

Interview with Prof. Michał Kleiber, President of the Polish Academy of Sciences

Looking to Another World



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Prof. Michał Kleiber is not just President of the Polish Academy of Sciences, but also leads the "Poland 2020" National Foresight Program

Academia: In addition to being President of the Polish Academy of Sciences, you also lead the "Poland 2020" National Foresight Program – and today we want to talk to you about the future.

Michał Kleiber: Talking about the future in a well-reasoned way is difficult and risky. The existence of many past predictions that have gone unfulfilled persuasively challenges the very notion that the future can reasonably be debated. I have gathered a whole collection of such paradoxical forecasts. For example, an official letter to the US authorities written by a late-19th-century chief of the US patent office, stating that his institu-

tion should be shut down because everything there was to invent had by then already been invented. Or, for an example closer to home, consider how 2–3 months before the Lehman Brothers bankruptcy the world's top economists were still maintaining that a financial market crash was impossible. It proved to be possible.

If thinking about the future is so risky, is it worth doing in the first place?

As I recently said in a lecture about forecasting: we are unable to ponder the future, and yet we must ponder it. If we look at the challenges facing the world, facing Poland, facing every

one of our institutions, it is hard to imagine us not trying to envision the future. We are having problems with the climate, with poverty (a large share of the world population has to survive on less than two dollars a day), with access to water (one consequence being the thousands of people dying in southern Sudan). These global problems will be getting worse, and the list could be extended indefinitely. There are also more local matters: e.g. the issue of ceding elements of national autonomy to international organizations like the EU. We need to think about this – to what extent we want to be self-reliant or part of a greater community.

To date, so many forecasts have proven way off-target (including some produced by great experts).

We cannot just rely on haphazard prophecies. The Polish media invites in some "specialist" - a randomly chosen commentator - and asks: Where will the euro-to-zloty exchange rate be five years from now? He gives some answer, which of course does not come true. That compromises the idea of pondering the future, and it has nothing to do with real forecasting. Fortunately, nowadays we do have more organized methods for debating the future.

How does the "foresight" methodology differ from previous forecasting methods?

The foresight approach does not aim to predict specific future events (because that is impossible), but attempts to work out possible scenarios for the future. We build scenarios which crucially give some attention to what must be done along the way for a given situation to come to fruition within a set timeframe.

And how many such scenarios should there be?

That is an open question. The "Poland 2020" Foresight Program developed 5 scenarios. Two of them are in our view unrealistic - one unfortunately, the other fortunately so. Their purpose is to delineate the boundaries of debate. The first scenario envisions a "leap forward," meaning Poland becoming a proverbial second Finland a decade and a half from now. The second, "collapse" scenario, envisions that nothing works out for us, no one helps us, and we enter a state of permanent crisis. The other, intermediate scenarios, or combinations thereof, are more likely. They show us what the realistic options are, and what we can do to bring each of them closer to becoming a reality.

And that is the key to a successful forecast?

Forecasting work is especially difficult in Poland. We have a historically rooted aversion to central planning efforts - for us they are reminiscent of the communist-era five- or six-year plans. People who remember those days feel uncomfortable when we talk about planning. Aside from that, we are a society that under-appreciates long-

digital media or journalism will look like 10 years from now. But to think about the future, one needs to tear oneself away from the here-and-now. The possibility of breakthrough innovations has to be accounted for. That requires very good familiarity with the present. The forecasting weakness of the otherwise very valuable "Poland 2030" re-

A knowledge-based society is key to Poland's future. Money spent on science is the best kind of investment

term consequences. For instance, in our country little attention gets paid to education and science. "Perhaps something will come of that someday, but for now it does not concern us." Our society is not concerned for either the environment or our health. We complain about the health care service, and with good reason, but we do not think about going on a diet or quitting smoking.

Poland has produced many strategies...

Every successive government comes up with its own strategies. They are mainly focused on long-term timeframes - by then no one will remember who is responsible for implementing what. Poland now has several hundred such strategies, it seems that efforts are being made to lower that number, but due to frequent political changes the situation is not improving. That is further exacerbated by the low caliber of public debate. How can the future be discussed in a way that is acceptable and supported by an interested society, if the subject does not appear in the media at all?

So how should we think about the future?

We should analyze many possible futures, noting the circumstances that underpin each of those scenarios. It is also important not to just extrapolate from today's situation, but to try to take account of completely new fields of activity. In certain domains, that can be anticipated: we can imagine what the

port prepared by a team led by Minister Michał Boni is that although the starting point was identified very well, its vision of the future is not formulated very concretely. For instance, broadband Internet access was adopted as a yardstick for measuring the development of information society. But what sort of yardstick will that be in 2030? We have to be careful not to look at tomorrow in terms of today's way of thinking and today's problems - the future will be another world entirely.

How does that look from the technical standpoint, for example in Foresight 2020?

Forecasting work needs to be done as a group. I do not lend credence to predictions made by single individuals. It is important to create the right conditions to foster unbiased thinking about the future. Everyone of us has their own visions and their own preferences. The Foresight 2020 program has made a great effort to bring in scientists, students, national and local government officials, representatives of chambers of commerce, and representatives of the media. Many interested parties need to be involved, if possible everyone who represents a key element on the given issue. It is also important for young people to be involved. The next issue is to identify the key factors. Among the unlimited number of possible factors, we need to choose which ones to ascribe greater importance to. They will then drive our scenarios, whereas the

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Patrycja Dolowy

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Pictured here: Prof. Michał Kleiber speaking at the Academy's Jabłonna Palace Conference Center

rest will just modify them. If we choose the key factors incorrectly, the report will not be of much value. Forecasting reports need to be written while bearing the demand for them firmly in mind. For many reasons. Firstly, that helps with gaining additional opinions while the project is already underway. Secondly, if efforts are not made to generate such demand, it will not arise on its own and the document will end up sitting on the shelf. We talked with all the ministries we suspected would be interested in our report.

Is forecasting a science or an art?

It contains elements of both. The scientific aspects include gathering and analyzing data, building mathematical models and computer simulations. Elements of psychology are also useful: the questions need to be framed for maximal clarity, communication must

be facilitated among people with highly diverse backgrounds. The methods for analyzing the information gathered also have to be well thought out. The public opinion research center Pentor is a joint implementer of the Foresight program. We formulated the questions, Pentor gathered the data and presented it to us for evaluation. There were 5,500 individuals taking part in the program, forming various levels of debate, including around 300 internal experts. They were also divided up into panels, with each panel additionally subdivided into thematic fields. The flow of information was also very important here: we developed a dedicated website for the purpose.

So what does Foresight 2020 mean?

One of the main conclusions is that the development of a knowledge-based society is crucial to Poland's development.

That was shown by all the positive scenarios. There is no way for us to be able to play a significant role in the world a decade and a half from now, if we rely just on European assistance and on our system of state institutions as it is today. Our economy is not innovative, our system of higher education and science is still far from perfect. Without systematic improvement in this regard, we can forget about such dreams.

How can we change that?

Fortunately, it has already become politically correct to speak about a knowledge-based society. At one time there was no talk of it at all. Now no one can deny that knowledge is the key to development. For 20 years it has been debated whether the weakness of Polish science lies in funding or organization. This is an irresolvable, chicken-or-the-egg dispute. The

situation can only improve when both elements improve: unfortunately, no one will provide money if there is no change, but changes are impossible if there is no money. Fortunately we do have European funding, but it will finish in a few years. The way we harness EU funding now could be crucial for our position in the world in the coming years. That funding cannot provide an excuse to politicians not to allocate greater budgetary spending to science. One interesting way of gauging things is to take the ratio of a country's spending on defense to its spending on research, illustrating what priorities and problems a country has. For most countries (including highly-developed European countries and the United States) this is more or less a 1:1 ratio. Things are somewhat worse for science funding in countries like the Czech Republic and Hungary (with ratios around 2:1).

And in our country?

In Poland this ratio is around 4:1, of course in favor of defense spending... We consider defense to be four times more important than fostering science! I think this is an utter failure to understand the challenges that lie ahead. As if we believed that a country's position in the world of the future will be determined by machine-guns. But the real battle is over intellectual autonomy - a country's position depends on competitive science. If Poland fails to create the right conditions to ensure that young people (from Poland and elsewhere) desire to stay and work here, we do not stand a chance. The developmental challenge is quite simple: whichever country attracts more talented individuals wins. This is something obvious to the scientific community, but unfortunately unpopular among politicians.

We are also wasting our domestic competitive potential. After finishing off PhDs, young researchers end up choosing to work for corporations. The state is losing independent experts. That is dangerous...

When I see how Western universities fight for students and compare that to the promotional efforts of Polish universities, it sends shivers down my spine. These sorts of things determine our weakness in future years as well. Our message with the Foresight program is: we need to prioritize education, science, and innovation. Money spent on such objectives is the best kind of investment. But we also need to prioritize quality: the "equal pay for everyone" philosophy is wrong.

Is there a chance this will shape how politicians think about the future?

It is not that we have weak politicians - the weakness stems from all of us. In a democratic system, such as we are fortunate to have, politicians behave in line with public sentiments. I have already mentioned that we lack robust public debate. People are more interested in celebrities - this is what gets published on the front pages. When I flew to China a few weeks ago I happened across a Chinese newspaper. On the front page was a story about how a Chinese scientist had been elected to head a major international organization. I have been head of a major international organization for years - but no one in Poland cares. Once at a meeting in parliament, I asked a group of MPs how many times they had been asked by voters in their constituencies about what they plan to do to improve Poland's system of science, to ensure that a knowledge-based society has real political support. No one had ever asked! The role of science is completely ignored in our public contemplation of the future.

And so our task is to make sure it gets noticed?

Every one of us scientists has a duty to bring this up. We need to attend meetings with MPs and ask them about education and science. We need to get the public to recognize science as a key factor of development: research

carried out at higher education institutions, research institutes, and no less importantly at innovative companies. What we have managed to achieve so far is that science is not considered something completely dispensable. But there is a lack of concrete actions to press this forward. This is not just exclusively about money - there is not enough appreciation for scientists' role as generators of the country's modern image, as experts who can help in all levels of state administration, as individuals responsible for developing creative educational programs. Academia magazine does a great job at promoting public awareness of science, but let's not delude ourselves - we are not yet in the mainstream.

Interviewed by

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Prof. Michał Kleiber, President of the Polish Academy of Sciences and chairman of the "Poland 2000 Plus" Forecasting Committee. Holder of honorary doctorates from several European universities, a member of the European Research Council, a foreign member of the Austrian Academy of Sciences and the academies in Salzburg and London, on the boards of more than a dozen research and popular-science periodicals, and editor-in-chief of *Archives of Computational Methods in Engineering* (Springer). He has won many Polish and foreign awards (including the Prize of the Foundation for Polish Science, the "Polish Nobel") and held state offices including Minister of Science and Information Technology. He studies research applications of computer techniques. He has authored or co-authored more than 240 papers and 7 books.