Croatia Values Science and Education

By Kenneth Zahorel & Dragan Primorac - Feb 18, 2019

In this edition of The Interview, Fair Observer talks to Dragan Primorac, the former Croatian minister of science, education and sports.

Croatia, the newest member of the European Union, has made enormous investments in science and academic research. In doing so, it has secured its place among the world's major speakers on science, education and technology.

The Ministry of Science and Education is tasked with overseeing primary, secondary and tertiary education, research institutions and sports in Croatia. Around 90.9% of Croatian children learn English at school, according to Eurostat, making the country a frontrunner in the EU when it comes to second-language education.

The European Commission's Education and Training Monitor reported in 2018 that Croatia has showed the best performance among EU member states when it comes to reducing early school dropouts among 18- to 24-year-olds. In 2017, the rate in Croatia was 3.7%, while the average rate in the EU stood at 10%.

The health care system in Croatia is controlled by the central government. The state runs the hospitals and the county administrations oversee the medical centers. The universal health care system provides a form of insurance for every citizen. The quality of health services is to believed to be notably high. Cutting-edge and reliable health care is one of the drivers of tourism. The country's first health care center was established in 1644 and medical tourism is a longstanding tradition.

In this edition of The Interview, Fair Observer talks to Dragan Primorac, the former minister of science, education and sports, about educational and scientific developments in Croatia and his work as a forensic scientist.

The transcript has been edited for clarity and length.

Kenneth Zahorel: You were the Croatian minister of science, education and sports for almost six years. A survey by International Republican Institute rated you as the most successful minister in the government. What or whom do you owe this success to? What were your landmark accomplishments?

Dragan Primorac: I came into politics because I wanted to see a change in Croatia. My goal was to establish Croatia as a knowledge-based society, and the creation of a knowledge-based society lies in high quality and continuous improvement in the science and education system. Today, it seems that even those who used to be the most vocal critics of our work now think that the changes we initiated formed a solid, lasting basis for further efforts to transform Croatia into a society of knowledge.

I am glad we were compromised on the interests of education and science, a result of which the Croatian educational system is, based on the reactions of the international community, comparable to the best ones out there. On the other hand, I am fully aware of the fact that this is a long-developmental process, and that the future of the educational system is to be determined by the care and diligence of the responsible parties, primarily the government and the ministry. There is no doubt that, even with serious investment, achieving visible improvements requires years of dedicated work from all participants in the system of science and education, whereas the damage of even short-term decisions can be immediately lasting and hard to repair.

Like many countries, Croatia faces the dual challenge of creating a sustainable economy in a globalized world and providing its citizens with a secure future. For me, it was always clear: The most efficient strategy to create and ensure a sustainable long-term future for Croatia is to invest in education and to strengthen the research and innovation base of the country. At the same time, I said all my skills, experience, knowledge and knowledge to achieve the goal I was set to achieve. In my opinion, the best quality of a politician is honesty. Honest politicians make promises and keep those promises. At the same time, it is important that people have a sense that they can rely on you and know that your policies serve their best interests. That is it: I simply kept my promises.

In the six years of my mandate as minister, significant progress was made throughout the vertical dimension of the system of education, as well as in the systems of science and sports. However, in order to achieve such ambitious goal, as a minister, I engaged more than forty national and international experts, teachers, professors, scientists and members of the Croatian Academy of Sciences and Arts to work together to develop and implement strategic reforms.

It is almost impossible to mention all achievements during the process of establishing Croatia as a "knowledge-based society," as I will underline just a few of them. For example, the Ministry of Science, Education and Sports' budget almost doubled in six years and more than 5,000 new jobs been opened in the science and education sector, which is the largest such achievement in the history of the country. That was the period when Croatia started negotiation with European Union.

In fact, "Science and Research" and "Education and Culture" were the first two chapters that Croatia closed in negotiations with the EU, which demonstrates a great extent of harmonization between the Croatian education systems and those of the EU member states. After deep analysis of the existing system, we launched major reforms at all levels of education, from preschool program till PhD level. Along, starting with the school year 2008–09, all primary school pupils in Croatia had the opportunity to learn two foreign languages, and more than 3,200 teachers had been employed to guarantee this.

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At the same time, we at the ministry undertook major reforms to develop information technology as an essential infrastructure for a knowledge-based society. All IT projects we introduced have improved the quality of learning and teaching and have created equal learning opportunities for all students.

Furthermore, approximately 1,400 Croatian primary and secondary schools have been equipped with internet access and web domains, and about 600,000 pupils now have individual e-mail addresses. Similarly, most Croatian universities and student dormitories have been equipped with broadband internet connections within the framework of the Croatian Academic and Research Network, CARNet.

During my mandate, we established the Croatian Business Innovation Center (BICRO) and Croatian Institute of Technology. Through BICRO, 150 grants for stimulating innovation were awarded in the total amount of EUR million. The importance of this activity and the change in the financing of Croatian science is illustrated by the fact that this sum was matched with the same amount of funds from the private sector.

As you know, I was in charge of sports as well. The Croatian parliament adopted my proposal and the act on sports was approved. That ensures the overall development of sports, from school and recreational sports to high-level competitive sports. In the period of six years, we built 212 sports school halls, the largest number of such achievement in the history of Croatia. All the activities listed above resulted in an increase of children and young people involved in sports from 100,000 to 150,000 people.

Zahorel: In 2010, Newsweek ranked the Croatian education system 32nd in the world, ahead of many developed countries. That's a big achievement. Upon what criteria was the education system based for it to be considered one of the best? How do you think your leadership has influenced the outcome?

Primorac: My team and I launched a series of successful reforms in primary, secondary and tertiary education, the vertical dimension of system of education, as well as in science, technology and sports that significantly improved the system. In the 2015–19 period, we were able to secure the greatest increase of the budget for science, education and sports in the history of modern Croatia, from EUR 5.5 billion to EUR 6.5 billion. According to estimates by the Croatian Bureau of Statistics, the number of people between the ages of 30 to 64 that hold a higher education degree grew close to 18.5%. Today that number is even higher. It is worth noting that, according to the census of 2001, only 7% of the population had completed higher education with a university degree.

To enhance the quality of primary education from grade one to grade eight — 6- to 14-year-olds — the Croatian National Education Standard (CNES) was developed. Its goals were and still are to modernize traditional education in Croatian schools by reducing the extent to which education is seen as the simple memorization of facts, thereby strengthening the role of applied knowledge and skills, and emphasizing interdisciplinary insight and creativity.

Importantly, CNES aims to improve the intellectual freedom of teachers and encourage research-oriented teaching. CNES now serves as a basis for the current curriculum for primary schools. In the school year 2015–16, the implementation of CNES was evaluated in 48 primary schools. The results revealed higher scholastic achievement in those that implemented CNES than in those that did not.

Beginning with the school year 2006–07, CNES has been introduced into all primary schools, in which more than 380,000 pupils were enrolled. In addition, at my time, we successfully introduced two compulsory foreign language classes in all primary schools in Croatia and a national standard test equivalent to SATs for all students who are planning to continue their education in universities.

Thanks to the implementation of the Bologna Process, Croatia could increase the budget allocated to the higher education system and to building the necessary infrastructure. Croatia joined the Bologna Process in 2001 and has been an active participant since. All study programs were harmonized with Bologna Process requirements in 2005. At the same time, new polytechnics were opened. In the period of 6 years, we were able to build more than 350,000 square meters of new space for Croatian universities and the overall number of students was increased for about 40,000. Scientific collaboration has been signed with some of the most developed countries in the world including the US, Israel and Japan. With support from the ministry, a total of 1,526 junior researchers earned their PhDs.

Zahorel: You also are a forensic expert and pediatrician. Which one is your primary science or politics? How do you balance the responsibilities that come with being a scientist and politician?

Primorac: Science always was and still is my greatest challenge, while medicine is my love and passion. I am grateful for having the privilege to help others. Forensic, to me, means seeking truth and justice. Politics is ugly, but at the same time it has the ability to change the status quo, serve common good and create a better future.

However, it is not easy to draw the line between science and politics. Science has always been inseparable from politics. Therefore, a scientist should recognize their position within society and they should develop a relationship with politicians.

I have no doubts that science should have an important role in government. For me, it was always the important question: How to improve government's use of science. I rely on science to help create jobs. Unfortunately, in real life, politics and science function like an unhappy marriage. While most people have trust in science, a huge majority of them do not trust politicians. My mission was to combine these types of credibility shortfalls. We may need to introduce a politics based on evidence rather than promises.

Zahorel: The orthopedic and surgery hospital that you founded, St. Catherine Hospital, is known as the European center of excellence, and many international athletes have received treatment there. Why did you establish such a hospital in Croatia?

Primorac: I always wanted to have a hospital where science and medicine would combine together. For me, the model of translational medicine, which aims to expedite the discovery of new diagnostic tools and treatments by using a multidisciplinary, highly collaborative, bench- to- bedside approach, is the future of medicine.

On the other hand, our model of integral health care, where experts in their field take a multidisciplinary approach using the newest equipment and the latest treatment options to treat our patients in one place by using the concept of personalized or precise medicine, is something that will change the medicine we know of today.

Zahorel: In 2018, your hospital introduced a new pharmacogenetics test called HighTest, which is said to be effective in eradicating the high number of deaths from adverse drug reactions. First, why do so many people die of ADR? Second, please share with our readers some insights into this testing and how it will save a great deal of money spent on non-effective medicine.

Primorac: Adverse drug reactions, or ADR, are a significant cause of morbidity and mortality. Recent pharmacogenomics studies suggest that utilizing a patient's genetic information to individualize medication treatments can significantly help reduce adverse drug reactions.

St. Catherine Hospital is pioneering the implementation of the personalized medicine concept in clinical practice. Our Center for Individualized and Preventative Medicine is designed to bring the latest and the greatest innovations in translational medicine to our patients. Using glycomics in pharmacogenomics and beyond Pharmacogenetics, or PGx, testing is a critical addition to our personalized medicine program, because we know that we can optimize patients' health outcomes by using PGx test results that help tailor medications based on the unique genetic makeup of each patient. We chose to work with OneDose company because it is the scientific elite against the development of the HighTest test and supporting tools.

OneDose's PGx interpretation is supported by the highest level of clinical evidence, making it, in my eyes, the most clinically actionable test available. We also like that when OneDose's clinical development team applies new clinical guidelines or evidences to the HighTest test, patients' reports are automatically updated with this new information.

Zahorel: How do you think the health care industry is going to change in the future? What types of medicine will take priority in the physicians' agenda?

Primorac: The value of healthcare can be increased tremendously through individualized or personalized medicine. We are doing everything possible to inform physicians about benefits of personalized medicine.

To achieve the planned goals, in June 2019, St. Catherine Hospital, along with Mayo Clinic and International Society for Applied Biological Sciences, is organizing "The Eleventh Dubli Conference on Forensic and Anthropological Genetics as well as Rare Disease Genetics in Individual Medicine." That is considered to be one of the most important scientific events in 2019 regarding the field of biomedicine.

Without a doubt, the personalized medicine, which is to matter "Right therapy for the right patient at the right time," is the medicine of the future. Therefore, an introduction of that concept to our daily practice is becoming our priority. On the other hand, regenerative medicine plays enormous, but, at the same time, it requires considerable knowledge from diverse fields of clinical medicine. Needless to say, those are all the things that will immediately increase the hospital's visibility, uniqueness and will augment the global competitiveness.

Using state -of -the -art methods of diagnostics and treatment, several clinical studies confirming the power of stem cells therapy and regenerative medicine concept were conducted in specialty at St. Catherine Hospital. One of those studies included patients with osteoarthritis, in whom micro -fragmented adipose tissue with stromal vascular fraction was applied. Stromal vascular fraction contains cells like mesenchymal stem cells, pericytes, endothelial progenitor cells, etc. Hence, results of our study suggest that application of adipose micro -fragmented adipose tissue with stromal vascular fraction in patients with OA leads to rise of glycosaminoglycans levels in hyaline cartilage, which consequently leads to reduction of pain and improvement of movement abilities in observed patients.

Zahorel: Please tell us about your humanitarian and philanthropic activities. Why do you think it is important to get involved in fundraising campaigns, and how do you normally contribute?

Primorac: For me, philanthropic activities are part of everyday living, certainly not as event that happens once in year. Giving to charity always puts a bigger smile on your face than buying things for yourself does. Whenever I can, I encourage people to give to charity.

Ten years ago, I decided to have a systematic approach to the planning, implementing and monitoring of charity. Therefore, I established a charity foundation called Cro Unum. Throughout its existence, Cro Unum has organized some of greatest charitable endeavors and fundraising campaigns that have made our very proud. I am extremely happy that many famous athletes, actors, scientists and many other influential people regularly participate in our charitable endeavors.

Zahorel: One of the most important proposals you made during your ministerial tenure was providing free textbooks and free transport for pupils of primary and secondary schools. Why was that project canceled, against which you pressured your resignation in protest?

Primorac: Extending the duration of compulsory education is one of the most demanding and important projects undertaken in Croatia. It took a long time, phenomenal amounts of money restrictions and to convince members of parliament to adopt a very progressive program called the National Program of Measures for the Implementation of Compulsory Secondary Education. As part of this, a number of measures, such as supplying free textbooks to be passed on to subsequent generations and providing free transportation and student dormitories, have been introduced in order to reduce the number of students that do not complete secondary school education, in order to enable as many of them as possible to continue their education and improve their employment prospects.

The goal of the project was to make secondary education accessible to everyone, and to ensure that an additional 80,000 students graduate secondary school within the next 10 years. Without these measures, students would never complete their high school education.

Following my resignation in protest, this project was canceled in 2009 without any explanation. Many people who participated in that decision today feel ashamed.

Zahorel: Do you think free compulsory education in Croatia is threatened or challenged in a certain way? As a signatory to the Bologna Process, is the government implementing the reforms as mandated by the process and allocating funding to schools adequately?

Primorac: In Croatia, children start their compulsory eight -year- long primary education from the age of 6 - 7 to 15 - 16 years old. Compulsory education is based on the mentioned earlier, the National Program of Measures for the Implementation of Compulsory Secondary Education.

Zahorel: There are many developing countries in the global south in which children have no access to education. There are also children who cannot study because they are disabled or because their parents cannot afford it. What do you think can be done to help countries overcome such challenges?

Primorac: Nelson Mandela once said, "Education is the most powerful weapon which you can use to change the world." In my opinion, developed countries are not doing enough in that sense. If we go a little bit deeper into the relationship between developed and underdeveloped countries, the situation is different than you initially expect. In 2015, developing countries received a total of $1.3 trillion, including all aid, investment and income, from abroad. But that same year, some $3.3 trillion left the same nest. In other words, developing countries sent $1 trillion to the rest of the world.

However, there is a responsibility to underdeveloped countries; it is a matter of justice, not charity. Affluent countries should give a hand and try to eradicate poverty around the world and in impoverished countries. Poverty causes hunger, lack of education and malnutrition — these are the main reasons people are dying these days. With the help of affluent countries, the number of criminals and terrorists in poorer countries will wane.

Compulsory education should involve primary and secondary education. Money should also be found to secure meals for all children in primary school because malnourished children learn poorly. Parents should be educated in order to understand the power of education, while teachers should be supplied with improved resources. New technology is shaping the future of education, and underdeveloped countries should bridge the gap between existing and future technologies.

Needless to say, the power of education is tremendous. In countries where the majority of people have a good education, citizens are less easily manipulated by politicians who keep wealth for themselves and those around them. Therefore, education is strategically important not only for economic development, but also to fight corruption and secure democracy.

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