GLOBAL SOLUTIONS
THE WORLD POLICY FORUM

Sustainable Responses
to the COVID-19 Pandemic

#disease #health #society

INTERSECTING

VOLUME 01/2021

Nicolas J.A. BUCHOUD
Milindo CHAKRABARTI
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(eds.)

NEW DIALOGUES PUBLISHER

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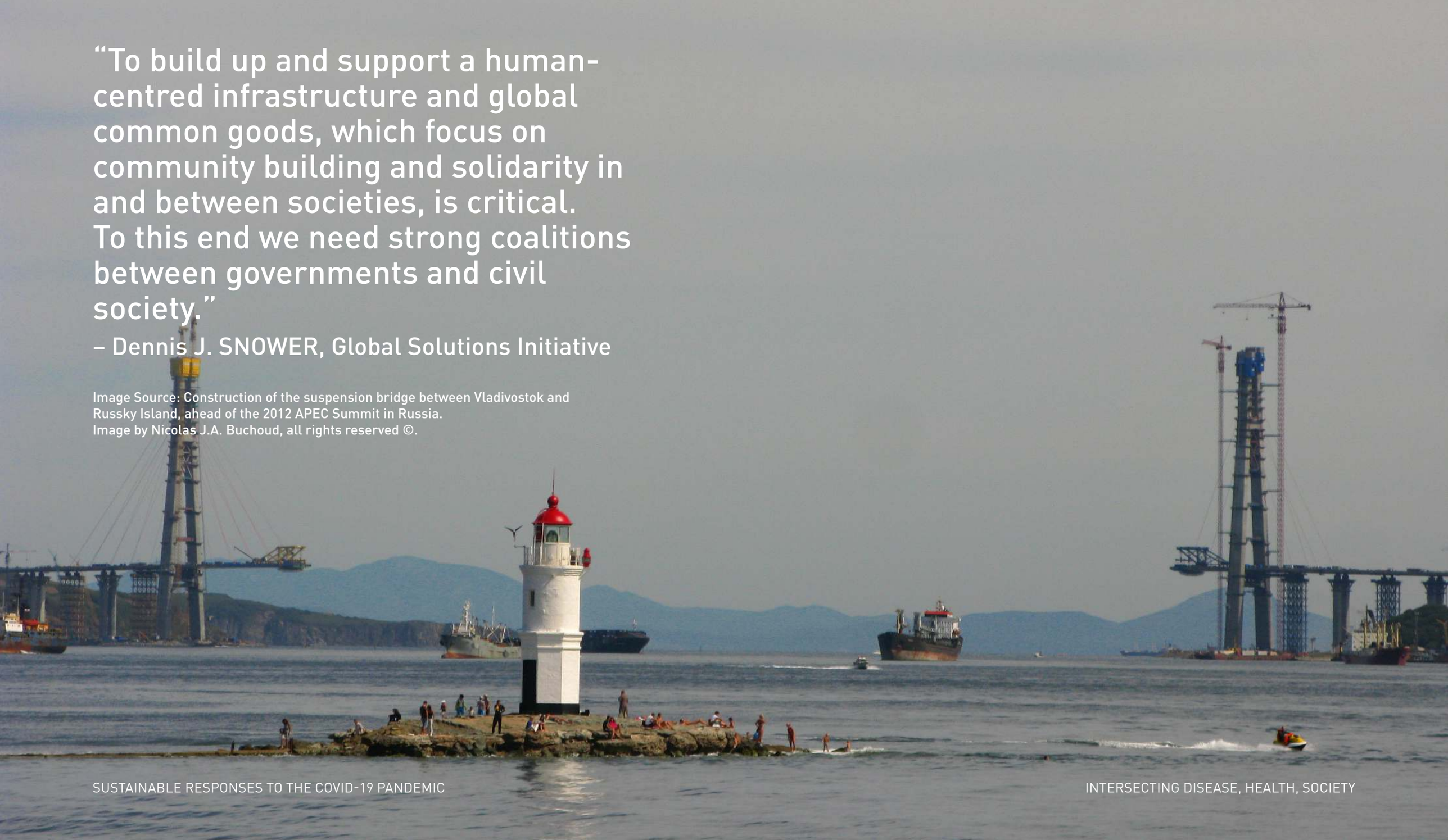
Image Source: Wikimedia Commons. Coronavirus infection prevention tips banner, Jongno, Seoul, South Korea, February 22, 2020. Image by Bonnielou2013. https://commons.wikimedia.org/wiki/File:Coronavirus_Jongno_1.jpg

Which of the Sustainable Development Goals (SDGs) have gained importance since the beginning of the pandemic?

Image Source: Ferry crossing Butterworth and Georgetown, Penang, Malaysia.
Image by Nicolas J.A. Buchoud, all rights reserved ©.

preface



"To build up and support a human-centred infrastructure and global common goods, which focus on community building and solidarity in and between societies, is critical. To this end we need strong coalitions between governments and civil society."

– Dennis J. SNOWER, Global Solutions Initiative

Image Source: Construction of the suspension bridge between Vladivostok and Russky Island, ahead of the 2012 APEC Summit in Russia.
Image by Nicolas J.A. Buchoud, all rights reserved ©.

Dennis J. SNOWER
President, Global Solutions Initiative (GSI)
Berlin, Germany

Foreword

Dear friends and partners in global problem solving,

2020 has proven the urgent need for a holistic approach for addressing global challenges. International cooperation and multilateralism are the precondition for problem solving. Therefore, I am grateful to address you in this book directly. I wish especially to thank Nicolas Buchoud for his outstanding engagement in the process and the GIZ for making this book possible.

The decoupling of economic and social progress in and between societies, the decoupling of technological and environmental progress and the decoupling of societal progress, wealth and health are main factors fostering global crises such as the current pandemic while placing great strain on efforts to solve challenges collectively. As long as societies are divided and the opportunities between social groups are unequally distributed this problem will remain.

At the same time the intensive scientific exchange to tackle COVID-19 and the rapid development of a vaccine proves that we have great power and opportunity if we work in solidarity. One learning of the current crises is certainly that we need to have a new understanding of wealth. Our societies and economies will only become resilient and sustainable if we integrate environmental and social aspects in our thinking, in our measurement and in our action. We must overcome the growth-oriented thinking which measures wealth solely in terms of GDP as well as the business focus on shareholder value. With the recoupling dashboard, unveiled in 2020, the GSI has proposed an alternative which reimagines our measurement of prosperity and thus our picture of social wellbeing to include crucial environmental and social factors. We welcome you to join us as we develop this new tool together.

To build from these lessons into a more sustainable and resilient future we need to agree on a future multilateralism which overcomes silo-mentalities, opens itself for a multi-stakeholder approach and guarantees a diversity of stakeholders in the decision-making process, and accepting the global power-shifts which have taken place in the last decades. A holistic approach for the future can´t be a western approach.

The trend towards sustainability and resilient societies is not only deeply integrated in international governmental thinking i.e. the G20, but is also fostered more and more by

private investors and thought leaders in business, who are shifting towards a long-lasting perspective instead of short-term objectives. To build up and support a human-centred infrastructure and global common goods which focus on community building and solidarity in and between societies is critical and to this end we need strong coalitions between governments and civil society.

It is encouraging that the current Italian G20-Presidency and its related engagement groups (in particular the T20) and the upcoming Indonesian and Indian Presidency share this perspective and encourage the civil society to engage in the G20-process. So, let´s strengthen our common efforts!

I am both delighted about and grateful for this project, which is powered by the GIZ and the Global Solutions Initiative. Together we will continuously work on global problem solving by integrating regional and local perspectives to realize the Sustainable Development Goals and the Paris Agreement on Climate Change.

Yours,
Dennis J. Snower

"Intersecting is not just a book about cities or infrastructure. Built across months-long dialogues and ad hoc panels, Intersecting is also a visual reflection of a major crisis and its aftermath."

– Nicolas J.A. BUCHOUD, Global Solutions Initiative, Paris

Image Source: At the opening plenary of the 'Central and South Asia Connectivity' international summit in Tashkent, Uzbekistan, July 15-16 2021.
Image by Nicolas J.A. Buchoud, all rights reserved ©.

Nicolas J.A. BUCHOUD (ed.)
Global Solutions Fellow
Paris, France

INTERSECTING as a compass for recovery

The pandemic is over (isn't it?).

When in the spring of 2020, we first initiated the Solutions Dialogues which would then become INTERSECTING, the World Health Organization (WHO) reported 10 million COVID-19 cases and half a million dead across the globe. When we released INTERSECTING's first edition a year later, the Coronavirus Update Live reported 115 million cases and 2,5 million dead. Halfway to 2021, over 220 million cases have officially been reported and nearly 5 million dead.

Much has been said about the pandemic, and often as quickly forgotten. It is unclear what we have learned from the crisis and yet, the world has moved from research to large scale industrialization of vaccines -and so far, a very uneven distribution of them. The global lockdowns of the spring 2020 have allowed for an instant photography of our interconnected world. Following the SARS, MERS and Ebola pandemics, the COVID-19 has forced us to break all routines abruptly and at massive scale. Governments, together with Central Banks and International Financial Institutions have spent staggering amounts to mitigate the crisis' macroeconomic impacts, especially in developed countries.

INTERSECTING's exploration from the Amazonian to Central Asia to the Arctic, from neighborhoods to urbanization corridors, from health to inequalities, warns that painting in green and inclusive colors the same institutional and networking patterns as before the crisis will quickly fall short.

Few countries and institutions, including local governments and their advocacy networks, have admitted how little prepared they were to cope with the pandemic. The global community has consolidated knowledge from the management of previous pandemics in too scarce and random a way, a situation accurately described by the Center for International and Strategic Studies in 2019 as a 'cycle of complacency.

The New Urban Agenda celebrated at the Habitat III Summit in Quito in 2016 was silent about pandemic risks. In 2020, the final Declaration of the 10th World Urban Forum held in Abu Dhabi remained equally mute, whereas cities and billions of urban dwellers were hard hit by the pandemic's many impacts.

Infrastructure investments are widely thought to be a key to recover from the crisis, to reach out to a new sustainable

economy, especially if we favor a new paradigm of infrastructure for distribution. Yet a decade of rebuilding growth through connectivity after the 2008 global financial crisis has painstakingly exposed people to the pandemic, showing the limitations of existing investment models. Multiple pleas for cities to implement sustainable pandemic responses locally and play a new role globally could just add more complexity to clogged global decision mechanisms.

INTERSECTING is a call for knowledge generation and distribution to become the cornerstone of future good government but this will be done in a world that is, if not in disorder, in transformation. The race for post pandemic leadership has started for good but delivering on a global roadmap of sustainable recovery will require coherent and accountable institutional frameworks and implementation mechanisms.

Formidable change has occured already. In the United-States, the new presidential administration elected in 2020 has issued a bipartisan trillion dollars' infrastructure plan in the summer of 2021, with even more to come. The European Union also approved a large recovery plan of more than 750 billion euros. In the meantime, profound geopolitical shifts are happening and one could only think that the United-States could no longer continue fight a war in Afghanistan while massively investing at home.

INTERSECTING was built as a compass or even as an astrolabe, pointing out to multidimensional combined social, political, infrastructural, geo-economical and scientific challenges and recovery options. It reflects over 18 months of debates, research, exchanges, dialogues, explorations and publications.

INTERSECTING is based upon multiple, interlinked entry points, from 'disease' to 'cooperation', looking into possible future world structures. We believe it is ours to decide how infrastructure can serve other purposes than trade development and resources consumption, ours to understand the social factors of global warming and other ecosystem alterations, ours to assess how cities can continue to be places of innovation while re-valuing rural geo-economics and while understanding that they are also the places where resentment and distrust are articulated.

One of INTERSECTING's main finding is that lethality of the SARS-Cov-2 virus is redoubled not only by its multiple variants, but also by a knowledge and even a cognitive crisis accelerated by the development of the digital space and media transformation. Therefore, solutions are to be found at the edges. At the intersections of disciplinary and policy borders. At the intersections of short and long term. At the intersections of community and global scales. At the intersections of systems, institutions and cultures. At the intersections of entrepreneurship and society. Otherwise, what lessons from biotechnologies and vaccine development could we ever learn to serve for better policy-making in the urban age?

INTERSECTING is a collective work, the result of the dedicated engagement of five co-editors, several supporting knowledge partners, ADBI and OECD, nearly a hundred co-authors, including strong voices and ones from future leaders, from all regions of the globe, with two dozen of some of the world's very best universities and research centers taking part. Incubated by the Global Solutions Initiative, supported by GIZ, it also marks the 10th anniversary of the Grand Paris Alliance for Sustainable Investments.

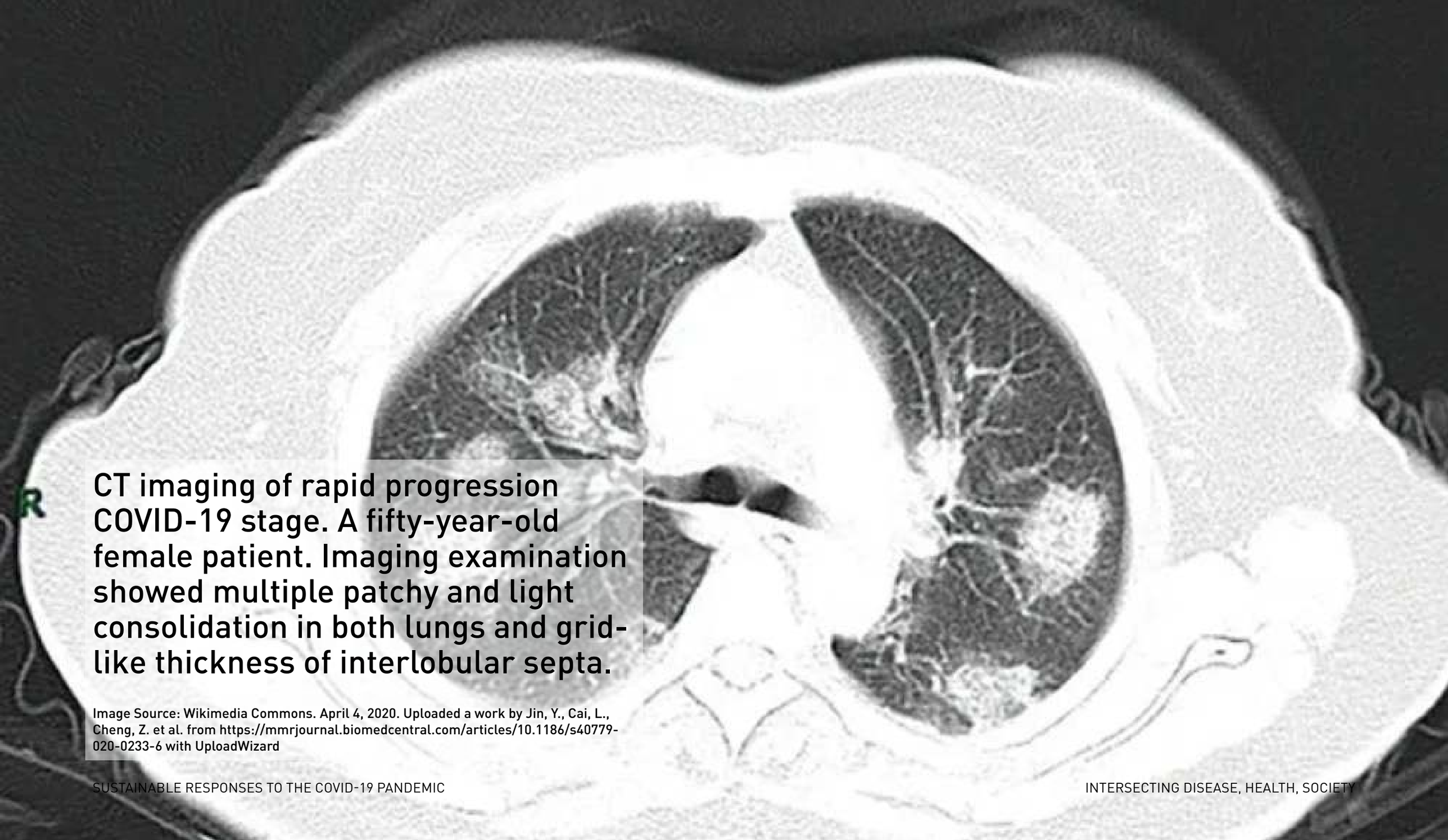
You can read INTERSECTING piece by piece, photography by photography, quote by quote and as a whole.

This very first volume of INTERSECTING 'On sustainable urbanization and infrastructure response to the Covid-19 pandemic crisis' is the cornerstone of several upcoming policy, research and advocacy global initiatives addressing resources and circular economy, the future of work and creative economy, and the delivery of the 2030 Agenda, in the context of the Troïka of G20 presidencies by Indonesia, India and Brazil from 2022 to 2024.

Welcome to INTERSECTING.

Intersecting
as a collective compass for recovery.

Image Source: A sea and aerial landscape over the North Sea between Amsterdam and Leeds. Image by Nicolas J.A. Buchoud, all rights reserved ©.



CT imaging of rapid progression COVID-19 stage. A fifty-year-old female patient. Imaging examination showed multiple patchy and light consolidation in both lungs and grid-like thickness of interlobular septa.

Image Source: Wikimedia Commons. April 4, 2020. Uploaded a work by Jin, Y., Cai, L., Cheng, Z. et al. from https://mmrjournal.biomedcentral.com/articles/10.1186/s40779-020-0233-6 with UploadWizard

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A medic in mobile testing facility collects the nasal sample of a devotee for COVID-19 testing during 'Magh Mela', in Prayagraj, Uttar Pradesh, India.

– the editors

Image Source: Courtesy of PTI Photo. https://www.outlookindia.com/photos/topic/covid-19-test/107419/1?photo-253983 Note: We apologize for the low image quality.

Nicolas J.A. BUCHOUD (ed.)
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The invisible city

Let's be clear from the very beginning. There is no simple causal link between the rapid spread of the COVID-19 virus and cities urban design per se. Patterns of jobs location and metropolitan mobility systems have played a role in the spread of the pandemic, but many other factors did, from indoor health management to the organization and funding of health and social infrastructure. Similarly, there is no simple causal link between rapid urban growth and the extent of urban problems. Urban problems did not come up 'naturally' from urbanisation, that would be intrinsically negative. Policy and growth choices, along with social organization can significantly influence the disease's spread and local and global responses.

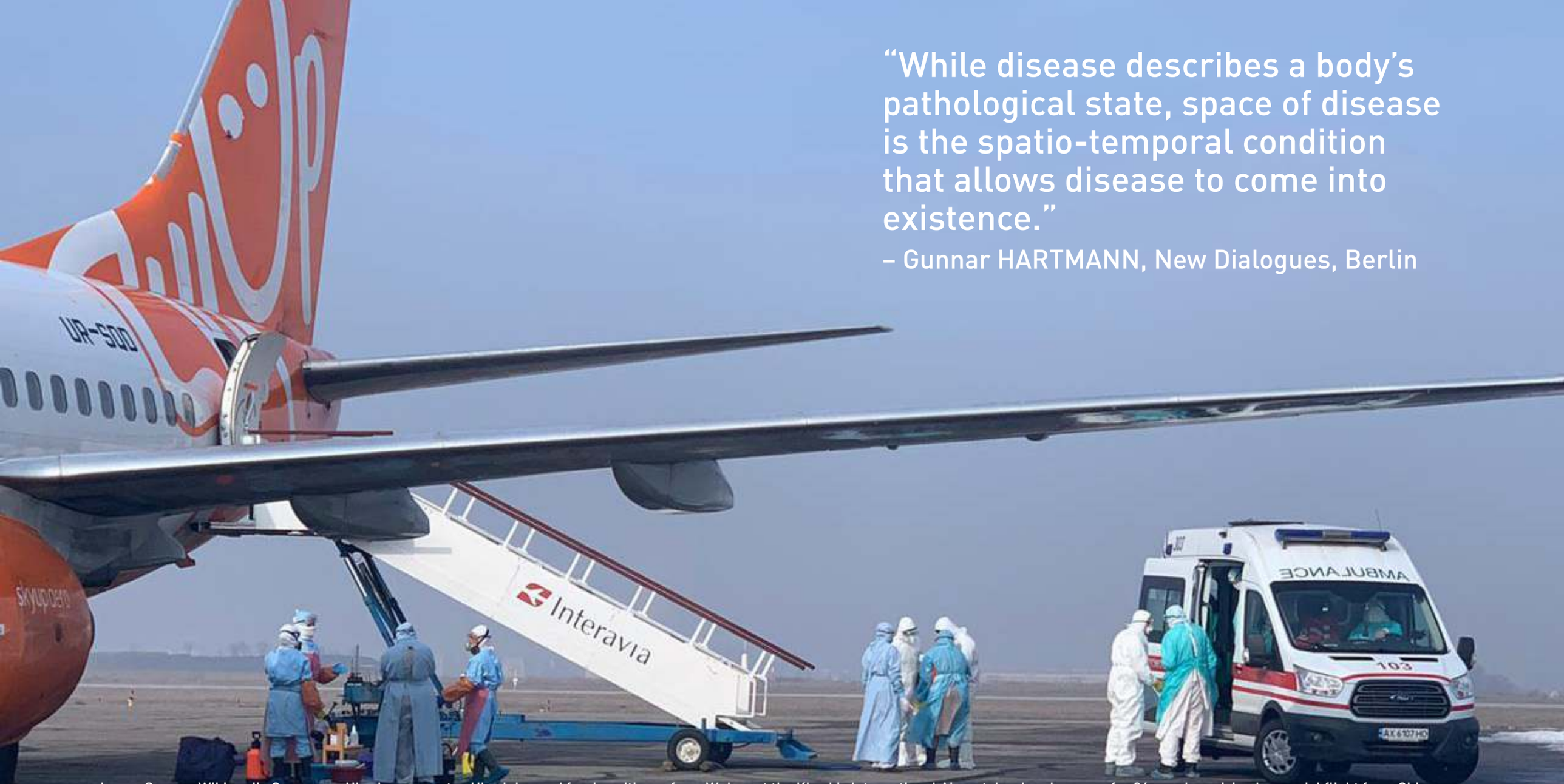
Throughout the 19th and 20th centuries, cities have been the cradle of tremendous socio-political and infrastructural transformations. Combined economic, political and health and sanitation issues gave birth to contemporary urbanism. Social perspectives have been embedded in urban design and urban planning, developing housing and sanitation services and infrastructure as common public goods. The 21st century was meant to become the 'urban' and the 'metropolitan century' but the COVID-19 pandemic has brutally disrupted two decades of celebration or urbanization. The health crisis reveals a deeper crisis of public urban health models. Somehow, we have taken public health for granted, leaving our societies largely unprepared to respond to global infectious diseases, despite the availability of new technology in cities. The COVID-19 crisis has illustrated differences between regions of the world in managing the pandemic. It has mostly highlighted common challenges. Since the early 1990's, networked infrastructure systems

have built interconnected (mega)regions and formed the backbone of growth, but since the 2008 global financial crisis, revenue distribution has become growingly unequal. Over the time, the combined urban and infrastructure systems have growingly fragmented major natural habitats, with impacts on all ecosystems worldwide. In this context, the COVID-19 pandemic resonates as a major wake-up call, following the disclosure of climate and global warming risks by the International Panel on Climate Change (IPCC) and of biodiversity losses by the International Panel on Biodiversity and Ecosystem Services (IPBES).[1] We have obviously not only reached limits of growth, we have locked them in cities and their infrastructure.

In the past months, cities have responded to health risks by breaking out their routines and opening up for large-scale experimentation, such as (re)organizing public space, services and regulations but lessons from past pandemics show the 'space of disease' goes way beyond neighborhoods' limits and temporary solutions. We believe that real opportunities lie within the fog of the pandemic to revisit inefficiencies, gaps and flaws of contemporary urban policymaking, including infrastructure investment and maintenance choices. Living with the pandemic has taught us that the problem requires a new approach from established expert bodies and better science-society interface. For instance, while it was initially assumed that virologists or epidemiologists should decide on school closures, it quickly became obvious their expertise was not self-sufficient. There is a need for health expertise and public health solutions that build on a wider range of disciplines, calling for a conscious planetary health strategy, as our urban age faces many other risks than infectious diseases.

Investing in a comprehensive global overview of the pandemic is key. Leveraging urban and digital infrastructure to combat the COVID-19 has worked better (so far) in some regions of the world, such as South-East Asia, than others. More innovative digital services have been created in Kenya or India to mitigate the social impacts of the crisis. Whereas it is too early to see any new urban typology emerging from the pandemic, valuable lessons can be derived from changes in hospital and vaccination facilities design. Addressing the indoor air-quality issue could be another a game changer in construction engineering with far reaching consequences on future urban landscapes. Urban players and decision makers have much to learn, not just from each other's, but from others out of their spheres and networks, INTERSECTING disease, health and society. There are many lessons to draw from the social and digital interactions during the crisis and how the public realm has been fragmented. The G20 work on health risks and health coverage in 2017 and 2019 could help reshape our interconnected urban world and mobilize human and financial resources towards global resilience to future pandemics. Such an effort cannot bypass cities and citizens.

1. 'Pandemics such as COVID-19 underscore both the interconnectedness of the world community and the rising threat posed by global inequality to the health, wellbeing and security of all people.' IPBES Workshop on biodiversity and pandemics, Oct. 2020.



"While disease describes a body's pathological state, space of disease is the spatio-temporal condition that allows disease to come into existence."

– Gunnar HARTMANN, New Dialogues, Berlin

Image Source: Wikimedia Commons. Ukraine evacuates Ukrainian and foreign citizens from Wuhan at the Kharkiv International Airport, border clearance for 94 people arriving by special flight from China. February 20, 2020. Image by Державна прикордонна служба України. https://fr.m.wikipedia.org/wiki/Fichier:Ukraine_evacuates_Ukrainian_and_foreign_citizens_from_Wuhan_16.jpg

Gunnar HARTMANN (ed.)
New Dialogues
Berlin, Germany

The space of disease

When an epidemic occurs, whether moving rapidly or slowly, its impact can be more devastating than any war. Unlike in the aftermath of a war, however, the fabric of a city remains largely intact even after an epidemic has run its course. Besides the loss of numerous people and the memories of those who survived, there is no trace of physical destruction within the city. Traces of an epidemic emerge only later. On a time scale of years, a disease leaves traces within ill bodies, but on a time scale of decades and centuries, a disease leaves traces within our urban practices, which in turn shape and reshape our cities. The outbreak of the ongoing COVID-19 pandemic made vividly apparent the role of space as an agent of medical-therapeutic measures against disease.

While disease describes a body's pathological state,[1] space of disease is the spatio-temporal condition that allows disease to come into existence. Conceptually speaking, a space of disease both preconditions a disease and holds it in place for a certain time. For example, in the case of the bubonic plague in Europe, the space of disease persisted for over five centuries. It relied on a number of intermediate hosts operating over great distance, that is, the flow of countless rats (carriers of bacteria-infected fleas) that eventually linked the Mongolian steppes with European cities.[2] Once the space of disease expanded to include these cities, the bubonic plague was transformed from a chronic disease in rodent colonies to an epizootic disease, eventually becoming an epidemic disease in human settlements. The space of disease for the plague encompassed a vast realm, from the pathways of the Silk Roads to the cramped quarters of the European cities.

Medicine's aim, now as always, is directed toward not only diagnosing and treating disease in the body, but also apprehending and, if at all possible, dismantling the space of disease; the latter requires interventions beyond the discipline of medicine. The human body remains the primary beneficiary of medical research and practice. Yet, if our built environment allows various spaces of disease to form, treating individual bodies seems like an endless task. In the late nineteenth century, medicine developed greater means to find disease-related evidence, i.e., with advances in microbiology.[3] Although physicians continue to view the human body as an autonomous and operationally closed system, such evidence suggests that the body is interacting with its environment in ways that are not always obvious.

By shifting ever so slightly the focus of medical diagnostics from bodily symptoms to body risk factors, medicine can frame a great number of spaces of disease. Diagnostics originally directed entirely toward the body's abnormal pathological condition accordingly have started to expand in the course of clinical medicine to include the spatio-temporal precondition of a disease. Medicine's investigations and interventions now encompass not only the physical body, but also its genetic history, its social climate, and its environmental context.

Bodies moving, interacting, and coming into physical contact with one another, as well as the mining or growing of materials to be moved, joined with other materials, and consumed or reshaped to suit a human purpose, are all processes of increasingly meshed complexity. Historically, disease has flourished in environments that emerge out of this blending process. Because urbanization relied on large concentrations of bodies and a vast amount of material flows, it generated spatial conditions that led to the proliferation of disease. Therefore cities were the first places that formed unprecedented habitats for diseases.[4] Even as certain urban conditions allowed diseases to become endemic, however, the outcome of urbanization, the city, also gave rise to organized medicine with its greater treatment efficacy.

Although the majority of the widespread diseases that European cities have encountered over the last three hundred years are highly treatable by medicine today, the spatial measures that were once essential to countering these epidemics still form the conceptual base upon which numerous spatial devices continue to operate, especially during the COVID-19 pandemic. While various spaces of disease were subject to continuous change, the spatial concepts themselves persisted. Rather than ascribing these spatial concepts to medical requirements alone, their implementations were instead a form of urban defense.

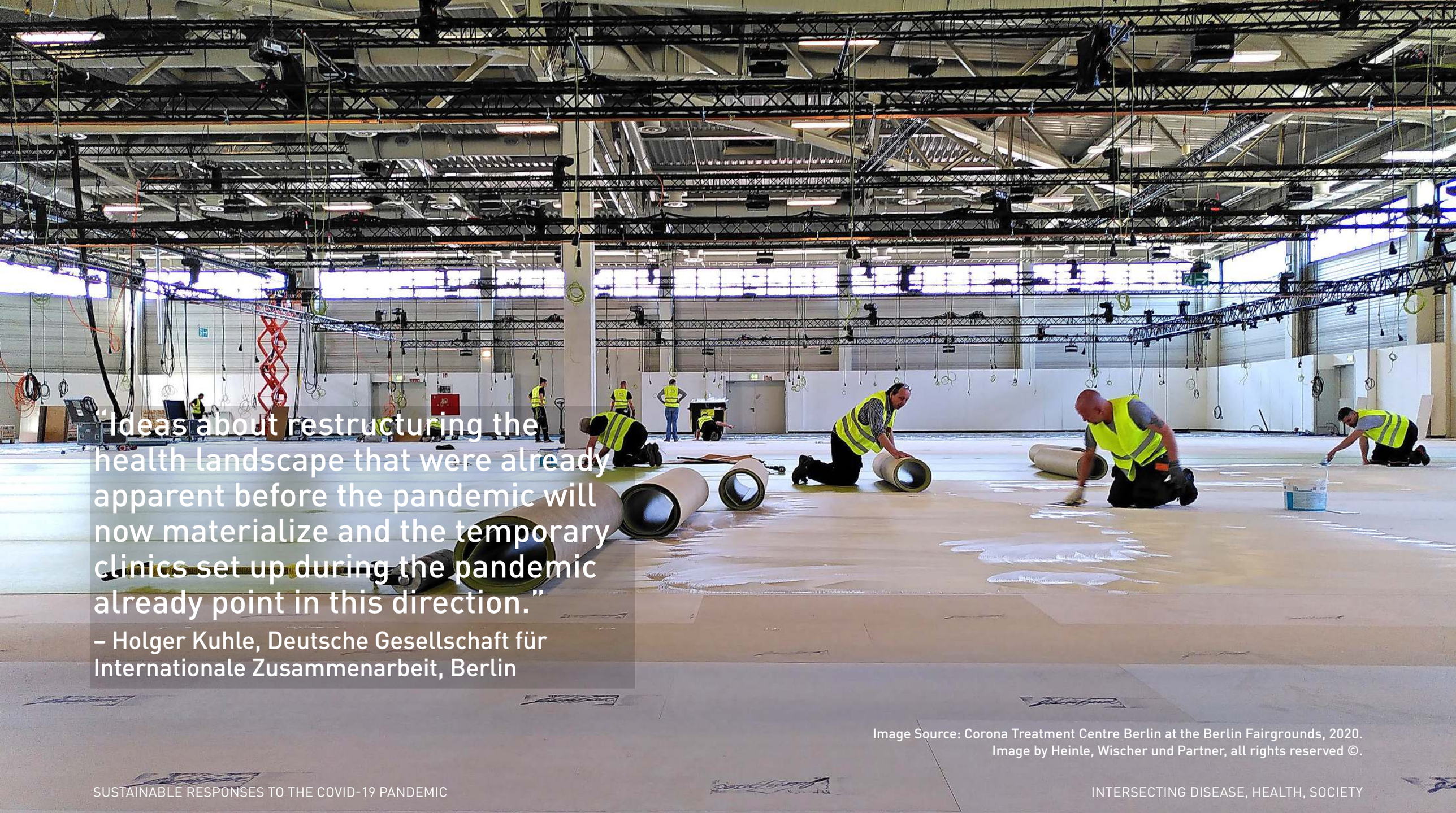
https://newdialogues.com/berlin-and-covid-19/

1. "A definite pathological process having a characteristic set of signs and symptoms. It may affect the whole body or any of its parts, and its etiology, pathology, and prognosis may be known or unkown." Miller-Keane. Encyclopedia & Dictionary of Medicine, Nursing, & Allied Health (Philadelphia: W.B. Saunders Company, 1992), 433.

2. William H. McNeill, Plagues and Peoples (Garden City, NJ: Anchor/Doubleday, 1976), 134.

3. Wolfgang Eckart, Geschichte der Medizin (Berlin: Springer-Verlag, 2009), 284-326.

4. Manuel DeLanda, A Thousand Years of Nonlinear History (New York: Zone Books, 1997), 157.



"Ideas about restructuring the health landscape that were already apparent before the pandemic will now materialize and the temporary clinics set up during the pandemic already point in this direction."

– Holger Kuhle, Deutsche Gesellschaft für Internationale Zusammenarbeit, Berlin

Image Source: Corona Treatment Centre Berlin at the Berlin Fairgrounds, 2020.
Image by Heinle, Wischer und Partner, all rights reserved ©.

Holger KUHLE (ed.)
Deutsche Gesellschaft
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Gunnar HARTMANN (ed.)
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Berlin, Germany

Pre-pandemic signs of changing urban health landscapes

The world's public was impressed by the speed with which, already in the face of SARS, the Xiaotanshan Hospital in Beijing was built in just seven days. After the outbreak of COVID-19, the same thing happened with the Huoshenshan Hospital in Wuhan in 2020. Technically, this was made possible by construction from prefabricated modules. What happened here is that these facilities became the centres of local medical emergency management, the costs of which were covered by the central government. Integrated into these clinics were test and research laboratories, warehouses for medical products. It is the author Laura Spinney who takes a closer look at these breathtaking developments and describes current trends in her article "Hospitals without walls: the future of healthcare." [1]

The world was equally impressed with the rapid response capacity in Singapore and Hong Kong. Instead of rapidly building clinics, they had learned the lessons of the SARS epidemic since 2003 and converted existing clinics. This includes, among other things, the ability to convert all patient rooms in hospitals into intensive care rooms, with techniques to stop germs "migrating" between rooms. Medical historian Mark Honigsbaum [2] points out that in other rich countries, such as the US or the UK, which have historically given themselves very high scores on the Global Health Security Index,[3] the infrastructure was not prepared for the pandemic. These countries were very focused on an Ebola model of epidemics. Here, there was a strong reliance on mobilising specialists, sending them to the site of the outbreak and ending it there quickly and effectively. In Western countries, the cultural memory of experiencing an epidemic was no longer active. Here, people were very focused on the virus. In Honigsbaum's view, this goes back to the 19th century with the discoveries of Robert Koch and Louis Pasteur. There seemed to be no room for also paying attention to the ecological context and socio-medical issues that are crucial for the transmission and spread of pathogens.

This approach from the 19th century to the causes of disease is also reflected in the way hospitals are built. The

already mentioned author Laura Spinney[4] describes how, in Pasteur's and Koch's times, Western countries favoured the 'pavilion' construction of hospitals, when infectious diseases still caused the most deaths and ventilation was very important. With the advent of antibiotics, in many places the "pavilion" design of hospitals has given way to the "hospital as office tower" model. In the interest of efficiency, specialist departments were spatially clustered, and antibiotics were relied on alongside hygiene.

Debates about how to rethink these developments are likely to intensify in the future insofar as evaluations of COVID-19 might show that novel viral diseases require a return to earlier spatial concepts of urban hospitals. The COVID-19 pandemic has hit the United Kingdom comparatively particularly hard. By end of January 2021, with 100,162 deaths registered the country has had the fifth-highest death toll globally (after the US, Brazil, India and Mexico), a figure higher than the country's entire civilian death toll in World War II. The epidemiologist and senior fellow at the King's Fund, a think-tank focused on healthcare, Veena Raleigh, points to a number of factors, but says: 'The UK also went into the pandemic with an under-sourced health system following years of austerity cuts.'[5]

It remains to be seen what these conditions will mean for the pace of development of urban health services after the pandemic. Spinney expects that ideas about restructuring the health landscape that were already apparent before the pandemic will now materialize and the temporary clinics set up in the United Kingdom during the COVID-19 pandemic already point in this direction. Before the COVID-19 pandemic, spatial reorganisations of urban health services and hospitals were being considered, not least due to the digitalisation, which is now being implemented more radically, as expected, over the pandemic. Spinney points to London, where St. Mary's Hospital was considering shifting more resources from inpatient to outpatient treatment. She quotes James Kinross of St. Mary's Hospital as saying that they are now considering "offering parts of the outpatient treatments right outside the hospital"[6] after the pandemic. A specialist centre digitally embedded in the city, with facilities to respond quickly to infectious diseases, is emerging as the hospital of the future. When it comes to other signs and trends of urban health services that already exist before the pandemic, it is also worth looking at that very city. Here, as in other urban centres of the Global North with a density of diverse ethnic and cultural populations, therapies that do not originate from Western modern medicine have become part of the omnipresent service offer.

Regarding the broader context of London, HRH the Prince of Wales has stated on several occasions his belief 'that there is a great deal to be gained from complementary treatments. Alas, even something as practical as osteopathy or acupuncture still sits on the sidelines under the heading 'alternative', inviting suspicion among the public and arousing a kind of angry derision from the mainstream

medical profession.'[7] In London, the promoters and providers of such complementary therapy include in particular the traditional naturopathy such as Ayurveda, which has many users in India, Nepal and Sri Lanka where either a department of the national health ministry or a ministry on its own is in charge of development, propagation and certification. Traditional Chinese medicine is also among them. Against the background of the current interest in questions of pandemics, it is worth remembering how acupuncture was discovered and exported to the West by French doctors in Tianjin during 1902 for the treatment of cholera.[8]

There is often controversy about the potential that exists in intersecting between the developments of modern Western medicine and naturopathic (indigenous) healing practices. At the same time, there are bridge-builders who are taking up the trends of health practices within the large urban migration locations. For instance, the Steinbeis Transfer Institute for Complementary Methods in Berlin has worked on natural and cultural medicine from the Global South and is dedicated to the academisation of health professions and research into health cultures.[9] This is INTERSECTING pioneering.

1. https://www.theguardian.com/society/2021/jan/02/hospitals-without-walls-the-future-of-digital-healthcare

2. https://www.zeit.de/wissen/gesundheit/2021-02/pandemie-historiker-mark-honigsbaum-buch-coronavirus-zukunft7

3. https://www.ghsindex.org/

4. https://www.theguardian.com/society/2021/jan/02/hospitals-without-walls-the-future-of-digital-healthcare

5. https://www.aljazeera.com/news/2021/1/27/uk-mourns-as-covid-deaths-exceed

6. https://www.freitag.de/autoren/the-guardian/die-modulare-klinik

7. The Prince of Wales with Tony Juniper and Ian Skelly (2010) Harmony. A New Way of Looking at Our World. Harper Collins Publishers, New York, 223-224.

8. https://www.franceculture.fr/emissions/concordance-des-temps/tianjin-1900-la-chine-et-deja-le-monde and Pierre Singaravélou, Tianjin Cosmopolis. Une autre histoire de la mondialisation, Le Seuil, coll. « L'Univers historique », 2017.

9. http://ikm-studium.de/fileadmin/Downloads/HoyerTjalf.pdf
http://www.weserwork.de/coworker/sti-gkb-tjalf-hoyer.html

“The principle of modular structures and flexibility seem to be suitable for dynamic scenarios, such as a pandemic, i.e., we have to develop structural concepts that endure the change.”

– Edzard SCHULTZ, architect and partner at Heinle, Wischer und Partner, Berlin

Image Source: Corona Treatment Centre Berlin at the Berlin Fairgrounds. Heinle, Wischer und Partner, 2020. Image by Nordsonne Identity, all rights reserved ©.

Aleksandra SHULEVSKA
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THE PANDEMIC AND ITS IMPACTS ON HEALTHCARE DESIGN

Due to its expertise in healthcare architecture, in March 2020 our office Heinle, Wischer und Partner was asked to create a new typology for a treatment center for COVID-19 and to simultaneously build one with great urgency. Later on we were also commissioned to build 6 vaccination centers throughout the city.

As an architect on the Corona Treatment Center Berlin (CTCB) team, I was directly a part of Berlin's utilization of spatial means to tackle the COVID-19 pandemic and take control over its spreading. Reflecting on this experience, as a researcher on the topic of Spaces and Disease at New Dialogues and as a citizen of Berlin, I can differentiate three main stages of dealing with the new coronavirus: Confining, Preventing and Treating COVID-19.

CONFINING COVID-19

First mechanism of defense against the unknown disease was implementing a concept of confinement with the aim of slowing down the spreading of the new virus. This defense mechanism gives the medical profession the necessary time to find a suitable treatment – cure, as well as a preventive vaccine. Confinement is a spatial principle of protection through restriction of movement, where organized medicine utilizes space to protect the unaffected by containing the disease and by restricting the movement of the infected. [1]

In Germany confining interaction measures were enforced on various scales reaching from national and regional to the urban level. The movement through the lines of defense, set by the concept of confinement was regulated with a 14-day quarantine, which is the period of communicability of COVID-19. The flow of potential COVID-19 patients in Berlin on the urban scale was regulated with a procedure, based on minimizing physical contact. The primary administrative regulation - the AHA-rule (Abstand, Hygiene, Alltagsmaske; German for distance, hygiene, everyday mask) is another defending mechanism by spatial means. The minimum distance of 1.5 m between humans was implemented into every aspect of society and all the scenarios which didn't allow that, were forbidden. As a consequence of the spatial restrictions in human interaction, some spaces within the city were left unused and available for a temporary adaptation into spaces of defense against COVID-19.

The CTCB was set up with the objective to reduce potentially the shortage of clinical care by taking over the COVID-19 patients who do not primarily require intensive care. Due to the temporary nature of the project and the time frame for execution it was decided on a host-building - the Berlin Fairgrounds. The location of the fairgrounds was chosen because it offers very specific logistical conditions and big column-free exhibition halls, which are not in use for the time being.

With the CTCB, Berlin created a centralized isolation area with a strict cordon, completely restricted to visitors, meant to spatially separate the contagious from the uninfected. A new building typology was developed with a very flexible structure based on a standard module. Considering the unpredictable situation, i.e., the building and design process running alongside the clinical reasoning process, the flexibility of this new typology was crucial. Even though the CTCB has not been put to use yet, its modular configuration has been a testing ground for time-limiting scenarios by medical staff. With that the city is evaluating its fast spatial response and learning how to improve it for future scenarios.

PREVENTING COVID-19

During the confining stage, medicine has been developing a vaccine against the new coronavirus. The second defending mechanism of the city is the one of preventing COVID-19, where spatial measurements play a role in the efficiency of its implementation. As part of this mechanism, Berlin set up 6 vaccination centres, a central vaccination logistic unit and a centralized storage area for the vaccine. Because the Corona Vaccination Centres Berlin (CVCB) were urgent and with a temporary character, the same spatial principal as for the CTCB was applied i.e., utilizing host spaces, which at the moment are out of use e.g., airports, concert halls etc. As of January 2021, three of the six vaccination centres have been put in use, with more to be opened as the production of the vaccine increases.

TREATING COVID-19

Handling COVID-19 would ultimately mean adapting our future to the treatment against this disease, without referring anymore to temporary solutions of defense, but to permanent solutions of treatment. When a cure for COVID-19 will be available, an appropriate spatial concept within hospitals will enable the COVID-19 treatment to become a regular practice. The entire experience of the COVID-19 pandemic calls for an adaptation of the typical hospital structure to one that is flexible enough to quickly answer unexpected scenarios.

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“We were asked for our expertise and we used the momentum to do what should be done in the future and what we have been preaching for years: modular thinking in hospital construction!”

– Edzard SCHULTZ, architect and partner at Heinle, Wischer und Partner, Berlin

Image Source: Vaccination Centre Berlin - Velodrom Arena 1. Heinle, Wischer und Partner, 2021. Image by Konstantin Boerner, all rights reserved ©.

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FUTURE PERSPECTIVES ON INDOOR AIR QUALITY

Over the last four decades, the growing proliferation of chemical pollutants in consumer and commercial products, the tendency towards tighter building envelopes, reduced ventilation to save energy and pressures to defer building services to reduce costs and energy, have fostered indoor air quality (IAQ) problems in most of the built-up environments in cities.

According to a recent report by the World Health Organization (WHO, 2019), ambient air pollution was responsible for 4.2 million deaths (out of these, almost 300,000 were children under the age of 5 years). A further 3.8 million deaths were attributable to Indoor Air Pollution, out of which almost 250,000 were children under the age of 5 years.

Preliminary reports during the current COVID-19 pandemic have shown the direct effects of long-term exposure to air pollution and the resulting higher mortality rates.

A preliminary study from Harvard University showed that people living in a higher level of air pollution over the past 15–17 years have a substantially higher COVID-19 mortality rate, i.e. one unit increase in long-term average exposure to fine particulate matter (1 µg/m3) is associated with a 15% increase in COVID-19 mortality rate on average in the analysis.[1] More data and research are needed to study the correlation between COVID-19 and other pollutants.

Architects and designers play a significant role at building inception in determining the long-term health effects of its users.[2] Current building policies in India are extremely fragmented in terms of recommending IAQ standards. While significant strides have been taken towards implementing 'green building' norms and policies, IAQ remains a serendipitous result rather than a design objective through these norms. This article recommends improving IAQ through building policies via a three-fold approach.

First, in terms of education, improving awareness and active participation in the design fraternity can go a long way to effectively identifying and curbing poor IAQ. Building health is seldom fully integrated into the design scheme, and most infrastructure is seen as an 'add-on' serving the purpose of affordability or building standard certifications. This kind of short-sightedness often leads to vulnerability of building infrastructure, which inadvertently causes long-term health problems for its occupants.

Second, there is ample scope for better regulations, as the fragmented approach of IAQ assessment has led to overlapping standards that are perceived more as design obstacles, and often lead to poorly-planned indoor spaces. Better regulations and reforms that can be localised and adapted to the local climate and context would be crucial in alleviating design hindrances, as well as catering to occupancy health.

Third, local and state-level subsidies through support from local and state legislations and governments would help to inspire innovation. As a case in point, such examples include KfW subsidies in Germany[3], state incentives across the US[4], BCA Green Mark incentives in Singapore[5], etc. Besides these three approaches, a general inter-disciplinary approach to design is also crucial towards ensuring better indoor spaces. Planning for health and the efficient use of resources means creating a more holistic collaborative approach towards building engineers and medical experts.

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"According to a recent report by the World Health Organization (WHO, 2019), ambient air pollution was responsible for 4.2 million deaths (out of these, almost 300,000 were children under the age of 5 years). A further 3.8 million deaths were attributable to Indoor Air Pollution, out of which almost 250,000 were children under the age of 5 years."

– Hamed KHALIDI, New Dialogues, Berlin

Image Source: Smog over Northern India. August 2017. Image by NASA Earth Observatory.

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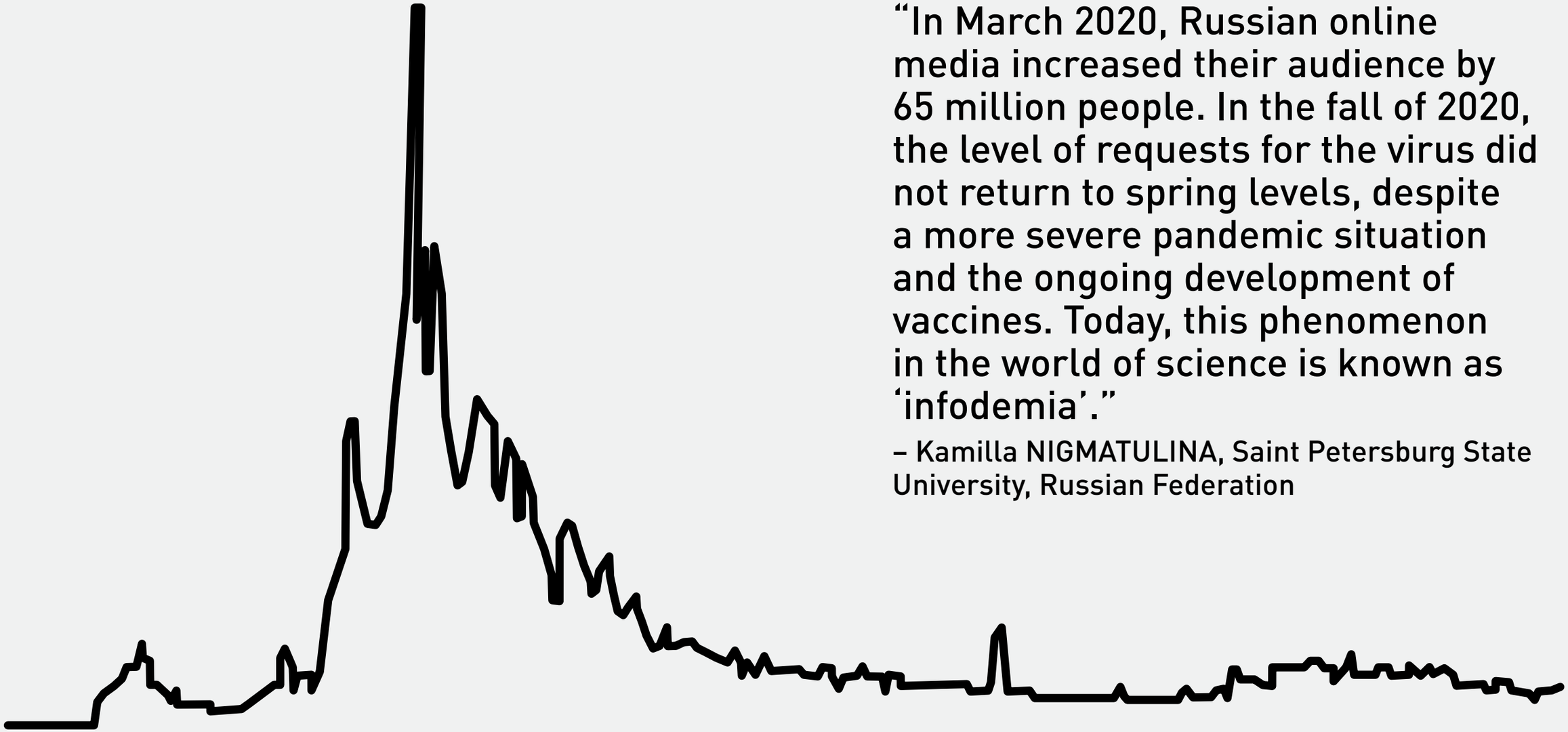
FROM PANDEMIC TO INFODEMIA

In March 2020, Russian online media increased their audience by 65 million people. People searched for information about the virus, symptoms, remedies and statistics for the regions of Russia. But this interest quickly subsided, because it was important for people not to receive information promptly, but to relieve tension - to laugh at the situation of self-isolation, discuss possible scenarios for the development of events in the Russian context, get support and reassure themselves with understandable explanations. Despite this, the Russian media turned out to be unprepared for a stream of new readers and offered low-quality information and unverified experts. This is not about fakes, but about a general decline in the quality of the work of professional journalists. Two main directions of publications were related to the pandemic situation and ways to engage yourself in self-isolation. Over time, both have exhausted their potential, and other social issues received less coverage. Finally, by June, the topic of coronavirus smoothly flowed into amendments to the Constitution and voting for the country's new main law. In the fall of 2020, the level of requests for the virus did not return to spring levels, despite a more severe pandemic situation. Today this phenomenon in the world of science is known as "infodemia."

It was not a surprise that people mostly searched for memes, humor, and positive stories, because they needed getting rid of fear and a stress relief. The interest of the audience of Russian media and social networks in memes and humor has always been quite strong, but the infodemia exposed this trend even more clearly. The largest and most popular flash mob was the #IsoIsolation movement, when Facebook users recreated painting masterpieces at home and became heroes of famous plots. The flash mob not only did not end in the fall of 2020 but was also embodied in a printed album of selected works with comments by an art critic. The movement became famous not only in Russia and abroad, the initiative was taken up by the world's leading museums and photo banks. Its Russian creator, Ekaterina Brudnaya-Chelyadinova, did not expect such a viral effect; today a separate article on Wikipedia is devoted to the flash mob. Along with grassroots initiatives a lot of official effort went into social media activism. In Russian social networks, both international and own hashtags with calls to stay at home spread quite quickly. The analytical company BrandAnalytics carried out measurements by hashtags on March 30. It turned out that in just one day the hashtags "better at home", "stay at home", "be at home",

“choose a home, not a disease”, “stop coronavirus”, “ wear a mask, it saves lives” 23 thousand posts were published (for 81.2 million messages in general on social networks), and 77% of them were pictures. Some of the pictures were distributed by accounts associated with the state project Stopcoronavirus. At the end of March, the United Russia party launched the hashtag #Thankyoudoctors with a call to photograph yourself with a piece of paper and a written phrase on it. The flash mob was supported by famous people. In November 2020, the #don’tgetsick call became the official hashtag.

Finally, professional media got into a complicated situation – their obligation was to provide information and analytics; however, this did not meet audiences’ expectations. Successful media practices have been all about creating a space for the audience to communicate and empathize. The easiest way is online bars and online parties, more complex options are photography contests, virtual tours, e-sports tournaments, social photo projects. Among the latter, one can name a photo project of the “Poster” outlet, where graduates of Tomsk schools were photographed in dresses that they never managed to wear to the presentation of diplomas, or a photo project of the NGS55 media (Omsk) about doctors before and after the coronavirus working shift. The Village media has launched an outdoor social advertising featuring doctors’ daily statements to draw attention to their daily work. This is how the media helped people cope with their fears and gave space to speak out.



“In March 2020, Russian online media increased their audience by 65 million people. In the fall of 2020, the level of requests for the virus did not return to spring levels, despite a more severe pandemic situation and the ongoing development of vaccines. Today, this phenomenon in the world of science is known as ‘infodemia’.”

– Kamilla NIGMATULINA, Saint Petersburg State University, Russian Federation

Image Source: Google search about Coronavirus in Russia in 2020.
Illustration redrawn from screen shot (12/07/2020).

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SOCIAL MEDIA AS A PHARMAKON

Social media became a large part of our everyday life. There is no doubt that in a situation as dangerous and unpredictable as the COVID-19 pandemic situation social media might play a very significant role — either positive or negative. Our goal here is to estimate what are the most notable aspects of social media which can be crucial during the pandemic.

To start with let us address the dark side of social media which is fraught with danger. Social media became a very effective tool for spreading fake news and misinformation regarding the COVID-19 pandemic. The official website of Europol states it clear that misinformation regardless of its origins and objectives "only gains traction if the public share it through social media." The reason why fake news spread so quickly can be traced up to search algorithms and page ranking. Geert Lovink mentioned that "nowadays an altogether new phenomenon is causing alarm: search engines rank according to popularity, not truth."[1] Moreover, MIT professor Sinan Aral states that "false news were 70 percent more likely to be retweeted and false news travel about six times faster that true news online."[2]

In September 2020, one of the recent and alarming fake publications is the so-called "Letter from Belgian Doctors" which was posted on the docs4opendebate platform and has been immediately translated into several languages, including Russian. In a month, more than 15 thousand signatures supporting the letter were collected. In the letter, people claiming to be Belgian medical doctors criticize the quarantine measures and suggest to treat the COVID-19 infection like a simple seasonal flu, since mortality statistics (as they say) are allegedly overstated by the governments. This misinformation is particularly dangerous as it implies a lot of scientific terms and links to numerous medical papers (for example to "The Lancet", one of the most respected medical journals). Thankfully, the arguments of the letter were investigated by a group of Russian journalists from "Meduza" and scientists and were declared insolvent.[3]

As for the fake news originated from Russia, we may recall the case of Polina Golovushkina who claims to be a Russian living in Lombardy, Italy. In March 2020, an alarming letter presumably written by Polina emerged in Russian social media. According to its text, elderly patients in Italy are denied treatment, as the government prefers to spend resources on young people, and medical workers "die like

flies". This kind of fake news can be extremely dangerous and misleading, as reliable data, mostly gleaned from the media, is intertwined there with obvious exaggeration and fraud. Even "Lenta.ru" which is one of the most popular Russian language online resources with over 600 thousand visitors daily took "Polina's letter" at face value.[4] These two fake letters were distributed via social media such as Facebook and may be seen as perfect examples of a collective mind (or "hive mind" as it is sometimes called) acting in a self-destructive manner. We may recall Jaron Lanier here stating that "the information system which informs the collective [should be] filtered by a quality control mechanism that relies on individuals to a high degree."[5]

Whether we like it or not but it is up to us to somehow find a perfect balance between multiple times proven thesis that hushing up the problem leads to disaster[6] and the warning that an excess of information can be just as harmful as a lack of it.[7]

Social media also can be incomparably useful when it comes to mapping and urban technologies. We may recall such projects like Kenyan open source software application Ushahidi and Indian digital citizen identification system Aadhaar. Ushahidi, which is used to collect large amounts of information and visualize data, have been creating more than 200 interactive maps on its hosted service to collect and share information about the virus spreading in the area, to organize local communities, and to make sure that those who need supplies, food, or help are connected to those who can give it. Aadhaar technology on the other hand is believed to be enormously helpful in the distribution of the COVID-19 vaccine to each and every Indian citizen.[8]

In Russia, the largest IT-corporation Yandex took certain steps meant to overcome the pandemic crisis. For example, in Yandex.Maps application, the "City" section was drastically changed. Also, Yandex.Maps created a map indicating the foci of the spread of the virus in real time. It also has developed a constantly updating statistics web page showing infestations, recoveries, and deaths in the area. From now on Yandex collects and shares here different solutions that should help in the situation of social distancing.[9] Yandex.Food, which is a delivery service started to remind to wash one's hands to each customer.[10] Moreover, Yandex is forming a fund for financial support of drivers and couriers of its services. The money will go to those who have contracted the coronavirus or are quarantined due to contact with patients.[11]

We can conclude that during the pandemic situation "social media is providing life-giving connection as well as kindness and compassion at a time when there are almost no other means to communicate."[12]

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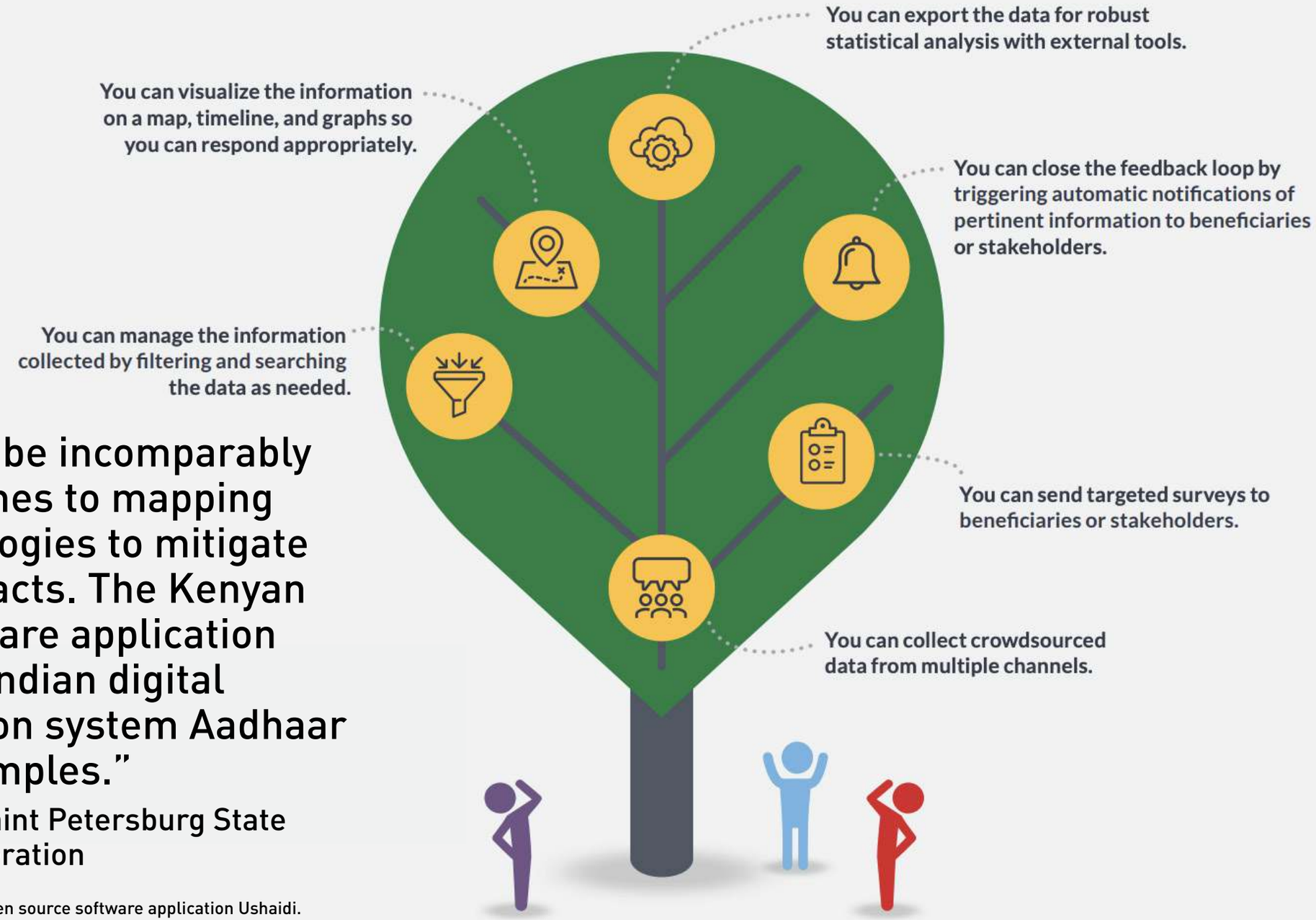

"Social media can be incomparably useful when it comes to mapping and urban technologies to mitigate the COVID-19 impacts. The Kenyan open source software application Ushahidi and the Indian digital citizen identification system Aadhaar are very good examples."

– Nikolay RODOSSKY, Saint Petersburg State University, Russian Federation

Image Source: Illustration of the Kenyan open source software application Ushaidi.

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We are more connected than ever and feel lonelier than ever. Can COVID-19 be a wake-up call?

Engaging the disengaged should be a top priority for us to build resilient communities. The drift started before COVID-19, but now is the time to start fixing it. We may still have time.

I was born in a small town of around 10.000 inhabitants before the smartphone and internet era. We used to play outside every night, go swimming in the nearby river, and run in the forest. Besides reading and rarely TV, everything was physical and collective. Everybody knew everybody; our parents met almost daily. It was a vibrant and strong community of kids, parents and neighbours. We felt safe, taken care of, and we supported ourselves in the face of adversity. This reality was around 2000, a long time ago.

More than a decade later, in 2015 The Independent talked about The loneliness epidemic,[1] citing various studies about loneliness, showing how social pain is as real a sensation for us as physical pain.[2] Research has shown loneliness impacts on health in a greater way than smoking or obesity, but loneliness is still a taboo subject we are just starting to discuss. My birthplace, having around the same population, already seemed empty. As the job and school ended, everyone went home, to log out from this life and log in the e-social life. I've experienced this happening more and more wherever I travelled around the world. Phones and Laptops are replacing people, being an escape router that ends up disconnecting us from reality. Back then it was a choice, now is not one anymore.

Years later, while the COVID-19 took the world by storm, and evolved from an epidemic to a pandemic, we may see the effects of our long term loneliness, while still being able to appreciate the positive side of social media and digitalisation during this time. The question is, what will happen after the lockdown, are we going to reconnect offline, to remain in the digital space? To escape virtual reality and re-engage with our families and friends and neighbours, we'll need a lot of collective effort.

The way you feel affects the way you behave and exist in society. When you are disengaged you care less, you vote less, to become less of a proactive citizen. You start to lock yourself inside your home and after that inside yourself. We have a lot of work to put into creating and maintaining the social fabric in the big cities today, in this digitalised world

affected by a pandemic. This social aspect is, in my opinion, the only way to create long-lasting resilient communities, addressing our addiction to e-devices and fighting climate change.

For the last 10 years, I coordinated in total more than 900 young people, volunteers, future engineers and architects in designing and building two of the most sustainable homes in the world and trying to create better cities. With Global Shapers, we started a project to put PVs in a neighbourhood to bring people together, to create a small community. Linking people at city-level starts by connecting people in their immediate space.

The COVID19 pandemic is both a health and a societal problem. We could have been more resilient if we had addressed the epidemic of loneliness sooner. Luckily for us, it is not too late, and we can use this global event as a spotlight to address mental issues and loneliness, two problems existing long before the pandemic. We can change the story and we have to.

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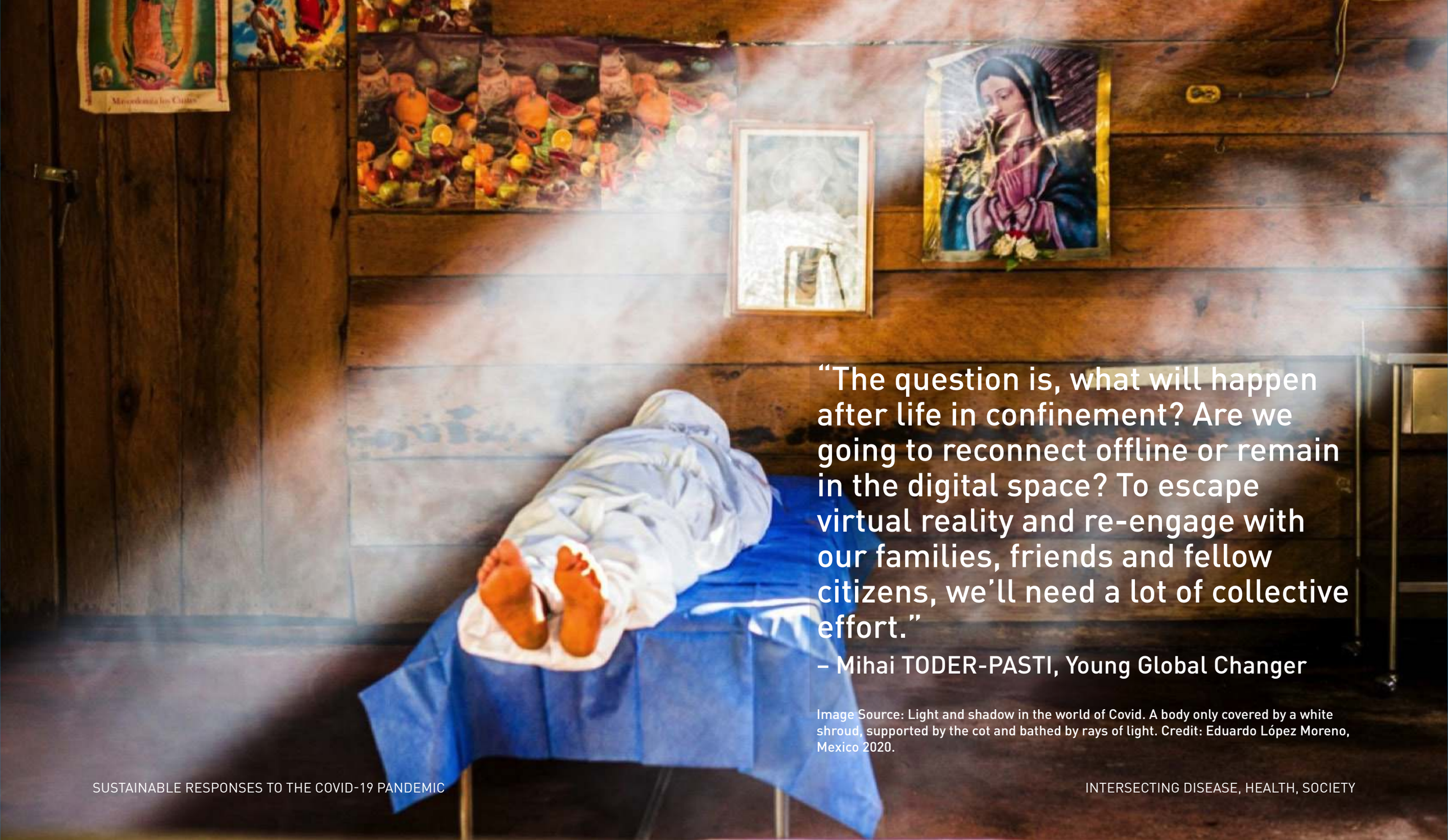

"The question is, what will happen after life in confinement? Are we going to reconnect offline or remain in the digital space? To escape virtual reality and re-engage with our families, friends and fellow citizens, we'll need a lot of collective effort."

– Mihai TODER-PASTI, Young Global Changer

Image Source: Light and shadow in the world of Covid. A body only covered by a white shroud, supported by the cot and bathed by rays of light. Credit: Eduardo López Moreno, Mexico 2020.

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Taiwan's resilient public health system: leveraging urban and digital infrastructure to combat COVID-19

Taiwan is a technological powerhouse with a highly urbanized population of 23 million. The greater Taipei metropolitan area is densely settled by 7 million people.[1] According to the International Institute for Management Development (IMD), Taiwan's economy was the 11th most digitally competitive in 2020.[2] Taiwan's sophisticated urban and digital public health infrastructure allowed it to combat COVID-19 effectively. In January 2020, Johns Hopkins University predicted that Taiwan would be the second-highest country/region at risk of experiencing a breakout due to its proximity (110 kilometers away) and linkages (c. 700 flights a week) to mainland China.[3] However, as of January 12th, 2021, Taiwan's case count remains at an extraordinary low of 838 – with 58 domestic cases and 7 fatalities.[4]

Centralized Command Enables Decisive Early Actions

Decisive early government action was key in preventing the spread of COVID-19. Back in 2003, Taiwan suffered one of the highest Severe Acute Respiratory Syndrome (SARS) fatality rates with 73 deaths.[5] As a result, in 2005, a framework for the Central Epidemic Command Center (CECC) was established.[6] On December 31st, 2019, a month before the World Health Organization (WHO) declared a Public Health Emergency of International Concern, Taiwan notified the WHO of its concerns, began onboard health inspections of aircraft passengers from Wuhan, and stockpiled respirators and N95 masks.[7] Before COVID-19 reached Taiwan, the CECC was activated on January 20th, 2020. After, on February 25, 2020, Taiwan's legislative body passed The Special Act for Prevention, Relief, and Revitalization Measures for Severe Pneumonia with Novel Pathogens and granted the center sweeping executive power.[8] The center made a necessary decision to ban healthcare professionals from traveling abroad to prevent pathogen importation into the healthcare system.[9] By late March, the CECC also limited foreign tourists from entry.[10] Careful management allowed Taiwan to maintain air links to major US, European and Asian cities throughout 2020.

World-Class Digital Contact Tracing w/ Mandatory 14-Day Self Quarantine

While standardizing travel and quarantine procedures, authorities took advantage of vacant urban hotels, municipal administrative resources, and digital healthcare infrastructure. National Health Insurance's Medi-Cloud digital platform (with real-time patient records, claims, and fee deductions) was integrated with Immigrations and Customs databases, so healthcare providers could see patients' complete travel history along with health records.[11] In late January of 2020, this allowed for case identification.[12]

Travelers bound for Taiwan are required to quarantine for 14-days.[13] At customs, they download the Quarantine System for Entry app, which triangulates their location via reception towers as part of the Digital Fence System, created by officials alongside telecom companies.[14] At the municipality level, officials call quarantining households daily, furnishing them with food and supplies, and noted turned-off phones.[15] If someone breaks quarantine, local civil affairs departments and police are notified immediately, and officials trace further contacts.[16] Using mobile phone location data, coupled with in-person interviews and CCTV footages, healthcare officials rigorously trace all patient contacts. Each case means an average of 25 people undergo quarantine. About 400,000 people took part in mandatory 14-day self quarantines during 2020. Remarkably, the non-compliance rate is approximately 0.3%.[17]

Facemasks Stop Local Transmissions

Early adoption of facemasks reduced local transmissions. The CECC limited facemask exports on Jan 24th, 2020, and temporarily nationalized the production chain on Jan 30th, 2020.[18] The Ministry of Economic Affairs worked with 26 local manufacturers to set up 60 production lines in 1 month[19] and increased daily facemask production from 1.8 million per day to 20+ million per day in a record 4 months' time.[20] Military reservists were brought in for midnight shifts to ensure 24/7 production.[21] Taiwan quickly became the world's second-largest facemask supplier.[22] Starting in March 2020, the CECC partially lifted bans and subsequently returned control of production facilities to private entities.[23]

Authorities leveraged existing urban and digital infrastructure to rapidly prototype a mask distribution system. On February 6th, over 6,500 pharmacies were supplied with requisitioned masks. Residents could present their national health insurance cards for 2 masks per week, later 10 per two weeks[24], at a price of NT$5 per mask (c. US$ 15 cents) (later reduced to NT$4 per mask) at these outlets.[25] When long lines formed, authorities swiftly took advantage of Taiwan's urban layout, dotted with convenience stores, and tasked a further 11,500 convenience stores including 7-11 and Family Mart stores to distribute facemasks 24/7/365.[26] In the final iteration, residents can order adult or kid-sized masks online, retrieve them 24/7, send them overseas to relatives, or

donate them to international humanitarian efforts.

During the pandemic, digital innovation was encouraged. Ministries worked with Taiwan's active hacktivist community on a "rapid, iterative and bottom-up process."[27] Armed with government open data, netizens, coders, and AI/Blockchain start-ups used distribution ledger technology to design interactive maps with chatbots and real-time stock levels of facemasks in distribution outlets to put a stop to panic buying.[28]

Effective Communication Strategy Generates High Level of Public Trust

From late January through early June of 2020, the CECC held daily press conferences.[29] The Minister of Health and Welfare personally provided updates in infection numbers and advice. The daily 2 pm show became one of the highest-rated television programs in Taiwan. Officials used social media outlets like Facebook, Line, and Twitter to connect with younger populations.[30] They sometimes released self-mocking memes to combat misinformation with humor.[31] In addition, online platforms like vTaiwan allowed youths and netizens to voice, upvote, and communicate policy expectations to officials, health experts, and business leaders.[32] This brought a degree of transparency to decision-making and helped officials gain public trust.

Resulting in an Extraordinarily Low Case Count of 838 in Taiwan as of January 12th, 2021

In conclusion, decisive early actions and transparent leveraging of digital public health and urban infrastructure enabled Taiwan to 1) set up a world-class contact tracing program; 2) enforce effective 14-day self quarantines; and 3) manufacture then widely distribute facemasks to stop local transmission. Instead of becoming the second-highest country/region at risk of a major outbreak, by working with its public, Taiwan enjoyed a run of 253 days free of local transmissions during 2020, and successfully contained COVID-19 with an extraordinarily low total case count of 838 as of January 12th, 2021.[33] Nonetheless, COVID-19 has been a humbling lesson for all of humanity. Taiwan needs to continue to be vigilant in its public health defenses to ensure the wellbeing and safety of its residents.

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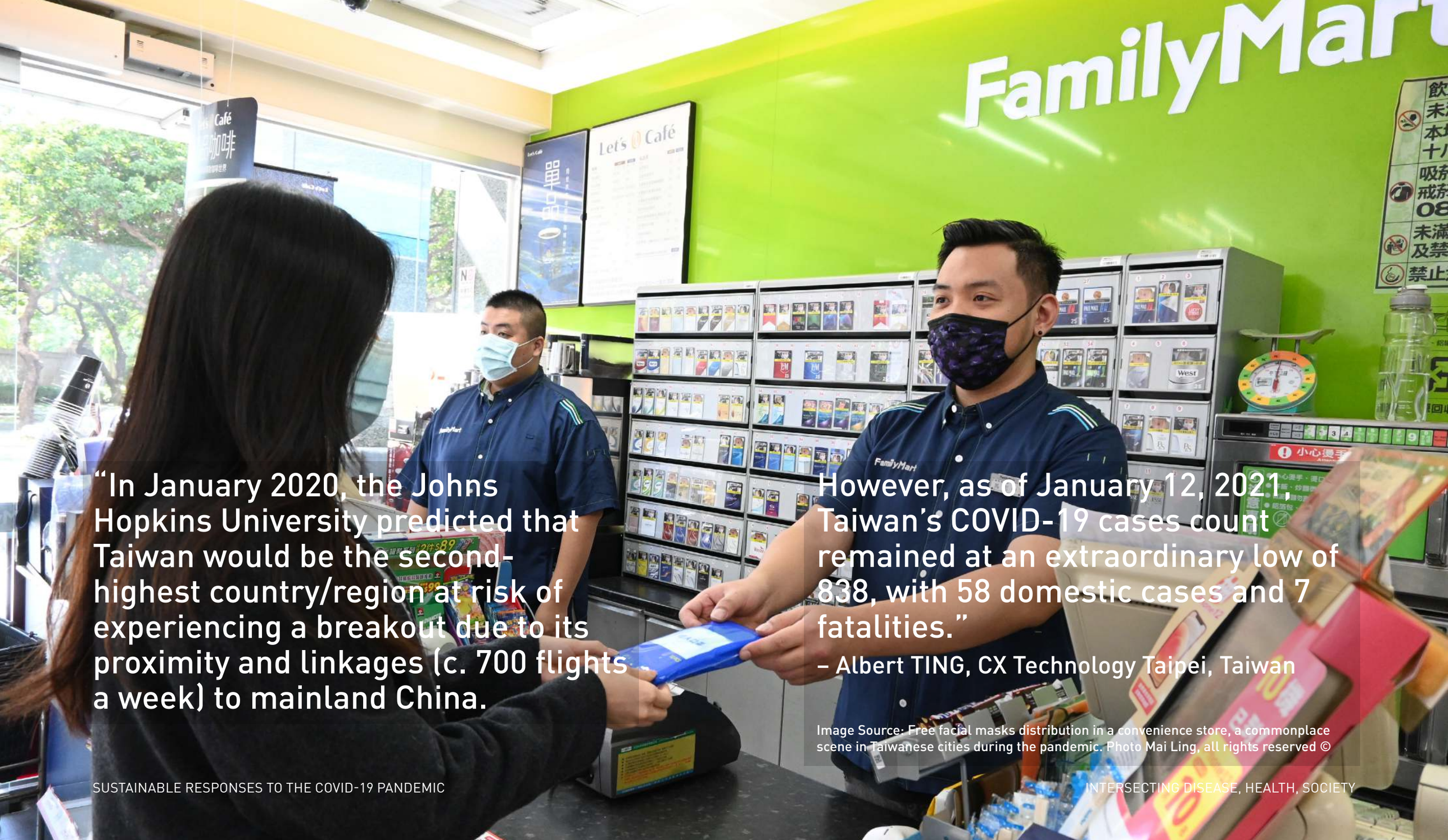

"In January 2020, the Johns Hopkins University predicted that Taiwan would be the second-highest country/region at risk of experiencing a breakout due to its proximity and linkages (c. 700 flights a week) to mainland China.

However, as of January 12, 2021, Taiwan's COVID-19 cases count remained at an extraordinary low of 838, with 58 domestic cases and 7 fatalities."

– Albert TING, CX Technology Taipei, Taiwan

Image Source: Free facial masks distribution in a convenience store, a commonplace scene in Taiwanese cities during the pandemic. Photo Mai Ling, all rights reserved ©

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Planetary health: refreshing the perspective one year after the COVID-19 pandemic outbreak

Health is everybody's business. That much has become apparent over the year 2020 as the Sars CoV-2 virus spread across the globe. The consequent pandemic, disproportionately playing out in cities, caused whole-of-society disruption with its tragic consequences on health and livelihoods and with all sectors explicitly tasked with creating health and reducing disease risk.

This unprecedented challenge to orthodoxy can be unsettling and overwhelming. However, there has been a rapid increase in social experimentation and solution design to mitigate the immediate short-term effect of the pandemic and public health response. To achieve long term inclusive health, this embrace of innovative solutions will need be extended to re-calibrate systems for health, bringing more diverse innovators into the health and health-adjacent urban sectors.

Achieving population health will also require a focus on urban areas because:

Rapid urbanisation, particularly across Africa and Asia, is characterised by a growing number of people are living in dense informal settlements with unsafe human settlements and inadequate waste and water infrastructure that increase disease vulnerability and the risk of transmission and persistence of infectious and non-communicable disease.

The large sprawl of these rapidly growing settlements is pushing the boundaries of human settlements and contributing to re-emergence of infectious disease and zoonotic disease transmission as human and animal environments intersect in new ways.

COVID-19 has revealed significant flaws in our existing urban infrastructure, with systems that reduce resilience to food insecurity and streets that prioritize motorised traffic making physical activity for leisure or travel unsafe in many cities.

These urban flaws can be considered to influence health and perpetuate inequalities along four dimensions: Exposure, Vulnerability, Consequence and Access to care.

Of these four dimensions, access to care is perhaps the most intuitive as considering health in urban infrastructure

most often conjures consideration of access to adequate healthcare infrastructure. It is worth considering that beyond geographical access, it is critical that urban infrastructure planning activities consider other domains of access including appropriateness and accommodation (to ensure the social and cultural needs of the population are served).

Our improved understanding of the epidemiology of the pandemic also revealed that vulnerability to severe disease and death is associated with exposures like air pollution and co-morbidities like obesity (at the end of 2020, COVID-19 mortality rates were more than ten times higher in countries where overweight prevalence exceeds 50% of adults compared with countries where overweight prevalence is below 50% of adults (https://www.worldobesity.org/resources/resource-library/covid-19-and-obesity-the-2021-atlas)). Beyond individual choice, we know that obesity prevalence is associated with the food environment and access to safe space for physical activity. And yet, in many particularly deprived parts of the UK, urban planning and development is not sufficiently considered a route to improving population health resilience resulting in inequitable access to healthy foods and public spaces.

While the initial rhetoric at the start of the pandemic was that we are all in this together, across the world, we have noted that certain population groups were more likely to be exposed to the virus. A better understanding of the modes of transmission of the virus revealed that household transmission comprised a significant source of infection. As such people living in poor quality, overcrowded housing were much more likely to be exposed to the virus. In the UK, this population group was much more likely to be deprived, from minority ethnic groups, and household members were much more likely to work in public facing essential work.

Furthermore, the fabric of the urban form plays a role in how communities shoulder the consequence of movement restriction measures to curtail the spread of the disease. The differential ability of individuals to abide by the spatial measures to mitigate risk such as self-isolation due to overcrowded households, built environments not conducive for social distancing, safe physical activity or embracing active modes of travel such as walking or cycling, and precarious livelihoods bearing severe economic consequences of lockdowns have exposed inequalities and systemic social, economic and environmental governance flaws in desperate need of repair and re-design for health and equity.

Despite these easily recognisable opportunities to improve health through integrating health considerations in urban design, the fact that these urban sectors are rarely or never held accountable for population health means that this opportunity is rarely embraced. For example, a radical reform of the planning system was announced to build more homes as part of pandemic recovery in the UK, bypassing normal planning requirements of minimum

space, ventilation and lighting requirements and the need to consult local authorities or communities about what development they want (https://www.ft.com/content/3f7a55c9-6757-4a73-9d50-962212d3d379). The association between these very built environment characteristics and health is illustrated by research from Wales conducted over a 10 year period that found that improvements to housing quality was associated with an almost 40% reduction in emergency hospital admissions (https://jech.bmj.com/content/jech/early/2018/06/20/jech-2017-210370.full.pdf).

Creating inclusive sustainable health in cities will therefore require a focus on systems for health, an umbrella term for factors and systems that determine health. Within this umbrella, the healthcare system, a necessary and vital component, is part of the broader systems of health that influence health such as urban development. Critical to the effectiveness for such a systems approach is embedding accountability mechanisms for health, cognisant of the disconnect in time and space between urban exposures and health outcomes.

The interconnected nature of the systems that influence health and the planet mean that policies that target one part of the system to create health may have unintended second-order consequences on other parts of the system that could be deleterious to health. This complexity highlights the importance of taking a planetary health approach to shaping cities, cognisant that disruptions in the delicate balance between human health, human activities in the built environment and the natural ecosystems we depend upon have significant implications for health and sustainability.

It is important that the timely and responsive commitments to addressing the acute manifestation of the consequence of systems failures, demonstrated in the emergency responses to the COVID-19 pandemic, are extended with the same degree of urgency to health foresight.[6] In the long term, health foresight endeavours should aim to address the social, economic, political and ecological emergencies that contribute to current and future health emergencies. It is vital that we grapple with complex evolving realities and environments that increase risk of persistence of old, and emergence of new diseases, and the delicate balance between human and ecological wellbeing. In so doing, we quickly realise that:

We cannot address this or any future health or environmental emergencies without addressing their social, economic and political determinants.

Response cannot be restricted to the health sector but instead a whole-of-society approach required, with unprecedented collaboration and cooperation across sectors, cities, countries and regions.

It is as short sighted to focus on urban development at the

detriment to health, as it is to focus on health at the detriment to ecological boundaries. From unprecedented collaboration between sectors (including transport, housing, business and health) to transformational adaptations in our work and study patterns over incredibly short periods, it has become apparent that initiatives previously considered unthinkable or radical have emerged as sensible and even popular strategies and policies. This is a lesson in what is possible when the situation is considered sufficiently urgent. And because health does not trickle down from good intentions, it will be crucial to develop robust data and metrics to measure the impact of innovative urban policies and strategies on human and planetary health.

While COVID-19 presents a new and acute health emergency, we would be remiss to not consider the sustained health emergencies that have plagued (particularly low and middle-income) countries for a long time. As such, efforts to build resilient and inclusive systems for health should consider that many of the shocks and stressors that drive acute and protracted health emergencies arise out of intentional choices by actors across sectors from local to global. Therefore, critical to building resilience is not simply adaptation to cope with shocks and stressors as an endpoint, instead confronting the upstream choices and decisions that weaken resilience by driving the system towards disease and ecological disruption. In this context, efforts to build resilient systems for health would focus on strengthening the ability of systems (and all actors within these systems) to create sustainable, sustained and inclusive human and planetary health.

Since the COVID-19 pandemic was declared, the world has witnessed unprecedented collaboration across society to fight the pandemic. For the first time in modern times, health has become everyone's business. This momentum, with its tragic impact of human lives worldwide, presents an opportunity to build on this cooperation and collaboration beyond reacting to the pandemic to accelerate innovative efforts to future-proof health by reducing vulnerability to, and mitigate impacts of future pandemics, challenging the boundaries of social possibility towards a re-imagined future.

Beyond addressing the immediate health emergency, post-COVID-19 planning and re-set requires that we focus on long-term solutions. There must not be another return to business as usual. We need to start building robust, inclusive systems that account for all the social determinants of communicable and chronic diseases, which will continue to plague the poorest and most marginalized communities around the world.

1. https://qz.com/africa/1839019/covid-19-how-to-plan-for-africas-next-health-emergency/
https://link.springer.com/referenceworkentry/10.1007/978-3-030-05325-3_106-1 https://www.weforum.org/agenda/2020/05/here-s-how-science-diplomacy-can-help-us-contain-covid-19/

"We cannot address this or any future health or environmental emergencies without addressing their social, economic and political determinants. It is as short sighted to focus on urban development at the detriment to health, as it is to focus on health at the detriment to ecological boundaries."

– Tolullah ONI, Univeristy of Cambridge

Image Source: Fragile permafrost, overlooking Yakutsk on a late spring day, Yakutia, Russian Federation. Image by Nicolas J.A. Buchoud, all rights reserved ©.

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From health to political economy: 'how we know what we know' and why Intersecting matters now [1]

As Yuval Noah Harari suggests, stories shape our understanding of the world and our place in it.[2] When we realize that, we can change how we allegorize the world, which is a hopeful message in the current time of crisis. My starting point is that the intertwined economic, social, political, and ecological crises that we face stem from a globalized, neoliberal, financialized form of capitalism, which is not just an economic system. It is, rather, an entire institutionalized social order, with ancillary conditions that sustain it, including, for example, the extractive relationship with our natural world and the extractive relationship with low wage workers and the unpaid care work that directly relates to gender inequality. Our current institutionalized social order is simply not compatible with a social and international order that allows everybody to enjoy the rights and the Universal Declaration of Human Rights, as called for in article 28 in that Declaration.

As a human rights advocate, I understand the concept of dignity in relational, dialectical terms, whether based on notions of Kantian deontology, or Ubuntu, or any of a host of other religious and philosophical traditions. One of the problems with the institutionalized social order that we find ourselves in, is precisely that it in some cases severs, and in some cases obscures the relationships of mutually humanizing interaction among diverse people, and between humans and the natural world. The interlocking structures of power based on colonialism, neoliberalism and patriarchy not only shape political economies, at national and global levels. They also structure representation of the world and 'how we know what we know'. And that 'how we know what we know' is generally untethered from history—for example, from colonialism's extractivist and exploitative history--and abstracted from social context. Such a fragmentation of our realities and knowledges perpetuates a feelings of apathy and cynicism among many, and inhibits collective action for change. Knowledge fragmentation also favors the a certain kind of technocratization of political economy and expertise based-policy making, and in turn nurtures an appetite for violent contestations to this version of modernity—whether from Trumpian populists or extreme religious movements elsewhere.

Within health, it contributes to emphasize the role of medicalization and biotechnology, divorced from the social and material context in which health is experienced. This is nothing new though, as the advent of anatomy and

dissection in the 16th Century and the development of experimentation with and deployment of chemistry especially 19th Century has largely shaped how Western science and medicine has struggled to dominate both the natural world and our understanding of disease in physical bodies.

In the context of global health, for example, the SARS-Cov-2 virus itself is still being treated as the main protagonist, many months after this wrenching pandemic saga began. The causes of the Covid-19 as a major pandemic crisis in interrelation to social contexts, and the pandemic of inequality that Covid revealed, are still marginalized in mainstream political—and scientific discourse. This reflects a larger epistemic framework in global health which long predates Covid. That is, the modern scientific method is largely based on very specialized technical expertise and studies designed to abstract questions from social contexts to analyze causation. For example, randomized control trials are the gold standard for producing evidence in public health and clinical medicine. Just as in economics, we displace what are called 'externalities', in public health, we call them 'confounding variables' which are then controlled for.

To be clear: this kind of knowledge is critically important. These studies allow for standardization of dosing, for example, such as in the US pharmacopoeia where standard dosing and testing of medications are extremely important to effective treatment. The importance of such a way of knowing the world cannot be discarded, all the more as it has contributed enormously to human flourishing in the development of vaccine solutions against the SARS-COV-2 virus. However, the exclusive dominion of this particular kind of knowledge means dismissing or discounting all other ways of knowing the world although people experience health and ill health in social contexts that are shaped by historical and socio-economic and cultural variables, as well as legal and institutional determinants. We've seen the wildly differing impacts of Covid between countries and within countries, and yet these issues tend to be treated as afterthoughts regarding 'equity'. As a consequence, it makes us focus on a very, very narrow slice of causation, hampering our collective ability to cope with the multiple problems that we face today and leaving policymakers to manage levels of inequity, as opposed to addressing root causes.

For example, Covid struck a world in which health systems had been underfunded and social protections had been hollowed out for decades. The narrow focus on medical and technical solutions makes for feeble proposed responses that are likely to be unfruitful. For example increasing disease surveillance as part of 'pandemic preparedness'. Why not instead use this inflection point to prioritize health systems that are universal, adequately-funded and resilient as integral parts of more egalitarian social orders? Quality and accessible primary health care has been the cornerstone of effective response during this pandemic—and it will be in any future pandemic. Of course, doing

so requires adequate material resources, supply chains and referral systems, and the like—and perhaps above all trained health workers who are not cogs in a technocratic apparatus but are treated with rights and dignity.[3]

Part of how we know the world in global health is shaped by 'indicatorization'. Jus as structural adjustment enables governance at a distance the World Bank and the International Monetary Fund through measuring inflation and interest rates, and other macroeconomic indicators, global health is increasingly monitored through algorithms and statistical and mathematical modelling, for example from the Institute for Health Metrics and Evaluation (IHME) in Washington DC. This health policy-making is not only fundamentally anti-democratic. The core of democracy –as well as rights –de is that the people who are governed can demand that decisions and policies are justified. Governance by indicators and inscrutable algorithms exiles questions about the rationales for decision-making and the ability to appeal those rationales from democratic space. In Covid, we've seen this conversion of political questions into 'technical' questions in spades : cloaked in an aura of apolitical 'scientificity' in a context of generalized fear, prescriptions based on algorithms and modelling have been insulated from normal democratic deliberation as states increasinly drift toward autocracy.[4] But more broadly, measuring the state of health this way also eludes a whole number of questions about what is actually happening, who is benefiting or facing uncertainties of different forms on the proverbial ground.

What might be alternatives to technocratic paradigms for the uses and applications o fknowledge proposed and advocated by many academic and global governance institutions as well as philanthropic organizations, such as the Gates Foundation? I fully concur with the philosopher of science, Sheila Jasanoff, when she argues for what she calls the 'technologies of humility' in contrast to the 'technologies of hubris' that have insulated technical expertise from democratic scrutiny. "These are methods, or better yet institutionalized habits of thought, that try to come to grips with the ragged fringes of human understanding – the unknown, the uncertain, the ambiguous, and the uncontrollable. Acknowledging the limits of prediction and control, technologies of humility confront 'head-on' the accountability, plurality and integrity of the expertise used".[5]

Indigenous forms of knowledge which are of course very diverse but generally far more grounded in human relationship with the natural world, as opposed to domination of it, offer critical lessons on ways of understanding well-being in all its intersectionality. Other qualitative forms of knowledge that are grounded in specific contexts and realities, are also undervalued in the way we analyze problems and design solutions. In the field of human rights, we have tried to develop different kinds of methodologies, different ways of tracking associations (or, intersections) and tracing plausible understandings of causation that do not extract the so-called confounding variables, but seek to understand how those variables are actually critical to understanding

effective enjoyment of rights in practice. I'll be candid; those methods have not gained great traction because they are not "scaleable." On the contrary, there is in my view a depressing trend toward indicatorization of 'rights fulfilment'. The Covid-19 pandemic crisis presents an opportunity—and an imperative-- for seriously re-evaluating existing models and approaches concerning the roles of technical experts and the kinds of knowledge that we value for making decisions in health, and for assessing the state of the world more broadly.

There is a crucial role for academic institutions in shifting to knowledges based on intersection. It is extraordinarily challenging to conduct intersecting research much less find funding for and build networks based on horizontal relations across fields, and countries, including with non-academic community-based partners.

Virtually all of our educational institutions are built around certain orthodoxies, where promotion is based on publishing in certain journals and using prescribed methodological techniques. In the past, 'intersectional' work has usually meant that one discipline was dominating, which certainly produced rewarding results, but was also deeply challenging (and often exploitative) --and limited. Today, we do not need so much purely academic interdisciplinary approaches, but bold intersections across academic research, think tanks, policy-making, and community-based organizations., and we need new incentive systems and reward to effectively support that work—as well as broader system change.

This may be challenging but it is possible. When comparing my teaching experience at Harvard TH Chan School of Public Health and Harvard Law School, it is clear that colleagues—and in turn the future members of these academic tribes-- speak very different languages,and are taught to think in very different ways. Even within the law, there are deep differences in legal theory and legal thought and the perspective on international law between South America and the United States, for example. I know from personal experience that those differences can lead to fruitful discussions among open-minded and generous -spirited people, allowing intersecting of knowledge to take shape and grow. But it does require a commitment to intersecting in practice, to a kind of 'radical hospitality' to the other—other people, with whom we share a common humanity, other perspectives, other life beyond the human race.

We are at the very beginning of developing new ways of knowing the world—or rescuing old ways, such as from indigenous traditions. But rejecting the sort of rigid fragmentation of knowledge among disciplines is absolutely essential if we hope to break away from the acceptance of our current institutionalized social order—with all of its pathogenic effects—as 'just the way things are.'
And I am convinced that we need not have a fixed model of what those new architectures of knowledge are; social

change in times of radical transition in our societies, economies, the environment, is a matter of iterative sequencing. As Amartya Sen notes, "As competent human beings, we cannot shirk the task of judging how things are and what needs to be done. As reflective creatures, we have the ability to contemplate the lives of others [and] the miseries that we see around us and that lie within our power to help remedy. [...] It is not so much a matter of having exact rules about how precisely we ought to behave, as of recognizing the relevance of our shared humanity in making the choices we face."[6]

1. Many of the ideas presented draw on my previous work, including When Misfortune Becomes Injustice: Evolving Human Rights Struggles for Health and Social Equality (2020).

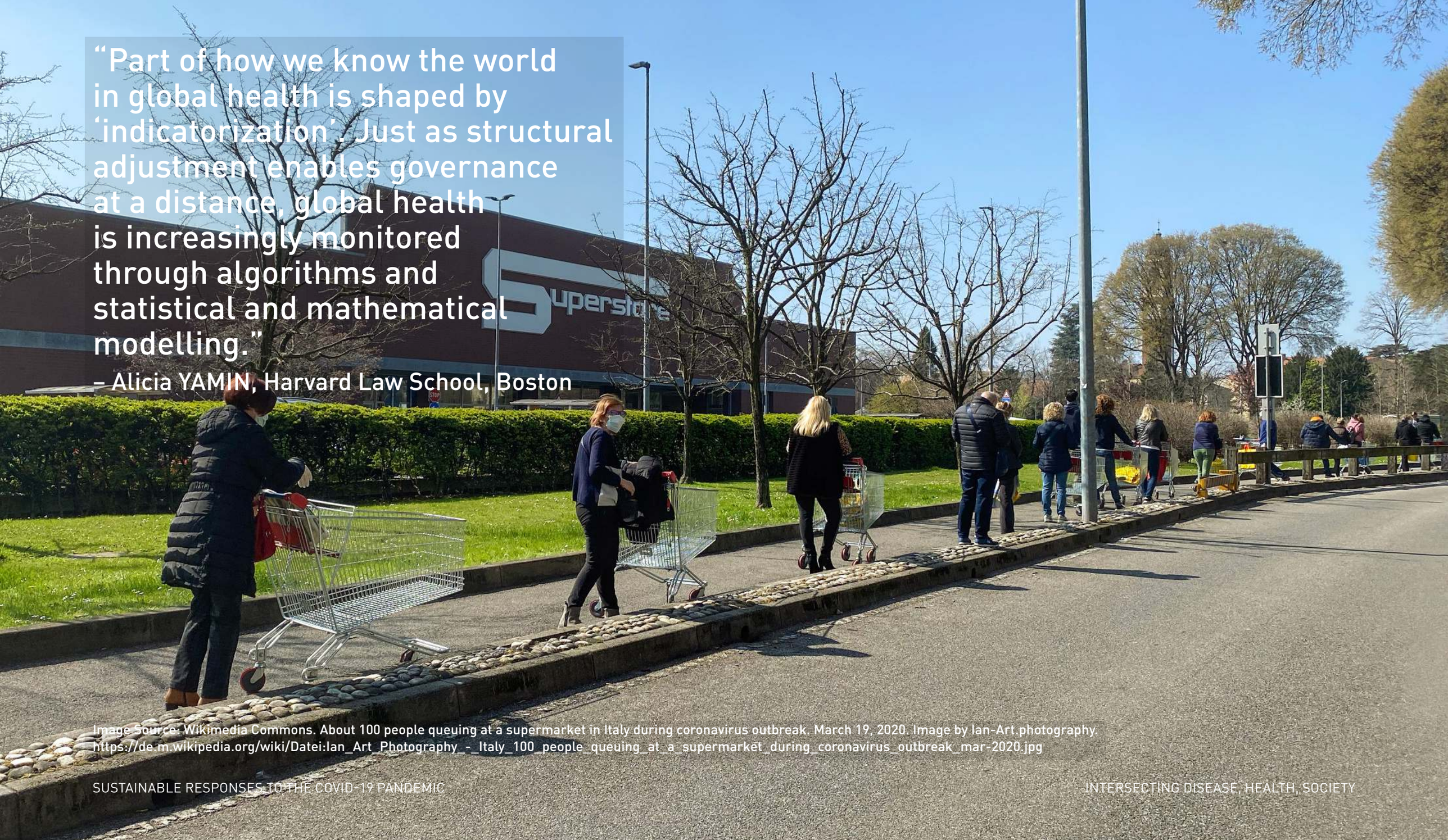
2. Yuval Noah Harari, Sapiens: A Brief History of Humankind (2015).

3. Alicia Ely Yamin & Paul E Farmer, Against nihilism: transformative human rights praxis for the future of global health, open global rights (2021). https://www.openglobalrights.org/against-nihilism-transformative-human-rights-praxis-for-the-future-of-global-health/

4. Eugene Richardson, Epidemic Illusions: On the Coloniality of Global Public Health (2020), p. 120.

5. Shelia Jasanoff, Science and Public Reason (2012), p. 170.

6. Amartya Sen, Development as Freedom (2001), pp. 282-83.



"Part of how we know the world in global health is shaped by 'indicatorization'. Just as structural adjustment enables governance at a distance, global health is increasingly monitored through algorithms and statistical and mathematical modelling."

– Alicia YAMIN, Harvard Law School, Boston

Image Source: Wikimedia Commons. About 100 people queuing at a supermarket in Italy during coronavirus outbreak. March 19, 2020. Image by Ian-Art.photography. https://de.m.wikipedia.org/wiki/Datei:Ian_Art_Photography_-_Italy_100_people_queuing_at_a_supermarket_during_coronavirus_outbreak_mar-2020.jpg

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Global resilience to future pandemics: A tentative action plan

Vulnerabilities galore

The present pandemic has forced the global humanity into an uncharted territory at an unimaginably and unmanageably high speed. It has increased our vulnerability in a way that spares none, differences in income, wealth, education and other social and political parameters nowithstanding. This crisis is showing up at a time when other potential sources of vulnerability like climate change, environmental and ecological degradation and inequality are simultaneously raising their ugly heads. An observed link across these different sources of vulnerabilities is being suggested from many corners including the Secretary General of the United Nations who called for an "effective delivery of global public goods."

Global Public Investments to create resilience

How to ensure "effective delivery of global public goods" (GPGs) that could reduce vulnerability? A small detour! We would argue that we got to take care of not only provision of GPGs but also protecting the global commons, that is, the planetary ecosystem. The latest Human Development Report 2020 emphatically underscores the crisis of human vulnerabilities at planetary scale and calls for linking human development to pressure on the planet earth. We may club these two into Global Social Goods (GSG).

Delivery of GSGs calls for global public investments (GPI). Investments would mean setting aside resources available for present consumption and to help generate income in future including that for the future generations as well. Such investments will help achieve SDGs within its stipulated time frame – an aspiration already made uncertain due to the onset of pandemic. While most of the SDGs call for provision of GPGs, some also are directed towards protecting the global commons – SDGs 6,7, 13 and 14 along with SDG 11. One common feature binds all these SDGs. Achievement of all these SDGs would ensure benefit to the entire humanity and the planet earth. In technical terms, all these efforts will generate positive externalities to Homo sapiens and other living species as opposed to the present practices of producing private goods for individual consumption that often generate negative externalities for many to benefit a small section of the humanity. Thus a necessary feature of GSGs would be to create positive externalities for the planet

and all its living inhabitants who are symbiotically linked to one another for sustained existence. It is doubtful if private investments that mostly look for selfish approaches to profit maximization, even with the prospect of inflicting negative externalities on others, would be a natural partner in facilitating GPI. There is no absurdity in assuming that resources for GPI would have to be forthcoming mostly from public sources in tandem with the altruists.

Mobilizing resources

Obviously, GPI would call for mobilization of considerable resources. A simple back of the envelope calculation suggests that if all the countries agree to annually contribute 0.28% of their GNI, i.e., an amount equivalent to the GNI generated in a day, US$ 240 bn can be accumulated annually (using estimates of global GNI at current prices in 2019). This fund may be utilized to invest to provide GSGs, like Intellectual Property Rights (IPR) -free technology and knowledge to eradicate poverty, hunger and infectious diseases among others. Protection of natural ecosystems may also be facilitated. As the funds are accumulated, they may be invested towards contributions to achievement of the SDGs. Needless to add, these resources are to be invested in providing only GSGs that have global footprints. Social Goods to be provided at local, national or regional levels would call for further and separate investments as they would cater to the need of a particular geographical region and may not necessarily correspond to the issues in global vulnerability, if not even add to possible regional conflicts.

There should be complete separation between public goods identified to be provided at the global level and those created at the level of a particular region.

GPI to tackle potential future pandemics

The flow of GPI so generated may be allocated for taking care of a number of global issues. Given the experiences of the present pandemic and keeping in mind the possible risks of future pandemics a part of the GPI may be spent for (i) early detection of threat of pandemics (ii) development of protective measures – vaccines, health infrastructure and logistics – to minimize the lethal impact of the pandemic and (iii) stabilization of the resultant shocks – economic and social – in the shortest period of time. Such funds may support collaborative research by a network of laboratories in developing vaccines at short notice followed by their swift production and distribution. A part of the funds accumulated may also be set aside for creating a corpus for global pandemic insurance fund for use to reduce the potential increase in vulnerability. Some resources may also be reserved for creating a basic minimum health care facilities in countries lagging behind in terms of their basic health infrastructure. Obviously, these measures are to be so created as to be accessible to the global population on an equal term in an inclusive manner. GPIs also have to be participatory.

G20 Summit in Japan called for Universal Health Coverage. With an annual potential kitty of 240 billion US$ elaborat-

ed above, a fraction of the same would be good enough to achieve universal health coverage for all by 2030. It is estimated that there will be a USD 176 billion gap in the meeting the health-linked SDGs in 54 poorest countries.[1] The overall research and development spending in the pharmaceutical industry being 186 billion U.S. dollars globally in 2019,[2] a part of the GPI may also be devoted to meet the R&D expenditure required to provide IPR-free necessary drugs and vaccines to combat infectious diseases with potentials to turn into pandemics. GPI in protecting the planet would also prevent spread of zoonotic diseases responsible for pandemics. Properly handled, the proposed GPI fund can take care of providing many of the GSGs and help achieve the SDGs as desired.

GPI and Global Basic Income

Recent discussions on global basic income have attracted attention of global policy makers, UN included.[3] It suggests providing annual basic income support to every individual to generate purchasing power in the hands of individuals to help them consume a basic minimum basket of private goods. GPI, on the other hand, with its intention to provide public goods that are non-excludable in consumption, calls for investments in global social goods that can, in effect, enhance the productive capacity and hence the income potential of every individual on a sustained basis.

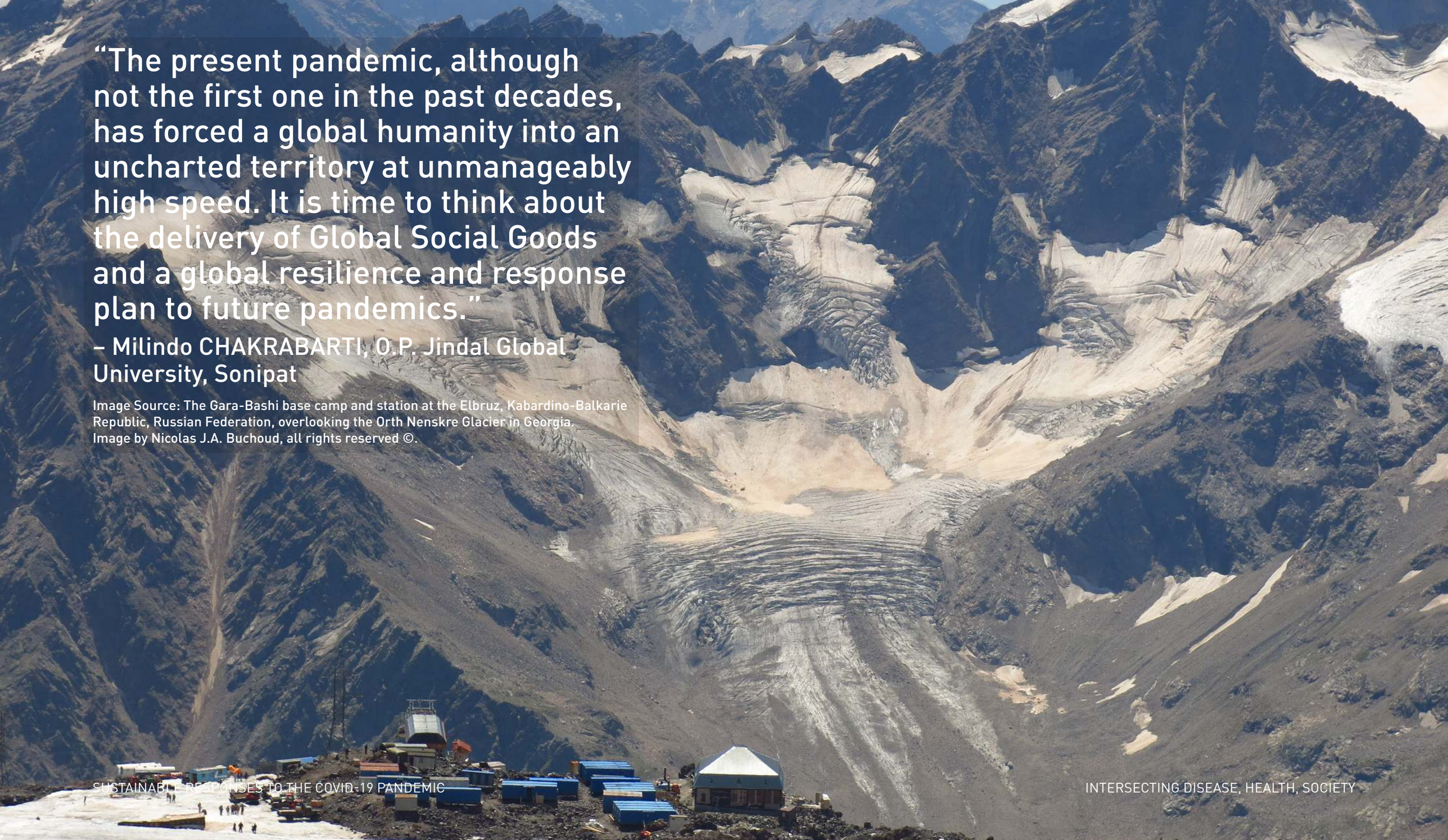
Some scalable experiments

The initiative by India to create a COVID 19 Emergency Fund with voluntary contributions from SAARC member countries may serve as an example of an effort in progress. Another initiative by India and France in creating International Solar Alliance to support utilization of solar power potential in the sunshine countries located in the tropical region can be cited as an effort towards this direction. The experiences of IBSA (India, Brazil, South Africa) Fund may also be scaled up to a global level.

1. https://openknowledge.worldbank.org/bitstream/handle/10986/31930/138096.pdf?sequence=4&isAllowed=y

2. https://www.statista.com/statistics/309466/global-r-and-d-expenditure-for-pharmaceuticals/#:~:text=In%202019%2C%20research%20and%20development,186%20billion%20U.S.%20dollars%20globally.&text=Pharmaceutical%20R%26D%20includes%20all%20steps,and%20all%20clinical%20trial%20stages.

3. https://digitallibrary.un.org/record/842173?ln=en



"The present pandemic, although not the first one in the past decades, has forced a global humanity into an uncharted territory at unmanageably high speed. It is time to think about the delivery of Global Social Goods and a global resilience and response plan to future pandemics."

– Milindo CHAKRABARTI, O.P. Jindal Global University, Sonipat

Image Source: The Gara-Bashi base camp and station at the Elbruz, Kabardino-Balkarie Republic, Russian Federation, overlooking the Orth Nenskre Glacier in Georgia. Image by Nicolas J.A. Buchoud, all rights reserved ©.

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"Experts are used to converting people on the ground into numbers to feed them into their economic equations. Now, they must listen to the people in the many voices which the people speak."

– Arun MAIRA, Help Age International, India

Image Source: Wikimedia Commons. June 19, 2020. Black Lives Matter - Sit In - Occupy Bay Street - College Street - Toronto Police Headquarters, Toronto, Canada. Image by Jason Hargrove. https://commons.wikimedia.org/wiki/File:Black_Lives_Matter_-_Sit_In_-_Occupy_Bay_Street_-_College_Street_-_Toronto_Police_Headquarters_-_June_19,_2020_-_Creative_Commons_(50025876838).jpg

Large-scale protest demonstrations against COVID-19 restrictions in Berlin.

Image Source: Wikimedia Commons. August 29, 2020. "Querdenken" against Corona restrictions at Friedrichstrasse in Berlin, Germany.
https://de.wikipedia.org/wiki/Datei:29.08.2020_Berlin-Friedrichstrasse.JPG

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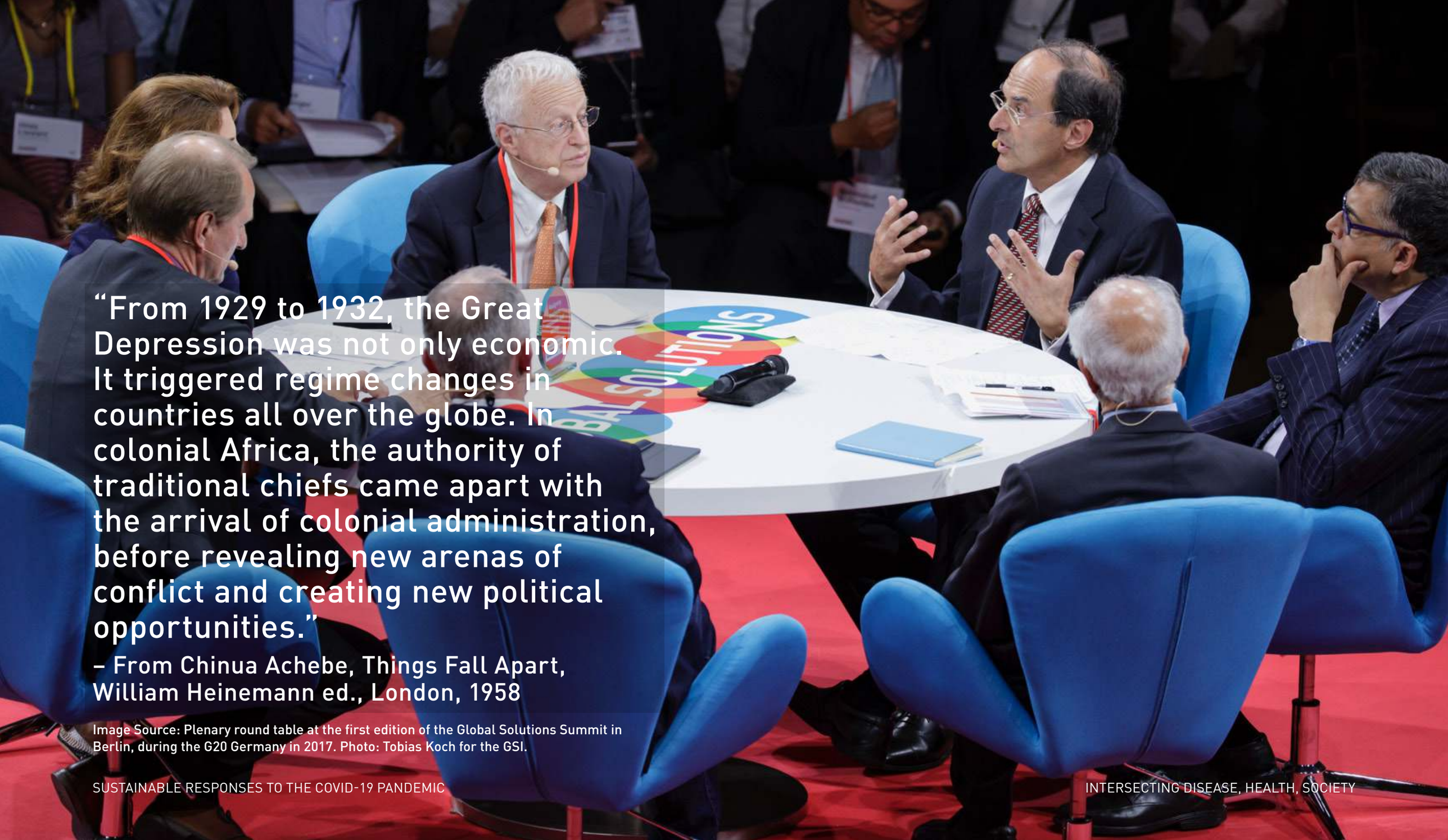

"From 1929 to 1932, the Great Depression was not only economic. It triggered regime changes in countries all over the globe. In colonial Africa, the authority of traditional chiefs came apart with the arrival of colonial administration, before revealing new arenas of conflict and creating new political opportunities."

– From Chinua Achebe, Things Fall Apart, William Heinemann ed., London, 1958

Image Source: Plenary round table at the first edition of the Global Solutions Summit in Berlin, during the G20 Germany in 2017. Photo: Tobias Koch for the GSI.

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