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HIGHLIGHT

Among Top Six
in the WorldAbout an achievement of
Armenian scientists

By Haroutiun Khachatryan

It was an ordinary laboratory in the basement of the Physics Department of Yerevan State University. The university has dozens of such laboratories whose shelves are filled with unnoticeable devices that seem to have remained unchanged since the Soviet time. When I was in the lab, there were only three people there, Samvel Gevorgian, the head of the lab, a modest man with an almost shy smile, and two young scientific workers ... Two items on the table, the prizes the group had recently won, were the only unusual thing. The silver cup with an inscription "2008 Global Security Challenge Finalist" immediately caught the eye.

Global Security Challenge was a competition in science and technology organized by famous London Business School and NUC Enterprise Company (U.S) in July-November of this year. Its

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goal was described as follows:

"Global Security Challenge (GSC) runs the leading international business plan competition to find and select the most promising security technology start-ups in the world. The mission of the GSC is to stimulate technological innovations that make airports, cities and enterprises safer without encroaching on civil liberties."

The winner was to receive half a million dollars. About two thousand companies, research groups and individuals took part in the competition. In order to reach the final stage, each participant was to win a regional competition at first. Armenia was included in the so-called Asian Group, in which some 800 works participated - from the countries ranging from Japan and Australia to those of the former USSR. On September 26 the work of Samvel Gevorgian's group was recognized as one of the five that won in the indicated group and it reached the Grand final, to be held in London on November 13 (besides the Asian Group, there were also European and American groups). So, on that day, six works were recognized as Global Security Challenge Finalists, actually, winners of the competition. The above mentioned half a million dollars was given to only one work which, in the opinion of many, was not the best one. In particular, an unofficial vote of the experts present at the competition evaluated the Armenian work among the top three, better than the American work that received the monetary prize.

What was done

The brief and dry words of the description of the scientific work say that the Armenian scientists developed an ultra-high sensitivity

Seismic Detection Subsystem that can also be used in many other fields where very small and very slow movements must be detected, for example, products for high precision instruments and tools, or so called absolute position sensor products. The key to achieving all this is an instrument small enough to be held in the palm. It is hard to imagine by casting an unaccustomed glance that several coils of a black wire wound on a square metal represent the indicated revolutionary innovation officially called a "single-layer flat or domed pick-up coil with high Q-factors". Samvel Gevorgian showed me two graphs - seismograms made in this basement room on two different days. On one day the oscillations were much higher than on the other day. However, it does not mean that an earthquake occurred that day. The Day of Strong Oscillations was a usual working day, whereas the Day of Weak Oscillations was a holiday. The seismograph just recorded the concussions caused by passing cars and even human footsteps. This device with a fantastic sensitivity can record position changes as small as one nanometre, that is, million times smaller than a mil-



Samvel Gevorgian

limetre. Even more important is that, different from devices not in use, the Gevorgian's coil can recognize also very slow movement. It is difficult to believe, but the device

is sensitive to the movement of the Moon, it reacts to (and registers)



The cup

the rise of the Moon like the ocean water during tide!

It is obvious that such a high-sensitivity device can be used not only in seismology. It was acknowledged at the Global Security Challenge Competition that the device can be applied in various spheres, from medicine to the fields where an unexpected danger not perceptible to the human eye and ear may emerge.

"We were told in London: 'It does not matter that you did not receive this half a million dollars. Instead you have won recognition and attracted interest. This can bring much more money,' Samvel Gevorgian said. According to him, negotiations on the sale of the technology are now underway with representatives of four countries, and negotiations with one of them - a Singaporean firm, have come quite close to bringing results.

Science and economy

Now I should mention Samvel Gevorgian's words which may seem unusual to many. In his

words, the fact that the invention of his group will bring money soon is first of all satisfying because he will be able to allocate resources for new studies and inventions. "We have a great wealth - our qualified specialists. Very often they are more skilful than their colleagues in other countries but they demand less payment. The very restricted funds provided by the state are never sufficient for science".

We can add that, in particular, funds provided by the Armenian state are quite insufficient. The question of why this government, which has proclaimed creation of a knowledge-based economy as a priority, allocates 0.6% of GDP to science while at least 2% is considered normal (according to Samvel Gevorgian, 2% would not be enough either) is a subject of a separate conversation. Let's see how this group managed to achieve such a result with limited resources. Two persons: Harutyun Karapetyan and Levon Torose



Harutyun Karapetyan

should be mentioned in this connection.

Harutyun Karapetyan heads the National Foundation of Science and Advanced Technologies (NFSAT), a non-state organization engaged in the introduction of modern methods of science financing in Armenia for ten years. These methods envisage an independent peer review of the projects; it was not applied in the USSR and is not

used effectively in Armenia so far. Karapetyan noted with pride that their Foundation has provided grants to the group of Samvel Gevorgian several times, thanks to which the group managed to complete the development of its single-layer flat coil.

The NFSAT's grant called Commercialization of Products/Results Support Program deserves special mention. In this case the grant was provided not for implementation of purely scientific work but for commercialization of the work done. It was also an unprecedented case in the history of Armenian science.

How this concrete scientific work became a commercial product is a long story. Suffice it to say that in the above mentioned Global Security Challenge Competition, the bid was submitted not by the laboratory of Dr Samvel Gevorgian but by a commercial enterprise, Precision Sensors/Instrumentation Development & Production Co. (PSI). Samvel Gevorgian, though one of the founders of that enterprise, is an advisor at it, and the manager is the third man who plays an important role in this work - Levon Torose. U.S-based Levon Torose is known as a benefactor in Armenia and Artsakh. He worked at a big U.S. company for many years and knows well what is needed in order to pass from science to production and commerce.

At this point our story ends. It can be called a success story in Armenia, even though it is quite far from a real success story by Western standards. Its participants believe that the cause of transforming scientific results of Armenian thought into money, and thus ensuring the country's progress and preventing the brain drain is quite real and promising.