

Defense And Scientific Potential: What Ukraine's Enemies Did Not Take Into Account

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The recent sinking of the flagship of the Russian Black Sea Fleet by Ukrainian Neptune missiles has forced the whole world to recognize Ukraine's ability to develop, manufacture and effectively use the latest high-tech weapons

Leading political parties and figures associated with, in particular, the previous and current Presidents of Ukraine have tried to prove in advance that they played a key role in supporting the Neptune Project, which, however, began during the presidency of fugitive Viktor Yanukovich in 2012.

In fact, the domestic rocket industry did not stop working under either Kravchuk or Kuchma, and the engineering school that created Neptune was part of the Luch Design Bureau for decades, beginning in the 1970s. It seems that most modern politicians do not understand that their decisions to allocate money for specific projects have proved effective only because the **country has and still has a strong scientific, technical and educational potential, the future of which is called into question by short-sighted decisions** often by the same people on institutional funding for education and science. Unfortunately, institutions such as the Ministry of Finance still set the tone for decision-makers who, perhaps because of their superficial education, limited neoclassical views of the economy or bureaucratic conformism, believe that if the state has little money, the first thing to cut is education and science. Until recently, these gentlemen lectured us very seriously that Ukraine does not need such a powerful scientific capacity.. According to their ready-made strategies, we had to build an agrarian superpower, and purchase all technological products (including weapons) from abroad, because this is "economically efficient" according to the teaching of neoclassical economic theory.

It is now clear to everyone that if such an approach had been brought to its logical conclusion, Ukraine as an independent state would no longer exist, because, as it turned out, no one is in a hurry to supply us with heavy technological weapons. Therefore, it should be well understood that if it were not for our own high-tech weapons and our own highly educated military and engineering personnel who withstood the blows of the first days of the war, the supply of adequate heavy weapons to Ukraine would not have even begun. In other words, no one will defend Ukraine if the Ukrainians themselves do not defend it first.

The effectiveness of Ukrainian defense has surprised many in the world. Much has been written about the Russian military's inadequate assessment of the socio-political situation in Ukraine and the capabilities of the Ukrainian Armed Forces, as well as the fact that trying to attack Ukraine from all sides, the Russians failed to concentrate enough strength in any direction. But there are things that cannot be explained even by these obvious miscalculations in invasion planning.

One of them is the survivability and efficiency of the Ukrainian air defense system. Some

Western experts note with sincere surprise that the old Soviet air defense systems, it turns out, can be very effective, at least if they are used by Ukrainians. According to some assessments, the Ukrainian Armed Forces set records for the effectiveness of the use of these Soviet systems, as well as weapons systems coming from Western partners. Part of the answer may be that Ukrainians use all these tools more “creatively” in combination with more efficient and modern Western communication systems. But, no matter how cool, it turns out that Ukrainians demonstrate the ability to very effectively and “creatively” use complex technology. And there is only one explanation for this: Ukraine still retains an unexpectedly high scientific, technical, and educational potential for such a poor country. Despite the fact that almost all governments of independent Ukraine “saved” money on science.

Even young Ukrainian soldiers and officers have relatively better mathematical and technical training than fighters and field commanders anywhere in Syria or Afghanistan. And they were able to receive such educational training because Ukraine still has a **strong school of basic natural and engineering sciences, and the system of mass higher and secondary education still functions**. There are still dozens of institutes and universities, which several decades ago were involved in the development of new materials, control systems and other aspects of intercontinental missiles, aircraft, aircraft carriers, radars and more. It should not be forgotten that in the early 1990s Ukraine was the only post-Soviet country except for Russia, which had a universal scientific and technical potential, i.e. scientific, engineering and industrial facilities in all key technological areas. Much of this has been lost. But today’s war has proved that not all is lost. Ukraine has been able not only to use a variety of complex weapons systems efficiently and in an integrated manner, but also to develop its own systems, including the Stugna ATGM and others.

Our scientific and technological potential is saving Ukraine today - the same potential that the neoliberals have been trying to destroy for so long, telling us that “Ukraine does not need such a powerful science capacity” and that the country “does not need Soviet heavy industry.” In fact, it was our scientific and technical potential, together with Western aid, that became the foundation on which the Armed Forces were able to withstand the first wave of the Russian invasion.

Our national pride, the Neptune rocket, was created by the Luch Design Bureau, founded in 1965 under the leadership of **Oleh Petrovich Korostelov**, a corresponding member of the National Academy of Sciences of Ukraine, and not by pseudo-experts from newly established business schools. According to some deputies, the successful hit of our missiles on the Russian navy flagship “Moscow” was possible precisely because Ukraine’s old specialists (the “last of the Mohicans” of the Soviet defense industry) were able to insist on proper missile testing, which allowed to detect “artificial origin” and correct settings and accurately hit the mark.

Perhaps Tymofiy Milovanov, a graduate of the Kyiv Polytechnic Institute, could be more useful if he went to work at the Luch Design Bureau instead of going to America in search of a better life and did not promote (perhaps quite sincerely) neoclassical dogma at the Kyiv School of Economics, which now breeds useful idiots of our enemies.

The future of Ukraine as an independent state will depend on whether we can rebuild, preserve and develop this scientific, technical and industrial potential. The Government of Ukraine must stop cutting spending on education and science, and as soon as the active phase of hostilities is completed, must develop a strategic plan to dramatically increase them and attract additional resources to high-tech developments, making it a national development priority!

It is possible that tactical direct NATO intervention could improve the situation and prevent at least some of the bombing, but it is well known that if foreign forces come to “help” someone control their own territory, then it is very difficult to get rid of them. In addition, it is known that NATO does not

want to directly intervene in the war in Ukraine. The skies over Ukraine should be covered by air defense systems **controlled by Ukrainian specialists**, and in the long run these should be systems of Ukrainian production. Ukrainian military specialists and engineers of the military-industrial complex have enough education and qualifications to quickly master the latest types of weapons.

Ukraine needs modern air defense systems - provide them!

Zakhar Popovych

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