

GYA

connections

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COVID-19 and Human Vulnerability

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Editorial

by Junpeng Li

GYA Connections Editor-at-Large, 2020/2021, GYA Member 2018-2023

When the 2020 New Year's bell rang, probably none of us anticipated such a turbulent and tragic year. Living in Wuhan, China, I first heard the message that a pneumonia-like illness was spreading in my city in late December. Like most of the 12 million local residents, I chose to trust the official news media by disregarding the message as nothing more than a fabricated rumor—after all, the whistleblowers were publicly punished by the government. But the situation changed abruptly. Three weeks later, it became clear that the coronavirus was real and my city faced an existential crisis.

Then came a 76-day city-wide lockdown. When the 12 million Wuhaners were ordered not to leave their homes for an indefinite period of time, many feared that this would be the end of the world. At one point, it became tortuous for me to reply to the many words of condolence from my GYA friends. Like countless other Chinese citizens, I was angry, confused, puzzled, and sometimes desperate.

By April, and in a quite dramatic fashion, it looked like COVID-19 had been contained, and this time it was me who extended regards to my GYA friends overseas.

Now, looking back after 15 months, I am both sad and hopeful. The global pandemic has resulted in more than 2.7 million human deaths worldwide and we continue to lose thousands of lives each day. A large proportion of people have experienced mental health problems—indeed, a student of mine recently attempted suicide after several months of lockdown-triggered depression and I am thankful that he is still alive.

Our taken-for-granted lifestyle may never fully come back as a result of border closures, travel restrictions, school shutdowns, business disruptions, job losses, work-model transformations, and home confinement. And all this accounts for only a small

portion of the human suffering we have endured. However, now that vaccines are increasingly available, we can expect effective global containment of COVID-19 in the not-so-distant future. We humans have always been able to come up with solutions and overcome obstacles, and this time we have no reason to expect otherwise.

In this new issue of GYA Connections, young scientists from different countries and disciplines join together to reflect on this global crisis. To offer a cause for optimism for the year and years ahead, this issue also includes a feature titled “A—Z of Hope”—we hope you will enjoy it.

As writer Greg Kincaid put it so vividly, “No matter how much falls on us, we keep plowing ahead. That’s the only way to keep the roads clear.”

We are all in this together, and with time we will become stronger and more resilient.

Stay healthy, dear readers!



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COVID-19: Short- and long-term impacts on human society

by Sandeep Kaur-Ghumaan

At the end of 2019, COVID-19 struck in Wuhan, China. As it started spreading at a rapid rate to other Asian countries, and then to Africa, Europe and America, lockdowns forcing people to stay at home had to be imposed to hinder the spread of the disease. Such lockdowns at a global level had never been undertaken, though a number of national and international curfews have been imposed before, the most noticeable being during World War II.

As a result of the lockdowns, there has been a reduction in economic activity, as well as transport by air, road or railways, which in turn has reduced pressure on the environment (Helm 2020). Unfortunately, the pandemic has been overwhelming in terms of various factors related directly to the disease, measures needed to be taken to fight it, and its impact. Nevertheless, the situation presents a chance to study and observe the changes taking place on the global and local scales.

A number of questions about the short- and long-term impacts of the pandemic have arisen, for example: Has less travel and reduced tourism had any impact on the natural environment and wildlife? How has the shutdown of economies

affected global and local GDP and emissions? Will the pandemic result in longer-term economic impacts (recession or depression) based on the responses and stimuli given by policy makers in different countries? Will the aftermath of the pandemic shift the focus to a global green economy, that is, green transport, energy and agriculture? Will this lead to a deceleration of globalisation? How will supply chains be affected and will the focus shift to the domestic production of food? How will future generations be impacted? What has been the psychological and social impact of COVID-19 (Saladino, Algeri and Auriemma 2020)? What behavioural changes will this lead to because of the impacts of debt, unemployment and reduced economic prospects?

To address short-term impacts, lockdowns have severely affected travel and tourism, the hospitality industry, retail, and the service sector as a whole. And though it is too early to talk about this in a sustainable way, urban air quality has improved to a great extent due to reduced greenhouse gas emissions. It might, however, take some time to predict and map the exact numbers related to reduced pollution levels. Will the above factors lead to a change of how we deal with climate change policies as funds need to be diverted towards health services? Moreover, since the new coronavirus pandemic has shifted political and administrative

focus towards dealing with the current situation, this might result in delays to international trade and environmental agreements.

Furthermore, since lockdowns have led to a different organisation of daily life, that is, spending more time at home, and an increased dependence on digital devices, it has affected the way people experience interpersonal relationships. The concept of empathy has also evolved during this period. Studies have shown that the psychological effects of contagion and quarantine are not limited to the fear of contracting the virus alone (Barbisch, Koenig, and Shih 2015). Indeed, dramatic consequences may result from the pandemic, as lockdown has affected people by separation from loved ones, loss of freedom, uncertainty about the advancement of the disease, and feelings of helplessness (Li and Wang 2020; Cao et al. 2020).

With extended lockdowns occurring in so many countries, people might attempt or find ways to circumvent or violate these restrictions, which might in turn lead to undoing their intended effects. With so many issues (social stress, unemployment, etc.) and events to be tackled as a result of the pandemic, strategies for exiting lockdown and lessening restrictions need to be introduced. At the same time, governments should also be wary about the second or third (fourth?) waves of the pandemic. The situations are different

in every country and halting all activities across regions is not easy due to the economic and trade dependencies across regions.

The pandemic has shown that health, social-psychological and economic perspectives are all interconnected and this also leads to the shaping of policy decisions (Dignum et al. 2020). How COVID-19 and its mutating strains have impacted the world will be explored for decades to come, as will the virus itself.

A few of the gains the world has taken from the pandemic might be short-term, but the sudden drop of economic activity has also taught us many lessons on mitigating climate change and the loss of biodiversity.

It has also shown that technological progress and availability needs to be scaled up at a global level. Whether this will be for the good or bad will only become apparent in the years to come.

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The three dimensions of human vulnerability to COVID-19



by Pradeep Kumar

The COVID-19 pandemic has exposed our vulnerability as a species, and exacerbated existing global health (pollution) and environmental (climate change) issues. This article presents some lessons about human vulnerability to climate change with respect to exposure, sensitivity, and adaptive capacity.¹ For starters, we reword and rephrase COVID-19-related vulnerability to “the degree to which people and the things they value are susceptible to, or are unable to cope with, the adverse impact of COVID-19 infection and related, varied aspects”. Compared to the long-term impact of climate change, the socioeconomic impacts of COVID-19 are immediate, making it more than just an infection or health condition. The dimensions of vulnerability explored below help determine how severe the impacts of COVID-19 can be.

Dimension 1 – Exposure

Given the highly infectious and partially airborne nature of COVID-19, exposure to an infected/carryer person or object may make one vulnerable to the virus. Exposure can happen anywhere – home,

work, social gatherings, religious events, shopping, even while visiting a health care facility. This greatly increases our vulnerability to COVID-19.

Dimension 2 – Sensitivity

The second dimension of vulnerability to COVID-19 is derived from its medical aspect. In addition to the notion of elderly people (above 85 years of age) being the most vulnerable, the Centers for Disease Control and Prevention’s (CDC) note that adults who are pregnant, or have cancer, chronic kidney disease, chronic obstructive pulmonary disease (COPD), heart conditions, are obese or severely obese, have sickle cell disease, smoke, or have Type 2 diabetes mellitus are all at increased risk of severe illness from COVID-19. This list represents a very wide swath of the global population. Further risks include asthma, cerebrovascular disease, cystic fibrosis, hypertension or high blood pressure, an immunocompromised state (blood or bone marrow transplant, immune deficiencies, HIV), neurologic conditions (dementia), liver disease, being overweight (BMI > 25 kg/m², but < 30 kg/m²), pulmonary fibrosis (having damaged or scarred lung tissues), thalassemia (a type of blood disorder), and Type 1 diabetes mellitus.²

In addition to the above medical conditions, people living in rural communities, people with disabilities, those experiencing homelessness, caregivers, essential service providers, and members of refugee populations are also at increased risk of contracting COVID-19. Furthermore, sensitivity towards the socioeconomic impact of lockdowns may also affect people directly or indirectly associated with travel and tourism, hospitality, event management, and those in the personal care industry.

Dimension 3 – Adaptive capacity

Adaptive capacity is the degree to which one can mitigate COVID-19’s potential for harm by taking action to reduce exposure or sensitivity. Although preventative measures such as wearing a mask, hand washing, and sanitising surfaces may decrease the chances of one becoming infected, vulnerability to exposure can only be reduced through social and physical distancing. Unfortunately, the potential for exposure cannot be completely avoided. In addition to its financial implications (loss of business and job insecurity), socio-physical distancing (including lockdowns) may make us vulnerable to nutritional issues (inaccessibility to or non-availability of food with a proper nutritional balance - this affects children the

most), social issues (gender-based violence in the home environment), and mental illnesses (anxiety, depression, or eating disorders).

The above discussion clearly delineates three dimensions of the COVID-19 pandemic and their impact on humans as a species. The fourth dimension that requires additional deliberation is the socio- and geo-political angle. However, investigation into this dimension may only be possible and practical after we study the global distribution of vaccines – an important aspect of COVID-19 that will render the pandemic the largest and most in-depth case study of our times.

As it stood on 18 January 2021, 49 higher-income countries had administered 39 million vaccine doses versus just 25 (not 25 million – just 25 total) in lower-income countries. Tedros Adhanom Ghebreyesus (Director-General of the World Health Organization) highlighted how the worldwide equitable access to COVID-19 vaccines is at risk and even went on to say that “The world is on the brink of a catastrophic moral failure - and the price of this failure will be paid with lives and livelihoods in the world’s poorest countries.”³

This cannot be allowed to happen.

Notes

1. Human vulnerability to climate impacts. Pennsylvania State University, College of Earth and Mineral Sciences. Available at <https://www.e-education.psu.edu/geog438w/node/252>. Last accessed 26 November 2020.
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COVID-19 response and management in resource-constrained settings: Experience from Nepal

by Meghnath Dhimal

The first case of COVID-19 was reported in Nepal on 23 January 2020, and the first death was reported on 14 May 2020. By 21 February 2021, there were 273,431 total cases and 2,061 total deaths. The overall case-fatality rate in Nepal is just 0.75%, which is much lower than in other countries. Over 98% of the total cases have already recovered, and there were only 1,494 active cases on 21 February 2021 (Ministry of Health and Population, Nepal 2021).

After the first case of COVID-19 in Nepal, there were fears that the outbreak would incapacitate the health system of the country, which had limited resources and inadequate preparedness for handling such a pandemic. Initially, the response to the outbreak was slow, but after the World Health Organization (WHO) declared a global pandemic on 11 March 2020 (Cucinotta and Vanelli 2020), Nepal sped up its efforts to control the disease. Nepal's government imposed lockdowns, promoted social distancing, the use of masks, and good hand hygiene (Piryani and Piryani 2020). Amidst worries of inadequate testing, there was speculation that Nepal was facing a grave threat. But instead, and somewhat miraculously, Nepal expanded COVID-19 testing from just one National Public Health Laboratory to 83 overall testing laboratories (57.8% of which are public).

Widespread vaccine rollout is needed to control COVID-19 (Wouters et al. 2021), and administration of the Covishield vaccine (ChAdOx1 nCoV-19 vaccine, recombinant) began in Nepal on 27 January 2021. Another 1 million doses of the vaccine arrived on 21 February 2021. Emergency use authorisation was granted to another vaccine, "Vero cell," which is produced by the Beijing Institute of Biological Products. Although mass vaccination is taking place and has given hope to Nepalese society, there are still challenges, including vaccine hesitancy, vaccine literacy, and the new, more infectious variants of the coronavirus (McGill et al. 2021; Sah et al. 2021). As of 22 February 2021, 429,705 people in Nepal had received their first dose of vaccine (population coverage 1.4%) and no severe adverse event following immunization (AEFI) cases were reported.



The major factors that will contribute to the successful containment of COVID-19 in Nepal are summarised below.

Timely enforcement of public health measures

The Government of Nepal (GoN) instructed people to stay home except in cases of emergency while maintaining social distances, and established a number of temporary quarantine centers and isolation beds in hospitals. The GoN also established 24-hour health desks at the International Airport including health checkpoints, and regularly screened passengers who entered the country from border districts. A high-level technical team was formed to monitor the situation across the hospital network, and a regular communication mechanism was established between the Health Emergency Operation Center, the Provincial Health Emergency Operation Center, and the Nepal Ministry of Social Development. The GoN imposed a nationwide lockdown effective 24 March 2020, which was later extended to 31 August. Compliance by the public was remarkably high.

Investment in research for evidence-informed decision-making

The GoN formed an Incident Command System, and carried out several studies during lockdown. Situational assessments helped inform the decision to procure test kits and undertake treatment of COVID-19 with Remdesivir, Convalescent Plasma Therapy, and Favipiravir in the absence of emergency authorisation to use these products.

Strong leadership and governance

Strong leadership at all levels of society is crucial to prevent and respond to the pandemic. A high-level Coordination Committee under the Chairmanship of the Deputy Prime Minister, including various committees in the Ministry of Health and Population on the prevention and control of COVID-19 were established. Under the leadership of the Ministry of Health and Population, these bodies have taken various steps to prevent further outbreaks. Monitoring teams and health desks have been established at major checkpoints in airports and borders between municipalities.

The Ministry of Health and Population also formulated the Health Sector Emergency Response Plan to manage the spread of COVID-19. The plan suggested forming Case Investigation and Contact Tracing Teams at the local level, to include members from the public health, laboratory, nursing, local council, administration and security sectors. Nepal received 1 million doses of the COVISHIELD vaccine as a donation from India. This shows strong science diplomacy between Nepal and its neighbors for the timely import of COVISHIELD.

Economic support package

Recognising the adverse impacts of lockdown during the pandemic and how these impacts disproportionately affected poor, daily wage earners and other marginalised groups, the GoN established the “COVID-19 Prevention, Control and Treatment Fund”. Hundreds of institutions, businesses and individuals have contributed thus far. The resulting packages comprise an extension of loan repayment deadlines, refinance options, grace period extensions for infrastructure projects, and targeted

lending in productive sectors at cheaper rates. Such economic relief also developed public trust in the GoN and encouraged compliance with travel restrictions during lockdown.

The battle is not over, but Nepal is coping well.

Note

The COVID-19 Dashboard by the Center for Systems Science and Engineering at Johns Hopkins University provides ongoing updates on cases and deaths (Gardner 2021).

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by Mimi H. Hassim

For academics or faculty members in Malaysia, the COVID-19 pandemic has been very challenging, as previously we almost never taught our students online. Even for part-time students based far away, we travelled to meet and teach them face-to-face and honestly, the satisfaction of teaching was worth it. Luckily, we had a few weeks to prepare ourselves when the campuses were closed down in 2020, and students were given time to move out from campus.

All lecturers needed to learn how to use the available online meeting platforms and redesign class teaching and learning practices to suit the online teaching approach. Since most of us had no experience in this before, we had to start from zero and just made do through trial and error. This was particularly difficult for those teachers who were less tech-savvy.

Online access challenges

Many houses in Malaysia do not have internet access, mostly due to limited coverage. Costs are a factor too; many families cannot afford to pay for the monthly fees. As I learned from an informal survey among students in my own classes, the majority use their mobile phone data to access the internet – this is very demanding, as they have several hours of online classes, 5 days a week. The Ministry of Higher Education and even the university make an effort to support students from families with monthly earnings below a certain threshold.

Children at home

The challenges of home schooling not only include providing electronic devices for learning, but most importantly, spending quality time supervising and assisting our children with their schoolwork.

For parents working full-time, this is quite frustrating, as we want to do our best to help, but at the same time, we have our own work and deadlines to meet.

Being an academician can be advantageous as we work flexibly. But on the other hand, work often now has no limit and must be done any time, on any day.

At first, I tried so hard to keep up with the schedules given by my children's teachers – that is, to help my children with their learning and schoolwork during the daytime and return it to the teacher right away.

But then I realised this simply didn't work for me – especially when I had a hectic day (ok, days). So I asked the teachers to allow us to submit schoolwork during

COVID-19 diary from Malaysia



the weekends, as I have much more time then. Of course the teachers understand parents' time constraints, but it is challenging for them to be flexible as well.

Working hours

Especially in the private sector, companies crossed the line by expecting employees to work beyond their normal working hours simply because they are working from home. This has caused physical and mental fatigue among so many workers.

Asking employees to work extended hours is actually against their rights. Not only should employees be aware of their rights and dare to say no, but the employers themselves should also be officially reminded of this.

Celebrating holidays amid COVID-19

Due to the closing of border crossings between states and even districts to keep the number of new COVID-19 cases at a minimum, for the first time in family history we celebrated Eid at our own house. Not visiting our parents during this main celebration of the year was devastating.

Our month of Ramadhan was also uniquely different this year since all the mosques and praying centres were closed. Normally every year during Ramadhan, we perform our Tarawikh night prayer together with our extended family in a mosque, alongside our neighbours and friends. This year we performed the Tarawikh prayer at home with our immediate family members. Of course, the blessing behind all this is that it has made our family bond better and stronger.

Shopping

Another new experience during lockdown was shopping for groceries, when only one family member was allowed to shop at a time. This was very strictly implemented – road blocks were everywhere and the police were on

duty 24/7, even during the rainy season.

Normally one of us went shopping very early in the morning, before most people were up. To be honest, we were quite skittish at the beginning – we barely touched things unless we really needed to take them. We sanitised our hands every time we'd go in and out of the store, and once we got into the car, we would even sanitise our wallet, mobile phones, and car keys. Once we reached home, the one who did the shopping took a shower right away, and their clothes were soaked in soapy water before washing them.

Our children were sent to a separate room to prevent contact with the person who had done the shopping, and the purchased goods were sanitised or washed before being used. For some dry things, we also put them under direct sunlight outside the house to kill the germs.

Economic impact

The price of hand sanitiser and face masks shot up and were also very difficult to find. After a short time, many shops, malls and pharmacies ran out. The blessing behind this was that a lot of researchers came out with various products at competitive prices, including sanitisers, face shields, and other protective equipment (which followed specifications given by the World Health Organization).

Malaysia's top fashion designers also sponsored such equipment for frontliners – some with innovative and more comfortable designs and materials. There were also restaurants that launched food or meal charity campaigns to provide free meals for frontliners, as well as the other many affected groups of communities who really suffered because of the lockdowns.

During the lockdowns, thousands of people lost their jobs and thousands of businesses were closed. Because of that, many suffered economically.

But the government has done so much to help people – one of the big initiatives is the moratorium incentive, where the government, in cooperation with all banks, exempted Malaysian citizens from paying their monthly loans (including houses, cars, or personal loans) for 6 months (April – September 2020). This also applied to the government's main loan for university students. These exemptions were later extended for another 3 months.

During that time, fuel prices dropped so much, but we could not take advantage of it since our cars remained parked – except for grocery shopping, of course

On the positive side, the lockdowns created various opportunities for new e-commerce-based businesses, for example, online shopping and e-delivery services.

Mental health

Day to day, all of us are praying that the cases will decrease dramatically, and immediately. We miss spending time outdoors, doing various physical activities, enjoying the fresh air. Our kids miss their schools, teachers and friends, we miss our parents and siblings, we miss traveling, we miss our research collaborators, we miss going to movies with family and friends, we miss jogging outdoors and dining out. But for now, we have to accept that our lives are not the same as before – at least until widespread vaccinations occur.

The new norm for all of us is wearing a facemask everywhere outside the house, applying sanitisers and washing hands frequently, not shaking hands when meeting people, and keeping a safe distance from one another.

Lockdowns have also taught us that some things can be done more efficiently and with much less time online, without compromising any of the quality, just as well

as if they were done physically, for example meetings, presentations, seminars, etc.

With the lockdowns, we found the charm of uniqueness and innovativeness in doing many things we normally did before COVID-19 face-to-face or with a physical presence.

But we have lost the closeness of years past – especially the togetherness.

And that is precisely what a normal human being really needs, no matter what their nationality.

Post-script

With sorrow, I share the news that, on 25 February 2021, my beloved mother-in-law Hasmah binti Suandi passed away due to COVID-19. This article is lovingly dedicated to her.

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Mirrors and triggers: Historical approaches to printed press cartoons on the COVID-19 pandemic

by Cristina Blanco Sío-López

“Any human power can be resisted and changed by human beings. Resistance and change often begin in art...”

Ursula K. Le Guin¹

As a team member of the GYA project The COVID-19 Pandemic and Art² and the Science and Art = Peace + Justice working group³, I was inspired to explore how artistic expressions mirror pluralistic, international and intimate expressions of living in a pandemic era, as well as how such expressions trigger alternative languages of the mind that are able to carve the foundations of hopeful and commonly inclusive futures.

The current global pandemic affects us all, both in terms of physical constraints and subjective perceptions. This “negative universalism”, characterised by transnational limitations, interdependent public health risks and constant indwelling touches upon high levels of uncertainty and social anxiety that cannot be sufficiently alleviated via outspoken messages. We are all in need of collective and non-only-verbal referents as renewed points of encounter of our fragmented cores.

Furthermore, art does unite such intuitive flows in a way that overlooks differences to encourage other forms of conversation. Against this backdrop, observing, exchanging and commenting on printed press cartoons through vividly transnational channels in digital media unleashes a promising chemical reaction for a reinvention of who we want to be in an unavoidable (?) new world in which we are striving to mesh proactive voices with positive societal impacts.

More particularly, international printed press cartoons invite historians to critically analyse the use of visual storytelling to address the multi-level complexities of our current COVID-19 context.⁴

Departing from the approaches of critical discourse analysis and visual semantics, cartoons offer a complementary examination of the key actors and factors in the consolidation of shared and transnational ways of expressing the development, challenges and hopes of growingly interconnected societies in the midst of this global pandemic.



In addition, cartoons connect an inherent iconic power with a taste of changing political priorities, societal concerns and critical interpretations of this rapidly shifting experience.

Most importantly, cartoons are not to be dismissed as a mere “mirror”, as they could also act as a revealing “trigger” in public opinion, especially when examining processes of contentious nature such as challenged notions of scientific expertise and intimate strategies to re-launch what makes us human beyond the constraints of the present.

The first question in this realm would be to ponder why cartoons particularly provide alternative thinking options concerning attitudes, reactions and forward-looking projects in light of the global pandemic. The main answer is that cartoons primarily propose the perspective of innermost perceptions by reflecting key societal topics such as the following: community-building around ground-breaking ideas; conflict-prevention and political stability at times of uncertainty; as well as discontent and increasing social divisions due to interrelated economic impacts. Indeed, cartoons express a delimitation of features of a reality in the making, as well as experimental paths through responses to crises that stand in opposition to a Kuhnian model of continuous progress without setbacks.

From this viewpoint, it is important to remember that many cartoons remind us of our own fragility and vulnerability – not as condemnation but as an encouragement to think beyond the limits of our conventional reality. That in itself is a form of liberation that is seldom expressed through texts on the pandemic and it makes the difference, not just bringing art as a therapeutic resource, but elevating it as a language to build a future that would not continue to exacerbate fundamental challenges such as environmental destruction or social inequality.

As Bertolt Brecht affirmed, “Art is not a mirror held up to reality, but a hammer with which to shape it.”⁵ In this sense, cartoons as an activist and kinetic art form constitute neglected sources of analysis we have been missing for too long in our interdisciplinary studies. Further, they are good reminders of the fact that this pandemic not only ties us but also encourages us to investigate freer and differential modes of expression. In that respect, graphic sources powerfully highlight the semantic weight of historical turning points and directly illustrate (many times, at once) the origins and consequences of the ruptures of patterns.

Cartoons also emphasise the shaping and strategic power of contentious issues and empower us to deal with contextual challenges, as well as offer a response to the fundamental issue of counteracting diverse forms of social paralysis and uncoordinated crisis management.

Cartoons’ inner strength further illustrates what other types of (mainly) textual sources do not say, even if they are not exempt of an ideological element. That is why any project analysing printed press cartoons should aim to contrast these sources with key players’ testimonies, including the views of policy makers, scholars, civil society representatives, etc.

Printed press cartoons as sources for historical analysis in times of radical ruptures, fragility and fragmentation⁶ such as the COVID-19 pandemic grant the following empowering features:

- Cartoons act as a way of conveying utopias and forms of image projection for probable reality conformation and consolidation. The question that remains in this case is whether it is possible to measure such impact.
- Cartoons express social and contextual mindsets not transparently transmitted by conventional media. They also complete contextual and historical analysis.
- Inertia and free will appear as revealing interpretative keys in cartoons.
- Images are, indeed, window areas to tentatively play with seeming realities as a ground for potential transformative combinations.
- Cartoons are endowed with the pattern-tracing power of aesthetic models created to reflect and influence.

All of these characteristics converge, in André Gide’s perspective, on how “the scholar seeks truth, but the artist finds it.” As such, these features represent great potential for a bridge between research and policy-making around key societal issues surrounding the pandemic. This naturally requires that primary source preservation models be put into place, as is the case in the current collaborative experiences between “COVID-19 archivists” and historians of this pandemic.⁶

Last but not least, the critical intent and effect of printed press cartoons on the pandemic invite us not just to continuously fail forward, but to choose concrete paths. In this sense, we should not overlook diverse invitations to think that (self) betterment is a choice that can also be channelled through art and poetic reflections.⁷

Furthermore, it is important to bear in mind how printed press cartoons on the pandemic not only highlight the quality of navigating challenges, but they also, and very humanely, illustrate flaws, misconceptions and uncertainties that are shared beyond borders. This is also echoed by multidisciplinary art projects such as “Subject to Change: New Horizons”, in which the Barbican Young Creatives produce new, artistic work that explores the uncertain times we’re living in.⁸

Pain and incertitude provoke wounds⁹ with universal reverberations that invite global reunions in which the decision of moving one step closer to each other remains always ours, reinstating a human capacity for reinvention as a right we should not dare to forget.

In sum, the manifold critical views unveiled by transnational cartoons allow for a breath of fresh (and much needed) air in our shared isolation: that is, the capacity to imagine a system other than the one that is being shattered and brought to the ground. The pieces are ours, and alternative languages gift us a constant capacity for inclusive and sustainable recombination.

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8. ‘Subject to Change: New Horizons’, by ‘Barbican Young Creatives’: <https://sites.barbican.org.uk/newhorizons/?fbclid=IwAR3QyGTraofiSPESdW-CvQ8G81f0aA0B4sIF74A8ia8LxqDYsRgPaMdTdc6I#group-Oliver-Cross-P4R11dguhQ>.
9. ‘Con tres heridas yo’, Museo Reina Sofía, May 2020: https://www.museoreinasofia.es/exposiciones/con-tres-heridas-yo?fbclid=IwAR0_fTS2OMjXbnEL_W2nGaa5tZC2zw3Zn_IHNEE3OcXZ0hzF-GKMCfGANpxg.

Motherhood in science



Illustration by Amri Putradjaja

by Nafissa Ismail and
Menattallah Elserafy

Science is becoming an increasingly competitive field around the globe. In this context, sometimes women are left feeling that there is no place for them, that they will not succeed, and that they will not be able to compete if they want to have children. Combining motherhood and a career in science is challenging and may sometimes seem incompatible. Why is this so? Because women continue to be the family's primary caregivers, and sometimes even the sole caregiver. With the COVID-19 pandemic, we have become increasingly aware of this fact. With so many priorities and responsibilities to juggle, can a mother also be a successful scientist?

To address this topic, 18 members of the GYA's Women in Science working group came together to share their unique stories of struggles and successes with brutal honesty in the book titled "Motherhood in Science - How children change our academic careers".

The working group members hail from different parts of the world, grew up in vastly different cultures, and have various scientific backgrounds. Their stories illustrate that it is definitely challenging to be a mother and to have a successful scientific career. However, it is not impossible, and we can work together to make things better for women in science.

To do that, we first need to change the environment in which mothers work. Societies, institutions, and families need to realise that there are clear actions that they can take and practical changes that they can make to the work environment of mothers that will allow them to succeed in what still remains a male-dominated field.

Second, we need to overcome the systematic inequities between men and women that create additional barriers for mothers and prevent them from leading a successful scientific career. For example, there is a bias in science that men are more capable than women (Moss-Racusin, et al. 2012; McNutt 2015). Therefore, men are more likely to be selected for scientific positions, to be promoted more rapidly and to be paid more than women (Reuben, Sapienza, and Zingales 2014). This bias is also present among journal reviewers and editors. Female-authored papers are generally held to a higher standard and take about 6 months longer in review than do male-authored papers (Knobloch-Westerwick, Glynn and Huye 2013).

Motherhood penalty

Additionally, mothers are seen as less competent and less committed to their work than men or women without children (Cukrowska-Torzenwska and Matysiak, 2020). This phenomenon is known as the "motherhood penalty". The combination of these

biases with the challenges of bearing and caring for children and caring for other family members leads to significant hardship and challenges, which often discourage women from pursuing careers in science. As long as these systemic gender inequities persist, mothers will continue to experience these additional barriers. Fathers can play a major role in helping their spouse overcome some of the challenges by playing a more active role in caring for children.

Overcoming biases is hard, but possible. We first need to become aware of them, understand them and find practical solutions for them, for example, by designing fairer processes to diminish the impact of these biases.

The personal stories in "Motherhood in Science - How children change our academic careers" raise awareness about these biases and barriers experienced by women scientists globally and show the importance of "support" within the family and the workplace.

One example of how this could be achieved would be to seek out a successful female researcher as a mentor who could share her experience of managing and juggling multiple responsibilities and suggest solutions and possible helpful tips and tricks.

The book presents many of these role models. You are welcome to read the stories and empower yourself to be a role model for women scientists as well!

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Mind the gap: Assessing research on early-career researchers in Latin America and the Caribbean before and during COVID-19

by Franziska F. N. Schreiber

Early-career researchers (ECRs) in Latin America and the Caribbean (LAC), who often confront precarious working conditions anyways, are hard-hit by COVID-19. International literature on ECRs suggests that the pandemic has exacerbated existing inequalities (Djerasimovic and Hooper 2020; Park 2020), thereby provoking funding insecurities, research delays, decreases of productivity and a reduction of networking opportunities for ECRs. As the LAC region is currently going through one of its most considerable crises in the past 120 years (ECLAC 2020), I will assess how research from the LAC region addresses this crisis in the academic discussion of the pandemic's repercussions on ECRs.

In what follows, I first describe the findings of a systematic literature review that maps the field of research on ECRs in LAC prior to the onset of the pandemic. Then I assess how research from the LAC region responds to the COVID-19 pandemic. Finally, I compare these findings with the literature review's outcome on the one hand, and the international literature on the other hand.

Systematic review of pre-COVID-19 literature

In order to map the field, GYA staff conducted a literature review as a scoping study of the third regional study in the research project The Global State of Young Scientists (GloSYS). This umbrella research project seeks to gain a better understanding of the circumstances and conditions under which ECRs work and live in various regions of the world. As a follow-up study of the GloSYS ASEAN and GloSYS Africa regional studies conducted in previous years, the GloSYS LAC research team is currently conducting a study in the region. While the literature review focusing on LAC does not account for any of the implications of the COVID-19 pandemic per se, the GloSYS LAC project will need to consider the current circumstances in further phases of the research process.

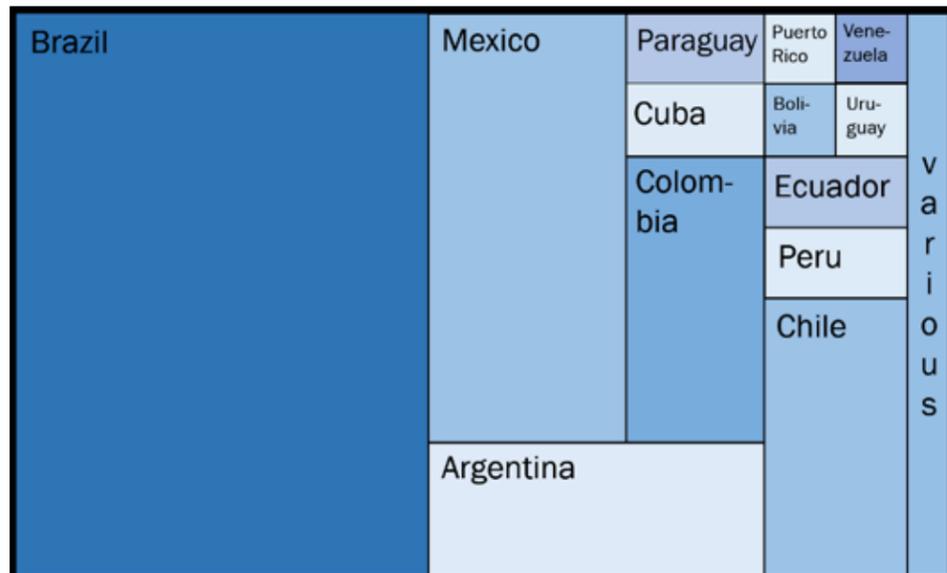


Figure 1. Allocation of articles according to their studies' focus country
Source: Author.

The literature review examined 101 empirical articles from LAC in Spanish, Portuguese and English. These articles stem from roughly one-quarter of the LAC countries that have been included in the study. Figure 1 shows the relative share of articles per country. Brazil provided the largest amount of articles, followed by Mexico, Argentina and Colombia. Several articles consider various countries in their analyses, indicated by the box labelled “various” in Figure 1.

The articles cover a broad range of subjects that were clustered into five broad themes (see Figure 2). By far, the theme that most studies cover relates to the growth and transformation in research and higher education. The other themes entail academic productivity and efficiency, constraints such as funding and the labour market, international mobility, as well as gender and diversity. Figure 1 shows the share of articles allocated to each theme, separated by the specific context they tackle. The articles were found to cover topics of everyday life experiences at the institutional level of organisations, as well as at the structural level, which refers to nation- or macro-related subjects.

In the LAC region, there has been a noticeable increase in the average number of publications per researcher, as well as an increase in students' enrolment ratios and an expansion of research programmes (often understood as “postgraduatization”). Some of the articles examined in the scoping study raise the question of whether the respective countries' higher education systems are able to absorb this increasing number of scholars (Marengo 2019). Others evaluate and value specific graduate programs (e.g., Ramos et al. 2010), which might be a way to assert programs' and disciplines' legitimacy in this evolving landscape of research.

Another group of articles investigates academic productivity and efficiency. This emphasis is related to the marketisation of and managerialism in research and higher education in the region: increased international competition among scholars and between research institutions pressures researchers to publish. Due to contemporary developments such as the massification of education, indicators of efficiency are increasingly applied to measure and to compare research outcomes via proxies such as the number of publications (Falaster et al. 2016), citations or joint publications of ECRs (Dias-Neto et al. 2015).

The theme concerning labour market, funding and job insecurities includes studies analysing graduates' insertion into the labour market (Gonzalez and Jiménez 2014) and precarious work conditions such as sub-contracting and short-term and flexible work arrangements (Arce Miyaki and Gomis Hernández 2019). Other authors study influence factors that affect students' participation in graduate programs, such as scholarships and the expectation of higher salaries after graduation (e.g., González-Moreno 2012; Núñez-Valdés et al. 2019) as well as stressors like time resources (Faro 2013a, 2013b).

The studies discuss international mobility *inter alia* as a factor contributing to scientific collaboration (Marmolejo-Leyva et al. 2015) and assess diverse factors and institutional policies that foster academic exchange in order to promote national research systems (e.g., Freidenberg and Malamud 2013; Sacco et al. 2018).

The articles hardly discuss gender and diversity issues. The ones that do tackle these topics point to the presence of problems such as gender and minority discrimination (e.g., Teixeira and Freitas 2015), despite recent successes

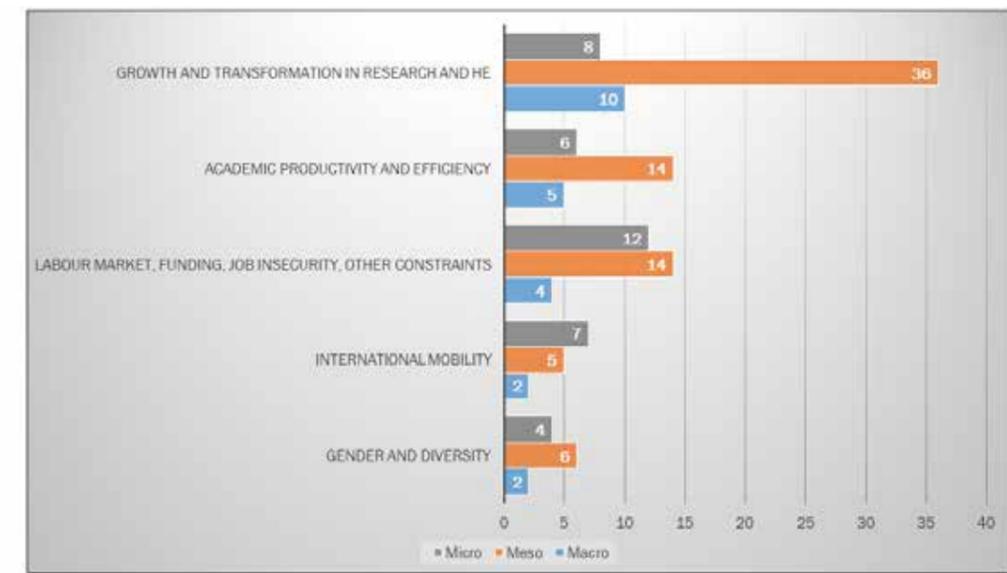


Figure 2. Number of articles per theme and context
Source: Author.

with integrating a broader range of scholars (in terms of socioeconomic backgrounds) into the research community.

Methodologically speaking, a considerable share of articles limits analysis to single countries, overlooking much of the international cooperation and mobility among scholars. Also, the majority of articles address the research on ECRs at the institutional level, evaluating specific doctoral programs or reflecting upon the development of one specific discipline (Martínez Rodríguez and Solís Cabrera 2013; Oliveira et al. 2014).

By dealing with ECRs within the boundaries of single countries, institutions or disciplines, these studies impede wider comparisons across these entities. Another limitation comes from the fact that there is no broadly acknowledged definition or common understanding of who ECRs are. Master's degree students and researchers without a doctorate, for instance, are often not included in studies about ECRs, despite the fact that some of them lead research-oriented careers and conduct part of the research developed in LAC.

Only a few articles provide a conceptual framework, which suggests an emphasis on empirical studies with little or no theoretical elaboration. Also, a considerable share of studies relies on (national) databases as the main type of data used, instead of collecting empirical data themselves. Most of these articles are published in journals dealing with issues of national significance.

Research on ECRs in the LAC region is generally guided by institutional orientations (such as the previously mentioned evaluation of doctoral programs). The review of this pre-COVID-19 literature about ECRs in the LAC region reveals a research gap concerning the

actual experiences of ECRs. Moreover, this literature disregards how structural, contextual and everyday factors affect their career trajectories. The following section assesses the latest literature on ECRs in the context of the pandemic and the extent to which this body of literature contributes to the gap's closure.

Review of literature considering COVID-19

The following presentation of the literature concentrating on the pandemic's effects on ECRs draws upon a non-systematic research in Google and Google Scholar. Most articles dealing with the pandemic's impact on higher education systems marginally refer to ECRs, as they mainly focus on students, university teachers or researchers in general. Articles focusing on those with academic degrees (such as Bachelor's, Master's, PhD and/or Post-doc) rather pool these groups than analyse the specific COVID-19 effects for each group individually (e.g., Hernández Ferrer and Valencia Aguilar 2020). Although the articles cover several countries, Brazil (Bigarelli 2020; Barbosa 2020; Martins and Rangni 2020; Silus et al. 2020) and Mexico (Gacel Ávila 2020; Hernández Ferrer and Valencia Aguilar 2021; Maldonado Gómez 2020; Schmelkes 2020) stand out as frequently studied countries. I have clustered the literature acquired through the non-systematic research into four main topics.

The majority of articles discuss the challenges and merits of higher education's digitalisation. Several articles emphasise that Latin America's educational system was not sufficiently prepared for such a crisis, particularly regarding the rapid adaptation of teaching methods and curricula to distance learning (Hershberg et al. 2020; Pedro 2020; Román 2020). A large share of educational institutions has switched to “emergency remote

education” as a “quick fix” (Salto 2020). Many articles discuss the notion of a “digital gap”, which was described in three different contexts. First, the degree of students’ access to adequate internet and technological devices varies due to socioeconomic inequalities, which restricts their access to higher education (Canaza-Choque 2020; Schmelkes 2020). Second, educational institutions have varying amounts and degrees of prior experience with remote education (Fanelli et al. 2020). Third, there is a divergence between the technological advances on the one hand and corresponding application and teaching competencies on the other hand (Paredes-Chacín et al. 2020; Román 2020). For instance, Martínez Garcés (2020) presents five crucial digital competencies that academic lecturers must acquire: computerisation and informational alphabetisation, communication and collaboration with the students, creation of digital content, security in the sense of data protection and problem solving.

The author finds that especially those competencies concerning the creation of digital content and data security are weakly pronounced, although the majority of lecturers in the sample are capable of using information technology (IT) in private and work contexts. In the context of a study in Brazil, Silus et al. (2020) emphasise as one challenge that 44.3% of the sample’s lecturers from higher education institutes received little or no training on how to use IT adequately.

The second set of articles emphasises the decrease in female scholars’ academic productivity and efficiency. For many, the necessity of working at home overlaps with additional (economically unrewarded) duties such as childcare responsibilities, which represents a double burden. For instance, Garrido-Vásquez et al. (2020) investigates scholars’ applications to the Chilean Young Investor Grant. The authors find that a larger share of women have submitted a proposal (38.5% in 2020 vs. 35.6% on average during the previous years). However, the gap between men’s and women’s success rates was larger in 2020 (4.1 percentage points) than in previous years (2.3 percentage points), and the share of women under the age of 40 decreased in 2020 as well. Other studies report that female researchers do not find the time to conduct research or have to adopt unusual work patterns, such as working in the early morning to harmonise work and family activities. Consequently, this development arguably leads to a further broadening of the gender gap (Mora 2020; Luna 2020; Ortiz 2020; Saravia 2020).

A third pool of studies report on the heterogeneity of higher education institutions in terms of infrastructure, resources and crisis response capacity (Fanelli et al. 2020; Paredes-Chacín et al. 2020; Schmelkes 2020).

Along with the fact that many institutions suffered from poor economic conditions even before COVID-19 (Hershberg et al. 2020), increasing economic shortages since 2020 represent a double burden for many researchers (Pérez Ortega and Wessel 2020).

The fourth group of articles analyse the pandemic’s impact on the internationalisation of the higher education sectors. For example, Echeverría-King and Lafont-Castillo (2020) investigate the internationalisation of higher education in Colombia. The authors find that international cooperation involving physical mobility has decreased, though collaboration through virtual mobility has increased (Echeverría-King and Lafont-Castillo 2020). Gacel Ávila (2020) adds to this point by studying the internationalisation of higher education in Mexico, which even before the pandemic lacked support from the government; this implies a rather negative prospect for its future development. According to Gacel Ávila, the “elitist character” of the internationalisation of higher education will be strengthened by COVID-19, as the gap between those countries that engage more in internationalisation and those that engage less (and consequently the gap between future researchers’ international profiles and capabilities) will increase (Gacel Ávila 2020).

Subordinately, several articles demur the expectable decrease in students’ enrolment in higher education programmes (Hershberg et al. 2020), as well as an increase in students’ abandonment or desertion. Forseeably, many students are and will be forced to quit their studies due to economic reasons (Figallo et al. 2020; Schmelkes 2020), or raise their extracurricular workload, which abets alienation with respect to their higher education (Pedro 2020). A few articles discuss mental health issues such as resilience (Román et al. 2020), students’ preoccupations (Mejia et al. 2021) and psychological effects (Cobo-Rendón et al. 2020), while funding as an article’s theme was found only once (Cortez Lopes et al. 2020).

Discussion

Three major findings were revealed by the COVID-19-related literature review. First, the articles do not sufficiently take account of the specific circumstances, interests and necessities of ECRs, as they predominantly report on students, lecturers or researchers in general. Furthermore, individuals pertaining to different degrees of higher education are insufficiently differentiated in the analyses. Exceedingly few articles make explicit reference to ECRs (e.g., Bigarelli 2020a, 2020b; Pérez Ortega and Wessel 2020). This finding supports the argument that there is a considerable research gap in the literature on ECRs in LAC.

Second, the articles present a certain homogeneity in their contents, for example by referring to the broadening of the digital gap, the gender gap or the institutional gap. The literature including COVID-19 also focuses on rather pragmatic issues such as the successes and challenges of the educational transformation to digital teaching practices, and on repercussions at the institutional or national level. Consequently, concrete implications on actual research practices are barely discussed. Analogous to the findings of our scoping study, researchers barely examine the actual experiences of ECRs and rarely draw comparisons across (e.g., Maldonado Gómez et al. 2020) and beyond the LAC region. Hence, the literature considering COVID-19 further reproduces (if not increases) the presented research gap in this regard.

Third, although the bodies of international literature and LAC literature about ECRs during COVID-19 show considerable congruence, the LAC literature does not cover the full range of topics frequently discussed in literature from other global regions. For example, the studies about ECRs in the LAC region barely discuss the effects of COVID-19 in the realm of unprecedented delays in work schedules or even cancellations of entire research projects. In contrast, international studies about ECRs and COVID-19 frequently broach this issue (Dooley 2020; Eurodoc 2020).

Further, the LAC literature disregards one effect of social distancing that international literature emphasises, namely the scarcity of networking opportunities (e.g., coffee meetings and in-person exchanges at conferences) as helpful tools for the introduction of early scholars to the scientific community (Ábrahám 2020; Dooley 2020; Eurodoc 2020; Glausiusz 2020; Termini and Traver 2020). Furthermore, international literature covers issues related to lacking, reduced or redirected funding (Dooley 2020; Termini and Traver 2020; Toldi et al. 2020) as well as gender and diversity topics (Woolston 2020) to a greater extent than the LAC literature does. In short, the range of topics analysed in the LAC literature needs to be further developed.

Conclusion

This article seeks to provide preliminary insights into how the literature on ECRs from the LAC region deals with the pandemic, and how this relates to pre-COVID-19 LAC on the one hand, and to the international COVID-19 literature on the other hand. Hopefully the present work will serve as an orientation and baseline for future research.

As the findings of the scoping study show, there is a significant research gap concerning scholarly research on ECRs in LAC. Although the literature from LAC addressing the COVID-19 pandemic addresses several issues in the realm of ECRs, so far it does not fully grasp the whole range of topics mentioned in the corresponding international literature. Consequently, this adds a layer of complexity onto the mentioned research gap and emphasises both the urgency as well as the foreseeable contribution of the GloSYS LAC research project.

Admittedly, research on ECRs considering the pandemic’s effects is still in its infancy, and more research may come in the following months. Still, now even more than before the pandemic, future research in the LAC region should address the presented research gap by investigating the relationship between personal, institutional and structural factors that shape the career trajectories of ECRs. More research efforts are required to lend support for this generation of scholars who are imperilled by the pandemic’s repercussions and are likely to be overlooked by academia and policymakers.

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Reasons for hope during the COVID-19 pandemic

Illustration by Mimi Haryani Hassim

A

Asanas

Jennifer Plaul
Global Young Academy, Germany

Asanas are yoga postures, or at least that's generally how English has repurposed the word; its original meaning is along the lines of "a steady and comfortable posture".

Yoga has made a long and amazing journey through the ages, from an ancient Indian meditation practice to a globally accessible, Instagram-friendly, modern way to exercise some (any) control over our desk-evolved bodies, and to calm our overstimulated minds.

Sounds perfect as a means to cope in times of crisis. But does it work? Researchers have studied the physical and psychological effects of yoga since the 19th century

and while numerous physical benefits have been proven, precise evidence of psychological benefits remains more elusive.

In these insecure pandemic times, in a full house functioning as a home, a school, a cafeteria and an office, I undertook a 30-day self-experiment: Yoga every day, regardless of prevailing noise levels, time, and space conditions.

My conclusion: Well... yoga does not do miracles, but even small improvements, when accumulated, can make a significant difference.

In this sense, I see Asanas as an act of hope.

B

Balance

Sandeep Kaur
University of Delhi, India

The COVID-19 outbreak has taught us the importance of balance. The crisis has brought things to a standstill and shown us that the world will never be the same again, irrespective of our nationality, color, gender, creed and faith. The crisis has also re-invigorated us with a sense of confidence that makes us believe everything is not coming to an end. This is a battle in which one needs to be sensible, cautious, pragmatic and optimistic – all at the same time.

The situation is truly in our own hands, as the crisis has taught us what really is essential for a balanced life. For those who believe in balance, this situation is quite easy to understand and appreciate. We should be working towards transforming our relationship with nature. A sense of balance is needed to minimise our reliance on exploitation and help create a resilient natural world.

C

Connections

Chandra Shekhar Sharma
Indian Institute of Technology Hyderabad, India

Connections result in close social bonding. People have thrived and developed a set of skills to live their lives by connecting in social groups. With the advent of the coronavirus pandemic, these connections did not remain as before. Social distancing and stay-at-home policies limited social interactions. However, humans and their abilities are boundless. Increasing empathy led people to connect beyond boundaries. These connections were seamless, fast, and opened up new dimensions of social interactions. Through

digital connectivity, people worldwide created their "digital social bubble" that is inclusive and supportive. These connections help collaborate expertise in varied fields. From policy-making to improving public health, research and development, as well as its implementation, trusted connections established a new world of togetherness. Looking beyond COVID-19, these strong connections among people will always encourage a sustainable future and a better world.

D

Dance

Lekelia D. Jenkins

School for the Future of Innovation in Society, Arizona State University, USA

Dance can be an answer to information overload and apathy. Research shows that our bodies and movement can actually impact our brains, changing our thoughts and emotions. As a dancer and marine scientist, I created a participatory approach for co-choreographing science dances, often about endangered sea turtles. Participants discover, share, and augment scientific knowledge and use structured improvisation to express this knowledge through movement. Evaluations show that participants learn and retain new scientific information, share what they learn with other people, and become more concerned for wildlife. But their concern does not depress them; they become energised. As they roll on the floor portraying ocean waves, they laugh like children, even while learning about the threats that kill sea turtles.

Digital seeds

Felix Moronta

International Centre for Genetic Engineering and Biotechnology, Italy

Advances in genomics and sequencing technologies has led to a greater understanding of the tree of life and the function of genes and their metabolic processes. As more genetic and biological data are digitalised and stored in international open databases, synthetic biology approaches may be available for the scientific community worldwide. This rapid evolution of biological research brings a decreasing need to access physical resources, which can be substituted with online genetic data or digital sequence information (DSI). Researchers can now readily recreate biological material from DSI sourced from databases, combine genetic information originally sourced from multiple locations, and modify genetic information to produce completely new material.

E

Earthquakes

Anet Režek Jambrak

Faculty of Food Technology and Biotechnology, University of Zagreb, Croatia

During the COVID-19 crisis, here in Croatia we experienced several strong earthquakes. I would like to express my condolences to the families of people who were killed, along with strong support to those who lost their houses, properties, and worldly goods. The COVID-19 virus brought with it so much insecurity, and many deaths were caused by the virus. So much occurred in 2020, but I am sure that by joining together with a strong spirit like those who had to face the earthquakes of Croatia, we will emerge in a better future!

Efficiency

Mimi Haryani Hassim

Universiti Teknologi Malaysia, Malaysia

My friends have always wondered how I'm able to accomplish so much despite having the same 24/7 time as others do. There are three key things: 1) start off the day early; 2) make a daily task list; and 3) multi-task.

I start my day between 04:00 and 05:00 with a cold shower to really freshen up and energise myself. Once I've settled the kids into their routines, I focus on my office work and eliminate unnecessary distractions.

No matter how much work I have that day, I finish by noon. I then monitor my kids' chores or homework, or do laundry and dinner.

I spend my evenings with family or watching dramas or reading up on news or current issues. By keeping busy and efficient, I've really been able to keep my optimism during the pandemic.

E

European integration

Cristina Blanco Sío-López

University of Pittsburgh, United States/ Ca' Foscari University of Venice, Italy

The process of European cooperation and integration was a hopeful idea launched in the aftermath of the Second World War to make war impossible between former enemies by pulling together resources used as raw materials for war industries, namely, coal and steel.

The objective was always political (unity), but the means to achieve it were economic. These two axes neglected a crucial cultural dimension that has yet to be explored, which generates lingering and complex identity questions.

The theoretical founding principles of this integration process in which Europe tried (and tries) to save itself from itself are peace, solidarity and socioeconomic cohesion. The greatest risk for the actual implementation

of such principles in this continent and in its global relations lies in the rhetorical co-opting of these norms and values while the very opposite is being implemented for the profit and power of ever-restricted groups, thus degrading the quality of democracy.

However, the capacity of transforming war as a business model, the violence of the European colonial past and persistently devastating North-South and East-West cleavages into dialogued forms of sustainability, livability and welfare via public goods and policies keeps the gates open for promising forms of collective self-betterment.

That is, as long as human societies do not forget to firmly hold the mirror of ethical imperatives towards their course of action...

Nous sommes embarqués.

Family fun

James Curtiss

Global Young Academy, Germany

Our son had just turned six when the lockdowns commenced in March 2020, and he was completely stoked about his pre-school shutting down.

But how to fill a young child's days with fun and educational activities? We studied the parents' websites and took cues from experts, friends and colleagues. I enlisted Amazon Alexa to help regiment our time. We even had a color-coded schedule for various days of the week.

Oh, we were WIRED!

Which lasted about a week.

We raced through the Lego Challenge faster than you can say "Wash your hands", and kept up with Karate classes online, but soon our son was begging to watch television all day, and with our work

demands, my wife and I were often sorely tempted to let him.

Then I bought a video gaming system with Super Mario Galaxy. This immediately transformed us into galactic adventurers!

When the weather warmed up, we built a swimming pool in our garden - a garden that we also found a lot more time to tend.

So from April until August, our days included video games, swimming and gardening, which kept us all happy, healthy, and well-fed during the ongoing lockdowns and social restrictions.

Of course being "rooted" in place isn't ideal, but the family fun that we have together in our garden has really kept me feeling energised and optimistic.

F

G

Gelassenheit

Goh Hong Ching
Universiti Malaya, Malaysia

For me, G will always be for *Gelassenheit*, a word shared by my *Doktorvater* (PhD advisor) when I was facing some particularly depressing moments in life. He said that *Gelassenheit* means “a certain easiness and contemplative attitude towards things that seem to be urgent and important”. At second glance, however, neither urgency nor importance exist, and life is much easier when one has this inner distance.

During the COVID-19 pandemic lockdowns, when many of us work from home, let us take it in stride with *Gelassenheit* when trying to deal with the blurred family/work boundaries that do not lessen the demands that our work expects. This challenging time provides a window of opportunity for us to reflect on our work-life balance and to prioritise our wellbeing.

Let's give our best!

Gratitude

Ghada Bassioni
Ain Shams University, Cairo, Egypt

Being grateful has been proven to boost serotonin (the feel-good hormone) and dopamine (the motivator), which in turn activate those parts of the brain responsible for behavioral regulation, stress response, as well as resilience. A consequence of gratefulness is a better-working mind that is more capable and more creative. A good way to practice gratitude is to notice the good things in our lives. Many studies report that those who have a greater level of gratitude tend to have a greater level of personal happiness. Gratitude is the appreciation of something received; happiness is the enjoyment of a present good; and hope is the desire for a valued future.

It takes a lot of strength to remain grateful in times of suffering or loss. Nevertheless, it has been shown that maintaining a feeling of gratitude for what good still exists makes dealing with adverse situations easier.

H

Hope

Victorien Dougnon
University of Abomey-Calavi, Benin

When everything seems to collapse, this is the only way to still dream.

Hope makes us celebrate what we already achieved.

2021 will see science answer the COVID-19 pandemic.

Many deaths but many opportunities to lead the way .

Hope to move forward despite everything.

Hope to learn from our errors and create happiness.

Hope that the love of science should continue to lead our minds.

Hope because we are the change.

Irony

Rob Jenkins
University of York, United Kingdom

Ironically, social distancing and lockdown has led me back to some long-lost friends. Before the pandemic, it was easier to keep in touch with friends who are nearby. But online-only socialising has had the curious effect of levelling the playing field. After all, it's no more difficult to Skype a friend overseas than to Skype a friend down the road. Why on Earth wasn't I doing that all along? My hope for the year ahead – better yet, my pledge for the year and beyond – is that I will not let these friendships slip away again. There are so few upsides to a global pandemic – let's keep them with us as we climb out the other side.

Ice cream

Anna-Maria Gramatté
Global Young Academy, Germany

Whenever I tell people there is an ice cream parlour in my building (and it is not just any old ice cream parlour, it is one of those fancy places with a number of crazy flavours), they get all dreamy-eyed and ask: how do you manage to walk past there every day on your way home from work? Until the pandemic hit, I did quite well, only ever taking a little detour now and then and not really appreciating the luxury of having a source of fresh ice cream close by.

However, during the ongoing lockdowns, going downstairs on purpose to try their flavour of the day and chat to a neighbour (from a safe distance) just makes my day. Ah, the sheer bliss of being able to work from home – with a cone of smoothly cold chocolate ice cream!

Joy

Justine Germe Nzweundji
Institute of Medical Research and Medicinal Plants Studies, Cameroon

Joy to celebrate what remains and what is unshakeable to us as young scientists – the love of science.

Joy of breaking boundaries, institutional, interdisciplinary and more, to fight our common enemy, COVID-19.

Joyfully working to find solutions through diagnosis, prevention and cure.

Joy of learning from and building on the lessons of the past.

Joyfully opting to make 2021 a year that prioritises human well-being.

Joy of sharing useful information, accessing data and building on what's been achieved.

Joy at scientific expertise and input being part of the decision-making process.

Joy over our solution-oriented approach to scientific challenges.

Joy of one day being able to forget the pandemic by respecting the measures advocated by science.

Joy for using science and truth to save lives locally and globally.

Joy to be alive and thrive and strive for Science.

K

Kindness

Maryam Matin
Ferdowsi University of Mashhad, Iran

A year has passed since it began. News came pouring in – an outbreak of an unknown virus, infections, death, and a global health emergency. The rise of COVID-19. Then came lockdowns, travel restrictions and even more death. It changed our lives greatly. People were affected by the virus, some lost their jobs to it, and many lost their loved ones. Surely, this is a story for generations. But when they ask what kept us going through the dark, the answer will be kindness. Our light was kindness. The pandemic taught us unity; that no matter where we come from,

we are all in the same boat, and that all we have is one another. Through kindness, love, and support, we found strength and got through it all. It might have been voluntary work in a hospital or care center, making a donation to a place in need, or shopping for the elderly. Maybe even something as simple as calling a friend, or checking up on a neighbor. We also started being kind to ourselves, wearing masks and washing our hands. We saved lives being kind. Only now do we know how much it matters. So be kind, use your magic.

L

Levers and leverage points

Kai Chan
University of British Columbia, Canada

Although human societies are on an unsustainable trajectory, there are powerful levers and leverage points to correct this. In 2019, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services identified five governance interventions (levers) and eight key parameters and processes in global systems (leverage points) that could enable human sustainable pathways.

These levers and leverage points will not be engaged simply because they address fundamental aspects of systems that currently favour the status quo and benefit rich and powerful individuals and organisations. Yet sustained pressure by civil society and individual advocates might engage these levers and leverage points and achieve a better future for humanity and life on Earth.

Motivation

Lahcen El Youssef
Sultan Moulay Slimane University, Morocco

Every species on Earth tends to adapt in a changing environment. Certainly we observe that some individuals can be more adaptive than others under conditions such as low or high temperatures or psychological duress. The individual capability to adapt is a result of attempts and exercises to avoid sources of stress during situation that require change. This capability also varies depending on

the intensity and frequency of attempts to change. Change here corresponds to a positive evolution of the physical and mental state of the individual in their environment. In fact, the species that survive are the ones that are motivated to change, and not necessarily the strong or the intelligent ones. I guess this is valid for humans too!

M

Nutrition

Gabriela Montenegro-Bethancourt
University of San Carlos, Guatemala

The COVID-19 pandemic has shed light on the connection between our health and environment, including food and nutrition. We learned that nutritional status and lifestyle play a fundamental role in the prevention of COVID-19. There has also been growing interest in how to improve our immune system through adequate nutrition. By identifying foods and key nutrients of importance known to affect immunity health, we can help prepare our bodies to overcome infections.

During the pandemic, many people have stopped eating out, and home cooking has become a tangible way to connect with our families and friends. We connected with our community through the shared need to quarantine and with our limited mobility, and we supported our local food producers. We valued the food system and were cognizant of the vulnerability of the food chain, which can very easily be impacted when one link breaks.

N

O

Özlem Türeci

Özge Yaka
Universität Potsdam, Germany

Ö is a character that exists in the German and Turkish alphabets, and Özlem Türeci defines herself as a Prussian Turk. She is the inventor of the first approved vaccine for COVID-19, the RNA-based Pfizer-BioNTech vaccine BNT162b2, together with Uğur Şahin, who is Türeci's long-term partner, both in science and in private life. When the 95% success rate of their vaccine in Phase 3 trials hit the news in November 2020, they gave hope to billions of people who struggle to sustain their everyday lives in the middle of the world's first truly global pandemic.

Özlem Türeci also gave hope to women and to people with a migration background by excelling in a country that has a scientific setting dominated by males. According to deutschland.de, 88.4% of all university professors in Germany are male, even though nearly half of all PhD candidates are female. Germany is also a country in which the German Turks are heavily stereotyped. Türeci thus provides hope, not only by defeating COVID-19, but also by confronting both sexist and racist stereotypes. This is the kind of hope we need!

P

Power of plants

Vidushi S. Neergheen
University of Mauritius

As we navigate through this COVID-19 pandemic, we realise that in the absence of completely effective medicines against the virus, many people are turning back to nature to seek solutions for treatment and/or prevention. This is not unrealistic when we recognise that approximately 40% of the drugs in clinical use today have a direct or indirect link to plants. We know that billions of years of co-evolutionary interactions among millions of species have produced a huge repertoire of defense molecules, many of which are currently used as drugs, whilst others continue to be the backbone of traditional medicine.

The intrinsic value of plants and their role as a critical foundation for sustainable development, human health and well-being are widely known. At this time of the pandemic, we should look back to our garden for plants with the power to boost our immune system, as well as to provide for our general wellness. Make sure you have at least five of the following common plants/herbs in your garden and generously use them as part of food preparation, juiced with fruits and as infusions or decoctions: basil, cabbage, chilies, garlic, onions, oregano, rosemary, thyme, tomatoes, and turmeric.

Q

Quiet

Karen Cloete
University of South Africa

The world has gone quiet. For humans, the echoes of laughter, excitement, and togetherness have been silenced by facial masks and distance. But for their environment, the silence has bequeathed the gift of regeneration, rebirth, reblossoming, resurgence, and revitalization. Crystal clear skies untainted by pollution are mirrored by our minds under lockdown, with the quiet

air clearing away old resolutions and paving pathways to an embrace of the new normal, a reinvention of the self, valuing others, valuing freedom, and ultimately, valuing the gift of life. During these quiet times, a different future may be seen lurking in the crystal ball, an exquisite one, and one that should be moulded and sculptured by respect, love, unity, and peace.

R

Research

Mohamed Elhadidy
Zewail City of Science and Technology, Egypt

A research environment that encourages interdisciplinarity is highly crucial to solve many of today's global problems. In my opinion, one significant factor that hampers the growth of research or young scientists is the lack of multidisciplinary aspects to provide holistic solutions to address current national and global issues and I believe that was clear with the COVID-19 pandemic crisis. I am too optimistic that this crisis showed us real lessons on how we should make use of the credibility in diversity of research fields to build networks and join societies that address the scientific, educational, health and environmental challenges we currently face.

My personal hope for improving the state of the sciences and research is to (1) break down the barriers between disciplines, and (2) get academics out to work with communities on the issues that matter to them. Science should be practiced not only at the bench but rather by active interaction with policy makers, scientific leaders and entrepreneurs to address current and future development needs, to bridge the gap between theoretically-driven decisions and proven practical approaches on solving problems related to applying research - especially in lower- and middle-income countries.

S

Serendipity

Chandra Shekhar Sharma
Indian Institute of Technology (IIT) Hyderabad, India

Most scientific breakthroughs take years of research, but sometimes discoveries occur due to serendipity. Scientific serendipity is the intersection of chance and wisdom; it's the ability to see and capture what is unexpected yet innovative. No time was as challenging and vital as the COVID-19 pandemic to understand the value of this word.

Through scientific serendipity, researchers are acquiring unanticipated and unsought information regarding COVID-19 and adding remarkable insights to curb its spread.

Serendipity is allowing scientists to make predictions related to the changing behaviour and the vulnerability of the new virus strains. This ability to look beyond the horizon has led researchers to try options in preventing and treating the disease with BCG and Hydroxychloroquine. Serendipity bridges the gap between old and new, either through drug repositioning or knowledge sharing and collaboration. Ultimately, serendipity helps provide innovative answers to the challenges the world is facing today, and helps us prepare for the challenges of tomorrow.

T

Time

Thomas Edison Dela Cruz
University of Santo Tomas, Philippines

Time is very precious in a health crisis. During the COVID-19 pandemic, we've seen how medical frontliners race against time to curb the spread of the virus. We've witnessed how scientists and researchers race against time to understand the virus and its spread and to develop a vaccine. Against this background, the COVID-19 pandemic has also given us its most precious gift – time. Time to sit back and think about our plans, reflect on our past, appreciate our present, and hope for our future. It's given us time to do things we missed, time to be productive, and time to look profoundly at people, places, or events that we would often ignore during our regular busy lives. It's given us time to be with our family, to enjoy and cherish the moments we spend with them, and for me, to witness every growing moment of my three little girls.

Technology

Pradeep Kumar
Wits University, South Africa

The Jerusalema challenge, originally produced in South Africa, was picked up by a group in Angola, and became an international sensation as a dance challenge – bringing smiles to everyone watching or performing the challenge. This is possible ONLY through technology.

Another impact of technology has been its role in positive coping. During the COVID-19 pandemic, technology has allowed for social interactions, social support, and social connectedness, creating millions of Happy Hours between family, friends, and colleagues.

Most importantly, the launch of thousands of new applications (apps) and platforms during the pandemic positively impacted the education sector, with great strides made towards the early adoption of 21st century learning design.

U

Urban

Suraj Bhattarai
Global Institute for Interdisciplinary Studies, Nepal

Urban areas, where more than half of the world's population lives, are vulnerable to recurrent or concurrent disasters, including epidemics such as the one wrought by COVID-19.

According to global data, over 90% of COVID-19 cases have occurred in urban areas, with approximately 1,500 cities world-

wide being affected. Therefore, it is high time that all governments prioritise urban areas in their developmental policies so that cities can become more resilient, with the ability to repurpose their resources during times of crisis.

V

Video calls

Robert Lepenies
Helmholtz Centre for Environmental Research, Germany

Nearly anyone (with a desk job) is now fluent in Zoom, Webex, Teams, Jitsi. Especially for scientists, this constitutes a massive behavioural change that makes me hopeful

for a less resource-intensive academic work culture of the future. Teaching, attending global conferences and giving science advice can all take place from your sofa!

W

Water

Jauad El Kharraz
Middle East Desalination Research Center, Oman

The provision of safe water, sanitation and hygienic conditions are essential for protecting human health during infectious disease outbreaks such as the current pandemic, especially in some areas already under stress due to the water scarcity caused by the climate crisis.

Wastewater surveillance for COVID-19 has the potential to improve both health and

economic outcomes for communities that continue to be impacted by COVID-19. Early detection of viral RNA may reduce the damage caused by a large-scale outbreak. Hence, a water-health nexus approach, coupled with the engagement of global young researchers and scientists who believe in international collaborations will allow us to be more prepared than ever for future pandemics.

X

X

Mari-Vaughn Johnson
Pacific Islands Climate Adaptation Science Center, United States

X is for xylem, xanthophyll, xenon, xenobiotic...

X is also for Wrong Answer! 2020 has exposed many wrong answers, but we need these and more Xs. Our Xs are badges denoting the courage it takes to ask tough questions, to recognise our mistakes and misdeeds, and to strike out again in pursuit of knowledge, relationships, and novel ways to address shared challenges. Mistakes, errors, tripping and falling, is how we learn.

X is how we cross days off our calendars, something many were anxious to do in 2020!

These X's mark the past, but these days are not behind us. They are with us. They are days that we learned to walk, days we learned to run, days we learned new words, days we found new possibilities.

The days that stretch before us will bear Xs, but for now we share the precious present. So, my friends, let us try and let us fail and let us embrace the lessons of our wrong answers. Let us recall that X is also the universal solution, the unknown variable, the answer we seek. Let this be the X that crosses today off your calendar, the X that brings us closer. Xs are also for kisses, so as I sign off, I share with you all hope and warmth. xoxo

Y

Yourself

Nova Ahmed
North South University, Bangladesh

In the time when we had to be locked down, being yourself is all we could do.

It was strange to find out how simple and plain it is to appreciate our own selves.

Hopefully we all emerge kinder, more appreciative, and more hopeful for tomorrow.

Z

Zen

Zeynep Aycan
Koç University, Turkey

What a wonderful word to end the A-Z of Hope. It is said that the essence of the Zen tradition is to live in the moment and remain hopeful in the face of calamity. Remembering the famous parable of King Salomon, we repeat silently "this too shall pass" – not only in bad times but also in good ones.

Zen teaches us to see things as they are (not as they should be), to remain hopeful, and to trust that "this too shall pass."



Alexandra Dmitrieva (Ukraine)

Researcher / Drug Use, Law and Health Policy

Alexandra received her PhD in Sociology at St. Petersburg State University, and has extensive international experience as a qualitative researcher and field ethnographer in various research projects. Alexandra co-founded the Support, Research and Development Center, a Kyiv-based NGO aimed at conducting qualitative social research of drug use, health and medicine.



Bashayer AlMajed (Kuwait)

Assistant Professor / Law

Bashayer AlMajed focuses on intellectual property, legal economics, constitutional, civil and contract law. She also has a strong interest in politics, humanitarian issues and legal reform. She recently won the International Muslim of the Year at the British Muslim Awards for her efforts to empower young people.



Carolina Andrade (Brazil)

Associate Professor / Medicinal Chemistry

Carolina's research group at the Federal University of Goiás, Brazil, focuses on computer-assisted and artificial intelligence-oriented drug discovery for neglected and emerging diseases. Her research also focuses on the development of AI tools for the prediction of toxicity properties of chemicals. Her major software tools and models are publicly available at the LabMol web portal www.labmol.com.br.



Chibuikwe Udenigwe (Canada)

Food Biochemist / Food and Nutrition Sciences

Chibuikwe holds the University Research Chair in Food Properties and Nutrient Bioavailability at the University of Ottawa. His research focuses on sustainable processing for unlocking the health-promoting and nutritional properties of food. He is the Editor of "Food Proteins and Peptides" (2021), and has published over 170 journal articles and book chapters.



Cristian Ripoli (Italy)

Associate Professor / Neurosciences

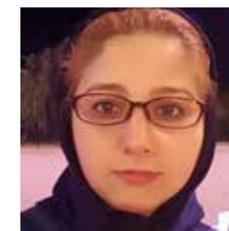
In addition to his professorship, Cristian serves as Researcher of the Fondazione Policlinico Universitario Agostino Gemelli IRCCS, where he is a member of the Institutional Translational Board. His research focuses on how synaptic plasticity influences neuronal signaling, and in elucidating the cellular and molecular mechanisms underlying learning and memory in the mammalian brain.



Emilija Stojmenova Duh (Slovenia)

Assistant Professor / Electrical Engineering

Emilija is the Head of the Public Private People Digital Innovation Hub at the University of Ljubljana. She also founded and is coordinating the national FabLab network in Slovenia. Emilija is a member of the Management Board of the Slovenian Research Agency, the Expert Council of the Employment Service of Slovenia, and the Council for Development in Agriculture, Forestry and Food.



Encieh Erfani (Iran)

Assistant Professor / Physics

Encieh obtained her PhD from the University of Bonn, Germany. She is a Junior Associate of the International Centre for Theoretical Physics - Trieste, a TWAS Young Affiliate member, and is on the Board of Directors of the Iranian Astronomy Society. Encieh is the founder of the "Yar-e-Danesh Fund". Her international experience has provided her with unique skills to communicate, understand problems and find solutions.



Farah Ouechtati (Tunisia)

Geneticist / Sustainable Development

Farah is a geneticist working on developing new therapeutic strategies to prevent neuronal loss that can lead to mental disorders and visual impairment. After receiving the L'Oréal-UNESCO International Fellowship for Women in Science in 2014 and earning a Master's degree in Social Sciences, she got involved in the science-policy-diplomacy interface and recently joined the Center for Open Science.



Ho Cheung (Anderson) Shum (China/Hong Kong)

Professor / Mechanical Biomedical Engineering

Anderson is Founding Director of the Advanced Biomedical Instrumentation Centre in Hong Kong. His research group focuses on microfluidics and soft matter and their applications, particularly in biomedical technologies. He is also a founding member of the Hong Kong Young Academy of Sciences.



Ibraheem Alhijry (Egypt)

Assistant Professor / Laser Physics

Ibraheem obtained his PhD in experimental laser physics from Mansoura University, Egypt. During his PhD studies, he worked on the enhancement of solid-state dye laser characteristics using metallic nanoparticles at the National Institute for Laser Science, Cairo University, Egypt. Recently, his research has focused on laser-induced breakdown spectroscopy (LIBS) in the Laboratory of Lasers and New Materials at Cairo University, Egypt.



Jelena Vladi (Serbia)

Scientific Associate / Green Technologies

Jelena is a Scientific and Teaching Assistant at the Faculty of Technology Novi Sad, Department of Biotechnology and Pharmaceutical Engineering, University of Novi Sad, Serbia. Her research areas are pharmaceutical technologies and chemistry, with special reference to green innovative extraction technologies and drying.



Jia Chen (Germany)

Professor / Environmental Sensing and Modeling

Jia Chen heads the Environmental Sensing and Modeling Group in the Department of Electrical and Computer Engineering, Technical University of Munich. She is also an associate in the Department of Earth and Planetary Sciences at Harvard University. Her research focuses on climate change and urban air pollution. She develops novel sensors, methods, and atmospheric models to localise and quantify greenhouse gas emissions.



Karishma Kaushik (India)

Physician-Scientist / Infection Biology

Karishma is a Physician-Scientist at Savitribai Phule Pune University. She returned to India in 2018 to start an independent research group, which focuses on the study of complex infection micro-environments, with a focus on biofilms. The group aims to develop human-relevant infection models that provide alternatives to animal studies, as well as to enable the development of composite infection therapeutics.



Kathryn Crowe (Iceland)

Speech-Language Pathologist / Hearing Loss

Kate focuses on how communication differences and disorders impact on participation in society, and particularly on using evidence-based practices to improve the outcomes of children with communication differences. She is presently working on improving the support of multilingual children with hearing loss, and is based in the Schools of Health Sciences and Education at the University of Iceland.



Luciana Balboa (Argentina)

Immunologist / Infectious Diseases

Luciana is an Associate Researcher in infectious diseases at the Institute of Experimental Medicine, Argentine National Scientific and Technical Research Council-National Academy of Medicine in Buenos Aires. She is a founding member of the Young Academy of Argentina, and a member of the Steering Committee of the Latin-American Society of Tuberculosis and other Mycobacteriosis.



Manuel Fernández-Götz (United Kingdom)

Reader / Archaeology

Manuel is Head of the Department of Archaeology at the University of Edinburgh. He has been a board member of the Young Academy of Europe and the European Association of Archaeologists, and is a fellow of several learned societies. Manuel's main research interests are the origins of urbanism, the archaeology of migrations, and conflict archaeology. Overall, he aims to learn from the past in order to construct a better future.



Mareli Claassens (Namibia)

Clinical Epidemiologist / Infectious Diseases

Mareli is a Medical Doctor and an epidemiologist with extensive research experience in infectious diseases that disproportionately affect poor people. She is fascinated by challenging questions that require a trans-disciplinary approach, and enjoys engaging with experts from other scientific domains to flesh out hypotheses, conceptual frameworks and potential solutions. Mareli is a strong believer in public and societal engagement.



Mirjam Brusius (United Kingdom)

Research Fellow / Heritage and Material Culture

Mirjam holds a PhD in History and Philosophy of Science from the University of Cambridge. Prior to GHI London, she held postdoctoral fellowships at Oxford, Harvard, and the Max Planck Society in Germany. Mirjam is interested in heritage, museum and material culture – past and present – in the context of global and colonial history.



Mohammed Mostajo-Radji (United States)

Scientist / Neuroscience and Science Diplomacy

Mohammed holds a PhD in Molecular and Cellular Biology from Harvard University and is currently a scientist at the University of California. His expertise is in programming and reprogramming neuronal identity in the developing cerebral cortex. In addition, He has vast experience in science education and science diplomacy, and was the first Latin American scientist to reach the diplomatic rank of Science and Technology Ambassador.



Nadia De León (Panama)

Researcher / Education and Social Sciences

As founder at CIEdupanama.org, and adjunct faculty at INDICASAT.org and CIEPS.org, Nadia carries out educational and social research focusing on gender, diversity, experiential learning and social justice. She is a member of the Panamanian National Research System and advisor to the Minister of Education. She is also founder and CEO of Praxia-edu.com. She previously worked at Stanford University and Western Kentucky University.



Neil Guerrero-Gonzalez (Colombia)

Associate Professor / Photonics Engineering

Neil is an Associate Professor at the Department of Electrical, Electronic and Computing Engineering at the National University of Colombia. His research focuses on designing the next generation of reconfigurable telecommunication networks integrating optical and wireless infrastructures for extended and reliable coverage mainly oriented to rural development.



Nkatha Kabira (Kenya)

Senior Lecturer / Law

Nkatha Kabira is a poet, author and Senior Lecturer at the School of Law, University of Nairobi. She is an Iso Lomso (“eye of tomorrow”) Fellow at the Institute for Advanced Studies in Stellenbosch, South Africa, a Fellow at the Institute of Advanced Studies, Berlin, a Fellow of the Africa Science Leadership Programme, University of Pretoria, and a fellow at the Institute of Advanced Studies, Program on Social Sciences at Princeton University.



Po-Yen Chen (Singapore)

Assistant Professor / Biomolecular Engineering

Po-Yen is an Assistant Professor in the Department of Chemical and Biomolecular Engineering, at the University of Maryland, College Park. His current research interests focus on strain engineering in nanomaterials, especially 2D materials. These strain-induced 2D-material architectures with high stability can be applied to next-generation soft robots.



Priscilla Mante (Ghana)

Neuropharmacologist / Neurogenetics

Priscilla has a PhD from the Kwame Nkrumah University of Science and Technology and postdoctoral training from the University of Michigan. Her research focuses on developing better therapeutic options for resistant epilepsy. Priscilla received the International Rising Talent Award in 2019 for her research, as well as a 2019 Organization for Women in Science for the Developing World Early Career Fellowship.



Rüstem Ertug Altınay (Turkey)

Performance Studies / Theatre

Ertuğ obtained his PhD in Performance Studies at New York University, and currently teaches at Kadir Has University. His primary areas of research are theories of media and performance, queer and feminist performance and literature, memory studies, and material culture, with a focus on Turkey. In 2020, he won the Science Academy Turkey's Young Scientist Award. Ertuğ is also a playwright, dramaturg, and dramatic translator.



Shymaa Enany (Egypt)

Associate Professor / Microbiology and Immunology

Shymaa is a member of the Microbiology Department, Suez Canal University, Egypt. She received her PhD from Niigata University, Japan. Shymaa was the first Arab scientist to apply bacterial proteomic techniques, which helped reveal good markers for microbes spreading in a community. She was awarded the State Encouragement Prize for Women in the field of health and pharmaceutical sciences, the most prestigious award in Egypt.



Siok Yee Chan (Malaysia)

Pharmacist / Drug Delivery Systems

Chan Siok Yee is on the academic staff in the School of Pharmaceutical Sciences, Universiti Sains Malaysia. She is the Editor in Chief of the Malaysian Journal of Pharmacy, President of the Malaysia Society of Pharmaceutical Technology, and exco member of the Young Scientist Network, Academy Sains Malaysia. Her research interest lies in the development of drug delivery systems using a solid dispersion technique.



Thomas Tagoe (Ghana)

Neuroscientist / Learning and Memory

Thomas is a neuroscientist based at the University of Ghana. His research group is built around exploring plasticity mechanisms in health and disease. This also extends towards understanding the neurological activity of compounds from traditional herbal medicines.



Victor Vilarrasa Riano (Spain)

Civil Engineer / Hydrogeology and Geomechanics

Victor is a scientist at the Spanish National Research Council, where he leads an interdisciplinary group investigating induced seismicity of low-carbon geoennergies. He did his PhD in Civil Engineering at the Technical University of Catalonia and has postdoctoral experience at the Lawrence Berkeley National Laboratory and at the École Polytechnique Fédérale de Lausanne, where he was a Marie Curie fellow.



Yensi Flores Bueso (Ireland)

Molecular Biologist / Synthetic Biology

Yensi is a Postdoctoral Researcher at the Cancer Research Centre and the School of Biochemistry and Cell Biology at University College Cork, Ireland. Her research focuses on developing novel cancer therapies using tumour-targeting bacteria. She has co-founded two start-ups aiming at providing accessible medical care and diagnostics for developing countries, and has directed outreach projects aiming to build research capacity in Honduras.



Yuguang (Chris) Li (United States)

Assistant Professor / Electrochemistry

At the University at Buffalo, SUNY, Chris and his research group are studying electroanalytical chemistry and catalysis reactions to activate small molecules and design new electrochemical systems to address the world's energy and climate challenges.

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The vision of the GYA is *science for all; science for the future*, and its mission is to give a voice to young scientists and researchers around the world. The GYA, founded in 2010, is an independent science academy of 200 outstanding early- to mid-career researchers from six continents who are selected from across disciplines based on their academic excellence and commitment to engage with society. GYA members serve five-year terms, and the GYA presently counts members and alumni from 86 countries. The GYA administrative Office is publicly funded and hosted at the German National Academy of Sciences Leopoldina. The wide array of GYA activities are supported by a range of international public and private funders.

Find out more at: www.globalyoungacademy.net

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