

Interview



Illustration by Shonagh Rae

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Jerzy Duszyński, the president of the Polish Academy of Sciences, talks about his country’s efforts to help scientists from neighboring Ukraine and what the future may hold for both Ukrainian and global science.

Since the Russian invasion of Ukraine in February 2022, close to 5 million Ukrainians—including hundreds of scientists and researchers—have fled the country, according to the United Nations High Commissioner for Refugees. More have gone to Poland than to any other country in Europe, and the Polish people, nongovernmental organizations (NGOs), and the government are working to provide them with housing, education, and health care. The Polish Academy of Sciences, under the leadership of President Jerzy Duszyński, has spearheaded efforts to find placements and funding for Ukrainian scientists in Polish research institutions until these researchers can return to Ukraine. Duszyński, an experimental biologist and professor at the Nencki Institute of Experimental Biology, has been president of the Polish Academy of Sciences since 2015.

In June, the US National Academy of Sciences met in Warsaw with other science academies, including the Polish and Ukrainian academies, to develop a plan to help Ukrainian researchers and prevent a long-term “brain drain” so that these researchers will be prepared to assist with rebuilding the country when the time comes. While in Warsaw, *Issues in Science and Technology* editor Molly Galvin spoke with Duszyński about the future of Ukrainian science, how the Polish academy got involved in helping Ukraine, and the ways the war may impact science globally.

Let’s start with what it was like after the Russian invasion of Ukraine on February 24. Poland has absorbed millions of Ukrainian refugees. Can you talk a little about how the Polish people have responded to the war?

Duszyński: Poland is in a unique situation because first of all, we now have millions of Ukrainians in Poland, which has significantly increased our population of 38 million.

The majority of Ukrainian refugees here are staying in private homes. It is absolutely extraordinary that the Polish people have accepted families into their modest flats and homes. Ukrainians feel safe here in Poland because they feel close to their loved ones who are fighting in Ukraine. They can go back and forth easily.

But eventually, there will be some sort of fatigue for this process among the Polish people. Let’s be frank. The situation is challenging. Consider the fact that populations of many of our big cities increased sharply—for example, Rzeszów by 56%, Gdańsk and Katowice by 34%, Wrocław by 29%, and Warsaw by 15%. All that happened within a few months, without conflicts, despite huge demands on our schools and medical systems to meet the needs of these newcomers. A miracle! This is especially true since this is happening right after the COVID pandemic. Therefore, Poland needs to build the capacity necessary to support these refugees as the war continues.

How soon did you realize that your academy was going to take an active role in supporting Ukrainian scientists?

Duszyński: The Warsaw Central railway station is just 100 meters from the Polish Academy of Sciences headquarters. We can see it from our windows. So when the war broke out, we went to the station, and we could see hundreds upon hundreds of Ukrainian people with no idea where to go and what to do, many with small children. They were disoriented and extremely tired. There were NGOs giving them food and clothes. Seeing that inspired our academy to work quickly with our institutes to host and support Ukrainian scholars displaced by the war. We worked through our administrative channels to get that arranged by March 1.

That’s just a week after the invasion began; that’s really fast. How many Ukrainian researchers did you support at first, and how many do you support now?

Duszyński: Our funding initially permitted us to host 60 scholars from Ukraine. We could afford to pay for three months of their accommodations and living expenses, but we quickly recognized that needs were much greater. So then we turned to the international community for help. We wrote letters, for example, to the institutions to which we pay fees, asking them to please allow us not to pay this year so we could use the money to help support Ukrainian scholars. Many of these institutions agreed, so that gave us extra money. And then came the US National Academy of Sciences, which entered into a partnership with the Polish Academy of Sciences to help support Ukrainian researchers, and the US academy raised some \$3.8 million, along with very generous support from others. Local and international institutions also provided support, including the Polish Ministry of Education and Science, the United Kingdom’s Royal Society, the German National Academy of Sciences Leopoldina, the Royal Danish Academy of Sciences and Letters, Taiwan’s Academia Sinica and National Cheng Kung University, and the publisher Elsevier. This allowed us to host 220 researchers at institutes of the Polish Academy of Sciences located throughout the country.

Initially, we were mostly bringing in scientists who already had connections with the Polish science community, but we knew this was not enough. So we reached out to our colleagues at the National Academy of Sciences of Ukraine and Ukrainian research agencies to help connect us to more scientists we could support. Looking ahead, we want to change our approach. We plan to establish about 20 research groups, or more if our funding permits, with Ukrainian scientists as principal investigators (PIs), who would then recruit small groups of coworkers, such as one or two postdocs. These groups will work in the best institutes of the Polish Academy of Sciences, and their assistants could

operate within Ukraine, at Ukrainian scientific institutions.

We also plan to establish a virtual Ukrainian institute that would be tasked with finding financial support for Ukrainian PIs, with opportunities for them to work at international scientific institutions at various stages. If this proves successful, my long-term dream is to establish a virtual Ukrainian institute with a global network, which, once the war is over, would be a significant driver for positive change for Ukrainian science.

As the war grinds on, this program could place a big strain on your academy's resources here in Poland. What does the Polish Academy of Sciences, and science in Poland in general, stand to gain from helping Ukraine?

Duszyński: First and foremost, we are in solidarity with Ukrainian scholars and with the Ukrainians fighting. We want them to succeed. We recognize how important science is for development of their country. We also believe this is the case here in Poland, and everywhere. In supporting Ukraine's science, we also want to demonstrate the importance of science to our own politicians. It is not an

Young researchers are getting even less support than more established scientists. So we want to focus on them especially. From the international community, we need financial support and intellectual support, especially to help implement our plans in the long term. We want to guarantee that 100% of the money we raise will go to Ukrainian scientists.

Importantly, this is not solely a top-down program either. For example, this program enables Ukrainian scientists to run many of their institutes remotely from Poland, including maintaining academic journals and computer systems.

The Polish Academy of Sciences was created after the devastation of World War II. Are there lessons from Poland's experience of rebuilding that could help Ukraine's academy after the war?

Duszyński: Our academy and the Ukrainian academy have similar structures. The Polish Academy of Sciences started in 1952 for the purpose of rebuilding our scientific enterprise after World War II, and it was mostly built on the

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accident that many scientific institutions in Ukraine are being destroyed. It is on purpose—because science is crucial for the country to flourish. We want to help because a strong and democratic Ukraine is in the best interests of Poland. There is no question about this.

Our scientists and institutions have gladly sought to support these scientists. We are doing this because it is the right thing to do. And, in doing so, our academy has also gained international visibility through supporting these scholars. We also have had the opportunity to host some of the most talented scholars from Ukraine's most excellent institutions and build connections with them. What could be better for a scientific institution?

What are the main goals of this program, both in the near and long term? How can the international science community help to support it?

Duszyński: Most Ukrainian scientists are still in Ukraine. They are in a tragic situation. At the moment, finances in Ukraine are being, understandably, directed to military purposes. Their scientific institutions are receiving very little support.

model of the Russian Academy of Sciences. Before World War II, there had been four universities in Poland. After the war, only two of them remained within our current territory of Poland—one of which was Warsaw University, which had been completely destroyed. So it was necessary to establish one institution that would oversee the development of all science in Poland.

The National Academy of Sciences of Ukraine (NASU), which started in 1918, was also based on the structure of the Russian Academy of Sciences. In recent years, the Polish academy has greatly evolved so that it could determine new research priorities and recruit the best researchers, many of them from abroad in open, international competition. These changes have enabled us to be more competitive globally. NASU was also beginning to reform before the Russian invasion. We still have problems in our academy, but we understand well what NASU is going through. There is room for them to grow and develop. After the war, there is a chance for NASU to rebuild better and stronger.

What do you think will be the most important priority for the Ukrainian science establishment to focus on now and when the war ends?

Duszyński: Our advice is that human capital is the most important. Money should go to support both established scientists and young, upcoming scientists. Of course, you cannot attract good nuclear physicists, for example, without infrastructure, but there is infrastructure that exists in Europe and in the world. So for our Ukrainian friends, attracting talented researchers, networking, and collaborating internationally is extremely important.

It is very difficult to build this talent pool from scratch. It can be painful because you must make some choices in the types of scientific endeavors and disciplines you support, and in whom you support, while building this capacity. There is understandable resistance to this kind of change. It can be difficult and seem more costly, but the cost of keeping mediocre institutions that aren't able to compete globally is even higher.

The Polish academy has relationships with other Eastern European science academies and, of course, with the Russian academy and Russian scientists as well. How has Russia's invasion affected the scientific landscape of the region?

Duszyński: We're observing the war in Ukraine up close, so Poland is in a special situation. We in the Polish scientific community released a statement that said we're breaking from relationships with Russian scientific institutions. It is heartbreaking sometimes, but you have to realize that there are two countries and one is destroying the other. So we have to take this into account, and we have to take sides. And for sure, we are with Ukraine. But on the matter of contact with individuals, it is very complex. We haven't advised Polish scientists not to have contact with any Russian colleagues because we know many of our Russian colleagues are opposed to the war. But of course, you never know who is on which side, and you cannot ask Russian colleagues which side they are on because you could be jeopardizing their safety. So we are very cautious in this respect.

How do you think global science is going to be affected by this war?

Duszyński: What I'm mostly afraid of is that there will be two sciences—democratic science and autocratic science. These two sciences would try to develop in parallel, but in isolation. That would harm everyone because the science would be so highly politicized.

We know about the harms of having two sciences from the past. Remember what happened to biology in the Soviet Union? In the West, science was rapidly advancing the understanding of genes, chromosomes, genetics, and so on. In the Soviet Union, particularly under Stalin,

chromosomes could not be acknowledged due to the political campaign of Trofim Denisovich Lysenko and his supporters, and their promotion of Michurinism. That was a catastrophe for Soviet science. Even many years later, Russian biology is still weak. It would be horrible if this "two sciences" situation happened at a global scale.

In addition, I worry about a propaganda war between these two worlds. For example, I think some of our problems in curbing the COVID pandemic came from antivaccination propaganda. This could happen for other issues too, such as with climate change—enabling complacency and halting scientific progress and the important role science can play in solving these challenges. And when there is a growing competition between democracies and autocracies, science may lose as investment shifts to other priorities, such as national security.

So this is what I'm afraid of—that there will be two blocks, two sciences, and hostilities between them. You cannot solve problems that are absolutely global in this landscape—such as pandemics or climate change. Thus, Ukraine and the outcome of the war are crucial in this world of two blocks. It's crucial for Ukraine to win this war to show the world that democracy is strong.

Why do you think that science is important to democracy?

Duszyński: Science flourishes when it is free—when politicians do not decide which field or which topic should be studied by scientists. So in a way, freedom is the essence of science, and freedom is the essence of democracy. Science should not be provincially restricted. However, autocracy is provincial. It is isolated within the boundaries of the country, and it does not like international external networking because it is very suspicious of it.

Science helps to develop rational expertise. This is important for the development of countries. But pursuing science should not come with the worry that you could lose your career if you do not align with government demands. This is what happens in autocracies where scientists' voices are muted or punished.

Democracies have problems too, of course. But I think of that Winston Churchill quote: "It has been said that democracy is the worst form of government except for all those other forms that have been tried from time to time." Although there are lots of drawbacks, there is no better solution to government than democracy.

Science is crucial for the wellbeing of a country. It creates people who understand the world. It creates people who can take a longer perspective than the next election. It creates people who understand very complicated mechanisms, like climate change and the consequences, and the price that we will pay if we do not act together.