



More
Excellence
& Openness,
Less Celebrity

Prof. Jerzy Duszyński, President of the Polish Academy of Sciences

Academia: Let's start back at the beginning. You graduated from the University of Warsaw at just 22 years old, and you also earned your doctorate quite quickly. What motivated you to become a scientist?

Jerzy Duszyński: *I am from Warsaw, from the first postwar generation, which witnessed Poland, or more specifically Warsaw, lying in ruins. I remember seeing a field of rubble on the route from the Żoliborz district to downtown. I remember bomb craters behind my school. I remember buildings on Marszałkowska Street with bare apartment walls exposed on the upper floors. And how nearly every house was pockmarked with bullet holes. I took a great interest in science already in my school years. The library was then an important place for me - both the one at school, and the one in the Żoliborz cultural center, near my home at ul. Suzina 3. After graduating from Lelewel High School (I have grateful memories of my school teachers, especially Ms. Anna Radziwiłł), I became an undergraduate at the University of Warsaw. After earning my diploma I started research work at the Nencki Institute of Experimental Biology, and I have remained affiliated with the institute ever since. I chose biology as a field that seemed to hold the greatest hopes of breakthrough discoveries just waiting to be made. Those hopes have indeed come true, and are still coming true. I have been a witness to - and also a humble participant in - the molecular revolution in biology, a whole series of great discoveries in biochemistry.*

Who was your mentor?

Prof. Lech Wojtczak, an outstanding biochemist, a pioneer in biochemical energetics in Poland. Being lucky enough to have an exceptional mentor is a great gift of fate.

What dreams did you have at the outset of your research career?

I wanted to work as a scientist, to discover something important, to make a name for myself in the field. I found the idea of travelling abroad to attend conferences, to stay as a guest researcher, an entic-

ing prospect. It was quite hard to travel abroad in those days. And indeed, right after earning my doctorate I went to stay as a visiting researcher in the United States, then later France.

How do the opportunities you had when getting started in science compare to those that young people have today?

Research work is very attractive for people who have a passion for discovery, for investigating and studying things. There is a small number of them in every society. They devote themselves to their passion, frequently forgoing many practical aspects of life. The number of individuals who go to university has risen several-fold compared to my student years. We can say that the impassioned science-lovers have become greatly "diluted" among less scientifically motivated people. Today's programs of study are also more geared towards the mass-scale undergraduate or doctorate student. I got my start in the times when it was not seen as fitting to talk about a "career" in research, as it could get one labeled as a "careerist," something very pejorative. My answer to your question is therefore this: doing science is now more of a mass-scale phenomenon, scientists operate with a greater awareness on the global scale, and the notion of a scientific career is already well-accepted, although there are likewise more "careerists" in today's research world.

Is there now more competition?

Yes, as we are now working more in the global dimension. We find out about achievements made by our colleagues much more quickly. Sometimes they announce results which we are close to achieving ourselves, or even more dramatically, results we are already working on writing up. This is because of the disappearance of the Iron Curtain, the increased freedom of movement and ease of communication, and the Internet.

How can today's young people be persuaded that science is a good option?

Doing science is an impassioned kind of work, offering great freedom to blaze one's own professional path. It is an intel-

lectual adventure, involving a constantly changing subject, so there is no getting stuck in routine.

What does your experience in research work tell you about holding the post of President of the Academy?

First and foremost, that in order to perform well we have to set ourselves priorities. For this term of office, I have set three objectives: fostering greater scientific excellence, ensuring openness, and cutting down on the sense of "celebrity," which means flattening the status hierarchies and creating an atmosphere of team partnership.

How do you want to pursue the first goal?

It is a long process, firstly because funding for science is on a very low level in Poland, and secondly because our science is highly compartmentalized. Let me mention that I recently had the chance to talk to the head of the Max Planck Society, and I asked him what limits the number of institutes. He said that there were mainly two limiting factors: the budget, and the number of scientifically talented people available in the fields where the Society recruits staff. Both that budget and those fields are an order of magnitude larger than ours. Judging by the standards of the Max Planck Society, our country can afford about ten Polish Academy of Sciences institutes, and also, judging by general German standards, a few state universities. But getting back to scientific excellence, in the first stage it is important to promote outstanding papers published in very good international journals. And despite what some might think, this does not just apply to the "harder" sciences: in the humanities and social sciences, as well, efforts need to be made to ensure that publications are, to the extent possible, written in English and published in good international journals. That is the right direction. We should not have any inferiority complex here - we contribute a lot of novelties to world science and as an important EU country we are interesting to the foreign audience. They are curious about us, our history, our society, and

what is currently happening here in our country. We need to realize that the cost of making a very good achievement is comparable to the financial outlays needed to fund poorer, secondary work. Given the limits on funding, it is a shame to engage in the latter. Change in the scientific domain proceeds relatively slowly, particularly on the level of research institutions. This is because of a certain natural inertia, but also because such reform is like doing an operation on a living organism. I feel that attention should be paid to a trend towards increasing the ratio of good and very good publications coming out of each individual research unit, as compared to mediocre and poor ones. Institutions that very clearly promote such a favorable trend should be rewarded. Not only those starting from a strong level, but also those beginning the process from weaker starting points. Numerous units in Poland would then be moving towards excellence. I feel that would be favorable.

The results of the National Science Center's ETIUDA 2 and FUGA 4 competitions were recently announced. Of the 147 winners, 28 work at the Polish Academy of Sciences. Is that a lot, or not a lot?

I feel that is a very good indicator of the excellence of the Polish Academy of Sciences.

But Polish researchers rarely win, for instance, grants from the European Research Council.

That is linked to the lack of pressure for excellence in science in Poland. Since the first edition of those grants in 2007 only a few researchers working in Poland have managed to secure one, and now there is a downward trend. What needs to be done? Above all, we need to strongly reward the winning of such a grant, both on the individual level (for instance, by awarding a National Science Center grant automatically after an ERC grant is won) and on the institutional level (for instance, awarding a research unit a lot of points in its evaluation for having an ERC grant winner among its staff). We

need to learn from others who win grants. The countries that fare well in the ERC competitions have whole systems worked out for selecting people who stand good chances of winning funding, then promoting them, aiding them in writing their applications and helping them present their achievements. It is not the case that these people win such grants on their own. They have a big support system and we need to build a similar one in Poland. The National Contact Point affiliated with one of the PAS institutes is very helpful here. But the Academy and other research institutions should be even more active in this direction.

Your second objective is openness.

By which I mean spreading information about research achievements and constantly trying to persuade society and decision-makers - who still very rarely approach us for expert opinions - that expert knowledge is crucial for the country's development. The energy sector, vaccinations, the system of education - without people who are well-oriented about how things stand elsewhere in the world, who study such issues scientifically, the future cannot be planned properly. Because good science is the basis of innovation, but also rational, well-considered strategic state decisions. We have to change something on this issue that is harming us terribly: the conviction that science is an eternal clash between two extreme opposing views. Someone maintains that GMOs are useful, others that they can kill. That discussion may indeed continue, but it is important to point out that 99% of scientists feel that at this point there is no strong evidence for the latter view. And vaccinations? We will always be able to find people who argue that they are harmful, but the vast majority of scientists have taken a clear stance on this: if we do not vaccinate our children we will be in terrible trouble, because once-defeated diseases will reappear. Things are similar in terms of CO₂ emissions - reductions will be a necessity in Poland sooner or later, and so we have to use sensible persuasion and prepare for generating energy by means other than coal. Our role is to say, at the very least,



Prof. Duszynski lives and enjoys his leisure time in Podkowa Leśna, a charming Warsaw suburb. He commutes to work in Warsaw by train

that atomic power plants do entail certain dangers, but they are smaller than those entailed by traditional forms of energy production. A center presenting alternative and energy-efficient technologies opened in the Warsaw suburb of Jabłonna in autumn of 2015, set up in affiliation with the Institute of Fluid-Flow Machinery, Polish Academy of Sciences.

The Polish Academy of Sciences should speak with one voice. Is that possible?

Yes. There are predominant currents, paradigms, opinions. The fact that some researchers might be found within the Academy who do not agree with them is a good thing. That's the nature of science. But science should above all be based on experimental results and observations published in the scientific literature, on opinions expressed by the top specialists. And so if anyone has a different opinion, they will have to try to demonstrate its credibility, for instance by publishing an article in a well-renowned journal. Then, perhaps, they might trigger a revolution in our understanding of a certain important issue. But for the time being we are talking about dominant views. In my opinion it is very important to instill a conviction that science can indeed take a clear stance on certain issues.

Getting the right information, the full story out to people is important, as was shown by an article we published in *Academia* magazine no. 1/2014 about shale gas ("Tapping Deep into Public Emotions"), written by a geologist, Dr. Magdalena Sidorczuk, and a sociologist, Dr. Piotr Stankiewicz. The research they cite indicates that society actually knows so little about the topic that people are opposed to it "just in case." The situation was similar in the case of a Polish law dealing with the experimental use of animals - there was talk about their suffering, but almost no one explained how important a role they play and why in many situations other methods cannot be used.

The latter case is also the fault of the media, which likes to report bloody stories. It should have been explained to people that excellent pain medications, which work in very complex ways, cannot be created for patients suffering from cancer, for instance, without first being tested on animals. Unless we decide that we will not be creating new drugs and rest satisfied with the way things are now, with what we have now. Scientists are voicing their opinions, but their voice is not getting heard. One analytical article in a newspaper will not make much of a difference. I want to change that state of affairs.

What else do you consider important to change?

Modern science is advancing through teamwork. Research infrastructure is of course important as a place where hardware is concentrated, but also where teams of specialists can interact. There are of course fields of science in which individual-scale efforts remain dominant - in many fields of the humanities, for instance philosophy. But in the natural sciences, teamwork and interdisciplinary approaches are now yielding good results. In Poland we have our work cut out for us here. In many domains of social life, the priority is placed on combatting pathologies. Suspicion flourishes and that gets transferred into the realm of science. Pathologies of course do need to be combatted, but the whole system cannot be focused on that, but on promoting what is good. People flourish and are creative in an atmosphere of trust. At the same time, certain ethical rules, clearly set standards, need to be in force. Anything and everything that violates those standards needs to be eliminated - succumbing to pressure, plagiarizing, claiming someone else's work, voicing unfair opinions. The Polish Academy of Sciences has to prioritize implementing the standards of a well-functioning scientific community. There is an ethics

committee affiliated with the Academy, whose scope of activity covers the whole realm of science in Poland.

Can we imagine a Polish science landscape without the Polish Academy of Sciences?

Our minds are capable of imagining anything. But many of the Academy's institutes are the country's leading centers, pursuing extraordinarily important research tasks. Effecting some kind of abrupt change here would be detrimental. Science is particularly in need of stability and long-term prospects. When countries take good care of their academies – such as Germany (the Max Planck Society) and France (the CNRS) – they demonstrate that they have enlightened science policies. When they turn their academy upside-down, like in the Russian Federation, they show that the opposite is true.

Sometimes one gets the impression that the Polish Academy of Sciences is

a fortress that comes under heavy fire every so often.

At a time when there is a shortfall of funding, coming under fire is something natural. But the attacks against the Academy could definitely be mitigated, for instance through greater openness to science in general. Researchers should band together to pursue group projects. But the poor flow of personnel between Polish institutions is a problem and a barrier. It should be the case, after all, that researchers from universities come work for a time at the Polish Academy of Sciences and vice-versa. Indeed, such is the practice at the PAS Institute of Mathematics and the respective faculty at the University of Warsaw, for instance, as well as at the Academy institutes in Poznań and the universities in the city. This practice is beneficial to the research skills of our university colleagues, giving them a chance to enter a new environment, experience a new perspective and to focus on research work for a certain period of time, and it gives Academy employees a chance to develop

their passion for teaching. As a result, the caliber of both research and teaching in the country is improved.

Different groups have been voicing opinions about how the Polish Academy of Sciences should be reformed. Are there some of their recommendations that you consider sensible?

Of course. Above all I believe that most of the circles criticizing the Academy, such as the "Citizens of Academia" movement and the Polish Young Academy, wish nothing but the best for Polish science and want it to continually improve. Many of their recommendations are well-founded. But not everything can be done straightaway. Reform needs to be systematic. Sudden change will disrupt the entire system of research in Poland.

You have announced the end of "celebrity" at the Academy. Why?

Because I remember being pleasantly surprised to discover how in the United States, the professor leading a research team would be on a first-name basis with all the team members. And that is the way things are all over the world. In Poland, a detrimental kind of feudalism still prevails, with a fear that being on a first-name basis will undermine the sense of respect. In fact, true respect cannot be created through titles alone, and it cannot be undermined by familiar forms of address. A team leader earns respect for what kind of person he or she is, how he or she behaves. By treating the team with respect, asking them for instance for their opinion on certain issues, rather than taking an authoritarian approach. At the "Polish Scientific Networks" conference this year, Prof. Andrzej Blikle delivered an inaugural address in which he spoke about how a well-functioning company does not have a boss and subordinates, but rather a team of collaborators. If that is something fundamental in business, it is all the more so in science. ■

Interview by Anna Zawadzka and Katarzyna Czarnecka, photos Jakub Ostałowski

Prof. Jerzy Duszyński was elected President of the Polish Academy of Sciences for the 2015-2018 term on 19 March. He leads a large research team (the Laboratory of Bioenergetics and Biomembranes of the Nencki Institute of Experimental Biology, Polish Academy of Sciences) that has been successful at grant-winning and he has for years been collaborating with numerous world research centers, including the Institute for Research in Biomedicine in Barcelona. He is also a member of the Science and Society committee of the FEBS (Federation of European Biochemical Societies) and the Board of Trustees of the Institute for Research in Biomedicine in Barcelona, and a leadership member and coordinator of the Polish Network of Molecular and Cellular Biology UNESCO/PAS, and also a former member of the International Advisory Committee to the International Institute of Molecular and Cellular Biology. In 2007-2008 he served as Deputy Minister of Science and Higher Education. Since April 2014 he has been involved in the Science Policy Committee, a 13-member advisory body to the Minister of Science and Higher Education. In the 2011-2014 term he was a member of the Presidium of the Polish Academy of Sciences and Dean of the Academy's Division II (Biological and Agricultural Sciences), the initiator of a meeting including the Deans and Chairs of the Councils of Provosts of all the Academy's Divisions.

He sits on the editorial boards of many leading research journals. He has written numerous articles published in the specialist press (including in the journal *Science*) and a series of high-school biology textbooks. He co-compiled the school encyclopedia *Biologia: Jedność i Różnorodność* ["Biology: Unity and Diversity"]. He has been an invited speaker at many international research conferences, and has organized many such gatherings. He has been a judge for many European competitions and an evaluator for European research organizations, including the Czech Academy of Sciences.