Zadeh was among those who resolutely came to its defense. Based on knowledge and deep understanding of the trends in the development of world science, he urged: “*It is necessary not to close the Academy, but to reform and gradually develop the system of organizing fundamental scientific research, adapting it to the conditions of a market economy*”. These words testify a deep understanding of the role of science in modern society, its influence on the course of inevitable reforms in a market economy, and the necessity for progressive development in priority areas, one of which is science.

It should be admitted that in those years (the first years of independence of the Republic of Azerbaijan) there was not yet an appropriate regulatory and legal framework of laws, strategies, state programs, action plans, etc. for the progressive development of science. All these have already appeared in the next century. In the meantime, complete uncertainty has remained in the system of organizing scientific research gradually “corroding” like corrosion the creative potential of the Academy of Sciences especially among young specialists. Akif Ali-Zadeh – a scientist deeply devoted to science could not remain indifferent to such situation, so, it was necessary to find a way out of the situation. And he did everything possible to find and demonstrate how and in what directions basic science should develop in the near future.

Once Academician A.E.Fersman quite rightly remarked: “*One of the biggest challenges of science is its ability to predict and anticipate*”. Akif Ali-Zadeh undoubtedly has such a talent based on high intelligence and extensive scientific outlook. This was especially clearly manifested in the project of the first national Concept of organization of Fundamental Scientific Research (FSR) in the Republic of Azerbaijan (hereinafter referred to as Concept¹ 92)² developed in 1992 on his initiative and direct participation, and in a number of articles published later in periodicals touching on key aspects of this Concept – state support of science, forms and financing mechanism of scientific research, the creation of a regulatory and legal framework for science, the development of international scientific cooperation, the introduction of scientific achievements (in modern interpretation – the development of mastering the innovative scientific developments), etc. It is interesting to note that many of the scientist’s proposals

expressed by him, in particular, in the fundamentally important article “What kind of Academy does Azerbaijan need?”³ were reflected in one form or another in the conceptual document for domestic science “National Strategy for the Development of Science in the Republic of Azerbaijan for the period of 2009-2015 and the State Program for the implementation of this Strategy” (approved by Order of the President of the Republic of Azerbaijan, May 4, 2009, No. 255) and in a number of other program documents and regulatory and legal acts. Some of them will be briefly considered below on specific examples.

Sources of scientific research funding

The main source of funding of science was (and remains today) state budgetary funding, the various forms of which were not written clearly enough anywhere (in any official documents) for a long time. Akif Ali-Zadeh proposed to divide the state budgetary funding of science into two “channels” to eliminate this uncertainty in 1992: the channel of basic funding of large institutes, centers and other scientific infrastructure facilities and the channel of program-targeted allocations (in modern interpretation – The Targeted Funding Program) of research projects and programs of national importance⁴, while the second channel also included grants allocated by state funds (which did not exist at that time!) to finance initiative scientific projects on a competitive basis.

24 years later (i.e. in 2016), the Law of the Republic of Azerbaijan “On Science” was adopted, in which the forms of state financing of scientific and scientific-technical activities in Article 34.4 were defined as follows: Basic Financing, The Targeted Financing Program and Grant Funding. The only difference between this article and the scientist’s previously expressed proposal is the allocation of grant funding as a separate line, although this does not change the essence of the matter.

Akif Ali-Zadeh initiated the development of four state programs at the Institute of Geology and Geophysics, which were approved by the Cabinet of Ministers of the Republic of Azerbaijan (see: Resolutions of the Cabinet of Ministers of the Republic of Azerbaijan, June 18, 2007, No. 98; January 23, 2008, No. 22s; August 22, 2008, No. 299s; July 31, 2014, No. 236s) and were successfully implemented over the period of 2007 - 2018 following the principle “Test your ideas in practice to make sure they

² Ali-Zadeh Ak.A., Ibrahimov V.B. Organization of basic scientific research in the Republic of Azerbaijan: main directions of reform (Project Concept). “Elm”, No. 11, 1992.

³ Ali-Zadeh Ak.A. What kind of Academy does Azerbaijan need? “Bakinskiy Rabochiy” No. 48, 2001.

⁴ Ali-Zadeh Ak.A., Ibrahimov V.B. “Lifesaver” for science. “Vishka”, September 29, 1992.

work” within the channel “The Targeted Financing Program of Scientific Research” for the first time in the system of the Azerbaijan National Academy of Sciences. Akif Ali-Zadeh had already created a new Department “Coordination of innovative projects” related to the “grant financing” within the structure of the Institute of Geology and Geophysics in 2001 with information and methodological support of which the Institute’s employees received about 150 grants from government funds (Science Development Foundation under the President of the Republic of Azerbaijan, Scientific Foundation under SOCAR), as well as foreign funds such as CRDF, INTAS, CARIPLO, DE-FRA, SDC, NSF, WOTRO, etc.

But is the state budget the only source of funding for scientific research? “No, it is not,” Akif Ali-Zadeh convinces. He notes the significant share of private companies in the total amount of funding for scientific research analyzing foreign experience and decides to use this factor anticipating an interest of the western oil companies in the development of oil and gas fields in the Azerbaijani sector of the Caspian Sea. A group of highly qualified specialists of the Institute began working with the alliance of “BP-Statoil” (Great Britain - Norway) companies providing for joint scientific research (with the financial support of the alliance) in the field of studying geology and geochemistry of mud volcanoes, as well as biostratigraphy of the Neogene of Azerbaijan and, in particular, the South Caspian basin in 1992 before the sign of the famous “Contract of the Century” on Akif Ali-Zadeh’s initiative. Hereafter the Institute carried out more than 50 works (!) on a contract basis for such oil companies as *ConocoPhillips*, *Statoil*, *ChevronTexaco*, *ExxonMobil*, *Shell*, *Unocal*, *Total*, *Elf*, *Agip*, *Lukoil*, etc. over the next two decades. All this made it possible not only to stabilize the financial situation of the Institute at certain stages, but also to accumulate invaluable experience in business interaction with similar western companies, as well as significantly expand the knowledge and practical skills of individual employees who have become real experts of the European level in the relevant fields of oil and gas geology.

The gradual transition from predominantly state to decentralized (multiple) funding of scientific research and development began from this period which was predicted by Akif Ali-Zadeh.

Commercialization in the scientific and technical field

Akif Ali-Zadeh urged scientists to learn how to earn money themselves e.g., using various forms of entrepreneurial activity noting the limited and constantly decreasing amount of state budget funding

for science (it amounts to 0.1-0.2% of GDP in Azerbaijan, and fluctuates between 2-5% of GDP while abroad). He wrote in the above-mentioned Concept⁹² back in the early 90s of the last century: “The new organizational structure of the Academy of Sciences should include commercial subdivisions intended to create a specific “nutrient medium” for the interaction of science and subjects of a market economy. This includes well-established *technology parks* in other countries, as well as small forms of entrepreneurial activity in the scientific and technical field – small and medium-sized enterprises, consulting, marketing, intermediary, information and other service firms forming a network of so-called “*small research business*”. As expected, numerous skeptics objected: they say that scientists should only be concerned with obtaining new knowledge, and let businessmen and their commercial structures deal with entrepreneurship. But Akif Ali-Zadeh stood firm in his position and was right. The right of scientists and specialists of scientific organizations and universities to engage in scientific entrepreneurial activities were clearly established in the Article 38 of the Law of the Republic of Azerbaijan “On Science” adopted in 2016. Hereafter the Resolution of the Cabinet of Ministers of the Republic of Azerbaijan, June 20, 2017, No. 266 specified the types of entrepreneurial activities allowed for research institutes, – production and sale of high-tech products, consulting services, laboratory tests (analyses) on a paid basis, information services, carrying out scientific research based on orders, etc. It is not difficult to see that all these types cover the above-mentioned “small research business”.

But Akif Ali-Zadeh considered that the creation of larger structures – technology parks is the most perspective organizational form of integration of science and production for the purpose of development (commercialization) of scientific achievements. In his article “Science on the Path to the Market” published in 1993⁵, he confidently stated: “I consider it is advisable to immediately begin preparations for the creation of the first of them in Azerbaijan (at least as an experiment) on the basis of the Academy of Sciences”. This proposal of the scientist remained unclaimed for a long time until 2016 when High Technology Park of the Azerbaijan National Academy of Sciences was created by Order of the President of the Republic of Azerbaijan, November 8, 2016, No. 2425. Thus, Akif Ali-Zadeh’s this prediction based on deep knowledge of the trends in the development of world science in a market economy came true.

⁵ Ali-Zadeh Ak. A., Ibrahimov V.B. Science on the path to the market. “Bakinskiy Rabochiy”, March 13, 1993.

Possessing a pronounced innovative mindset, Akif muallim foresaw the innovative path of development of Azerbaijan and prepared for it: "I see a way out of the current situation (with the development and commercialization of scientific developments)," he said in 2001, "on the way of transition (of the institutes of the Academy of Sciences) to active innovation." And this "transition" began with the creation of the first specialized Department "Coordination of innovative projects" at the Institute of Geology and Geophysics in the system of Azerbaijan National Academy of Sciences, where four innovative projects were developed by

the employees of the Institute in a short time. The final product of one of them, "Atlas of lithologic-paleogeographical maps of the territory of Azerbaijan and the Azerbaijani sector of the Caspian Sea" was acquired by BP (British Petroleum). Thus, it was proven that the scientific developments of the Institute of an innovative nature can be of not only scientific, but also commercial interest.

Academician Akif Alizadeh turned 90 years. But, despite such a venerable age he does not stop and continues the "difficult ascent to the peaks of science". He is still full of new ideas and plans. And we believe that they will all realize.

d.t.s. Vagif Ibrahimov