

A Ukrainian student created a unique drone tracking system

Monday 12 December 2022, by [GRITSEVA Katya](#), [LE TRÉHONDAT Patrick](#), [SHUMAKOV Maksym](#) (Date first published: 5 December 2022).

A few months ago we interviewed Maxim Shumakov, together with Katya Gritseva, about the situation of Ukrainian students and the possible reconstruction of a left-wing student union. Maxim then explained to us that he was a computer science student in Lviv. Last September, he was present at the Sotsialniy Rukh conference in Kyiv of which he is a member. Conference during which he will be elected to the rada of this socialist organization. At the end of October, his name appeared in the Ukrainian press as the inventor of a drone tracking system. The Ukrainian daily Focus explains his invention as follows: "He created a device from sensor systems and a video camera. The teachers noted that this had never been done in Ukraine before. Due to the situation at the front, he decided to focus on drones. And so he developed a drone movement tracking system. » He was kind enough to answer our questions about his invention and on the situation of the Ukrainian education system.

How did you come up with this invention? How long did it take?

The so-called Small Academy of Sciences operates in Ukraine. This state institution encourages schoolchildren to engage in scientific research at the level of knowledge available to them. Once a year, they organize an all-Ukrainian competition of projects in entirely different fields, from physics and chemistry to sociology and philosophy. Participation in it is an excellent opportunity for young researchers to acquire basic skills in working with scientific articles, studying literature, and developing creativity. During the last two years of higher education, I also engaged in research at the Small Academy of Sciences in computer systems and robotics.

It was more than six years before Russia's full-scale invasion of Ukraine, but even then, the people of Ukraine felt the logic of war insofar as the military operations took place in the east of the country. All these events prompted us to make maximum efforts to end hostilities as soon as possible. In particular, I was concerned about the malfunction of tracking the movement of cheap army drones when the enemy jams their communications.

The development lasted in three stages, each of which took approximately a year. As a result, we had three different devices, which consisted of both hardware and software. Obviously, every year the device becomes more and more reliable and sophisticated from the point of view of the software part. If the first version recorded the trajectory of movement purely by the camera, which recorded shifts in the images and corrected them through sensors, the latter used modern methods of artificial intelligence and could record three-dimensional targets and obstacles on the way. By the way, I developed the latest version in my first year of university.

We presented this project at numerous scientific exhibitions, conferences and exhibitions. In those days, I had to meet with the country's most famous politicians to demonstrate developments. All

these political, military, and scientific contacts definitely help in my work and militancy now.

All military equipment requires the highest reliability and accuracy, so it is difficult to say whether this project has any prospects for practical use. However, we have done extensive research and gained experience to work on future developments. And last but not least also inspired many young inventors to experiment and explore.

As a socialist and scientific activist, you want to participate in the military defense of your country?(I read that the army was interested in your invention). Can you tell us a few words about your commitment ?

Since the beginning of the invasion, I have been more involved in humanitarian and political campaigns. In the field of humanitarian aid, he participated in the organization of two trade union convoys, logistics of humanitarian cargo, etc. In the last days of February, he also spent many night shifts as a volunteer at the Lviv railway station, helping refugees. We usually implement these projects on behalf of the NGO "Social Movement", in which I am an activist.

Left-wing organizations in Ukraine often have contacts and usually know each other personally. That is why we sometimes get in touch with those anarchists and socialists who are waging an armed struggle on the front line, including our activists. We try to provide them with all the necessary equipment, etc. Many trade unionists in the military have ties to the "Social Movement". Undoubtedly, we try to make every effort to assist them as well.

From the point of view of scientific activity, I participated for some time within the framework of my university in a project on developing a scheme for manufacturing domestic turnstiles. As it turned out, this process requires considerable interdisciplinary knowledge and awareness of many nuances, such as the elasticity and flexibility of different knitting fabrics etc. The state is trying to some extent to finance such vital research and set up the production line. Still, the low education funding level in the last thirty years and the general degradation of education and science do not contribute to this.

You recently said, "Innovative development requires deep theoretical research...Research like this requires massive financial infusion and rejection of short-term gains. Innovation in mass manufacturing requires major structural changes and finance. We should admit that science is in a critical state and that only a fundamental overhaul of the socio-economic sphere will change things » Can you tell us more about this declaration ?

This is a very complex issue that can be considered in different sections. The neoliberal policy of so-called optimization, cuts in the social and cultural spheres, reductions and deregulation, the path followed by Ukraine since independence, is not just a challenge to the national education and science system. It is a consistent special operation aimed at its destruction. Education in Ukraine is by no means a priority for the authorities and is financed on a residual basis. Even in the absence of qualitative sociology and general statistics in education, one can easily observe the reduction in spending.

The consequence of these processes is a decrease in the quality of education and the qualification of the academy's employees, as well as its devaluation. Admission to a higher education institution is not a problem for most applicants, as the threshold is very low. However, it would be a mistake to suppose that it would cause increased accessibility and democracy of higher education. Student scholarships are very low and do not cover learners' basic needs. Therefore, most students try to find a job as soon as possible, alienating them from the educational process. Students do not feel themselves a part of the university. Being "atomized", they cannot form a student movement, engage in trade union activism and defend the interests of their collectives. All that remains for them is to look

for individual solutions to problems and to beg for leniency from teachers. At the same time, the teachers, who cannot prepare materials and organize the educational process in a high-quality way, seek leniency in the eyes of students, drawing attention to their poor conditions. Such a paternalistic spirit creates what Inna Sovsun, in the article “Is a student revolution possible in Ukraine?” described as the “miserable” ethos of the Ukrainian university. Understanding this characteristic is extremely important to comprehend the social function performed by universities in our country.

On the other hand, Ukraine is undergoing a general trend of privatization and commodification of higher education. As a participant in the Bologna Process, the authorities, step by step, turn education into a commodity sold and bought. The logic of market fundamentalism penetrates to such an extent that profound theoretical studies and projects are put on the back burner to focus on immediate business requirements. From the very first year at a Ukrainian university, teachers preach that students must adapt to business realities, learn how to sell their knowledge, pass interviews, etc. This is not surprising since Ukrainian and transnational technology companies often intrude into the university space to recruit cheap specialists. This tendency leads to a general decrease in the quality of humanitarian education and the orientation of technical education not on deep theoretical knowledge but on solving particular practical problems. Nevertheless, it is profound fundamental knowledge that is absolutely necessary for the development of national science and the creation of innovations.

How do you conceive of the development of science in the service of a democratic and self-managed socialist society?

The question of socialism and a genuinely democratic society must necessarily be considered on a global scale. Therefore, the issue of education and science and the prospects for their development cannot be analyzed other than at the international level. Today, the dominant paradigm of the organization of the academic system is the Bologna Process. I mentioned the shortcomings of the implementation of its principles earlier. However, it is worth understanding that the Bologna Process is a logical continuation of the logic of globalization, which has been in full swing since the fall of the Berlin Wall. This kind of “Washington Consensus” in science involves a set of values, which are now commonly called the values of neoliberalism, in particular, the commodification of education and science. For knowledge to become a commodity, conditions were created under which it is possible to compare, exchange and evaluate education on a global scale. This enabled the activation of student mobility, recognition of diplomas from one country by another, etc. Therefore, it would be wrong to say that the processes in education over the last 30 years have been purely negative at the international level. As a result, the question arises, which position should the socialists take - to support the Bologna Process or to be in the radical opposition, a delinking in Samir Amin’s sense? To my mind, both alternatives are unsatisfactory.

We have already discussed the disadvantages of the first option and have seen that the Bologna Process cannot be an alternative vision for the organization of democratic and socialist education. However, returning to the pre-Bologna type, in my opinion, is perhaps an even worse option. This opposition reflects a trend in politics that has been seen similarly for the past 30 years. Namely, the search for the so-called “own way”, emphasizing the particularity of one’s nation, communitarian, not universal values. This path leads to the rise of nationalism and isolationism. Illustrative examples are Iran and Russia. It is unsurprising that the Russian authorities abandoned the Bologna Process after the commencement of full-scale invasion and emphasized the construction of education based on traditional values.

I believe that for true communists who adhere to radical democratic values, this contradiction is false. So we should not take sides. Our alternative must be neither the first nor the second, but something third, which one cannot see as something existing. Occupying this third stance creates a

space for experimentation, the construction of a democratic novelty that is indiscernible in the current state of affairs (a similar logic as in Jacques Rancière's book "The Ignorant Schoolmaster"). And you should not think that this "impossible" position has not progressed. The beginnings of such experimentation are the University of Vincennes in the 70s, the cooperative movement in the field of university education, trust property on a public basis, etc. The catastrophic destruction of Ukrainian education due to the war is terrible. However, it is worth emphasizing that post-war reconstruction should not only use old models but also experiment and propose new methods in education.

Without revealing anything secret, do you have other projects?

Currently, almost all my free time is occupied by activism and work within the "Sotsialnyi Rukh" council. Moreover, I am currently studying at the Faculty of Philosophy and obtaining a master's degree. I cannot say much, but at the same time, I am trying to establish contacts with the so-called "Drone Army" in the Ukrainian army. Something may come out of this in the future.

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