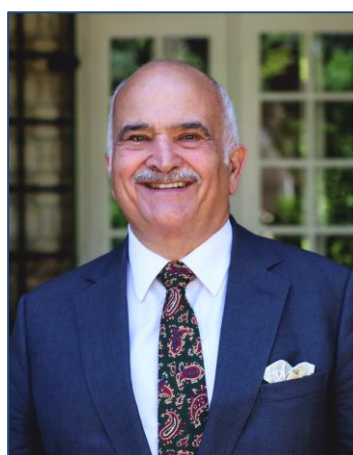


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**REINFORCING CONNECTIONS:  
INTERACTION, CO-OPERATION AND  
RESILIENCE**

*HRH El Hassan bin Talal  
Founding Patron of the Islamic World Academy of  
Sciences (IAS)*



Muhammad Ali Jinnah often said India was not a country, but a subcontinent of nationalities whose leadership should focus on 'peace within and peace without'.

This is not new. In 1919 Sir Halford Mackinder observed:

*"Who rules East Europe commands the Heartland; Who rules the Heartland commands the World Island; Who rules the World Island commands the World."*

The struggle for control of the energy ellipse from Eurasia to the Straits of Hormuz may emerge as the most crucial test of the East-West world power balance in the next decade. A time of reckoning is approaching in West Asia, inclusive of Turkey, Iran, Pakistan and the Arab countries of the hinterland to the Gulf Cooperation Council (GCC)).

The regional hotspots of the Eastern Mediterranean: Cyprus and Turkey, Palestine and Israel, and Kashmir in South Asia, contain distinct communities, presenting a security dilemma.

The continuing conflicts in Syria, Libya, the Yemen, the powder keg that Iraq remains, looming chaos in Lebanon, alongside the US Peace Plan and Israeli responses, together with the abrupt ending of funding to UNRWA, tantamount to defining Palestinian refugees, if not the Palestinian entity itself out of existence, have added new elements to regional problem solving.

It should perhaps be no surprise –the clue was in the title, that the Deal of the Century, bears all the hallmarks of a real estate transaction and none of the ingredients for successful conflict resolution: talking, listening, and compromising on a shared solution with majority support. All difficult to achieve when the key partners are notable only by their absence, forced out by impossible demands.

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*There is a seismic political fault line running from the Baltic to the Indian Ocean.*

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But moving on, the regional picture has been further complicated by the cancellation of the JCPOA (Joint Comprehensive Plan of Action), the potential scuppering of New Start and the terrifying development of nuclear cyber and space weapons involving all the major nuclear powers. Last month witnessed the 75<sup>th</sup> anniversary of Hiroshima and Nagasaki. Amnesia is dangerous. There is a seismic political fault line running from the Baltic to the Indian Ocean.

Unfortunately, just when needed, an authentic Euro-Atlantic policy for the West Asian region which is of course dependent on stable relationships with Russia, India, China and the ESCAP zones of influence in South and East Asia is in tatters. To paraphrase Robert Kaplan: As Europe disappears Eurasia coheres.

Meanwhile, China's Belt and Road Initiative shapes the emerging Eurasian world order, witness Turkey and Pakistan's increasing international role, Russia's Eurasian Economic Union. Mapping this initiative from a Mashreq perspective is a must.

The coronavirus crisis has exposed our fragility. International, national and local landscapes in its aftermath will be determined by the decisions we make nationally and globally in responding.

Key political and humanitarian challenges in West Asia-North Africa (WANA) stare us in the face. Foremost is the lack of coherence within the WANA region which remains unrepresented by an inclusionist ECOSOC (Economic and Social Council), where regional commons could be addressed. Rather, the WANA states attend UN plenaries as individual countries, with individual agendas.

More people are on the move than at any time since the Second World War and 80% of the world's refugees are Muslim. Territoriality, Identity and Migration, T.I.M. should become priorities

Equally clear, is the historical lack of investment in the collective capacity for "conflict resilience" in WANA. All hinges on what we do next.

*Homo economicus*, would say this is a non sequitur. These figures are not interconnected. One relates to political and humanitarian challenges. The other to market forces and the market is the deity of our postmodern times.

Far from being the great leveller, Covid 19 has increased inequalities whilst simultaneously intensifying retrenchment and narrow nationalisms.

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*The schisms are so numerous, the inequities so stark, that a universal respect for human dignity must be brought back to the consciousness of the international community.*

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The schisms are so numerous, the inequities so stark, that a universal respect for human dignity must be brought back to the consciousness of the international community. A politics of humanity is needed to restore respect for human dignity.

Poverty, exclusion and marginalisation deny the human rights of almost half the world's population. Poverty undermines religion, subverts reason and invites hatred. It denies health, opportunity, basic freedoms, and mutual respect, whilst destroying self-respect by targeting the soul of our humanity.

These challenges can only be met collectively. Building regional resilience must be the place to start.

Hence what I call the Triple Helix encompassing the three main components of regional security: political, economic and civil society.

Water scarcity is matched only by unequal and inadequate access to energy resources; problems which will be exacerbated by climate change.

Above all we must advocate for the integration of equality of access, across borders as well as between and within marginalised groups. Or future waves of displacement will be environmental refugees; and no country will have the resources to provide safe-haven.

Turning to the second component of the helix – We have to move from economic politicking to economic policy.

We are a region riddled with contradiction. Burdened with legacies of rentier stagnation and inequalities. Yet, brimming with opportunity: literacy records, resource wealth and youth.

Socio-economic and sociopolitical challenges can only be met together through policy based on human dignity.

The final component is human security, the absence of which is a failure of good governance and undermines social cohesion.

*Prof. Abdullah Al-Musa*

*Director General, Islamic World Academy of Sciences*

The response lies not in securitisation but in good governance: the rule of law, inclusivity, social cohesion, shared identity and equality of opportunity.

Eurasia lives as a colonial-era legacy that helps dictators rule today and prompted populist revolt. Policymakers must recognise that the rhetoric of the “war on terror” fanned bitter historical resentments. It stokes justification for militant Islamist groups and erases memory and therefore the potential for modern Islamic politics.

Policy planners today see the region as mired in anarchy, a ‘new world disorder’ where war is a condition of life.

Can we transcend that disorder and conceptually move to a more comprehensive strategy?

I invite my readers to an approach based on four groupings of operational sectors: Political; Security; Human; and Structural.

*This article was written for The Friday Times. The original can be found at: [www.thefridaytimes.com/reinforcing-connections-interaction-co-operation-and-resilience/](http://www.thefridaytimes.com/reinforcing-connections-interaction-co-operation-and-resilience/)*



**C**COVID-19 not only affects the health of those who fell victim to it, but proved to be instrumental in eliciting changes in almost all aspects of society and individual life at multiple scales including spatial, temporal and institutional.

At the spacial level, partial or total curfews, lockdowns, social distancing and travel restrictions impacted the socioeconomics at the individual, community and national levels to regional and global levels. These challenges pushed the institutions and organizations within the society to exploit new approaches to do their business away from usual. The success or failure in their efforts to counteract the deleterious effect of the pandemic reflects very much the capacity, capability and resilience of the actors within the society and government. At a society with weak safety net system, the pandemic may play havoc on the wellbeing of economically vulnerable people, specially those who make their living by day to day work.

### **Business environment**

In the workplace, a new business paradigm emerged where companies are forced to delve in, accelerate and exploit the potential of working from home. Adopting this approach demands more inclusive interaction and involvement of the companies’ managerial tier with their workface. This is translated by issuing guidelines and establishing policies aimed at smoothing and increasing efficiency of working from home. Companies during the pandemic are also under pressure to follow and monitor the consumer preference and behavioral shift that may affect their business transactions. However, the pandemic provides an opportunity to accelerate research and development and ignite competition, race and cooperation among concerned companies in the area of vaccine production and artificial intelligence.

### **Trade and investment**

According to the United Nations Conference on Trade and Development (UNCTAD), the Pandemic resulted in a marked drop in global trade. World Trade Organization (WTO) forecasted 13-32% drop in global goods exports in 2020. This had been a result of reduced freight and passenger transport and evident nationalistic

policies in some countries. The drop in international airline passengers ranged from 44-80%. The impact of this on global economic output was best stated in the Harvard Business Review which claims that travel for business or leisure with its spin-off in facilitating trade and investment is more effective in materializing global economic benefits than automotive industry. In addition, the disruption of production and supply chain mechanism by the pandemic had pushed nationalistic and self-reliance trends to the front as clearly reflected by policies to protect local food and fostering inward economies and repatriating vital supply chain specially with reference to medical technologies and production inputs.

According to WTO, foreign investment marked a 30-40% decline due to the pandemic as compared to 38% fall during the global financial crisis.

### **Pollution**

The breadth and the urgent response by governments across the globe against COVID-19 as shown by lockdowns and social restrictions has resulted in drastic decline in global pollution by 25% according to NASA Satellite Imagery. It is noteworthy that this alertness and actions taken by governments contrasted with current slow and probably negligence towards the climate change which claims 10 times higher mortality rates than that caused by COVID-19.

### **Globalization**

The pandemic pushed globalization down the scale giving fuels to already destabilized global business by trade war between USA and China. This along with the economic hardship reduced support for international trade and encouraged protectionism. Some politicians are now more vocal against globalization and they exploit fears from the pandemic to stigmatize minority communities which inevitably lead to violence and hatred. Their argument was based on the speed by which the pandemic spread across the world as a result of globalization. So it was not surprising to see countries in the European Union erected frontier controls again between them. Other countries go to the extreme during the initial spread of the pandemic by banning alien citizens from visiting. While protectionism may help in curbing the surge of pandemic, it surely cannot prevent occurrence of global catastrophes as such caused by climate change. In this situation only concerted and collective global cooperation is needed to tackle such a problem. This interdependency makes some researchers and experts to believe that globalization is inevitable process on the long run.

### **Food System**

According to the June 2020 Global Economic Prospect Report, COVID-19 pandemic pushed additional 100 million people to poverty due to partial or total lockdown which consequently reduces employment opportunities and rendered access to food and nutrition rather a challenging task. The world food systems already suffer from different deleterious factors including population increase, climate change, loss of biodiversity, land degradation and recently coronavirus pandemic. For more sustainable food system, specially in times of crisis, proper public policy should be enacted to ensure non-concentrated supply chain mechanism. This could be achieved by encouraging involvement of civil society and retail centers to be more active in home delivery. A successful system needs a thorough digital platform accessible by all stakeholders delineating details of the supply chain from production (area, cultural practices, varieties, etc.), transit, storage and distribution to prices.

Such a model should be able to counteract the accumulation of market power, allowing more transparent and healthy competition and provide tracing capability of food quantity and quality throughout the supply chain.

However, this system calls for the need to establish an entity that collects and posts the relevant data for successful food chain system.



# THE MORAL IMPERATIVE OF MONEY: *what investments in science say about a nation's priorities and ethical compass\**

Mohamed H. A. Hassan FIAS & Daniel Schaffer

## Executive Summary\*\*

The global scientific community has experienced fundamental irreversible change over the past several decades. The meteoric rise of China as a scientific and technological powerhouse, growing challenges to US supremacy in global science, and a significant narrowing of the North-South gap in scientific capacity have all shaken – and reordered – the liberal, rules-based international order that has framed and shaped global science since the fall of Berlin Wall in 1989 and the subsequent demise of the Soviet Union.

While there is a much truth to the notion that the global scientific community has entered a new era, one enduring legacy of times past remains firmly in place: Scientific and technological capacity continues to reside largely within the domain of just a few countries. For example, China, the United States and the Europe Union (with 27 countries) account for two-thirds of the annual global US\$2 trillion investment in research and development. Similarly, scientists in the US, China, and EU account for two-thirds of all scientific and engineering articles published in peer-reviewed scientific journals.

In short, scientific investments and scientific output remain nearly as concentrated today as they were 30 years ago. We should be encouraged by a narrowing of the North-South divide in science. But we should also be concerned about a growing South-South divide in science. Deep inequities in scientific capacity continue to be a defining characteristic of global science, a disturbing characteristic that is most evident in sub-Saharan Africa.

The enduring elements of marginalization and inequity that persist within the rapidly changing landscape of global science demand both attention and action. The article, “The moral imperative of money: what investments in science say about a nation’s priorities and ethical compass,” examines the global scientific community at the dawn of a new era that in some significant ways resembles the old one. It calls on national governments, especially in poor countries, to expand their investments in science and technology and to more closely integrate these expenditures into their

national plans for economic development. The article also calls on international organizations to renew their commitments to scientific capacity building, especially among countries that have yet to fully benefit from advances in science and technology or to fully participate in global research efforts designed to address common global challenges. The article is based on the notion that inclusive international science requires strong scientific and technological capabilities in each and every nation.



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\* *Biologia Futura*, a Springer/Nature publication, 23 October 2020.

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# THE IMPACT OF COVID 19 ON SCIENTIFIC RESEARCH:

*A holistic approach for the Islamic World*

Prof. Rida A. Shibli<sup>1,2</sup> &  
Dr. Tamara Qudab<sup>2</sup>

The COVID-19 pandemic has forced the entire world to face one of the most challenging crises, with millions of people infected and hundreds of thousands of them dead. COVID-19 pandemic is not only considered a health crisis, it is a large-scale humanitarian crisis that has led to the suffering of all humanity and has put its social, economic and scientific research on the brink collapse.

The effects of the COVID-19 pandemic on the countries of the Islamic world have been highlighted in many of the negative impacts of this unprecedented crisis. Member states of the Organization of Islamic Cooperation have begun to witness negative and disproportionate effects of the virus on their economies and societies. The Islamic world, being a primary constituent of nations of the world, has sustained great suffering as a consequence of this pandemic. In essence, the pandemic affected major economic and social aspects in addition to the adverse effects it has had on the educational process and scientific research, in general, as it generally led to pronounced consequences including reduced spending on scientific research. In addition, the COVID-19 pandemic has affected many different institutions and governments in the fields of science and technology around the world, which ultimately led to a decrease in productivity in a number of areas and programs.

On the other hand, COVID-19 pandemic has resulted in the initiation of several new lines of research for funding by many government agencies around the world. For example, the pandemic has improved scientific communication and/or created new forms of it as huge amounts of data were released in different domains of knowledge and general media. Where scientists were able to analyze and publish scientific articles and data at record speeds and in large numbers, it became imminent that publication of research at this speed would allow an extraordinary level of cooperation and competence among scholars. Although the process of publishing research on the topic of the pandemic is moving faster, the pace of general research "continues to feel slow" during the pandemic.

Covid-19 has not impacted all scientists equally. Studies indicate that this epidemic has had a greater impact on female scientists, especially working women with young

children, as they experienced a significant decrease in the time allocated to research. This can have short and long term implications for their careers, which corporate leaders and funders need to address carefully.

## Scientific research in the Islamic World

The economic growth, military power, and national security of the OIC countries depend heavily on technological progress like other countries of the world. Therefore, there is a need for concerted efforts in scientific research and development processes to keep pace with the rest of the knowledge-based societies in the world. In recent years, government support for scientific research operations has increased in many of these countries, which in turn led to the improvement of the national scientific infrastructure. However, most of the Islamic world until now are still not involved in science and the average spending on scientific research and development across the 57 OIC member states is very low.

## Scientific research in the Islamic World during COVID 19

The race among countries to find a vaccine for COVID-19 is evident in the volume of spending to support scientific research. So, increasing the volume of Islamic countries spending on scientific research should be a priority. It must be ensured that research is invested in developing labor policies and increasing productive development. Otherwise, it will be difficult, if not impossible, for Islamic countries to catch up with the scientifically developed nations, and thus will always remain under their hegemony.

## The impact of COVID 19 on scientific research in the Islamic World

As we have seen, scientific research in the Islamic world in general suffers from many problems. But with the ongoing outbreak of the Corona epidemic around the world, the challenges facing the process of scientific research in the Islamic world have increased. Among the most important of these challenges is the economic crisis that the world is going through, which has led to a pronounced reduction in the direly needed funding for conducting scientific research in general, with some major focus directed on expenditure on treatment and health care. Until now, there are insufficient allocations for conducting scientific research related to the discovery of an effective and new vaccine for the COVID 19 in the Islamic world. In addition, the percentage of financial support for conducting other scientific research apart from the Coronavirus has been

<sup>1</sup> Association of Agricultural Research Institutions in the Near East & North Africa (AARINENA), Amman Jordan.

<sup>2</sup> Hamdi Mango Center for Scientific Research, The University of Jordan, Amman, Jordan.

significantly reduced. In general, the impact of COVID 19 on scientific research in Islamic world scientific can be summarized as following:

**Impact on researchers:** The spread of the CORONA virus has also affected researchers' ability to collect data, discuss ideas and results with colleagues, and publish research results. This is in addition to the accompanying negative impact on data analysis and reporting. The Coronavirus pandemic has significantly affected the research activities of researchers, especially those of graduate students. Graduate students who are conducting their research to obtain master's or doctorate degrees, are among the worst affected. This is because their research is conducted either in the field or in the laboratory using certain types of equipment, and other chartered machineries. Moreover, data collection (be it daily, weekly, biweekly or monthly) has been severely hampered. This has consequently resulted in various disruptions in the research arenas.

**Impact on scientific events:** different scientific events such as conferences are cancelled or pushed out in various regions of the world due to concerns related to the epidemic, which hinders the work of scientists, especially those who are still at the beginning of their career. With the witnessed increase in confirmed cases of "Covid-19" in the Islamic world and around the world, gatherings of all kinds have begun to be cancelled or postponed. This includes all scientific meetings as well as various science conferences; activities that inherently lend themselves fairly well and offer fertile grounds for the exchange of new ideas and collaborative projects.

At the same time, research institutions and government agencies began imposing increasingly stricter restrictions over time, preventing scientists from traveling internationally and domestically. Currently, many researchers have resorted to electronic meetings (and online University offerings). However, such alternatives cannot fully compensate for the types of losses researchers have particularly sustained as a result. This is particularly so as personal gatherings are critical to collaborative projects, as well as follow through on large-scale projects. Here, many scientists fear that continuing to cancel or defer conferences for extended periods of time could pose some detrimental effects, especially on students and researchers who are still in the early stages of their careers.

**Impact on ongoing research** (Research in progress): The impact on research in progress prior to COVID-19 was rapid and dramatic. This epidemic has led to the reduction of most of academic, scientific, industrial, medical, and governmental research pursuits. Much research got, in fact, redirected to research related to the Coronavirus and the discovery of effective vaccines and

medicinal remedies for this epidemic. Unfortunately, most of the experimental trials have been temporarily stopped in order to reduce the risk of researchers becoming infected with COVID-19. In general, such disruptions on research threatening scientists, many of whom have had to shift their efforts from research to patient care.

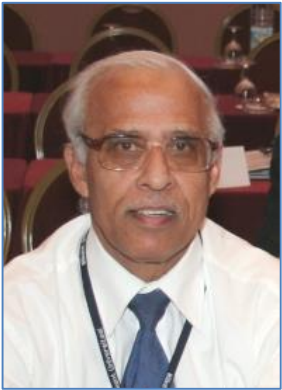
**COVID-19 research:** The Islamic world has continuously tried to push its scientific research communities in the ways (COVID-19)-related research. This, however, was at the expense of other important research venues in the fields involved. Most of the research agencies and governments in the Islamic world have allocated special budgets for conducting research related to COVID-19 and submitting proposals in this regard. This was in addition to financial rewards to those who would unveil some vaccine or treatment methodology for this coronavirus.

After the outbreak of the Corona epidemic, there are an urgent need to enhance the role of scientific research in finding solutions for problems in all fields all across society. It has become apparent that most countries of the Islamic world have suffered from notable weaknesses in the components and tools that can be leveraged for scientific research. This is on top of amalgamated complexities in the absence of a much needed leverage in the ways of researcher sponsorships by governmental and non-governmental agencies, and the lack of laboratories to help researchers complete their research outcomes and support then by experiments.

Scientific research in the Islamic world is witnessing a diverse set of various perplexing challenges, and in light of the Corona virus crisis, the need for institutions that would adopt scientific research and its various methods is becoming rather more important than ever. This is in addition to the need to give scientific research the importance that it deserves, and, along the way, provide the needed material and human support that go along. The Corona crisis has, indeed, revealed the true reality in the state-of-affairs as pertains to scientific research all across the Islamic world. In a like manner, it has shown some deep scarcity in the human capital and material resources, which, in turn, have led to some serious failures to bolster the much needed resources that would prop up efforts in the ways of successful research pursuits. It is therefore pretty imperative that Muslim countries start to recognize and appreciate all genuine efforts tallied by researchers in the ways of advancing the wellbeing of the communities involved, and along the way help the underlying economies move in progressive pursuits bringing together some viable industrial pursuits that can readily on the path of success for the Islamic world.

# COVID-19 LOCKDOWN AND ITS EFFECT ON EARTH'S WEATHER AND CLIMATE

Prof. M. Asghar\* FLAS



The Covid-19 pandemic caused-world-wide lockdown has brought a sudden and almost complete halt to the economic activity and dramatically limited the social life of people with draconian constraints on their movement and personal behavior. However, this disruption has also led to a dramatic fall in air pollution everywhere. An example, Fig.1, shows the image of the situation with pollution (mostly from airborne nitrogen dioxide (NO<sub>2</sub>) from industry and traffic) in China before the lockdown and after the lockdown. One observes that the lockdown resulted in a dramatic improvement in visibility and clarity of atmosphere.

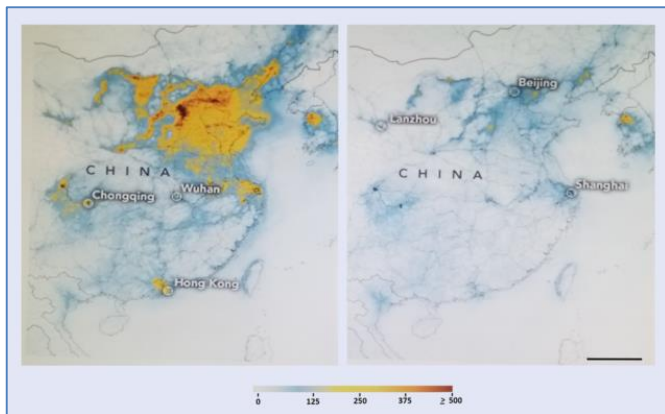


Fig.1: What a difference a month makes. Airborne nitrogen dioxide (NO<sub>2</sub>) – which is primarily emitted by industry and traffic – plummeted over China after Wuhan went into lockdown on 23 January and the surrounding regions quickly followed. Over eastern China in particular, levels dropped by 70%. (Courtesy: NASA). <https://physicsworld.com/wp-content/uploads/2020/09/Rav-fig1.png>

This dramatic fall in air pollution has provided a practical opportunity to scientists to look into some of the longstanding mysteries surrounding the formation of low cloud coverage. Here a significant increase in the low cloud formation was observed over the region following a significant decrease in the aerosol emission due to lockdown as suggested by the calculation with the global climate model (1).

Moreover, this work has enabled them to gain a better understanding of the complicated interactions between air pollution, weather and climate such as the interaction of nitrogen dioxide pollution with the ozone produced and present at ground level and breaking it into NO<sub>2</sub> and oxygen. Furthermore, the reduction in the NO<sub>2</sub> pollution resulted in dense haze over Peking due to the fine dust particles of 2.5 μ m size, called PM<sub>2.5</sub>, kept under control and inactive by the presence of this pollution (2).

It is well known that clearer skies impact the atmospheric circulation patterns. One knows that the reduction in air pollution across Europe has changed the strength and location of high-altitude winds shifting the Jet Stream further north during winter. This movement lessened the likelihood of extreme cold weather over Euroasia (3). It is possible that short-term reduction in air pollution due to Covid-19, would affect the heating patterns across the globe and influence the weather patterns.

Would the presence of clearer skies, when more sunlight reaches the Earth, lead to more severe melting of the already fragile glaciers, the ice coverage in the polar regions and an increased methane (a powerful greenhouse gas) emission from the Siberian permafrost? If this is the case, it could render the climatic situation even more precarious.

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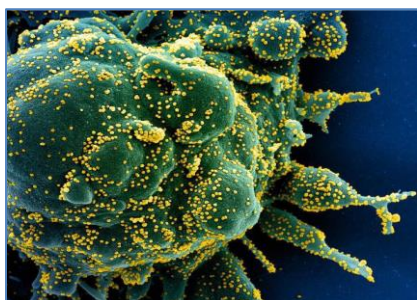
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## THE STRENGTH WEAKENING OR FAINTING OF COVID-19 – NOTE 2

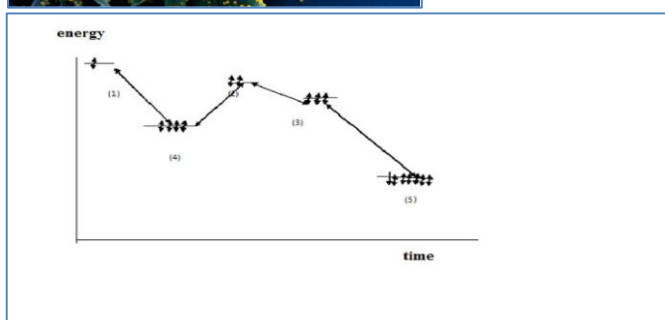
Prof. Muthana Shanshal, Baghdad University FLAS & Rabma M. Shanshal (MBCHB, Baghdad)

In the preceding note we described a quantum molecular dynamic approach for the understanding of the weakening phenomenon of Covid-19, as reported by European medical virologists [1]. We concluded that the various replication, conformational changes and hydrogen bridge rearrangements should lead to the formation of different quantized energy stationary states among which the virus ensemble is distributed according to the Boltzman statistical law. The enrichment in the lowest stationary states parallels the decline in the pathogenic activity of the virus. In the present note we aim to demonstrate the suitability of this model to understand the different observed changes in the pathogenic activity of this virus, as reported in the available literature.



*Electron Microscope picture of a human cell infected with Covid-19 virus.*

(FAZ, wissen, 20, 9, 2020).



At the end of the 19th century, exactly 1898, the Russian flu resulted in the death of approx. one million persons. Present scientific “estimations” relate the initiator of the pandemic to the present Corona pandemic virus. The virus appeared at 1889 in central Asia and was transferred then from cow feedstock to the humans. The lung disease spread very quickly among the humans by then. Shortly after the disappearance of the first wave, a second and stronger wave of the pandemic struck the masses and left, after few years, approximately one million victims.

Nowadays, the initiator of the Russian pandemic, named as HCoV-OC43, is known to be responsible, together with other Coronaviruses, for normal influenza flu which is the cause of 20-30% of all cold infections. The decline in the pathogenic activity of HCoV-OC43

is easily understood, as due to the decline of the highly active mutative form of the virus to the energetically lower and thus less reactive forms according to our former model [1].

Another demonstration of the virus quantized energy levels might be the recently published number of deaths as caused by the Corona epidemic in England, at the same week day in the period 13 April to th15th June, 2020. The data are released by the NHS England at 2 pm each day and reports daily count up to the previous day as well as a total figure.

15th June: 28 deaths	8th June: 59 deaths
1st June: 108 deaths	25th May: 59 deaths*
18th May: 122 deaths	11th May: 209 deaths
4th May: 204 deaths	27th of April: 329 deaths
20th April: 429 deaths	13th April: 667 deaths

Obvious is the decline in the number of mortality. Again the increased weakness of the virus can be viewed as due to decline of the virus to low energy levels which correspond to the least reactive mutative form of the virus as suggested in our formerly hypothesized model [1].

In India, the researchers studied the strain isolated from one of the first three cases of COVID-19 in Kerala on January 27. The research has claimed that the novel corona virus has undergone mutation making its spikes weaker. This points out that the mutant strain of SARS-CoV-2, that causes the COVID-19 disease, could have become less virulent due to its “reduced” ability to bind with a human cell and then reduplicate. The study is conducted by researchers from Taiwan and Australia. The findings are published in BioRxiv, a pre-print online publication.

The study found a mutation in the mechanism that the deadly virus uses to gain entry into the human lung cells. “We found changes in a part of the spike protein that allows the virus to bind to and penetrate human cells. We identified a mutation that leads to weaker receptor binding capability,” the researchers said. This spike protein targets cells containing ACE-2, a protein found on lungs, kidney, heart, and gut cells in humans.

**The less reactive mutation of Covid-19, seems to have occupied its low energy levels due to its decline from the normal reactive state.**

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# THE ECONOMIC STATUS OF OIC MEMBER STATES DURING AND AFTER THE COVID-19 PANDEMIC

*Advices that have to be taken into account*

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As of January 25<sup>th</sup>, 2020, when the first COVID-19 cases were reported within the Organization of Islamic Cooperation (OIC) member states, there have been about 12,547,814 deaths, and 508,402,760 confirmed COVID-19 cases in the OIC member states (1). Besides affecting health care sectors and social life, COVID-19 pandemic has been extensively striking all microeconomics and macroeconomics aspects such as the level of production and poverty, employment, international trade, budgets, economic growth and so on. The economic burden of COVID-19 pandemic, also called the second global economic shock, is said to be even worse than the 2008 global financial crisis. This issue should be specifically noted in OIC member states since there has been a negative economic growth (-2%) during the COVID-19 pandemic despite the positive growth (+ 1.7%) in 2008 (2). Yet, it is almost unfeasible to correctly estimate the long-term effects of the current pandemic on monetary values, e.g., gross domestic product (GDP) and gross domestic expenditure on research and development (GERD) since several factors, including the magnitude/duration of pandemic and lockdown are being at play here. According to the International Monetary Fund (IMF) WEO database (October 2020 update), global GDP annual growth rate has declined about 4.4% in 2020, which is forecasted to be 5.15% in 2021, in the most optimistic case (3). In line with this, emerging and developing Asia (-1.7%, +7.9%), ASEAN-5 (-3.4%, +6.2%) and Middle East and Central Asia (-4%, +3%) country groups are expected to follow the same pattern over the indicated period (4) and (5). In spite of these, during 2007-2017 and after the 2008 financial crisis, average GDP annual growth rate was 4%, 5.5% and 5% for low-income, lower-middle income and higher-middle income countries, respectively. Hence, it seems that although the short-term effects of COVID-19 pandemic have been more severe, recovery from the current economic crisis will occur at a higher rate.

The question arising here is to what extent COVID-19 has changed or will change research and development investments. Indeed, there has been by far no database available estimating impacts of the current pandemic on

GERD (6). The existing literature only contains limited information from different years concerning GERD investments by field, activity, and performing sectors among 33 OIC countries, making it quite challenging to interpret the whole member states. The GERD percentage as GDP was small within almost all OIC countries, except Malaysia, United Arab Emirates, Iran, Saudi Arabia, and Turkey. The highest number of countries invested the largest share of GERD in engineering and technology (n=12), followed by agricultural and veterinary sciences (n=4), natural sciences (n=3), medical and health sciences (n=2), social sciences and humanities (n=1), and the art (n=0).

Regarding the types of activity, applied research (n=12) and basic research (n=6) had the largest GERD share among 18 member states with available data. As well, GERD was mostly performed by the government (n=15) followed by higher education (n=11), business enterprise (n=3), and private non-profit sector (n=1). Since there were minimal investments in medical and health sciences across most of the OIC member states, COVID-19 is expected to associate with a cut in GERD for other fields, driving a shift towards medical and health expenditures. Although such a diversion is crucial for public health during the COVID-19 crisis in low-and middle-income countries, it can deal a severe blow to the country's economy post-pandemic given general revenue, education infrastructures, and monetary deficits (2). Due to the COVID-19 pandemic itself, school closures are estimated to cause USD 10 trillion loss in global earning over the next generation (2). The negative impact of this issue on the future of a country is quite intelligible. Now suppose that the GERD on education and related fields is diverted to health sectors during the pandemic. What happens next to the provision of essential services? Couldn't a cut in engineering and technology expenditures, agricultural and veterinary sciences and humanities be associated with a considerable decline in public income, innovation, supply, and further international trade?

Taking a lesson from the 2008 financial shock (7), countries implemented balanced strategies were less affected than ones with weak budgetary management, which further slowed down their science and innovation development. Likewise, recovering from the current pandemic is dependent on keeping a fiscal balance between multiple disciplines of education, digital technologies, sociology, psychology, engineering, supply chain, etc. More importantly is that unstable research and academic conditions such as declines/cuts in research funds and salaries push researchers, particularly early-carrier researchers, to change their career or migrate to regions with better GERD investments (7). Hence, during the COVID-19 outbreak, countries should be attentive to other areas as much as medical

# A SEPTUPLE CHARTER FOR COEXISTENCE IN THE FUTURE WORLD

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***Human beings are members of a whole  
In creation of one essence and soul  
If one member is afflicted with pain  
Other members uneasy will remain  
If you've no sympathy for human pain  
The name of human you cannot retain  
Saadi Shirazi***

and health sciences. Indeed, the first priority should be assigned to health infrastructures and related research performed by academics and public institutions and private sectors to supply diagnostic tests, vaccines, and therapeutic requirements. Two other important aspects are technology and natural sciences. Enough funds should be invested in digital technologies-related research since they are currently the leading way to inform about preventive methods.

Moreover, the emergence of digital education during the pandemic has added to the importance of this field. Last but not least, the recent devastating natural disasters and the issue of global warming highlight the necessity for investment in the field of natural sciences, which should not be neglected during the COVID-19 pandemic. To this end, 13 European climate and environment ministers have signed a convention to have a green deal with the COVID-19 outbreak. Such plans should be adopted in OIC countries as well (7).

All together, we must keep in mind that the COVID-19 pandemic is a global crisis which requires close intra-OIC cooperation and coordinated steps, particularly in the least developed countries which more immensely suffer from post-pandemic financial complications such as unemployment and poverty.

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Nowadays, coronavirus or the so-called Covid-19 has spread all over the globe, endangering human lives. On the other hand, it has also been a lesson of life for all human beings to take, which has exerted some beneficial impacts on their lives; hence, this immensely little invisible creature has to be treated wisely enough. Thus, one has to refer to old sayings and pieces of advice given by late wise men and philosophers so as to come to a proper realization of the situation. In this regard, the late great Iranian bard called Saadi Shirazi, the poet of all ages and eras, is a world-known poet and wise philosopher whose clear guidelines can be an effective solution to human problems these days. Saadi wrote the following triple rhyming couplets about 800 years before the universal declaration of human rights. These couplets are still being caroled in different languages as melodies, anthems, and global music. It is, of course, worth mentioning that Achaemenid Cyrus Charter of Human Rights was the very first and the oldest human rights charter referring back to 600 BC.

Human civilization is estimated to refer back to some thousands of years ago and the initiation of the world to four to five billion. Although the social, cultural, political, and economic evolution of different ages and the bonding between them have had a whole lot of ups and downs, it has never been torn apart. Regarding the concordance between nature and the human spirit in the past and now, we can draw this conclusion that: nature is crumbling, and at the same time, man's enjoyment of nature and his inner enjoyment is as low as spiritualism. At the same time, the level of the fun of artificial achievements and external attractions has increased. Meanwhile, humans seem to be deriving more pleasure from some fictional attainment and external fascination. On this very day, it is the right moment to write an open

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letter to mention some novel and no repetitive words! The time when all those charter developers write down all things crossing their minds to share them with people. This septuple charter is of those great belletrist's and poet's odes and lyrics who lived well and taught others the right way to live well. Reading through the literary works and quotes of those top poets of Iran, namely, Saadi, Hafiz, Rumi, and Ferdowsi, and other Greats whose writings go hundred years back, provides us with an opportunity to recognize the potential harms and pests of human life. This guides us to a more comprehensive understanding join with more in-depth insight and intuition in this perilous world so that we can take a further leap towards humanity. Hence, in this short message, we declare this septuple charter along the guidelines cited and quoted by these Persian poets, sages, and wise philosophers.

*You have to raise yourself to the seventh heaven  
because the love you have is precious (Rumi).*

### First Charter (Self-Perception)

*Know that everyone who has wisdom will look at  
the ordain of Almighty of the judge (Ferdowsi).*

This invisible coronavirus has done plenty of things in the universe, which can't be seen solely through our eyes; instead, we need a different vision to observe it. Entity and existence have got higher spiritual values; humankind is blessed to be the extract of the whole universe who owns dignity. Human wellbeing is gained as a result of his/her balance and harmony with outer and inner nature (innate). Therefore, self-knowledge is the foundation of human health and happiness. Of course, self-knowledge is a kind of theology. Man needs the wisdom to know himself and creation. Wisdom means attaining truth through knowledge and reason, in which there is no weakness or perversion. Science is the discovery of facts as it is, the scientist does not create anything but knows what has been created. But wisdom means discovering the truth and realizing the ultimate purpose of life that only special humans have access to them.

*Although the world has enchanted you, you are  
immensely valuable internally, and if you look at things  
through your third eye, you will realize the high value  
of your existence; thus, you will take steps towards your  
origin (Rumi).*

### Second Charter (The Change)

*Since human beings change at the time of peace  
and battle, they never gain spiritual unity;  
therefore, their souls lack unity (Rumi).*

In this day and age, the main focus of governments is not to figure out the root and causes of problems, they seek the privileges instead. Thus, most of the issues in the world aren't solved and eradicated, and even if

solved, they bring about other predicaments. What is the principle? We will not need to define what a secondary matter is if we know the law owing to the fact that a principle is always a principle, and a side issue will always be secondary. But, most of the people in charge have no idea about the principle, and they are always focused on secondary issues, they may have to intentionally ignore the principle due to the personal benefits that they gain from the secondary matter. Everything changes regardless of the place and time, and it is only the word "change" that remains unchanged. What are some of the responsibilities that we have to shoulder regarding the Coronavirus diseases? We can survive a disaster provided that we make some changes to ourselves along with the changes that take place in the environment and nature; if not so, we are condemned to perish. As before, if we were the reason for improper changes in nature and the environment, we would deserve death.

### Third Charter (Raising Happiness)

**How a verse excites and afresh the sorrowful heart!**

*A subtlety out of this book, we uttered and is this  
very subtlety (Hafiz).*

*I have a covenant with a joy that is my happiness,  
and my beloved has promised to be close to me  
like my existence is (Rumi).*

The world is now in a severe need of gentleness and kindness more than any time ever before. When society and people living there are hit by sadness and grief, no delighting results could be obtained. The storm of information in nowadays modern life has made humans jaded and somewhat confused; consequently, they are accustomed to being mouth fed, and they allocate no time to meditating on issues. Since time immemorial, not only have poems been a pacificator of soul and alleviation to emotional sufferings, but they have also been a remedy and a solution to human pains and problems.

### Fourth Charter (Deficiency of Power)

*You are so greedy that an elephant would be moral  
for your greediness, and if you welcome  
greediness, it seems as if an Ababil bird has  
hunted an elephant (Rumi).*

Here comes the question that was coronavirus eradicated and the nature restored, would we be back to square one again and does what we used to do? Seeing we sociable figures have been made to stay home. They have been deprived of social activities due to the current situation, we had better go back to our community once again through humanity. Have we ever asked ourselves why this virus became a global concern? It may be better if we don't ignore the role of information technology, which irritated the world, in addition to that, modern

transportation led to the speedy transmission of coronavirus and its outbreak in every single corner of the world. Furthermore, the human is proven to be forgetful and arrogant. It is cited, O human! What has deceived you concerning your Generous Lord? In this utter chaos caused by the corona pandemic, we are witnessing that a virus with an overall weight of fewer than five grams has paralyzed people, bringing the whole globe to a standstill in both economic and social terms.

#### **Fifth Charter (Knowledge and Spirituality)**

*If you get stuffed with the pleasure of seeking knowledge by sagacious people, no longer mundane pleasures will attract you (Naser Khosrow).*

*Science and knowledge, which assemble Soleyman's signet ring, are the source of authority and ability, and the importance of science seems as if it is the soul of the universe, and the universe is the body (Sanai).*

In this territory, every poet has been a sort of "doctor of the soul" of this age. Every poet has been trying to diagnose problems of society and remedy them. In point of fact, the art of poetry and music have both been of the same purpose, and both have been a means of expressing transcendental thoughts and creating beauty. If we artistically are the precursor of freedom and the discoverer of humans' in-commons as a global medium. If we try to help a lonely one abandon violence, we have led him towards observing all the beauty, and it may eventually result in a cleansing society of violence.

*Don't spend your valuable time on material science, unless it bonds you to reality. Having gained immaterial science, leave material science since immaterial is the essence, and the material science seems not to be that valuable (Saadi Shirazi).*

#### **Sixth Charter (Peace and Truthfulness)**

*Spread peace all over the globe, and send a message of peace to all those warmongers and warriors (Jami).*

To those who say "wait until the right time comes", I have to say, isn't it right to think of peace and existence seeing a tiny invisible creature is even looking for life? To those who say that the time of joy and delightedness is up, when would this sorrow end? Rumi responds that:

*Only the souls of those in times of war and peace want peace and reconciliation that always has a spirit of purity and intimacy (Rumi).*

So, we are sending out the message to all governors and government officials:

*Spread peace all over the globe, and send a message of peace to all those warmongers and warriors (Muhammad Iqbal).*

*Be an upright person since upright people get to salvation. Honest people are strong, valuable, and have got so much credit in this world (Awhadi Maraghai).*

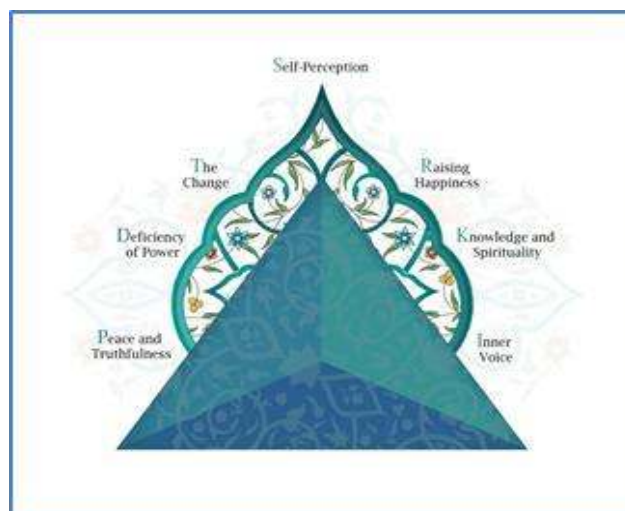
#### **Seventh Charter (Inner Voice)**

*Always try to reach wisdom through your heart inside; your whole body will accompany you in this way (Attar of Nishapur).*

In retrospect, the recent event of coronavirus proved that humans are highly vulnerable despite scientific advancements and that they have to have second thoughts about their lifestyle and gain a new insight into the future. In a nutshell, we stressed the pivotal role of poetry in softening the social life atmosphere and raising their hope of a better future, and therefore, we draw this conclusion that the secret to a better future is to pay specific attention to our inner thoughts. Then, let us reinforce our inside to protect ourselves from foes outside. Let us interpret the balance for ourselves again, which is the essence of life as well as God's command. Let us aim for inner peace in order that we prevent outer conflicts with others. Isn't it the time to first prepare our inside, and subsequently outside, for inner and outer peace.

*Whoever is a true lover and can reach the loved one, he/she will be eternal, and death will never come to him/her. If someone's beloved supports him, no harm will come to him (Rumi).*

*Let us respect each other and value being with each other so that nothing can separate us; this way we will never regret being apart. Kind people will sacrifice themselves for the sake of their friends, and we ought to avoid meanness and have humanity instead (Rumi).*



*Seven Spiritual and Knowledge Changes for Happiness*

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## Introduction

1. Pandemics have been, by their very nature, disruptive, leaving after the crisis recedes, who knows what? COVID-19 is no different in the all-encompassing scope of its disruption. This is a viral infection, contagious in nature with high degree of pathogenicity. Respiratory system is mainly involved however effects are wide spread in the presence of co-morbidity. COVID – 19 emerged in Wuhan, China and later spread globally as pandemic. The exact source of origin and transfer to humans is still under investigation, however, the fast human to human transfer has been confirmed extensively. There is no patent treatment or vaccine available as yet. The pandemic has now adversely affected a wide range of fields of life like economy, Education and social connections.

There is no second thought that higher education, both domestically and internationally, has been interrupted. Forecasts predict considerable decline in registration. In the past it took higher education two years to recover from the influence of the SARS in affected areas. This disease has put the limelight on old-fashioned financial models, inflexible admission, recording procedures, student progression and graduation rates. The COVID-19 has also presented higher education with opportunities after the dangers of disease have passed or a vaccine is revealed which makes it benign, once again, to restart normal activities. The virus ultimately will fade out. The question is will higher education institutions worldwide respond to the ruminant effects?

## Impacts of COVID pandemic on Higher Education

2. The assumed/observed effects and actions include:
- Strategic planning will include vision planning and these will co-exist.
  - Face to face learning will not begin most likely until the spring 2021 semester.
  - Business models will be outdated.
  - Teaching Institutions are forced to close.
  - Poorly endowed universities/institutions will merge with others.

## Response of Higher Education to the pandemic Vision planning will supplement strategic planning

3. It is not a short term thinking with some box. It's a strategy with a strong vision. A vision statement is a statement to determine and is therefore different from a mission statement. This is a description of the route to be followed to comprehend the vision. Thinking from the end backwards is the key requirement of vision statements. These vision questions may be, why a student should be enrolled in your university? What is different in comparison with any other university? How your university reshapes after COVID-19 recedes? What is the vision for coming students? How it differs from present practice? Creating vision plans differs from strategic plans. Different human resource elements would be tasked with creating a vision for the forthcoming academic sessions and will be articulated to all major institutions.

## Create a year-long academic programme combining the face to face and online learning

4. The academic year will be 52 weeks long and combine to make it a hybrid learning system, this will contribute to improved progression and graduation rates. Edward J Maloney, writing an article in Inside Higher Education, listed several potential academic scenarios that could be implemented for the next academic semester, including: Moving the autumn to the spring semester, dropping the number of courses offered face to face and increasing the number of courses imparted online and creating a structured gap year. Designing separate courses for residential and online students, allowing students to take one course at a time for three or four weeks and offering a modified tutorial model of instruction allowing students to take a common online lecture session.

None of us thought let's use COVID-19 to abolish instructor-led courses and send all of our students to virtual learning. We can infer now that remote learning is all to reconfigure the connection between faculty and students. The vision teams of Higher Education Institutions may think of this submission.

## Create year-long recruitment programmes for students

5. Year-round recruitment activities will allow applicants greater flexibility in college and university selection and enrolment. What would your campus 'look like' if your enrolment and admissions procedures/policies were changed to replicate the realities of the post-pandemic world? Would your recruitment teams continue to attract the students in conventional manner both domestically and internationally? The answers to these questions most likely will not be affirmative. When

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the academic year is restructured, the recruitment year must also be restructured. If the admission branch has developed a visual admission system, then evaluate its effectiveness with regards to efficiency and method of communicating with all applicants. The parents should be informed that their wards did not require participating in university extra-curricular functions and fairs? In USA, Association for College Admission Counselling has asked universities to review their admissions criteria. What does your vision squad think of this suggestion?

### **New financing and business models**

6. Adoption of new business models and financing opportunities will bring steadiness to the 'bottom line'. Most institutions are dependent on semester tuition fee and are victim of COVID-19. Current business plans are based on boundaries that have been getting leaner and slimmer every passing year. As part of the university's vision team, the Internal Editor or Director Accounts would perhaps raise these queries: If the academic year is changed and students are enrolled in both face to face and online courses, then what would be the difference in amounts of fee for both methods? What would be the duration for return of investment? Further will it affect improved progression and qualification rates? Reducing cost in recurrent expenditures are expected to reduce overall cost. What measures your university can adopt? What does your think tank say about this suggestion? Would it also be necessary to border Human Resource?

### **Psychomotor Learning**

7. Demonstration of psychomotor learning and development of skills to that effect be taken as challenge. Actions which evidence gross motor skills in laboratory working should be ensured through virtual tutorials. It must rely on use of websites and videos that helped the students to effectively learn. Other venues are literature review, YouTube videos, recorded experiments or procedures like dissections or use of some equipment or preparing of chemicals. A few sessions may be taken in person are student may be deputed to join concerned industry for a limited time.

### **Collaboration and not the competition**

8. Collaboration, not competition, will be incorporated by the academia. It is impossible to estimate number of universities that will be subjected to halt academic activities and close due to decreasing student intake and income. If the virus falls and then again rises in the next seasons, extra losses of both students and revenue will make it almost impossible for many endowment-poor institutions, to endure. Assuming that safe on campus classes will not be possible until a vaccine is made, what

could such universities do at present to prepare not for closing, certainly no option except for amalgamation with another institution? Potential partners should be known in near or remote.

### **The way forward**

9. In order to cross the events, HEIs need to react skillfully and strategically. After ensuring the adoption of appropriate financial model and medium of communication it is imperative for senior leadership to be in contact with Ministry of Health particularly the epidemiological experts.

- a. A multipronged approach combining elements of management, technology, health care and business with entrepreneurship may not prove valuable for economically poor countries.
- b. In Pakistan where more than 60% population comprises youth has more potential to handle the situation and meet the requirements of global industry and the higher education sector has a unique chance to capitalize on.
- c. Measures based on equity should be adopted to youth to ensure online connectivity and availability of modern gadgets.
- d. The theoretical learning can be supported with project studies to complete allotted credit hours.
- e. Review of requirements for degree completion may be done to simplify it.
- f. Instead of traditional coursework the skill development programs must be introduced.

The opportunity is unique and Higher Education Institutions must capitalize it and attain the goal of moving towards sustainable future.

### **Conclusions**

10. Will COVID-19 change present Educational Institutions the same way as observed during the outbreak of the Black Death in the Middle Ages? That plague swept through Europe in the late 1340s and resulted into a shift from a world view positioned on divinity to the other one that valued science. In present time this pandemic has supplemented a new complication and misperception to the higher education sector, to academia / administrators, and to the new potential students seeking admission in universities. Creation of vision, making choices based on collected data, creating innovative financial, employment/academic models will pave the way to join a post COVID -19 world in collaboration and not in isolation.

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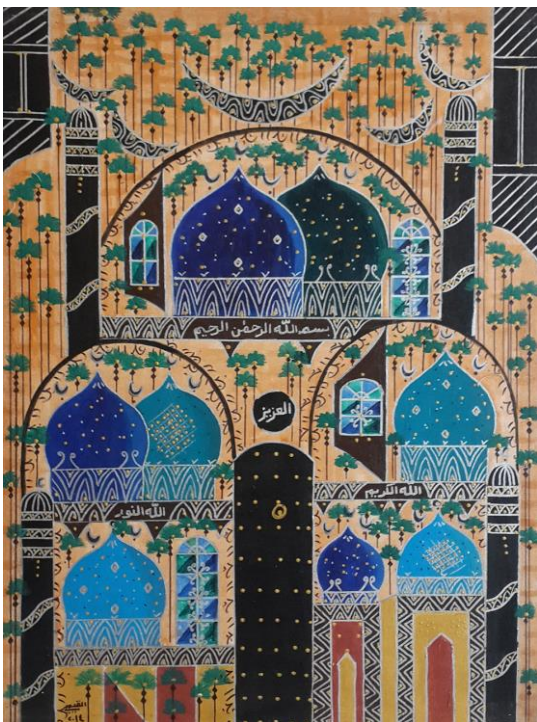
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## RESPONSE OF CAPITAL UNIVERSITY OF SCIENCE AND TECHNOLOGY TO COVID-19 PANDEMIC

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### I. Introduction

World saw an unprecedented pandemic with the name Corona (otherwise known as COVID-19) in late 2019. According to a report published by Johns Hopkins University, more than 540,000 people have died and over 11.6 million infected. Almost all the industries and sectors across the globe were adversely effected. Unsurprisingly, higher education sector had to face a negative impact too. Worldwide **higher education landscape has radically changed** in the past few months. University students in Pakistan have also been impacted by the pandemic, from campus closures to inter-city travel restrictions, social distancing and isolation measures. On *March 13, 2020*, Government of Pakistan took a decision to suspend all academic operations and close down till April 05, 2020, that was further extended till July 15, 2020. Higher Education Commission of Pakistan (HEC) gave a free hand to all universities to either go for online classes or suspend their academic activities. **Virtual Learning Environment (VLE) was considered as the new devil in the market, that many people thought will ruin the whole education system**. But, we at Capital University of Science and Technology (CUST) have altogether a different experience. CUST was probably the first university in Pakistan who decided to switch to VLE and practically showed this approach to be feasible by starting regular online classes within one week, i.e. from March 20, 2020. This proved to be the best possible solution to respond wisely to the new normal, in the given circumstances and to avoid loss of precious time of the students.

### II. Administrative Support

Online teaching learning and assessment was a challenge for the university leadership, teaching and administrative staff. It was a great struggle to navigate this crisis while maintaining continuous course delivery, ensuring quality and responding to the students' needs. In this regard,

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numerous steps were taken to make VLE successful. Following four committees were constituted to support the online classes:

- VLE Academic Council
- VLE Monitoring Committee
- Technical Support Committee and
- Grievance Committee

VLE Academic Council, the formal decision making body to authorize online delivery of courses, in its first meeting gave approval of 404 courses to go online. The council decided to adopt Microsoft Teams for online teaching. Groups were created on Microsoft Teams for all the online classes, subsequently, all the teachers and students were furnished with their login details well before the start of online classes. VLE Monitoring Committee was constituted, under the Dean QEC, to monitor all the online classes through a proper formal mechanism. One faculty member from each department, as well as Director Students Affairs, Sr. Manager IT, Librarian and Assistant Director QEC are also members of the committee. This committee meets every week to discuss the matters related to VLE, and to eradicate if there is any problem being faced by departments. Technical Support Committee was responsible for providing technical support related to MS Teams, as well as the university LMS and other relevant technological software and hardware, ensuring smooth access for faculty and students. The four-member Grievance Committee addresses the problems and difficulties faced by students. All the policies and guidelines shared by the Regulatory Authorities (HEC, PEC etc.) are discussed in detail in VLE Monitoring Committee Meetings. It is ensured that all the guidelines are being followed in all the departments. In light of these guidelines, various policies are drafted and approved by VLE Academic Council.

### III. Students

As far as students are concerned, ***this shift to virtual learning was not easy as it was the first time for almost all the students to get online education.*** CUST administration and faculty were committed to ensure the quality of education and to facilitate students so that there is no negative impact on the learning and grading of students. Students living in far flung areas and with internet connectivity problems were given options of course drop/ withdrawal and semester break. COVID-19 scholarships were introduced and given to

the students who had to face financial problems during pandemic. In these scholarships, students were given up to 50% of fee waiver. In general, relaxation was also given to students in fee submission deadline. VPN service was also of great support for students, as they could remotely access their lectures, assignments, reading material, Softwares and other required material. An effective complaints system was also introduced to address the problems of students. An email ID for this purpose was created and communicated to all the students of university by sharing it on the university website, social media networks and student app. Various complaints including connectivity issues, assignment / quiz submission problems, etc. are received from students, and resolved on priority basis. It was taken special care that students of final semester complete their degrees timely. For this, policies were made so that such students complete their Internships, Final Year Projects and Theses without wasting time.

### IV. Teaching Staff

Teaching staff at CUST played a vital role in successful execution of Virtual Learning. ***The major challenge was how to shift from conventional face to face learning to virtual learning environment,*** and how to maintain same level of quality education. Capacity development of faculty was required to smoothly adopt to the new virtual learning environment. A number of online training sessions were arranged in this regard by Quality Enhancement Cell, as well as by all the departments. A total of 80 trainings were arranged, that equipped the faculty with all the required skills and strategies for online teaching. Moreover, all the departments organize departmental meetings on weekly basis. Objective of the meeting is to monitor and review the ongoing academic activities, and ensure the smooth conduction of online classes and exams. Problems faced by the faculty and students are discussed, and their solution is decided in the meeting. It was all due to the sincere efforts and hard work of teaching staff that CUST was able to conduct fair assessments, midterm and final term examinations successfully.

While these are uncertain times, higher education institutions can continuously endeavor to provide high quality learning following the strategies discussed in this article. It is imperative that universities pay special attention to students' needs and concerns, and provide them with the best quality of education.

## RESPONSE OF HIGHER EDUCATION TO THE PANDEMIC

*Prof. Tanwir Khaliq\* &*  
*Dr. Syeda Kiran Riaz\*\**

The first case of COVID-19 was confirmed in Pakistan on 26th February 2020 and community spread started in the middle of March, 2020. Pakistan Institute of Medical Sciences (PIMS) Islamabad is the constituent Hospital of Shaheed Zulfiqar Ali Bhutto Medical University (SZABMU). Isolation wards were setup immediately in PIMS hospital exclusively for COVID-19 patients. In the first week of April, 2020, Government of Pakistan and Higher Education Commission (HEC) decided to close the educational institutions to curtail the community spread of the SARS-CoV-2 virus in Pakistan.

The administration of SZABMU under the leadership of our worthy Vice Chancellor, Prof. Dr. Tanwir Khaliq strived hard in those critical times for keeping the interests of university students as well as constituent hospital intact. As the first batch of M-Phil and PhD, SZABMU was to be commenced in Spring, 2020, the academic activities were gravely hampered at that point of time due to pandemic. The administration of SZABMU explored the virtual niche and decided to start the academic calendar from 1st June, 2020. With the gracious help of IT department, SZABMU, faculty of Molecular Biology department took the reins for using online platforms to initiate the academic activities. Faculty members and students were provided login addresses for using Google Class room and our program received a flying start with online lectures of four courses every week. Although virtual teaching can never replace the experience of taking class in person but our faculty members tried their best by sharing recorded lectures along with other teaching resources with students to avoid lack of understanding due poor network issues. By the grace of God, we have conducted mid-term exams of our first batch in July using online resources.

Immediately after impediment of the outpatient department services, Prof. Dr. Tanwir Khaliq established telemedicine centre in SZABMU for facilitating patients in dire need of consultation which was inaugurated by the Governor of Punjab. Dr. Fibhaa Syed (Assistant Professor, General Medicine) was nominated as the focal person with

over 70 doctors recruited on voluntary basis to run the helpline and offer telemedicine consultations through video conferencing. As soon as the isolation wards were set-up in PIMS hospital, the clinical faculty of SZABMU including Dr. Naseem Akhtar (Assistant Professor, Infectious Diseases) and Dr. Fibhaa Syed took the lead for treating COVID-19 patients. The intensive care units were overwhelmed with critically ill patients, where Dr. Salman Shafi (Assistant Professor, Critical Care Medicine) worked tirelessly for saving precious lives.

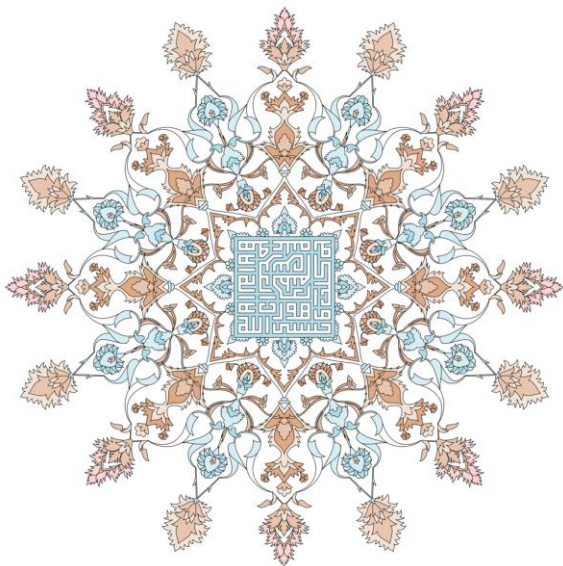
Recognizing the need of the hour, the faculty of basic sciences, SZABMU submitted several projects in HEC and Pakistan Science Foundation (PSF) for initiating research on SARS-CoV-2 spread and etiology. It's a great pride for SZABMU that Dr. Ayesha Isani Majeed (Associate Professor, Radiology) and her team has been awarded with a prestigious grant from PSF for development of CADx based tool for detection of COVID-19 which will be first of its kind in the country. Several collaborations were also built with other institutions of Pakistan including National Institute of Health (Islamabad), University of Health Sciences (Lahore), Pakistan Atomic Energy Commission (Islamabad), H.E.J. Research Institute of Chemistry (Karachi), Centre of Excellence in Molecular Biology (Lahore) etc. for developing COVID detection and screening kits as well as other research projects. Indefatigable efforts of Prof. Dr. Tanwir Khaliq resulted in SZABMU becoming approved centre for clinical trials by Drug Regulatory Authority of Pakistan (DRAP). Clinical trial called CHEER was registered by Dr. Fibhaa Syed in the database of US National Library of Medicine for recruiting COVID-19 patients. SZABMU is also a part of multicentric trials like Breakthrough and PROTECT for evaluating the use of various treatment options in COVID-19 patients. SZABMU also joined hands with National Institute of Blood Diseases for use of convalescent plasma therapy in COVID-19 patients. Multiple awareness sessions on COVID-19 were conducted for the medical students, post graduate doctors and faculty including one day COVID-19 Crash Course, which was conducted for 50 doctors from more than 5 hospitals over Rawalpindi and Islamabad. A one-hour Personal Protective Course (PPE) course for educating healthcare workers on the types and usage of PPE had been designed by Dr. Salman Shafi and Dr. Fibhaa Syed. It has been launched in collaboration with World Health Organization

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\*\* Assistant Professor, Department of Molecular Biology, SZABMU.

(WHO) and MNHSR&C and almost 11500 health care workers have been trained for PPE usage in COVID management from this platform. Moreover, safety guidelines for Healthcare personnel during COVID-19 pandemic were prepared and a pathway has been uploaded on the HEC website as well as displayed at various points in the hospital. Furthermore, when the Ministry of National Health Services, Regulations and Coordination (MNHSR&C) decided to establish the COVID-19 detection facility in PIMS pathology, Dr. Syeda Kiran Riaz (Assistant Professor, Molecular Biology) with expertise in Molecular Diagnostics provided immaculate help for immediate commencement of RT-PCR based diagnostic lab. Under the headship of Dr. Ahmaren Khalid Shiekh (Assistant Professor, Pathology) and supervision of Dr. Syeda Kiran Riaz, more than thousand diagnostic tests of health care workers for COVID-19 have successfully been conducted in PIMS pathology until now. These educational and experimental approaches are paving way for decreasing patient mortality, reducing need of ventilator support and providing effective control of disease in the constituent hospital.

Although COVID-19 pandemic has taken its toll on the economies of several countries and left harrowing memories for numerous families but we took it as a prospect to rise above the expectations and excel in our existing means. We will have to plan ahead of times for improvising the current education and health system for facing future epidemics. COVID-19 pandemic was rather a straw in the wind providing us an opportunity to devote our skills for unforeseen events coming down the pike.



## STAR EVOLUTION TO NEUTRON STARS, QUARK STARS AND BLACK HOLES

*Prof. M. Asghar FLAS*

**Abstract:** This document deals with the different stages of star evolution in the universe including the successive formation of neutron stars, quark stars and the black holes along with the possible nature of their contents.

**a.** The universe contains massive molecular clouds consisting mostly of molecular hydrogen and helium with small amounts of heavier gases. These clouds collapse into fragments some of them with the right size to be protostars.

1. If the mass of a protostar is greater than 0.08 solar masses, hydrogen starts to burn at its center through nuclear fusion producing helium, and the protostar joins *the main stellar sequence*. The helium production continues leading to a helium-4 core with a hydrogen burning ring around the core.

2. As the mass of the star goes up, the gravitational pressure on the helium core increases and overcomes the electron degeneracy pressure, it contracts, heats up and helium starts to fuse into carbon-12 through the capture of three helium atoms (alpha particles).

3. For a star mass greater than 8 solar masses, the system overcomes the electron degeneracy pressure, the carbon core contracts, heats up and starts to fuse into neon nuclides along with the helium and hydrogen burning shells around the neon core.

4. For still a higher star mass, as the gravitational pressure on the neon core increases, the system overcomes the electron degeneracy pressure and the neon core contracts, heats up and neon starts to fuse into a heavier nuclide along with the burning rings of carbon, helium and hydrogen around the core of the resulting new nuclide.

5. As the star mass goes up further, heavier cores are produced and the process of core burning followed by core contraction, heating and the appropriate shell burning, is repeated in a series of reactions producing successively heavier core- nuclides until *iron* is formed in the core (fig. 1). Iron with the highest binding energy (8.8 MeV) of all the nuclides in Nature cannot be fused/burned into heavier nuclides of lower binding energy as the reaction is endothermic that needs energy from an external source to proceed. Here, the star finally runs out of the nuclear fusion fuel to confront the pressure of gravity and collapses under its pressure.

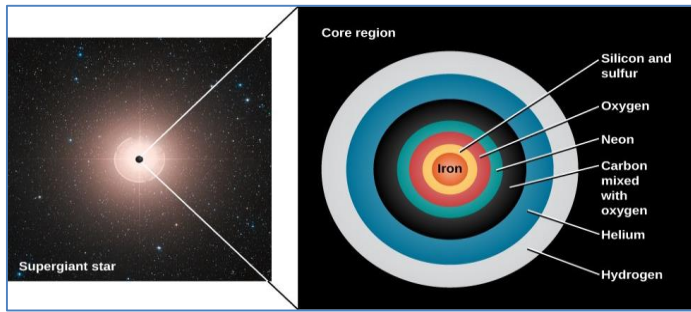


Fig 1. Shows the iron core along with the different burning shells around the iron core (google).

### b. Birth of a neutron core and a neutron star.

1. As the mass of the star goes beyond 8 solar masses, the gravitational pressure overcomes the electron degeneracy pressure of the core; it collapses and during the collapse the gravitational pressure pushes the electrons and protons of the atoms in the core to merge into neutrons forming a neutron core along with the emission of electron neutrinos. Then, under a higher gravitational pressure the neutron core collapses further and as a reaction, causes the supernova explosion and leaving behind the neutron core as a *neutron star* with a mass of about 1.4 solar masses.

### 2. Quark-gluon-plasma core, and a quark star.

As the mass of the star increases further, the gravitational pressure should overcome the “neutron degeneracy pressure” of the neutron core, and it should transform into a QCD-gluon-quark-plasma-phase star core. This star quark-core is likely to be in the form of a strongly interacting “liquid” of quarks as confirmed by the different experimental results on the light and heavy interacting systems tested at the RHIC, BNL, USA, and the LHC, CERN, Geneva, machines (1).

Here, again a higher gravitational pressure should overcome the strongly interacting-quark degeneracy pressure and the star quark-core should collapse further and lead to the supernova explosion leaving behind a “quark star” with quarks as a “strongly interacting liquid”. There are quite a few observational signs of the existence of quark stars, for example (2), that still need confirmation.

### 3. Transition to a black hole.

As the star becomes more and more massive leading to an even higher and higher gravitational pressure on the star quark-core, the QCD-strong interaction between quarks mediated by the gluons, should get weaker and weaker and ultimately go over to zero at the what is

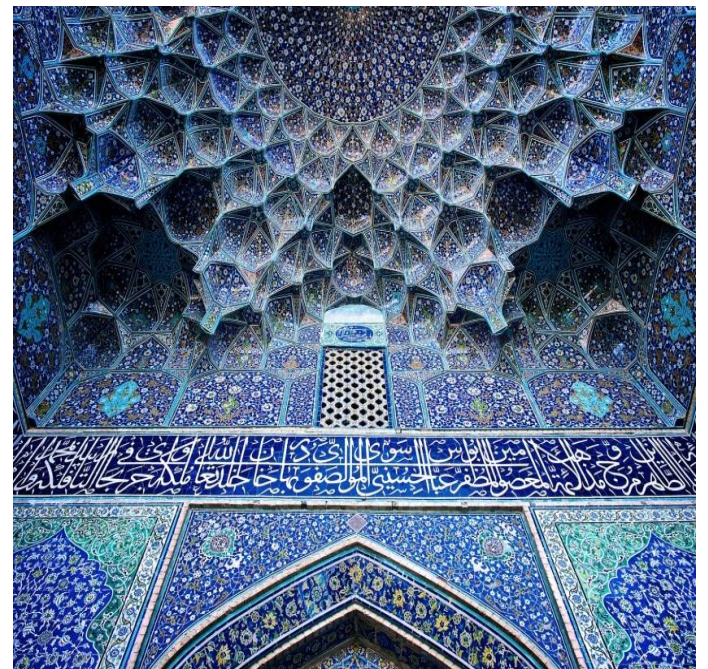
called the “asymptotic limit”. At this point, the strongly interacting-quark-gluon-plasma core should go over to a new phase of matter of *noninteracting-Fermi gas-quarks* core.

When the star becomes even more massive, the higher gravitational pressure should overcome the quark degeneracy pressure of the “Fermi-gas-quark core” leading to the collapse of the core into a black-hole core, and after the supernova explosion, this should lead to a black hole of at least of 5 solar masses (3) of *noninteracting Fermi gas of quarks*.

**c. Conclusions:** This article tries to analyse the different stages of star evolution including the successive formation of neutron stars, quark stars and black holes along with the possible nature of their contents.

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## UNDER THE PATRONAGE OF HRH PRINCE EL-HASSAN BIN TALAL IAS HOLDS ITS 22<sup>ND</sup> CONFERENCE ON *LANDSCAPE OF SCIENCE, TECHNOLOGY AND INNOVATION IN THE ISLAMIC COUNTRIES*



Under the patronage of His Royal Highness Prince El-Hassan Bin Talal, Founding Patron of the Islamic World Academy of Sciences (IAS), the IAS convened its 22nd international science conference virtually via Zoom platform on 1 December 2020. The theme of the conference was ‘Landscape of Science, Technology and Innovation in the Islamic Countries.’

The IAS Conference was an open activity in which over 135 local and international participants over 20 countries. Among the participants were Fellows of the IAS, local scientists from the various universities and institutes.

The 22<sup>nd</sup> IAS Conference was co-sponsored by:

- Arab Fund for Social and Economic Development (AFSED), Kuwait;
- Kuwait Foundation for the Advancement of Science (KFAS), Kuwait;
- Petra University, Jordan;
- Cairo Amman Bank, Jordan;
- The Inter-Islamic Network on Water Resources Development and Management (INWRDAM), Jordan;
- Higher Council for Science and Technology (HCST), Jordan; and
- Jordan Islamic Bank, Jordan.

The conference addressed a number of key issues in the domain of Science, Technology and Innovation in the Islamic Countries.

The inaugural ceremony of the conference included an address by HRH Prince El-Hassan bin Talal, Founding Patron of the IAS, the message of the President of Pakistan, IAS Patron which was read by H. E. Prof. Iqbal Choudhary, Coordinator General, COMSTECH, and the opening address of H. E. Prof. Abdel Salam Majali, Former Prime Minister of Jordan and IAS President read by H. E. Prof. Adnan Badran and welcome speech by Prof. Abdullah Al-Musa Director General, IAS.



His Royal Highness Prince El-Hassan bin Talal, Chairman of the Higher Council for Science and Technology and Founding Patron of the IAS, indicated the importance of building a partnership between science and technology in the field of scientific research, which could generate opportunities for local, national, regional and global participation. H.R.H. called for a re-focus on policies and recognition of science as a tool to push the limits of the human knowledge and to monitor and analyze responses to environmental, social and economic challenges. H.R.H. said that “in our world today as we face environmental, social, climatic and human challenges, the need for science, partnership between institutions, and building a scientific culture has become an urgent need to search for solutions through integration”. H.R.H. noted the importance of science in achieving sustainable development and the well-being of societies, explaining that to achieve this, science must be assigned to human values in line with the reality of human development, and for science to have the flexibility to allow adaptation to the changing and evolving requirements of science, and the requirements of advancing development in a sustainable, economically, environmentally and socially.



The first academic session of the IAS 22<sup>nd</sup> conference included keynote presentations by: Dr. Markku Markkula, First

Vice-President of the European Committee of the Regions, Finland, whose presentation was entitled *Identification and Development of STI Policies*; Prof. Adnan Badran FIAS, Former Prime Minister of Jordan, Chairman of the Board of Trustees, University of Jordan and Chancellor, University of Petra, Jordan, whose presentation was entitled *Ups and Downs of STI Indicators in Islamic Countries*; Prof. M. Qasim Jan FIAS, President, Pakistan Academy of Sciences, Pakistan, his presentation was on *Climate Change and its Impact on Sustainable Agriculture and Food Security*; Ms. Amani Albedah, Deputy Director General for Support Programs & Functions, KFAS, Kuwait, presented a paper entitled *Landscape of Science, Technology and Innovation in the Islamic Countries: STI Development, the Centrality of General Education*; and lastly Ms. Aicha Bammoun, Director of Programs, Islamic World Educational, Scientific and Cultural Organization (ICESCO), Rabat, Morocco presented a paper entitled *New vision of ICESCO on STI for Islamic World*.



The second working session of the conference included three presentations; Dr. Shaukat Hameed Khan, Fellow, Pakistan Academy of Sciences, Pakistan, delivered a presentation under the title *Nurturing the Thinking Mind: The OIC Dilemma in Science, Technology and Innovation*. Prof. Malek Maaza FIAS, UNESCO UNISA Africa Chair in Nanoscience & Nanotechnology, South Africa presented a paper on *SARS-COV2 Pandemic's Effects on the R&D Community in Africa: Challenges and Opportunities* and lastly Prof. Zabta Shinwari FIAS, National Council for Tibb, Islamabad, Pakistan, presented a paper on *Islamic Countries: Open Science; Inclusive Society and Ethics*.



The declaration of the conference (approved by the IAS Council members); called upon Islamic countries to uphold the various objectives of the

Organization of Islamic Cooperation specially those related to science, technology and innovation and formulate STI policy that can deliver national STI agenda.

Urged the governments to increase investments in science, technology and innovation and in outreach activities to effect transfer of science and technology to



speed up socioeconomic wellbeing of our countries, and urged OIC countries to enhance networking and cooperation among scientists across the Islamic World and facilitate outreach

activities.

Encouraged OIC countries to implement and articulate a functional STI policy that can identify inter and intrasectional priorities and consolidate human, physical and financial resources within each country's backdrop of social, cultural, political and religious heritage.



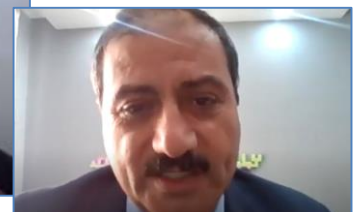
The declaration affirmed that the STI policy shall be inclusive and capable of enabling working ecosystem that insures participation of all stakeholders, and affirmed the importance of governmental commitment towards strengthening national STI capacity and capability that encompass human resources, research and development institutions, science parks and incubators, legislation, incentives, and funding.



The declaration also urged our states to monitor and review periodically their STI policies, STI agenda and action plans at national and regional levels to gain insight and share experience in best practices to set priorities, implement programs and evaluate progress.



The declaration acknowledged that for socio-economic development to be achieved, STI implementation action plan should take into consideration the importance of instilling science and scientific method into the education system and involving the parliaments by establishing parliamentary standing committee on STI.





And urged the OIC countries to adapt initiative of partnership by forming STI consortium among the OIC states to rectify deficiencies and maximize the collective strength of the *Ummah* in science and technology or at least be more conscious about the need for collective cooperation and collaboration amongst scientists in our



countries, and urged the government of OICs to nurture and develop STI ecosystem by providing STI physical and soft infrastructure, encourage and enrich a vibrant ethical scientific community and insure participation of private sector in STI evolution and to designate centers of excellence in disciplinary and interdisciplinary science to form networks that can initiate collective R&D and training for young scientists in priority research areas for development.

Lastly, the IAS through the declaration

expressed its thanks and appreciation to all the organizations and agencies which supported the conference.

The presentations delivered in the conference are published on the IAS YouTube Channel:

<https://www.youtube.com/user/TheIASworld/videos>

and on the IAS Facebook page:

<https://www.facebook.com/iasworld>

## A SERIES OF ONLINE WEBINARS

The Islamic World Academy of Sciences (IAS) and Association of Agricultural Research Institutions in the Near East & North Africa (AARINENA) hold a series of webinars on Agriculture Production and Food Security under COVID-19 Pandemic.

First session was on **Challenges and Opportunities for Meeting Food Security in the Islamic World** by **Dr. Mahmud Duwayri**, *Former Minister of Agriculture and Higher Education Government Policy and Agricultural Science expert.*



Full lecture can be found on IAS YouTube Channel on the link: <https://www.youtube.com/watch?v=3pZodSY-k8Y&t=6s>

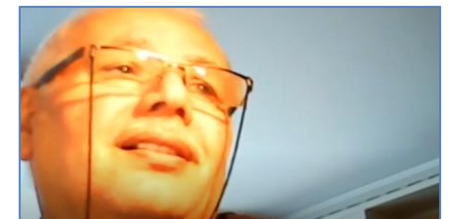


Second Session was on **The Debate on Future Strategies to cope with Agricultural**

**Water Scarcity & Climate** by **Dr. Theib Oweis**, *Senior Consultant, Water, Land and Ecosystems, International Center for Agricultural Research in the Dry Areas (ICARDA).* Video of the presentation can be found on IAS YouTube Channel:

<https://www.youtube.com/watch?v=cbmSH9CmBaY>

Third session was on **Agriculture Production and Food Security of Turkey & Middle East under COV-**



**19 Pandemic** by **Dr. İbrahim Ortaş**, *full time professor in the University of Cukurova, Faculty of Agriculture, Department of Soil Science and Plant Nutrition, Adana, Turkey.* Lecture can be found on IAS YouTube Channel on the link:

<https://www.youtube.com/watch?v=RjDVFZn1liQ>



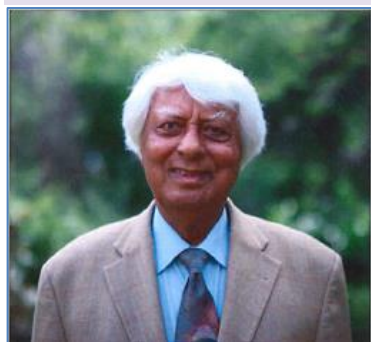
Last Session will be on 7 January 2021 by **Dr. Dilfuza Egamberdieva**, *National University of Uzbekistan, Ecobiome R&D, Tashkent, Uzbekistan* on **Organic Agriculture: The Challenge of Sustaining Food Production in the Era of Covid19.** Full lecture

will be available on IAS YouTube Channel: <https://www.youtube.com/user/TheIASworld/videos>

Register in advance for this meeting: <https://zoom.us/join/zoom/register/tjIufuuvrz4jE93JVAppW/OasRxsjUe3Qe4IZ>

## ON CAMPUS FOR 50 YEARS: INTERVIEW WITH PROF. SYED QAIM

15 October 2020. 14 years ago, Prof. Syed M. Qaim retired - and yet you can still meet the nuclear chemist at INM-5 in the laboratory, in his office at his desk or in his former research group. Since 1970, the 79-year-old has been coming to the campus of Forschungszentrum Jülich almost every day. Add to this his pension, which is still research-intensive, and today, Pakistan-born Qaim can look back on 50 years of research at Jülich.



**Prof. Qaim, since 2006 you are officially retired. Why do you still like to come?**

Qaim: For me, research means life-long learning - and I simply enjoy it. I am happy that I can still pursue my passion, science. I am very

grateful for that. Even back in 1970, I was already so well received at Jülich and have always been held in high esteem - even today. So I am happy to give something back. Even now I can still support, participate and advise in experiments and research work. However, it is always very important to me never to interfere without being asked.

**What exactly do you still do?**

Qaim: I am still in charge of coordinating the international cooperation of the institute. There are many, for example with the USA, Hungary, Pakistan or Bangladesh. I have also been editor-in-chief of the international journal *Radiochimica Acta* for 24 years. This year I have taken on another honorable task: I have been appointed to the World Council on Isotopes (WCI) where I chair the standing committee on education and teaching. In addition, I regularly teach students at the FH Aachen in Jülich, for example in the English-language lecture European Masters in nuclear applications. This is another thing I enjoy very much - besides chemistry, I can teach students many an English expression they did not know before! (laughs) Until 2013, I also spent 20 years lecturing and working at the University of Cologne.

**What makes working as a researcher so special for you?**

Qaim: In addition to the exciting research questions I have always focused on, a very big point is the internationality. I myself come from Pakistan and greatly appreciate the international character of science. I have always been very supportive of this and over the years I have looked after more than 70 people from all over the

world here in Jülich - for example, from Egypt, Malaysia, India, Brazil, Hungary, Israel, Pakistan, Turkey, Bangladesh and South Africa. Everyone works together with everyone else here - and I think that's great!

**Do you feel that you have achieved your goals as a researcher?**

Qaim: After all, research is never finished - that's why I keep coming back! (laughs) When I was a young scientist writing my doctoral thesis in England, I set myself the goal of publishing 100 publications over the course of my career. Now there are more than 400 and four edited books! My fifth, on the production of medical radionuclides, has just been published by de Gruyter. It contains research work from the last 30 years with many examples from Jülich.

**What do you like to do most when you are not doing research or taking on other tasks?**

Qaim: I enjoy spending time with my wife - and I also feel really at home in my garden at home in Jülich between roses and rhododendrons. I can switch off there - a real contrast to my other activities.

Many thanks for the interview!

**Excellent years**

Over the past 50 years, Prof. Syed M. Qaim has worked at INM-5 as provisional institute director, deputy institute director and group leader, and has made a lot of progress. He has received various awards in more than 10 countries - including the JARI Medal of Pergamon-Press, the Hevesy Medal for outstanding achievements in the field of radio- and nuclear chemistry and the Becquerel Medal of the Royal Society of Chemistry. He has also been honored with two honorary doctorates and appointments in three scientific academies, most recently in the Third World Academy of Sciences (TWAS).

For Forschungszentrum Jülich, he coordinated research projects between Germany and abroad and supported the training and further education of more than 70 scientists. For more than 20 years he represented the Federal Republic of Germany at the Organization for Economic Cooperation and Development (OECD) in Paris and the International Atomic Energy Agency (IAEA) in Vienna.

*Interview originally published in Forschungszentrum Jülich – Media - Author: c.ballen@fz-juelich.de*

*Photo Source: Jülicher Zeitung/ Jülicher Nachrichten: Guido Jansen.*

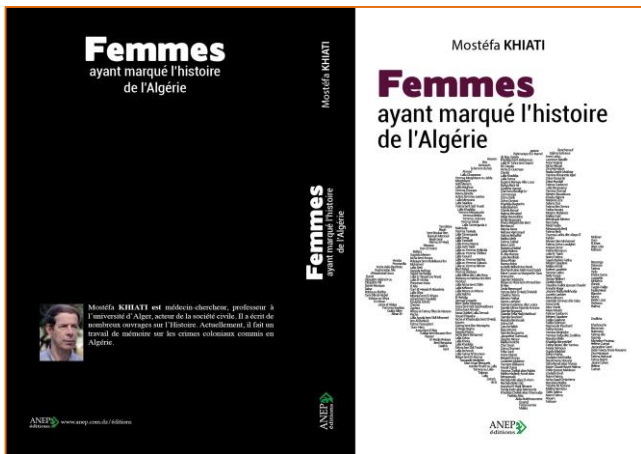




## RECENT BOOKS BY PROF. MOSTÉFA KHIATI FIAS



Prof. Mostéfa Khiati FIAS is a pediatrician, professor at the University of Algiers with extensive knowledge in nutrition and high experience in health policy. He is the author of fifty books in different fields: paediatrics, history of medicine, childhood and ethics. He is interested in the history of medicine but his interest has widened to other fields. He never stops teeming us with new topics and new discoveries. During the current year, he published three works of which we report summaries:

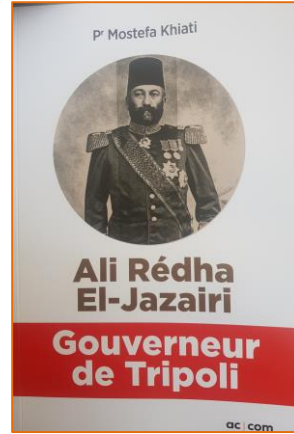


**Women who marked the history of Algeria  
(Femmes ayant marqué l'histoire de l'Algérie)**  
*Published by ANEP, Algiers 2020*

From the ancient period and through the medieval period, the Ottoman period, the colonial period and the construction of the young Algerian State, Algerian women or women who have embraced/espoused the Algerian cause have marked by their qualities, their behavior, and their production and sometimes by their sacrifice the history of Algeria.

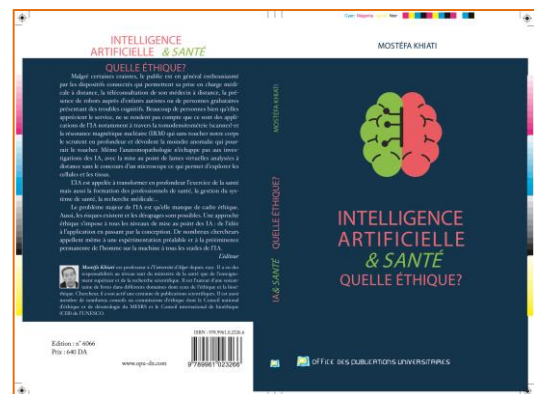
A patient and perspicacious work, made it possible to retrieve a considerable number of these women that influenced their era. These women marked the history of Algeria during their life, they became famous because of their work accomplished, their behavior, their social, cultural, economic and political weight... This

publication evokes them today on the one hand to reflect the wealth of our country in “eternal” women, and on the other hand to perpetuate their memory.



**Ali Ridha El-Djazairi**  
*Published by Ac.com, Algiers  
2020*

The writing of history has overlooked many Algerian personalities who marked the 19th century. Among them, we must mention Ali Rédha, son of HamdaneKhodja, the author of the book "Le Miroir", who by all "democratic" means opposed French colonization. Ali Rédha, he was in Algiers in 1820 from a family of notables, he had a fabulous career: graduated from the military school of Saint Cyr then from the artillery school of Metz in 1840, he entered the Ottoman army with the rank of major and he quickly climbed the various military ranks to be appointed to the rank of marshal of the Ottoman army in 1860. He will defend the Strait of Sinop which protects the Black Sea against the Russian navy, he will participate in the Crimean War (1853-1856), he will also occupy civil functions: prefect of Belgrade, wali of Bursa, governor of Tripoli. It is as governor of Tripoli that he will give free rein to his genius. Tripolitania owes him the administrative reform of local communities with the creation of the Tripoli baladya. He will preserve the province of Fezzan from colonial ambitions and trying to reconcile the Tuareg tribes among themselves. He was also a strategist, he became aware of the geographic importance of Bumba, Tawakra and Tobruk on the Cyrenaica coast as soon as the Suez Canal opened and set up a plan for their settlement.



**Artificial Intelligence and health, which ethics?  
(Intelligence artificielle et santé, quelle éthique?)**  
*Published by OPU, Algiers 2020*

Despite some fears, the public is generally enthusiastic about connected devices that allow remote medical care, remote consultation of their doctor, the presence of robots with autistic children or bedridden people with cognitive disorders. Many people, although they appreciate the service, do not realize that these are applications of AI in particular through computed tomography (scanner) and nuclear magnetic resonance (MRI) which without touching our body scrutinize it in depth and reveal the slightest anomaly that could affect him. Even pathology is not immune to AI investigations, with the development of virtual slides analyzed remotely without the aid of a microscope, allowing cells and tissues to be explored.

AI is called upon to profoundly transform the practice of health but also the training of health professionals, the management of the health system, medical research. The major problem with AI is that it lacks an ethical framework. Also, risks exist and slippages are possible. An ethical approach is required at all levels of AI development: from idea to application to design. Many researchers are even calling for prior experimentation and the continued preeminence of man over machine at all stages of AI.

## DIGITAL TRANSFORMATION IN HIGHER EDUCATION: EMERGING CHALLENGES AND FUTURE OPPORTUNITIES

The COMSTECH Inter-Islamic Network on Virtual Universities (CINVU) held a webinar meeting in October 2020 on Digital Transformation in Higher Education: Emerging Challenges and Future Opportunities, on. Several scientists from Iran, France and Jordan gave their speeches.

IAS Fellows Dr. Muhammed Asghar and Dr. Mohammad Abdollahi participated in the webinar as panelists.

The Government of Islamic Republic of Iran as the Host Country of the CINVU had accepted to provide the required administrative, financial and scientific support to make CINVU a viable and successful institution of the COMSTECH.

## THE LATE PROF. ALI ALI HEBEISH (EGYPT)



*It is with a sense of sadness and sorrow that the President and the Director General of the Islamic World Academy of Sciences (IAS) in Amman, Jordan, announce the passing away of the eminent Egyptian scientist: Prof. Ali Hebeish.*

Prof. Hebeish was born in 1936 in Gharbia, Egypt. He earned his BSc in Chemistry and Geology from Cairo University in Egypt in 1960. His MSc from the same university in 1965, PhD in chemistry from Gujarat University in India in 1968 and DSc in Chemistry from Cairo University in 1983.

Hebeish joined the National Research Center (NRC) Cairo, Egypt in 1960 and got successive promotions which ended with the post of Research Professor in 1979. In 1984 he was transferred to the Academy of Scientific Research and Technology (ASRT), Cairo, Egypt, to occupy the post of Under Secretary of State, then Vice-President of ASRT. During the period 1992-1996 he was the President of ASRT with a ministerial rank. Since mid-1996 up to date, he was Emeritus Professor at NRC.

Dr. Hebeish was a Fellow of both the African and the World Academy of Sciences. He became a Fellow of the Islamic World Academy of Sciences in 1994.

Dr. Hebeish was the awardee of several honors, notably, the Merit Prize in Basic Science – Egypt (1995), TWNSO Prize in Technology-Italy (1995), El-Nile Prize in Advanced Technologies-Egypt (2004), Lifetime membership of the Academy of Arabic Language-Egypt (2009), African Union Kwame Nkrumah Award in Science, Technology and Innovation–Addis Ababa (2016).

Hebeish's work has been the subject of more than 680 papers that have been published in peer reviewed journals during the last five decades.

Since 2003, Prof. Hebeish had been the principal investigator of a nation-wide Campaign for Sustainable Development of Textiles. The Campaign was implemented in various textile mills affiliated to public, private and investment sectors with the aim of enhancing competitiveness of the textile products while fulfilling the requirements of sustainable development. Hebeish was also involved in formulation and implementation of "Science and Technology Policy, Strategy and Planning," as well as administrating the same during his work at the ASRT.

*Prof. Ali Hebeish will be greatly missed by his colleagues and fellow scientists in the Islamic World Ina Lillab Wa Ina Ilaihi Raj'oon. IAS President, Fellows and staff offer their heartfelt condolences to his family and friends throughout the World.*

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# IAS NEWSLETTER

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*Published by the IAS Secretariat, Amman, Jordan*

*The IAS welcomes the submission of short articles for publication in the Newsletter (publication however is at the IAS discretion)*

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