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Title: „Régi vágású felfogást tükröz, amit Orbán az európai innovációról írt”

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Mariana Mazzucato is the director of the UCL Institute for Innovation & Public Purpose, and her research focuses on the relationship between growth and innovation, the interaction between the state and the economy, and sustainability. In his highly successful books, *Entrepreneurial State* (2013) and *Value of Everything* (2019), he approaches the role of the state in a new, unusual way.

She is also active as a policy advisor, a member of the UN Development Policy Committee, and the author of the study on which Horizon 2020, the EU's largest research and innovation program to date, was based.

We talked to her on the occasion that Rajk College students chose her as its 2020 Neumann Prize winner. The economist will give a lecture in English on Monday, October 12, from 6 p.m., entitled “Rethinking the State: From Public Goods to Public Value”. The presentation is open to everyone - the link to the Facebook event can be accessed by clicking here - but participation is subject to registration.

In a recent essay published in the Hungarian Nation, Prime Minister Viktor Orbán wrote that Europe lags behind the United States and China in global technology competition because it envisions technology competition on a civil-economic basis, while the US and China compete on a military basis. Is Orbán right that without a serious joint army, modern technologies cannot be developed in Europe?

I think he would have been right a long time ago, in that sense, a slightly old-fashioned notion on which the essay's argument is based. It is true that many of the innovations that I wrote about in the *Entrepreneurial State* (the book does not yet have a Hungarian translation, the title means: The Entrepreneurial State - ed.) Were created through Cold War and military expenditures. But it was not the Cold War that was the primary cause of the developments, but the fact that innovation was treated as a matter of national security.

This was taken very seriously and that is why in the US the Department of Defense spent the most on research and development. There was a significant difference between the United States and the Soviet Union, with the process in the United States deliberately also focused on civilian use. Therefore, there were much more significant links between the financial system, academia, and industry.

This is what we now call a national innovation system. In my book, I show that many innovations, such as “blockbuster” * drugs, the iPhone, the touch screen, GPS, or Siri, artificial intelligence, cloud computing, government-funded military, space exploration, or healthcare comes from research.

It does not depend on the emergence of epoch-making technologies, on whether military expenditures cover developments, but on whether we treat them as a matter of national security.

I think that, at the moment, we should subordinate R&D spending the most to sustainable development goals. Of course, this requires us to feel this urgency, and the real problem is that we don't feel it.

In 2020, for example, we should treat the fight against climate change or the fight against the coronavirus epidemic as a matter of national security. Or, for example, the fight against inequality, as President Johnson spoke about the fight against poverty in the 1960s. These goals can result in the same amount of research and development as military goals.

What do you think about the idea that a country like Hungary is not worth spending on basic research, so it should only spend on applied research and use the results of basic research in richer countries? It may be part of the strategy after all, but it's not worth just basing on it. To get to the moon, basic research and applied research were needed, and the same is true of the fight against climate change. The most interesting ideas often come from collaborations between basic and applied research.

One of the reasons, by the way, that the American state was able to convince very sensible people to work for it was precisely the relationship between basic research and applied research. I am thinking of agencies such as DARPA (Defense Advanced Research Projects Agency), which deals with both applied and basic research. The real question, then, is not whether a country specializes in basic or applied research, but what areas it focuses on. I am thinking of areas such as digitalisation, climate change, or health research.

If a country focuses only on the employee, there is a risk that the research will be very isolated, and as a result, really talented applied researchers will go to countries where they take R&D more seriously. Retaining good researchers requires both basic and applied research.

However, it is also true that a country cannot pretend to be the best in everything. And here comes goal-oriented research that delimits the areas on which a country can focus its resources.

And it doesn't all depend on how rich or poor a country is. Richer countries can maintain a broader R&D portfolio. But there is Denmark, for example, a small but global leader in green technologies. And not only in the industrial field, but also in services. Even before announcing its plan for massive emissions reductions last week, China planned to spend \$ 1.7 trillion to green its economy, using Danish digital services to do so.

The question is where this capacity comes from. And the answer is that you need a plan for that. There was a political will in Denmark, and this was accompanied by a comprehensive plan. Coherent, coherent measures have been taken, creating a dynamic innovation system.

How should a country like Hungary approach research and development?

It is not necessary to focus on the ratio of basic research to applied research, but on the problem that the Hungarian state envisages solving through research and development. It is possible that the applied research will be stronger in the distribution, but this does not mean that basic research should be completely neglected.

I think for a country like Hungary, the most important thing is to have ambitious targets in certain areas and bring about as much innovation as possible in those areas.

Instead of making the typical mistake of writing a list of industries, of course, instead, there is no economy-wide innovation.

In the United Kingdom, for example, the industrial strategy focused on five sectors *. Research and development tax breaks were created and resources were allocated to industries, but to no avail. A good solution would have been to involve not only the automotive industry, but also other industries, such as design, digital services, and infrastructure investment, with a focus on mobility, for example.

At the Moon, the focus was not only on aerodynamics, but they also invested a lot in nutrition science, materials science, electronics and software development. These were all byproducts of the quest to get to the moon.

Attracting talented researchers and industry collaboration requires an appropriate public procurement policy. Within a state budget, it is worth focusing public procurement spending on innovations that solve citizens' problems, which is a good way to increase innovation capacity.

In Hungary, we also have a special word for when EU R&D money is stolen, we often say that the money has been stolen. What solutions can guarantee that research funding actually serves its original purpose?

There have been similar problems in Italy, in the past a lot of EU money has not been spent because the state has not been able to organize the spending of the money. And that's the first thing before we talk about corruption.

Often states do not even have the capacity to play a key role in the innovation.

Because of this, money coming from outside the country is either spent badly or not spent at all. This is partly because we believe it is the responsibility of the state to address market failures and reduce private sector risks. As a result, many countries rely too heavily on tax breaks in R&D, which in most cases only increases the profit of the private sector, but not their investment. This is a waste overall.

So it is not corruption that is the cause, but a misunderstanding of how private sector investment is created. These investments are primarily determined by whether companies see future opportunities. Therefore, R&D can be made cheap for the private sector, but if they do not see opportunities, they will not invest. This problem is seen in many countries, such as Italy, but also in the United Kingdom.

Waste is also common in financing small and medium-sized enterprises. SMEs do not primarily need money, but growth opportunities, but they need markets. A good public procurement system can create a market for SMEs. In the United States, for example, there is a program that allocates 3 percent of each ministry's budget to SMEs. This program helped a lot of American companies in their initial growth.

Something similar is very much missing in Europe. And returning to Orban's statement, Europe is not lagging behind in technological competition because it does not spend enough on defense, but because it does not use all government instruments at the level of individual countries - grants, loans, public procurement - to encourage corporate investment.

How do you rate “global competition for the coronavirus vaccine”? This is exactly a goal-oriented research project that you are also involved in.

The small problems seen in vaccine development are a good reflection of global problems in health care. There is no well-functioning relationship between the private and public sectors. A lot of public money goes into improvements, as it does now with a coronavirus epidemic vaccine, but the same is true for Hepatitis-C drugs, cancer drugs, or diabetes drugs.

For most blockbuster drugs released in the 21st century, the initial, most risky development phase was funded with public money. If this process is not properly regulated afterwards at the level of intellectual property rights, patents and pricing, citizens will not benefit from the goods they finance.

At present, patents are too broad, too strong, the licensing process difficult, and they are increasingly patenting knowledge generated in earlier phases of research, whereas in the past the patenting of end products was more significant. This is essentially the privatization of science, which has had a bad impact on innovation in recent years.

In the 1980s, the biotech industry was created because states allowed state-sponsored research to be patented, so many American and British universities came out with spin-off projects. That would have been fine, but states should have ensured that patents were regulated in a way that encouraged the spread of new ideas and further innovation, which they failed to do.

In addition, the private sector, such as venture capital funds, have mowed heavily on publicly funded research. The prices of the medicines thus placed on the market were completely deviated from the level that would have been justified on the basis of the public money invested in development. Pharmaceutical companies like to pretend to be the world's greatest innovators, while they actually spend much more to repurchase their own shares to artificially increase their share prices than they do to research and development.

And what does this look like with a coronavirus vaccine?

We want the community contribution to be included in the pricing, and in fact, we want it to be as free as possible, because it all only makes sense if everyone is vaccinated. So governments can subsidize the costs, but the real goal is 100 percent universally available and affordable vaccination.

The World Health Organization argues for a patent union, but it is not mandatory, just a proposal. I think it should be mandatory for companies that also use public money to be subject to rules agreed with the public sector, but negotiations on this usually do not even start.

A dose of Remdesivir, also used to treat coronavirus, costs \$ 3,120 (nearly \$ 1 million) in the U.S., while \$ 70.5 million in taxpayer money was used to develop it. This epidemic, I think, highlights that this whole thing should work completely differently.

Bjørn Lomborg, director of the Danish Environmental Assessment Institute, said in a recent interview with 24.hu that there is no need to panic about climate change because it will only force low-efficiency and expensive short-term solutions out of politicians. Do you agree with that?

I think he panics rather than coming up with a plan. The right attitude towards climate change is when we have a very clear plan of what exactly we need to do, and that is exactly the opposite of panic.

The first logical thing is to listen to science. If science says we have roughly 10 years before we reach irreversible levels of climate change, then the question is what investment is needed to achieve climate goals. It would be good not to get to the point where we need to introduce exit restrictions because of climate change, because that is really panic.

No one wants that, so we would rather slow down our consumption of red meat or gradually reduce the length of our trips. I'm arguing that we don't have to get there to panic.

And what exactly does this mean at the level of measures?

For example, the transformation of the financial system, the transformation of corporate governance, from the maximization of shareholder value to the stakeholder model. Transforming our economic policies so that they do not just focus on correcting market failures, to establish ambitious public-private partnerships.

If this happens, it will also benefit citizens and companies, but unfortunately we have not yet seen that something has started. Even rescue packages designed to offset the economic impact of the epidemic will in many cases support the most polluting companies, while in industries such as aviation or the automotive industry, access to public funds should be made conditional on a commitment to reduce emissions.

Even economists do not fully agree on what measures should be taken to combat climate change. Some people think that a carbon tax alone will solve all the problems, you consider much more state intervention to be appropriate. How do you envision the ideal climate policy?

I think we need to change our habits, but I don't think we should dictate to people what they can and can't do. However, within who eats what, what car they drive, what house they live in, to some extent, everyone has to take responsibility, especially in rich countries.

I think that the policy mix should include direct funding for certain areas, such as the development of carbon-neutral cities, but the demand side must also play an important role, and I am not just thinking about public procurement here. I believe that green technology can create the demand pressure that will lead to the spread of new technologies across the economy.

People sometimes think that IT, or green technology, is a sector, but these are not industries but large areas that need to interact with each other. Greening industries therefore requires a digital strategy. IT technologies, artificial intelligence, everything we usually refer to under the collective name industry 5.0, do not in themselves have a big impact on the economy. A real paradigm shift would be if these technologies transformed the whole economy and made it sustainable.

We currently allow technology companies to produce applications that write gadgets and 140-character messages. And Elon Musk wants to go into space, instead of thinking about what ambitious innovations could be that would make it possible to reduce emissions from industries.

In Germany, the steel industry recently had serious problems and was asked by the government to rescue them. The government saved them by reducing their use of materials and by recycling. But all this could not have been done without the digitization of the industry. This is a good example of how an old sector such as the steel industry can be transformed.

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