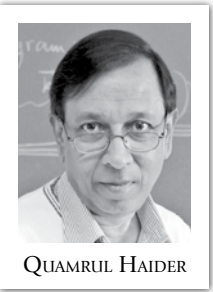


WORLD SCIENCE DAY FOR PEACE AND DEVELOPMENT

Interplay between science, society and politics



QUAMRUL HAIDER

SCIENCE is a remarkable tool available to humans for understanding what is true about the world. It expanded the boundaries of our knowledge and challenged our preconceived notions of what reality is. Accordingly, scientific research has yielded a treasure trove of knowledge about many previously inaccessible domains of nature. The validity of such knowledge received confirmation from the fact that they led to new technologies that are helping us live longer, healthier and more enriching lives.

Scientific research does not take place in a vacuum. It is a social activity with a political overtone. And scientists are very much aware of the intricate interplay between science, society and politics. Perhaps one of the most persuasive arguments regarding the rightful place of science in modern society was brilliantly articulated by the American inventor and science administrator Vannevar Bush in his report *Science: The Endless Frontier* prepared in July 1945 for US President Harry Truman. In the report, he notes that the “social contract between science and society allows scientists alone to decide what research best serves the society.”

Having said that, the practice of science is never entirely free of politics. It makes its presence felt in science via money. While philanthropists and private foundations fund scientific research to some extent, most research is inherently shaped by the funding landscape of government, and therein lies the conflict between science and politics.

Since decisions about funding allocation are made by politicians, deciding what type of science a scientist should do is no longer a scientific one, but a political one. Furthermore, there are examples of politicians punishing or favouring scientists for ideological reasons. A case in point is Trofim Lysenko, a Russian agronomist and biologist, whose work was enthusiastically endorsed by the Soviet government under Stalin because his theories supported the principles of Marxism. Hence the term Lysenkoism, used to reference

the manipulation of the scientific process to achieve ideological goals. On the other hand, the work of Andrei Sakharov, who holds an honoured place in the pantheon of distinguished physicists, was discredited by the Soviets because of his dissident humanitarian voice.

In the wake of the Covid-19 pandemic, which has so far claimed nearly 1.2 million lives worldwide, the relationship between science and politics is now smack at the centre of the world stage. While the world looked up to the United States to lead the fight against Covid-19, President Donald Trump, defying science, played down the severity of the virus by saying “It is what it is.” Not surprisingly, there is a surge of new cases in the USA, while leaders of countries who are carefully straddling the fine line between science and politics managed to contain the spread of the virus.

Regardless, scientists are working tirelessly to develop Covid-19 vaccines. Trials are underway, testing the BCG vaccine to see if it can provide at least temporary protection against the virus, marking the first time a vaccine is being tested against a specific pathogen other than the one it was designed for, which is tuberculosis. At the same time, researchers in the United Kingdom found that patients injected with T-cells, which are white blood cells that are of key importance to our immune system, responded positively to the Covid-19 virus.

Another example of the conflict between the value-laden space of political decision-making and the factual, objective world of science is climate change. Scientific evidence of climate change has helped to create a robust social and political debate about reducing greenhouse gas emissions. However, instead of responding positively to the debate, leaders of the fossil fuel producing countries are focusing on the uncertainties of climate models, or rejecting outright the findings of scientists, thereby sowing seeds of doubt about what constitutes “good” science.

Nevertheless, scientists are trying to convince politicians that it would serve all of us well if they use scientific facts as neutral information to guide public policy. Lest we forget, politicians need the knowledge that scientists possess in order to give us a decent shot at enjoying the full benefits of living in a

high-tech world. Otherwise, they risk making ill-informed decisions on issues that are highly technical and complex.

Politics aside, scientific research and innovation are principally responsible for decades of economic growth and medical advances. Indeed, scientific discoveries, along with advanced techniques and instruments developed by scientists, particularly physicists, in the past 100 years or so have ushered in a new era in medical science.



PHOTO: COLLECTED

The era began in 1895 with the discovery of X-ray, used today as a diagnostic tool to see through different parts of our body. Imaging by X-ray was dramatically improved after the invention of the computerised tomography. Other technologies, for instance nuclear magnetic resonance, are allowing us to recover from life-threatening illness which in the past would have been fatal. Additionally, positron emission tomography, or PET scan, developed after the discovery of positron—the anti-particle of an electron—allows doctors to check for diseases in our body, as well as help them to see how well our organs and tissues are working.

The advances in laser physics have also made considerable impact on medical

research. Soon after the advent of lasers in 1960, they found their way into medical applications, namely ophthalmology, dermatology, cosmetic surgery, oncology, dentistry and more. More importantly, lasers allow surgeons to work at high levels of precision by focusing on a small area, damaging less of the surrounding tissues.

We could not do without radioactive materials in today’s world, even if we wanted to. Radioactive isotopes, discovered in the early 20th century, are an integral part of nuclear medicine and are commonly used to treat some cancers and medical conditions that require shrinking or destruction of harmful cells.

The use of nanotechnology in medical sciences is a rapidly expanding field. Originating from the Greek word *nanos* (dwarf), “nano” describes length scales of the order of a millionth of a millimetre. Although this field is still in its infant stage, there is a growing interest among the medical community to use the technology for targeted drug delivery, cancer treatment, nano-biosensors and nano-medical imaging.

The discovery of graphene in 2004 is among the highlights in materials science

and nanotechnology. It is a sheet of carbon atoms just one atom thick, arranged in a honeycomb-like lattice with amazing physical and chemical properties. Graphene has potential applications in a wide range of areas of biomedical sciences. Chief among its applications is DNA sequencing, the gold standard for successful diagnosis of various diseases.

In 1938, when physicists successfully split (fission) the atomic nucleus, it gave humanity access to something extremely potent: the tremendous amount of energy released during the fission process. Immediately recognised as the basis for weapons of mass destruction, it is now used to generate around ten percent of the world’s electricity.

The letter “h” introduced by Max Planck in 1900 to explain the spectra of thermal radiation is the fundamental constant of quantum theory. Because this constant governs the scale of the quantum effects in the subatomic world, it had profound ramifications in technology. For example, it enabled the construction of microcircuits, quantum computers, transistors and semiconductors, lasers, iPods, cell phones and digital cameras that have changed the trajectory of our life from ordinary to extraordinary.

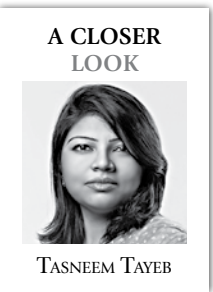
It is now almost impossible to get lost whether we are on land, sky or ocean, thanks to Einstein’s special and general relativity theories, which play a big role in the design of Global Positioning System satellites that give accurate readings of position, speed and direction of an object in real-time. The satellites would fail in their navigational functions if the relativistic effects of time dilation and spacetime curvature in their clocks are left uncompensated.

A final thought on the World Science Day for Peace and Development. In the past, scientists who challenged politicians for ignoring their advice have been accused of behaving unethically. But as we stare down the barrel of an ongoing global pandemic, we should realise that society forms politics, politics controls science and science informs both society and politics. So, as we move forward, a harmonious relationship between the three is ever more important in today’s fractious world.

Quamrul Haider is a Professor of Physics at Fordham University, New York.

Have we forgotten the Bangladeshis trapped in Velika Kladusa?

Desperation, uncertainties, and the exploitation of the vulnerable



A CLOSER LOOK

TASNEEM TAYEB

IF someone looks up Velika Kladusa on Pinterest, they’ll find lovely photos of the town and its beautiful landscape. Pretty as it may be, this little known town, in the far northwest of Bosnia and Herzegovina, has been in the news in the recent past for all the wrong reasons. Hundreds of migrants hoping to make their fortune in rich European countries such as Italy and Spain are being forced to pass uncertain days in the woods of Velika Kladusa.

According to a report published by this daily on October 20, “Several hundred Bangladeshis are spending nights in overcrowded shacks made of polythene sheets. They don’t have sufficient food, drinking water and emergency medical supplies... Many of the Bangladeshis there said officials from some international agencies distributed food among them and provided medical support occasionally but those were not sufficient.” And having failed to secure shelter at a refugee camp nearby, these desperate people had to seek refuge in the forest.

These migrants live in shacks made of tarp that do little to protect them from the cold and rain. Some of the others have sought shelter in an abandoned factory; the damaged roof and walls of the factory provide little relief from the unsympathetic weather.

And the ones who try to cross into Croatia to ultimately land in Italy or Spain are often allegedly subjected to human rights abuses by the Croatian border police, who have been repeatedly accused of resorting to torture on illegal migrants. According to victims, the Croatian police not only brutally beat them up and push them back into Bosnia, but also seize their possessions, including money, phones, and even clothes.

Danish Refugee Council (DRC) Secretary General Charlotte Slente told Deutsche Welle (DW), “People from different groups and nationalities have independently reported inhumane treatment, savage beatings and even sexual abuse at the border. There is an urgent need to ensure that independent border-monitoring mechanisms are in place to prevent these abuses and to ensure that all reports of abuse are



A Bangladeshi migrant calls for prayer in the woods near Velika Kladusa, Bosnia and Herzegovina, on September 30, 2020.

PHOTO: REUTERS

transparently and credibly investigated—and those responsible are held to account.”

While no doubt these migrants cannot and should not attempt to unlawfully cross into another country, they are human beings nonetheless and no one can violate their fundamental rights to life and liberty, freedom from slavery and torture, freedom of opinion and expression, the right to work and education and more. Everyone is entitled

to these rights, without discrimination, according to fundamental human rights as defined by the United Nations.

What are the concerned authorities in Bangladesh doing to redress the sufferings of these trapped migrants? Various organisations, including Bangladesh Civil Society for Migrants (BCSM) and BASUG-Diaspora and Development, a Netherlands-based diaspora organisation, have called upon the government to take immediate measures to address the sufferings of the individuals. But so far, no major action has been taken to bring these people back, or for that matter provide them with subsistence to survive the harsh Bosnian winter where the temperature, according to a DW report, has already dropped below two degrees Celsius.

However, the recent reports by the German broadcaster that recorded the miseries of the migrants from many South Asian nations, including

Bangladesh, is not the first time that this has come to light. On June 13, 2019, the Associated Press reported that aid groups were warning of an impending humanitarian crisis in Bosnia, as the number of migrants kept increasing in the northwestern cities of Cazin, Bihac and Velika Kladusa. The report mentioned that the majority of the migrants were from Bangladesh, Iraq, Pakistan, Syria and Afghanistan. One might be pardoned for wondering why the authorities in

legally or illegally—in search of a better future. From failing to eliminate the economic and social factors that force people to take such desperate measures, to not taking adequate measures to ensure the security of migrant workers abroad, the seemingly half-hearted actions taken by the authorities raise questions about their intention and/or ability to address these in the first place. Let’s take the case of the tragic plight of the female migrant workers—bodies of 473 of them have been returned in shrouds from the Middle East alone from 2016 to September 2020. And what have we done to address that? Does the government not have any responsibility in ensuring that women workers who go abroad to work are not tortured and abused or worse, killed while trying to earn a decent living?

We have seen reports of migrants being inhumanely tortured in Libya. And yet, we are allowing our people to suffer in the Libyan desert because there is a war going on there, and the traffickers are using the situation as a shield to carry out their criminal activities. Why did it take the gruesome murder of 26 Bangladeshi nationals for the authorities to bust this trafficking ring in Bangladesh?

These are unpleasant questions, but it is high time the authorities concerned spared them some thought. With the ongoing global health crisis pushing people further into poverty—a recent World Bank report suggests that an additional 88 million to 115 million people across the world may be pushed into extreme poverty this year, with the total rising to as many as 150 million by 2021, depending on the severity of the economic contraction—it has become easier for traffickers and smugglers to manipulate vulnerable people and victimise them. Now more than ever, the concerned authorities need to demonstrate strong political will through proactive measures to end trafficking and smuggling of people.

The authorities need to be more vigilant, more agile and more decisive in taking action against those who prey on the vulnerable, and those who fail to ensure the safety of our citizens abroad, irrespective of their official position or political affiliation. The economic and social triggers also need to be rooted out. With the right approach and the right actions, trafficking and smuggling of people can be eliminated for good. But do we have the political will?

Tasneem Tayeb is a columnist for The Daily Star. Her Twitter handle is: @TayebTasneem

CROSSWORD BY THOMAS JOSEPH

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23 Isaac's father
24 Kenya capital
25 TV fashion guru
26 Pre-election events
28 That woman's
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31 Nearby
32 Funny fellow
33 Massage targets
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YESTERDAY'S ANSWERS

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