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We struggle with change Pandemics and the World Economy

Norman Gall



Magno Borges/Agência Mural

We begin to understand the deep and lasting changes in human societies posed by the covid-19 pandemic. Starting with the first cases that appeared in China in 2019, we try to examine the key events and trends. Norman Gall, founder and research director of the Braudel Institute, has been reporting on Latin America and the world economy since 1961. This essay forms part of ongoing inquiry into the causes and consequences of the current pandemic, clarifying basic issues for the general public.



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1. A New Era

Never before in the history of the world has a pandemic so suddenly provoked a global economic upheaval. The coronavirus pandemic (covid-19), impacts billions of people on all continents, with a stream of surprises that the world struggles to understand. They now have fed into pending conflicts over the structure of the world economy.

We have no clear idea of how long this pandemic will last. “Exactly how long remains to be seen,” said Marc Lipsitch, an epidemiologist at Harvard. “It’s going to be a matter of managing it over months to a couple of years. It’s not a matter of getting past the peak, as some people seem to believe.” The curve is flowing downward in many countries, but upward in others. Specialists expect erratic and shifting bursts in numbers of cases in an eventual decline, with many ups and downs and a wide variety of experiences in time, place and intensity.

The covid pandemic is the fourth shock to strike at the world economy since the global financial crisis of 2008. This shock was the culmination of trends that simultaneously produced an acceleration of financial activity, the expanding role of China in world trade and a new scale and diversity of digital activity.

Private financial markets, independently of public stock exchanges, grew in size and variety, supported by huge increases in spending by governments to support economies after 2008. In the first two decades of the 21st century, wealth in private markets grew by 500%. Then official reserves grew by \$1 trillion in 2021, the first year of the crisis, as central banks sought safety and stability.

There is no known way that complex societies could have prepared in advance for adversities of this magnitude, even though emergency provisions have been fortified in recent decades. Unforeseen crises appear, as in today’s conflict between Russia and Ukraine, leading to the worse price and supply shock in commodities since the Arab-Israeli war of 1973, with the worse disruption of wheat supplies since the outbreak of the First World War in 1914.

We do not know whether the pandemic will subside with mass inoculations in privileged populations, whether herd immunities gained from prior waves of infection by other diseases will protect larger numbers of people, whether outbreaks will return repeatedly, or whether covid-19 will remain embedded in populations like other endemic diseases, as a low-level threat to most people but deadly to a few.

“The poor cannot afford to be sick,” Iqbal Shaheen, a taxi driver in Pakistan who took his father home to die of covid after failing to find a bed for him at several hospitals. In poorer countries, the pandemic drives uncertainty, terror and cynicism. Official counts of cases and deaths bear no relation to what is seen and felt in homes, hospitals and streets.

Epidemics hit poor people hardest. This was as true of the bubonic plague in medieval Europe as it is today. In his classic *Tales of the Decameron* (1353) Giovanni Boccaccio told of wealthy Italians from Florence taking refuge from the Black Death at a nearby rural estate to tell each other stories, leaving ordinary city dwellers more exposed, just as in New York and São Paulo richer citizens flee to country homes or quarantine themselves in large apartments. In New York, as in other big U.S. cities, Latino and black people have been twice as likely than whites to die from covid-19. The same difference applies between richer and poorer communities in Brazil’s cities, with the similar racial and cultural contrasts. Covid-19 is mainly a disease of the poor and powerless, lacking medical attention and forced to leave home daily and mix with crowds in order to work. In California, mortality among bakers rose by 50% and restaurant cooks by 60%.

In recent decades, the world experienced six viral pandemics: Asian flu in 1957-58; Hong Kong flu in 1968-69; SARS (Severe Acute Respiratory Syndrome) in 2002-03; AIDS; West African Ebola in 2013-16; MERS (Middle East Respiratory Syndrome) in 2012-15) and the current covid-19, the most virulent since the Spanish flu a century ago.



Burying plague victims / coffins at Tournai in 1349.

Covid-19 may be the biggest news story since World War II. Major news organizations provide copious reporting on the scope of the pandemic and the issues it raises, in continuous dialogue with scientists. Yet confusion grew from wild falsehoods posted on many sites of the internet.

Covid quickly spreads

Scientists are baffled by sudden changes in covid variants. Like other viruses, covid changes constantly, spawning new variants and traveling fast around the world. Among them are Omicron, Delta, Alpha, Beta and their many descendants. Omicron's offspring, BA.1 and BA.2, were discovered in Africa in November 2021 and within a month spread to the United States, quickly infecting a million people. Delta first appeared in India late in 2020 before infecting populations of several other countries. At first glance, covid-19 is less deadly than SARS, with a case/fatality rate 10 times lower. But covid spreads faster and more widely, with many infected people showing no symptoms but spreading the disease more deeply among communities. While SARS killed more of its sufferers, covid spread among surviving carriers on a much greater scale.

Survivors of covid can acquire longer-lasting ailments: severe fatigue, memory lapses, digestive problems, erratic heart rates, headaches, dizziness, fluctuating blood pressure and hair loss. Months after their release from hospital, some covid patients around the world have developed chronic brain disorders. Others report loss of taste and smell after recovering from covid. "I have not seen any other illness that affects so many different organ systems as covid does," said Zijian Chen, director of post-covid care at New York's

Mount Sinai Hospital.

The new pandemic accelerated basic changes already evolving in human societies. It is impacting political priorities, costs, economic security of populations, natural resource limitations, the organization of business and work, the structure of international trade and opportunities of young people for education, jobs and creative activity, among many other contingencies. Many complex societies are weakened by rigidities in the sharing of wealth that must be renegotiated. In contending with these difficulties, and facing stringencies in public finances, governments face hard choices between repression and inflation.

First came a sudden burst of prosperity, fed by a huge expansion of credit. Since 2000, the value of global wealth held by households, firms and governments roughly tripled, from \$160 trillion to \$510 trillion, or five times global GDP, with wealth increasingly concentrated in the top 10% of earners.

Annual saving by the richest 1% of Americans outstripped flows of net domestic investment. Over the last two decades, China accounted for half of the growth in net worth of the world's population, while the United States absorbed 22%. Within the household sectors of China and the United States, the top 10% of households own two-thirds of wealth, concentrated in real estate investments supported by big price increases. Meanwhile, the share of the poorer half of households fell sharply. The bottom 50% of Chinese households owned 14% of wealth in 2000, falling to 6% in 2015.

Elsewhere problems are simpler and more desperate. Many places in the world lack facilities for mass burials. In many cities, morgues were overflowing. Bereaved families, unable to bury their dead, left

corpses on street corners. In Guayaquil, Ecuador's biggest city, the coronavirus spread fast as people circulated freely despite a government-ordered quarantine. Former Ecuadorean President Lenin Moreno warned that, as elsewhere, official statistics could not account for "tens of thousands of infected people and hundreds of lives cut short."

Ecuador became a world leader in coronavirus mortality, with 161 deaths per 100,000 population. Abandoned corpses, slumped in wheelchairs or packed into cardboard boxes, were picked up daily in the streets, increasing from 30 to 150 within a few days, with the coronavirus death toll among the world's highest. "They are not only dying from covid," said Cynthia Viteri, the mayor of Guayaquil. "People with diabetes, hypertension, and heart disease die from lack of medical attention. Hospitals are saturated with the critically ill."

With the public treasury empty, with unpaid debts of \$65 billion, Hector Hugo, a young urban planner, then devised a pioneering strategy akin to the one devised two centuries ago by the public health pioneer John Snow in London's great cholera epidemic, locating the source of infection in neighborhood water pumps. Hugo found a record of 911 calls for ambulances or funeral cars from afflicted neighborhoods. Public health and social workers were sent to crisis districts to test residents, distribute masks and food and urge washing of hands and social distancing, in what became a mass mobilization in afflicted communities. On April 4, the worst day of the pandemic, Guayaquil suffered 778 deaths, 10 times the daily average of previous years. By June deaths fell to 60 a day, only a few of them from covid-19. Since then, the numbers of cases and deaths have fallen, only to surge again more recently, reviving scenes of a year ago, with uncontrolled contagion, excess mortality and hospitals short of intensive care beds.

The fusion of today's pandemic and international financial crisis constitutes a unique historical event. How contagion spread so quickly from eruptions of infectious disease to labor and financial markets, producing institutional shocks on a global scale, is yet to be fully explained. Nevertheless, it reflects an ease of communication between the world's regions and societies never before seen.

"It is very likely that the global economy will experience its worst recession since the Great Depression, surpassing that seen during the global financial crisis a decade ago," said Gita Gopinath of the IMF. "The great lockdown, as one might call it, is projected to shrink global growth dramatically. Like in a war or a political crisis, there is continued severe uncertainty about the duration and severity of the shock." However, the global economy is reviving even as new covid varieties appear. Questions persist: How long will the current pandemic last? Will covid-19 later become part of endemic disease cultures that weaken

but not threaten communities? How may they be influenced by inventions in medical technology? What levels of skills, investment and solidarity are needed to sustain the health of complex societies?

Emergency measures intensified in several countries after public health specialists at Imperial College, London, in March 2020 warned of 510,000 deaths in Britain and 2.2 million in the United States, if the pandemic remained uncontrolled. As of April 2022, recorded covid deaths in the United States reached one million. The Imperial College specialists warned: "The global impact of covid-19 has been profound, and the public health threat it represents is the most serious seen in a respiratory virus since the 1918 influenza pandemic," commonly known as the Spanish flu, which killed tens of millions of people. The emergencies bred by this pandemic reinforce major changes in the structures of economies and societies, threatening longstanding political commitments.

Early in 2022, a worldwide surge in cases of Omicron, a new covid variant, provoked confusion as case numbers multiplied radically while mortality remained stable. "This is an unbelievably unique moment when so many people get infected by a pathogen at the same time," said Christopher Murray, a leading analyst of health and mortality trends. Within weeks, the Omicron surge quickly receded, without explanation, not before bringing

the total U.S. death toll for the pandemic to one million, which some specialists saw as an under-estimate. A new federal study found that nearly 60% of those tested carry antibodies from previous infections and vaccinations. New drugs appear, like Pfizer's Paxlovid, taken orally as pills, eliminating the need for medical staff to administer and for elaborate transport rituals to reach distant communities.

Covid-19 has exacted a tragic toll on Mexico, with 450,000 lives lost, according to a new official mortality recount, the world's third-highest toll after the United States and Brazil. Mexico's population of 130 million is half the size of Brazil's, one-third of that of the United States and one tenth of India's, which recorded fewer cases and deaths. Mexico was easing control measures even as death rates rose sharply. While national statistics are scarce, with little testing, Mexico City's mortality rates surged to over three times previous years, heavily concentrated in poor neighborhoods. Mexico does not produce its own oxygen tanks and could not import them as usual from the United States because of the covid epidemic there. People die at home even as public hospital beds remain unused because of the high death rates in poorly equipped government hospitals where nearly 40% of covid patients. A shortage of death certificate forms delayed burials. Many corpses lie at home or in refrigerated trucks until the papers can be signed by doctors. Yet coffins are hard to find and burials hard to arrange. Funeral homes store unburied bod-

Uncertainty haunted hospital staff

ies in their refrigerators. Family members in old cars or taxis scoured the city searching for undertakers to bury their kin who died at home.

Some 18 million people worldwide died so far in this pandemic, far exceeding general mortality in previous years. The numbers grow as more data becomes available and processed, using more sophisticated analytical tools. New findings were published this year by a large group of scientists for the World Health Organization and separately by researchers at *The Economist*. India led the pack, with four million covid deaths, against an official estimate of 200,000. Other big countries, with concentrations of urban poor and weak public institutions, recorded high levels of covid mortality: United States, Russia, Mexico, Brazil, Indonesia and Pakistan. In all, 21 countries suffered high mortality levels [at least 300 covid-related deaths per 100,000 population]. Bolivia, with weak institutions, recorded the world's highest covid-related mortality rate [735 per 100,000 population], five times the global average.

Neglect of public health is common in countries with large territories and weak institutions. Russia and Brazil are world leaders in covid deaths. Russia, a rich country, recorded about 580,000 more deaths than expected in April 2020>June 2021, against an officially registered mortality of only 130,000. Unrecorded covid mortality is even more common in some African countries like Tanzania, where most deaths are not registered or are misclassified. Only 724 covid deaths were registered officially in Tanzania during the pandemic, against 69,000 later reported in more detailed public health surveys. "We used to bury one a week [before the pandemic]," said a local gravedigger, "but over the past year we reached 17 a day."

Doubts ranged from verifying death rates in stricken regions to the usefulness of wearing face masks outside hospitals. Uncertainty haunted hospital staff. Most predictions foresaw a bell curve profile of the pandemic in rich countries, with a sudden rise in cases and deaths, remaining at peak levels for a short period, followed by rapid declines and return to a kind of normalcy with lower levels of infection. But then cases and deaths surged once more in Europe and the United States. The projections often fail to account for seasonality in different regions of the world, the mixture of covid-19 with other infectious diseases and enormous differences in the quality of public health institutions between richer and poorer regions. Mid-2022 saw a resurgence of cases in the United States, Europe and South Africa, with covid varieties proliferating and populations discarding preventive measures.

Robert Redfield, director of the U.S. Centers for Disease Control and Prevention, warned that this is "going to be the most difficult time in the public health history of this nation. We're going to have the flu epidemic and the coronavirus epidemic at the same time." Redfield said that covid-19 infections may be 10 times more common than those recorded.

Statistical analysis in January 2021 of data from 59 nations and states by *The Wall Street Journal* showed that 2.8 million people lost their lives during the pandemic, a 12% increase in reported deaths over the average of previous years.

Mortality statistics for covid-19 reflect widespread underreporting. A comparison of mortality between 2019 and 2020 in 14 countries by the *Financial Times* indicated 60% more covid-19 deaths than those registered. "The covid-19 crisis has again exposed the fragilities of social and economic systems and how they can operate on a knife edge," writes Andy Haldane, chief economist of the Bank of England. "This time, the source of the threat is public health rather than financial wealth, but again the risk is systemic and chronic."

Rich and poor countries face basically the same challenges with different levels of institutional resources. Rich countries can invest more financial and human assets than poor countries in testing and in tracing contacts of those who test positive for covid-19. All can wear masks of differing quality, but many refuse and their protective value is doubted. Protective clothing for hospital workers is scarcer in poor countries than in rich countries. In rich and poor countries, hospitals themselves become a focus of spreading infections. The machinery needed to produce oxygen is relatively simple, but it must be sturdy enough to withstand dust, humidity and maintenance deficiencies in poor countries. Oxygen support for patients demands skilled staff and infrastructure to replenish supplies. Ventilators are rare in poorer countries, as well as expensive. Patients need constant monitoring by anesthesiologists and trained technicians.

New York and São Paulo show striking affinities. Both are giant cities that grew with migration, attracting talented and ambitious people from the rest of the world. Both now are regional concentrations of the coronavirus pandemic that burst the boundaries of knowledge and control. Doctors, nurses and support staff faced similar challenges at Elmhurst Hospital in the New York borough of Queens, in a poor neighborhood packed with immigrants of varied origins, and at São Paulo's Hospital das Clínicas, a huge public institution that is the ultimate port of call for the desperate. Patients and families demanded tests for coronavirus, not yet available. "The most difficult thing has been describing to patients what is going on," said Hashem Zikry, a young doctor at Elmhurst working shifts of up to 13 hours, examining patients from behind a large plastic face shield, talking through interpreters who use dozens of languages. "We ourselves are so confused and scared, and every day it seems like there's a different protocol for who we are testing, who we are admitting."

São Paulo contains the biggest concentration of Brazil's cases. Local governments were unable to enforce quarantine measures. One million people there are elderly with low incomes, one-fourth of them living more than five kilometers from hospi-

tals with intensive care units. Obesity is a major risk factor. As in New York and other big cities, an epidemiological polarization occurs in São Paulo between richer and poorer communities.

Emergency room doctors like Hashem Zikry were wrestling with a strange and menacing web of problems, without known solutions. Covid-19 can provoke kidney failure, driving the body's immune system into catastrophic intensity, and blood clots that impede circulation to heart, lungs or brain. There are questions: Why does a dangerous, newly observed tendency to blood clotting transform some mild cases into life-threatening emergencies? Is an exaggerated immune response behind the worst cases, as if treatment with immune-suppressing drugs could help? Why very low blood oxygen in patients does not leave them gasping for breath until the onset of a final crisis? Why is this virus so powerful? A group of trainee doctors, pressed unprepared into complex tasks on long emergency shifts, wrote to the head of New York City hospitals: "We are horrified and scared, paralyzed with feelings of helplessness and guilt."

New York initially was the epicenter of the pandemic, with 7% of the world's coronavirus deaths by June 2020 and 27% of U.S. fatalities. After Covid-19 quickly spread to low-income districts of New York City, local agencies moved fast. The mobilization, one way or another, with many mistakes and deficiencies, was repeated in stricken cities throughout the world, many of them without the institutional and financial resources of New York. Months later, covid in New York came to be regarded by specialists as a permanent feature of urban life. "We're seeing it more as a chronic problem than as an immediate, huge pandemic problem like we were before," said Dr. Mangala Narasimhan, a critical care specialist.

In New York, hundreds of intensive care beds were added without enough trained staff, leading to mistakes, neglect and death. Hundreds of expensive ventilators were added, often faulty, without enough of other critical resources, such as oxygen, vital signs monitors and dialysis machines. Doctors and nurses died, lacking protective gear. Nevertheless, the emergency subsided within weeks. The flow of cases slowed. That has been the hope of communities throughout the world that have suffered badly.

Large hospitals in many countries are better prepared for a new surge of patients, with improved treatment skills and equipment, and fewer patients dying. But pressure from a new surge of cases threatens to overwhelm. Hospital staffs are exhausted, with rising rates of depression, trauma and burnout. Nomadic travel nurses, hired for emergencies at multiples of normal pay, move from city to city in the United States for short periods to deal with surges of covid cases.

Shortage of hospital beds has been a worldwide problem in this pandemic, but California, with 40 million people, has been short of beds for many years. "This pandemic is a story of shortage, whether it is shortages of personal protective equipment, shortages of testing supplies, shortages of the trained

staff needed to deal with these patients," said Carmela Coyle, head of the California Hospital Association. "It is what has made this pandemic unique and different from other disasters."

The affliction struck São Paulo, but this metropolis of 21 million people so far is coping. At Hospital das Clínicas, the giant complex with a staff of 21,000, a new intensive care unit was expanded to treat coronavirus patients, doubling its staff. With private sector support, HC hired 140 anesthetists for 900 dedicated beds for covid-19 patients. São Paulo municipal authorities hired 220 more grave-diggers to prepare 13,000 graves and bought 32 funeral cars and 15,000 body bags, a pattern followed in other big cities of the world.

Brazil is a world leader with some 630,000 registered covid deaths. But unrecorded fatalities would bring totals much higher. In 2020, with less than two percent of the world's population, Brazil's average covid death toll, at 3,500 daily was 13% of the world's recorded total. There are sudden fluctuations, such as the surge early in 2022 of daily deaths, from 98 to 653 in one month as a new Omicron variant spread.

"This will increase mortality," said Márcia Castro, a Brazilian demographer at Harvard. "The message is clear, direct and simple: the demographic impact of this pandemic erases nearly two decades of progress in reducing mortality in Brazil." The covid emergency reduced treatments for diabetes, detection of cancers and vaccination of children.

Most deaths in São Paulo are in densely populated peripheral neighborhoods, such as Brasilândia and Capão Redondo. In the suburb of Carapicuíba, a bedroom community where most people work elsewhere, buses remain crowded. Alert street vendors board them to sell homemade surgical masks and gel instead of their customary candy and mineral water. Churches are closed, along with temples for Spiritism and African religions, but rituals are transmitted on video cameras and cellphones. Many ignore the quarantine. Lacking routine medical care or tests for covid-19, they live in flimsy houses, sleeping four or five to a room, sustained by acquired immunities or their own vitality. Old people dying of covid deprived many families of money from grandparents' pensions that was their main cash income.

Many young people of the periphery work at day jobs and attend university classes at night, arriving at home after midnight. In the peripheral community of Jardim Miriam where she lives, Debora Nascimento, who supervises the Braudel Institute's Reading Circles in public schools, reports that "bars and beauty parlors remain open. On Friday and Saturday nights, loudspeakers at parties on my street blast music until dawn. Near my house three people died of covid-19. One was the father of a schoolmate of mine."

With the growth and urbanization of present-day populations far exceeding settlement patterns of previous centuries, problems of scale and density develop that are new to human experience. This will test the strength and values of our civilization.



Memorial service for mayors victims of covid, Cuzco, Peru. Photo by Albino Ruiz Lazo

2. Heroism and Poverty

This chapter is based on decades of original field research on peripheral settlements in Lima by Albino Ruiz Lazo, a Peruvian journalist and member of the Braudel Institute

The shocks of the covid pandemic threatened Peru, along with other Latin American republics, with shrinkage or reversal of modernization. With only 8% of global population, Latin America suffered nearly 30% of deaths in the world from covid-19 during the pandemic, with one of the steepest economic collapses anywhere. In April 2021 Peru confirmed one of the world's highest covid mortality rates. Twice as many Peruvians died in April-May 2020 than the average for the same months in 2017-2019. A third surge followed later in 2021, one of the world's worst so far, but with less mortality. More people are getting used to warnings and taking care of themselves. But social and political structures are being severely tested. People of peripheral communities are on their own, learning about survival strategies and collective action in dealing with bureaucracies as their settlements grow.

The eastern periphery of Lima, crowding the narrow coastal space between the Pacific Ocean and the foothills of the Andes, is home to two million migrants of different origins. Most of its people come from small communities of Peru's mountainous interior. Their numbers are complemented by a middle class minority —merchants, teachers, of-

fice workers— who built houses in the coastal desert in a struggle in recent decades to survive waves of chronic inflation, exceeding 1,000% in some years. So far, democracy has survived, perhaps even strengthened. The strengthening takes place in the periphery of organized society.

With eyes fixed on the slippery ground beneath their feet, the migrants descend the hills overlooking Lima, Peru's capital for the past four centuries, in the fog of dawn that blurs silhouettes and distances. They arrive at scattered and improvised parking lots where motorcycle taxis wait to take them to a bus stop a few kilometers further down the road. The migrants from the periphery then board buses that cross the city and scatter them in well-established neighborhoods where they earn their livings doing all kinds of jobs.

Some are different, with more initiative. Determined to create their own jobs, they provide new services, create micro-enterprises or launch parallel businesses selling both legal merchandise and fakes, finding a modest role in the growth of world trade. The metropolis of 11 million people offers many forms of work and freelance enterprise. Many use credit cards to buy in supermarkets that multiplied



Pedro Castillo leads teachers strike, 2017 . Photo by La Republica

like mushrooms in Lima's periphery.

With globalization, international food and household product marketing chains found new opportunities in areas where eight million new consumers, two-thirds of those who live in the marginal neighborhoods of Lima, consume millions of kilos of food and household items daily. Some become intermediaries who resell some products in shops in their communities of origin in the mountainous interior.

Rural migrants make up most of the populations that have gathered in recent decades at the edge of large cities in Peru, fleeing poverty greater than that of the older neighborhoods of the urban periphery, with shortages of piped drinking water, sewers and access roads. Marginal urban dwellers spend much money on overcoming red tape to obtain authorizations and financing to connect their homes to nearby water and sewage networks. Their lives only start to change when their attempts succeed. Their houses attend the urban condition and they go from the status of invisible inhabitants to that of qualified consumers, essential to access new services and credit.

In these neighborhoods, which have begun to grow vertically with houses of more than two floors for rent, the main wish of its inhabitants is for a democracy of opportunities, growing in recent years.

In the jargon of modern marketing, they are "the emergents." A new middle class transforms their poor neighborhoods by creating new visions of modernity. They do not believe in the sanctity of law and do not expect much from public initiatives. Leaders and social organizations must quickly produce results. Political loyalties change fast.

New leaders emerge, some of them in the confusion of accident and need. Pedro Castillo, now president of Peru, was seen as a simple man. Since 1995, he taught school in a remote village of the northern Andes, built without government support, where he was responsible for cooking and cleaning as well as for teaching children. In official photos as president, he wears a broad-brimmed white hat, typical of local fashion, which became his trademark in his travels throughout Peru. Born of illiterate parents, he supported his university studies by harvesting rice in Amazonia and by selling newspapers and cleaning hotel rooms in Lima. His engagement in politics began in the 1980s, joining local peasant patrols to defend against leftist guerrillas. He became a union leader in 2017 during a national teachers strike, then was urged to run for president as part of broader engagement of lower classes in politics.

It has been 70 years since human settlements be-

gan to multiply in the barren hills above Lima. The hills sheltered poor people looking for work as Peru began to industrialize. Some settlers were evicted and their leaders persecuted and jailed. The electoral calculation of the politicians in the government and the demand for labor was consenting to the occupations. In the early 1950s, the city had 20 districts, and its population did not exceed 750 thousand souls. In 1963, when universal elections for municipal authorities were first scheduled, the city was home to 2 million people in 31 districts. For the municipal elections of 2022 the population exceeds 10 million and there are 43 districts in the city.

One of the earliest settlements, on the rocky slopes of a hill that dominates the city behind the government palace, water and drainage networks were installed at the beginning of the second decade of the 21st century, after a wait of 60 years. The wait ended thanks to the organizational capacity of their inhabitants and the work of their leaders. Governments changed but civic leaders remained. In fact, they became partners in the management of the city. The pattern of its success includes having the ability to conduct three processes: management-action-negotiation. They know that management is often slow, tiring and frustrating. They know that only action leads to negotiation.

Poorly financed and equipped hospitals could not meet the needs of covid patients. Corruption stories multiplied. Peru's police chief and interior minister resigned after subordinates bought diluted sanitizer and flimsy face masks for policemen, of whom 11,000 were infected and 200 died of the virus.

So far, 33 town mayors have died of covid in different regions of Peru. But known statistics do not reveal the losses in government services and structures, especially with the deaths of many more teachers and policemen. A new wave surged in Peru, spread from the P-1 variant that first surfaced in Brazil's *Amazonia*, infecting a record daily high of 11,260 cases on March 23, 2022, with 40% of them in Lima.

Lack of parts and maintenance have kept several hospital oxygen plants out of service for years. One mototaxi driver, earning \$50 daily, borrowed money from friends and family to pay \$1,300 for an oxygen tank to keep his son alive. "They asked us to stay at home, but lots of people have no savings, so that was impossible," said Hugo Nopo of Grade, to a Lima research group. "They asked us to wash our hands, but only one in three Peruvian households has access to running water."

Poor people became restless and desperate, responding in two ways. (1) Women in poor communities organized soup kitchens, as during the hyperinflation of the 1980s, a practice that surged spontaneously in many countries during the pandemic. (2) As elsewhere in the world, especially in the United States and Brazil as well as in Europe and South Africa, young adults abandoned caution to converge in street parties and beach parties.

In Lima, police raided a *nightclub where young people were defying lockdown restrictions. As they rushed for the exit to flee arrest, 13 were crushed to death, 11 of whom later tested positive for covid. Of the 23 survivors arrested by police, 15 also were infected.

Meanwhile, Dr. Rosa López at the intensive care unit at a social security hospital in downtown Lima said that its 49 intensive care beds are still full with covid-19 patients, but fewer now require critical care thanks to improved treatment methods. A month ago doctors had to choose between 52 critically ill patients needing intensive care with only three special beds available. More recently there were only eight patients needing such care.

The covid death surge in Peru, the worst in Latin America, seemed to have abated and gone into reverse, along with declines in covid deaths in other Latin American countries. But cases and deaths resurged in December 2021. Peruvian doctors went on a hunger strike, protesting the lack of ventilators and trained staff to operate them. When cases receded in mid-year, doctors and nurses were fired, but never rehired when infections resurged. By January 2021, 276 physicians had died from coronavirus. "We're working with a deficit of 6,000 specialist doctors, at least 1,500 intensive-care physicians and 6,000 to 8,000 intensive-care nurses," said Dr. Teodoro Quiñones, head of the doctors' union who led a hunger strike. Panic ensued after hospitals exhausted their oxygen supplies. Desperate families scoured black markets to find oxygen for covid patients dying at home.

Officials announced a deal for one million vaccine doses from Sinopharm of China, but no delivery date was given. Governments of Peru, United States and other countries sent special airplane flights to China to pick up contracted shipments of Sinopharm vaccines that might be diverted to other countries at higher prices, only to discover later that Chinese vaccines had little effect on new covid varieties. Amid this turbulence and desperation, Peru ran through three presidents in 10 days. Three candidates in 2021 April's presidential election faced charges of corruption or murder. Facing court charges for administrative or criminal offenses were 68 of the 130 members of Congress.

Peru until recently was Latin America's big success story, with strong public finances, fast economic growth, social progress and a solid credit rating, despite recurring corruption scandals. But Peru's economy shrank by 11% in 2020, recovered in 2021, but may shrink again with renewed covid outbreaks. Most Peruvians now see corruption as a greater threat to their future than the pandemic as they face poverty and disorder.

The main challenge for governments in Peru and several other Latin American countries is to legitimize fast urban growth, without planning, especially in high-risk areas, where it is costly and difficult to integrate migrants into organized society.

3. Amazonia



Amazonia: Seeking medical attention in covid pandemic. Ueslei Marcelino - Reuters Wider Image

The coronavirus pandemic hit like a cyclone in Amazonia. The newest phase of the pandemic erupted in Manaus by December 2020 with the new variant P.1, resistant to known vaccines, twice as contagious as other viruses known in Brazil, reinfecting many who already had been vaccinated. P.1 spread fast throughout Brazil and to many other countries.

“Manaus is a remarkable city,” Theodore Roosevelt, former president of the United States, observed in 1913 as he ended his exploration of *Amazônia* toward the end of Brazil’s rubber export bonanza. “Sixty years ago it was a nameless little collection of hovels, tenanted by a few Indians and a few of the poorest class of Brazilian peasants. Now it is a big, handsome, modern city, with opera-house, tramways, good hotels, fine squares and public buildings, and attractive private houses.”

Amazonia is a vast, dynamic region, impacted by waves of migration and new technologies attacking its rich resource base, with new cities rising amid the world’s biggest rainforest, now threatened and receding, with multiplying patches of forest stripped for cattle-raising, crops and wildcat gold mining, ever more mechanized for digging deeper. They are opposed by a growing number of Brazilians and foreigners alarmed by prospects of destruction of the world’s largest tropical forest.

The population of Manaus surged during Amazonia’s rubber boom of the late 19th Century, from 39,000 in 1890 to 76,000 in 1920, then doubling again and again, to 140,000 in 1950, to 314,000 in 1970. By that time military rulers had created a subsidized duty-free zone in Manaus to protect Amazonia from foreign incursion, allowing foreign investors to import and assemble duty-free parts for many products –transistor radios, cellphones,

TVs, computers and motorcycles—for export to the rest of Brazil. A busy international airport landed factory parts as well as tourists who explored the river system. By 1980 the population of Manaus doubled again to 642,000, then doubled again to 1.4 million by 2000, approaching 3 million today in an expanded metropolitan region.

As deaths surged in Manaus by April 2020, cemeteries were so overwhelmed that workers were ordered to bury five corpses in the same grave. So many died that the city cut mass burial grounds out of thick forest. Doctors and nurses, unpaid for several months, fled the city. Many with symptoms of covid chose to stay home, scared of dying alone in hospitals.

Funeral vans roamed around the clock to collect bodies. Crowded riverboats, packed with hammocks, brought even more patients from distant river towns and villages in the vast state of Amazonas and from beyond. Covid-19 spread from big cities to remote communities with few medical resources. On the island of Marajó at the mouth of the Amazon River, the town of Breves became the most impacted city in the world by cases of coronavirus, with one-fourth of its 100,000 people infected, falling to 9.4% a few months later, by the second half of 2020.

“We confess our failure,” said Manaus Mayor Arthur Virgílio, scion of a patrician family who caught covid-19 along with his wife. “People ignored our recommendations to stay home, crowding the streets, thinking that covid-19 is a rich man’s disease, not affecting the poor. During seasonal flu outbreaks in Manaus as many as 30 a day died. With covid we buried as many as 142 a day. There were several times more cases. We don’t know how many sick and dead there were because most go unrecorded.”

The recorded covid infection rate in the state of Ama-

immunization programs. Meanwhile, some populations, especially in rich countries, are rejecting vaccination, arguing that the danger is past while governments stop ordering more supplies.

Biosecurity experts often focus on vaccines, rather than the more complex institutional weaknesses of public health systems. Few talk of the scale and cost of political mobilization needed to coordinate health workers and biomedical resources to test and treat people, quarantine them and trace their contacts. Logistical challenges engage a vast array of producers and supply chains, moving vaccines and other perishable materials over long distances despite scarce warehousing and transportation capacity, especially for airfreight. "The logistics industry doesn't have enough of airfreight capacity, ground handling personnel and specialized equipment to handle this," said one executive.

Given these logistical problems, the German firm BioNTech, developer of a mRNA vaccine to defend against covid-19 infections, is reworking its manufacturing processes to produce the new vaccine inside standard shipping containers. BioNTech seeks to standardize vaccine production in containers designed for shipment to distant markets.

There are stark comparisons and contrasts with today's covid pandemic and financial expansion with the relatively tranquil and optimistic boom years in the 1920s before the Great Depression of the 1930s. The financial boom of the 1920s parallels the global financial expansion in the decades before the stock market crash of 2008-9. In both experiences, massive financial expansion sustained economic growth, with declining results most recently.

On January 30, 2020, after several days of internal debate, the WHO declared a public health emergency caused by the covid-19 outbreak in Wuhan, China. The public health crisis entered a new phase.

Problems of scale breed uncertainty. Scientists throughout the world are sharing insights and information, as well as competing, in intensive efforts to develop new vaccines. The speed and scale of scientific discovery can overwhelm, with 23,000 research papers appearing on different aspects of the pandemic in its first four months, doubling in number every 20 days. Discovery can be erratic, subject to error and revision, before any advances consolidate.

"Covid-19 is a new disease that demands use of the best models that may be mistaken, not because they are imprecise, but because we have insufficient knowledge of the virus," observed Hernan Chaimovich, a leading Brazilian biochemist. By September, the National Institutes of Health of the United States listed 3,086 studies, only 272 of which followed rigorous standards of clinical research. Since then, scientific and medical research have grown in scale and quality.

We face new and confusing contingencies. Scientists may foresee what may happen, but often cannot mobilize strategic action. New pathogens emerge in a more crowded world, with people, livestock and wildlife living closer together, where big cities expanded into forests and farmland, with closer contact between people and wildlife, with global population quadrupling since the 1918 flu pandemic. So it was in southern China, where SARS

appeared two decades ago as a coronavirus, a new pathogen that challenged the world's thinking about epidemics.

Estimates of mortality tend to converge around 0.5% to 1.0% of people infected, but covid-19 is vastly more contagious than most other viral infections, causing more deaths. Yet there is uncertainty over herd immunity: whether past viral infections provide populations with protection from outbreaks. New discoveries find that immunity acquired through infection tends to decline over weeks or months.

WHO's executive director, Michael Ryan, warned that "we must now do what we can to suppress transmission and not count on herd immunity for our salvation." Access to vaccine immunizations is spotty and erratic throughout the world as new covid varieties develop, reducing hope for quickly ending the acute phase of the pandemic.

Herd immunity indeed is important. WHO reports that vaccinations had not begun in 130 countries as of February 2021, while three-fourths of all doses consumed worldwide were in just 10 countries. Surprising is the low covid mortality reported in many poor countries, which in part may be caused by defective registry. But age also may decide. In rich countries, the biggest share of covid deaths occurs in old-age homes, while median age in poorer countries is much lower.

The rapid mutation of coronavirus variants threatens the effectiveness of vaccines. An epidemic in South Africa led to discovery of a potent mutation—called 501Y.V2—that quickly spread to Britain, the United States and other countries. The variant emerging in Manaus quickly impacted other cities of Brazil. If these variants can reinfect immunized patients, observed Tulio Oliveira of the University of KwaZulu Natal in Durban, South Africa, "the whole idea of herd immunity would become a pipe dream, at least from natural infection."

Recently, case fatality rates have been falling throughout the world, but epidemiologists now fear more waves of infections after the initial eruption subsides, as in Israel and Europe, repeating the successive waves of a century ago, testing the institutional capacity of many cities and nations. According to an MIT study, data from 84 countries suggests that global infections were 12 times more, and deaths 50% more, than officially reported.

An ocean of uncertainties

Contradictions appear frequently. Within Brazil and the United States, as in many other countries, dramatic differences appear in timing and severity of outbreaks between different communities and regions. State and local governments face cuts in revenue while dealing with new demands for public health and welfare services. Contrasts emerge between rich and poor communities, between big and small countries, between nations with strong or weak institutions, and between races, reinforcing other infirmities. Wealth can help but it is not decisive. Negligence can be disastrous. European democracies, such as Italy, Spain and France, were stricken badly but recovered quickly because of their institutional coherence and capacity for focused action, but then suffered new waves on a smaller scale.

Continental nations, such as the United States, Brazil, India and Russia, are less capable of swift and coherent

action because of the size of their territories and complexity of their societies. Brazil and the United States suffered increased mortality in 2020 for the first time since World War II. We remain confused by ups and downs and zig-zags in the spread of covid. Big waves struck, followed by troughs, only to surge again in the United States, Brazil, India, Russia and Europe, among other afflicted regions.

China is the biggest supplier of active ingredients to the world's pharmaceutical industry. India's generic drug industry, relying on China for most of these basic ingredients, supplies 40% of U.S. consumption of these drugs and a larger share of the market in Brazil and many other countries. China had a dominant role in producing and exporting face masks, breathing equipment and other surgical and industrial goods needed throughout the world for dealing with the coronavirus pandemic, as well as critical supplies of vaccines. "The covid-19 pandemic may intensify the trend for global manufacturing to reduce its dependence on China: companies will need to improve the resilience of supply chains, and respond to greater political demands for manufacturing critical goods closer to home," observed Dan Wang of Gavekal Dragonomics, a consultancy. "The end result likely will be more robust and decentralized global supply chains." The role of China is diminishing as the most dynamic source of intermediate goods as well as of economic growth.

The failure of public health institutions in China to control covid, using its own methods and strategies, added to the growing sense of limitation. Moving toward a tense political transition this year, China must maintain failing covid controls while stimulating its economy.

The effects of vaccination in preventing spread and recurrence of covid 19 remain uncertain. Excess mortality, differences in death rates between epidemic years and normal years, is useful where deaths are counted and explained. Russia alone recorded 753,000 excess deaths since the pandemic began late in 2019. But in large swaths of Africa, deaths are not recorded. One exception is South Africa, where public health statistics are more accurate and new variants better detected, such as the BA.4 and BA.5, in a recent tripling of covid cases.

Contradictions appear frequently. Within Brazil, Russia and the United States, as in many other countries, dramatic differences appear in timing and severity of outbreaks between communities and regions. State and local governments face cuts in revenue while dealing with new demands for public health and welfare services that happen fast.

Russia's long-planned invasion of Ukraine happened as covid once again struck European populations, with unforeseen consequences. Russians expected a quick victory but were surprised by the intelligence and ferocity of Ukraine's resistance. The defense of Ukraine became an international cause that unified and mobilized democracies while the Russian invasion floundered.

The United States played a leading role in supplying money and weapons, persuading European allies to do so as well, but replacement of existing stocks of weapons consumed in this conflict may prove costly and delayed, leading to doubts as to how long these efforts can be sustained. The *Financial Times* observed: "After the double shock of covid-19 and the Russian invasion of Ukraine, inflation

rates have exceeded expectations, surging to the highest level in decades in many countries, while economic growth forecasts are rapidly deteriorating. The prospect of stagflation's return strikes fear into policymakers because there are few monetary tools to address it."

International bureaucracies are struggling with new realities. The power struggle between East and West, between dictatorships and democracies, have led western governments to back a long war against Russia, with money but without sending their own troops. But some allies now are backing away.

A new normal? An old one? Victory? Retreat? Nobody knows. President Vladimir Putin assumed personal command of Russian forces in Ukraine, wary of his own political future, after losing thousands of soldiers in battle, without prospect of the easy victory that he expected. The official talk on both sides describes a long war, but signs multiply of exhaustion and compromise.

Poorer countries, especially those dependent on wheat from Russia and Ukraine, feel convulsion and pain on a scale not experienced since the Great Depression of the 1930s. "It's like wildfires in all directions," said Jayati Ghosh, an economist at the University of Massachusetts. "This is much bigger than after the global financial crisis. Everything is stacked against the low- and middle-income countries." Russia and Ukraine, together in normal times providing one-fourth of global wheat exports, deprive several countries of basic food supplies for large urban populations.

Massive damage to Ukraine's cities provides new lessons on the costs of war, in the speed and scale of destruction. Damage to trading networks abort hopes of globalization and its vast webs of cooperation and support. "The economic prospects for Russia are especially gloomy," Finland's central bank reported. "By initiating a brutal war against Ukraine, Russia has chosen to become much poorer and less influential in economic terms." Russian inflation surged and production fell. Ambitious industrial projects were suspended. The cost of rebuilding war-damaged Ukraine is estimated at \$500 billion, while short-term needs to enable its wartime government to function total up to \$7 billion monthly. Ukraine's civilian heroes, advocating democracy, appear continuously on international television, while traditional criminal elements wait in the background. Who will support reconstruction in coming decades? Why? How?

We struggle to find our way. We take for granted the gains of the past century, without considering the costs. Stagnation is replacing growth. The scattering of pieces on the global chessboard may yield new combinations. "It would certainly be a different world," said Jerome Powell, head of the U.S. Federal Reserve. "It might be a world of perhaps higher inflation, perhaps lower productivity, but more resilient, more robust supply chains." Russia's difficulties in Ukraine coincide with disorganization and shrinkage of world trade after several decades of expansion. The global system, after evolving over several centuries, found itself dependent on complex logistical networks that proved fragile during periods of conflict and instability. The challenge of modern times lies in the management of growing levels of complexity. We must deal with our own fragility.

5. Cooperation



Magno Borges/Agência Mural

Cooperation makes the difference. It nourishes the accumulation and spread of knowledge over time between generations in most forms of life, in their codes of conduct and in sharing information.

In the century between 1920 and 2020, the average human life span doubled, with large variations between countries, but rising nearly everywhere. In Brazil, life expectancy at birth rose from 27 years in 1870 to 75 years today, as it did in Mumbai and Delhi in India. Until the mid-18th Century, life expectancy stayed at around 30 years for centuries. Population growth was slow. Humanity multiplied only with better food supplies, more scientific experiments and data collection, new infrastructure and improved codes of civic behavior. Innovation in public health accelerated in the 18th Century and seems to have reached a climax in recent decades.

The surge in survival of populations began around 1750 with development by scientists like Edward Jenner invented a vaccine to prevent smallpox, which killed both rich and poor. Meanwhile, the swelling of cities led to surges in mortality, especially among the crowded poor, as today, on a smaller scale, with covid in New York, São Paulo, Lima, Delhi and other big cities.

Epidemics tend to strike suddenly, but no pandemic has stricken so many countries so quickly and on such

a large scale as covid. But organized societies so far remain intact. In virtually all stricken countries, doctors, nurses other medical staff keep working long hours, as do gravediggers working overnight and creating new space to bury the surging inflow of corpses. At least 17,000 health workers died from covid during the first year of the pandemic, and many more since then, with promised levels of vaccination for them falling short. But people tended to respect institutions, even though hospitals could not treat the huge inflow of patients.

The civilized world still struggles to overcome these adversities. “The number of infectious disease outbreaks has been accelerating,” warns a panel of leading scientists. But vaccines appear at unprecedented speed with tools never before available, including submicroscopic technologies. As of October 2020, 44 candidate vaccines were being tested clinically with another 151 in preclinical development.

New and better vaccines are appearing fast, especially those based on RNA (ribonucleic acid), a genetic molecule that defines the specific character of all forms of life. A revolutionary second wave of RNA vaccines, developed recently in Germany, enables poorer countries to apply widely the new covid vaccine without needing the freezing technology demanded by earlier versions. RNA molecules also are used in developing farm pesticides at falling costs, including in Brazil.

The boss of a Kansas firm developing RNA-based pesticides observes that “a gram of RNA cost \$100,000 when we started. By 2014 it was \$100 a gram. Now it’s a dollar a gram.”

Knowledge of transmission dynamics of covid is still evolving. Scientists warn that “many characteristics of Sars-CoV-2 are not yet fully understood, such as levels of immunity and immune response, the full spectrum of disease and long-term sequels, the possibility of reinfection, and the potential of the virus to become endemic.” Doubts remain with proliferation of varieties of Sars-CoV-2, on whether the virus is an airborne threat and on the effectiveness of vaccines.

In December 2020, only 11 months after Chinese scientists published the SARS-CoV-2 genetic code, the U.S. pharmaceutical giant Pfizer and its German partner BioNTech, followed by Moderna, won regulatory approval for new vaccines based on a new gene-based technology. The founders of BioNTech are a Turkish-born couple, Ozlem Tureci and Ugur Sahin, who worked for decades in Germany on new treatments for cancer by reprogramming the body’s immune system, then quickly applied their new technique to covid-19 as soon as China published its genetic code.

After a promising start, world covid vaccine production and distribution has fallen into confusion. In recent years India emerged as the world’s leading exporter of many vaccines, within a few months in 2019 generating half of global consumption of new covid vaccines. The privately owned Serum Institute of India, the world’s biggest producer, planned to export 2.2 billion doses, with one-third going to developing countries under a World Health Organization program. But India in May suspended all covid vaccine exports to deal with a surge of cases at home. Because of scanty reporting of cases and deaths, independent professional estimates project between one third and half of India’s 1.4 billion people infected by covid, leading to 1.6 million deaths, 20 times official counts of cases and five times the number of recorded deaths. “There is no way a democratic government under these circumstances would not take domestic political sensitivities into account,” said Harsh Pant of New Delhi’s Observer Research Foundation. “I don’t think India would be in a position to come back to its original role as an exporter of vaccines. Perhaps it will dent India’s image but no country comes out of this crisis unscathed.”

China made its vaccines as part of a commercial and diplomatic strategy in the covid pandemic, but denied giving clear answers on prices, delivery schedules or volumes. More than 60 countries approved them for use, with Brazil and many Asian and African nations highly dependent on applying them. Sinovac, the main brand, claimed a 79% efficiency rate, without releasing data, then reduced it to the 50% demanded by WHO. A phase-three trial in Brazil showed wide variations in efficacy. Gao Fu, head of the Chinese Center for Disease Control and Prevention, said that current vaccines “don’t have very high rates of protection” and suggested that they could be mixed with other vac-

cines to improve efficiency.

The distribution process revealed a wide breach between technical capacity and institutional capacity. Distribution faltered due to confusion on scheduling of deliveries and shortages in trained staff, impaired by lack of funding. “We’ve taken the people with least amount of resources and capacity and asked them to do the hardest part of the vaccination –which is actually getting the vaccine into people’s arms,” said Dr. Ashish Jha, head of the U.S. government’s covid control effort. Disorganization in deliveries to hospitals and in storage in freezers lead to large-scale waste.

In the absence of large amounts of effective vaccines and efficient distribution systems supplying their continental territories, citizens of both Brazil and the United States resisted basic precautions such as social distancing, wearing masks and frequent hand-washing. In Brazil, only one fifth of vaccine doses distributed to state governments were injected into citizens, despite decades of experience of the national public health system with vaccination programs. Reaching into small towns in the interior.

Vaccines are being developed fast, but the enormous task of distribution is slowed by logistical problems and confusion. In the United States, most states lacked plans to expand vaccine delivery systems, needing to identify and check thousands of new providers. Faulty reporting procedures confuse both suppliers and clinics. Many health systems were unsure of how much vaccines they would receive or when.

The dedication and stoicism of doctors and nurses are widely publicized, but the unseen heroes of the surge in covid cases are the hospital laboratory technicians whose workload expanded enormously, pressuring many of them to work 16-hour shifts to keep up with the flow of tests. Billions of lab tests for coronavirus are done worldwide since the pandemic spread in the United States, straining technicians, equipment and chemical supplies, with many hard-to-replace older specialists retiring or quitting their jobs. Vaccination on a continental scale also must integrate the efforts of pilots, chemists, factory workers, truck drivers, data scientists, bureaucrats, pharmacists and health care employees.

Coordinated delivery must be made of ultra-cold freezers, dry ice, needles, masks, syringes and alcohol wipes. Huge shipments of dry ice need storage at extremely low temperatures to prevent their degradation into poisonous gas. “Everything has to come together –the packaging, the dry ice, the vials, the material itself,” said Yossi Sheffi of the MIT Center for Transportation and Logistics. “It all must come together to the same place and have enough of it and exactly the right people there ready to take it. Right now, there’s no conductor for the symphony.” We do not know how long protection will last for new vaccines. An editorial in the medical journal *The Lancet* warned:

Whether the vaccines prevent transmission of SARS-CoV-2 or mainly just protect against illness is largely unknown too. If the latter, achieving herd immunity

becomes a difficult prospect. Pfizer and Moderna together project that there will be enough vaccine for 35 million individuals in 2020 and perhaps up to one billion in 2021. As a result, many millions of people at high risk of disease will not be immunized any time soon, necessitating the continued use of non-pharmaceutical interventions. There is a danger that the public might become complacent following the news of promising vaccines. What will the long-term future look like? Will SARS-CoV-2 become endemic, in a post-pandemic phase? It is likely, but it is too early to be sure what form this endemicity will take. Vaccines will be just one determinant. Reinfections are another.

Many specialists advocate producing vaccines not just for moments of crisis but as part of a long-term process, with huge political and financial challenges. Developing new vaccines is risky, slow and costly. Over the past two decades, scientists, public health specialists and philanthropists have been meeting to discuss the next pandemic. Scenarios like Operation Dark Winter (2001) and Atlantic Storm (2005) were discussed at international conferences and biosecurity think tanks in Europe and the United States. WHO sponsored the Covid-19 Vaccines Global Access Facility (COVAX), a distribution scheme for poorer countries, which managed to distribute only 72 million doses, only 4% of the 1.7 billion covid doses shipped worldwide, thanks to concentration of production and consumption in rich nations and suspension of exports from India, the biggest producer, to face the huge covid outbreak there.

The risks of vaccination development programs are daunting. Only one-third of new vaccines survive early evaluation to reach preclinical testing. Many vaccines are useful only during major epidemics, leaving behind wasted investments. Many of them are distributed to poor countries at prices far below cost and face challenges of storage and distribution, requiring billions of needles and syringes, hundreds of millions of glass vials and specialized “cold chain” transport

Epidemics multiply with growing populations crowding new environments as modern transportation systems ease traffic between distant regions of the world. One consequence of this crowding between the urban and the wild may be the role of the pangolin, a small creature wrapped in scales as protective armor. Pangolins and other wild animals are sold in the market in Wuhan, China, and elsewhere in Southeast Asia, for their meat and medicinal properties. Many scientists believe such creatures carried the coronavirus from the wild to human communities, starting its spread throughout the world in the covid-19 pandemic.

Other scientists disagree, after detailed examination of the thesis of wildlife origin of covid. They now find that covid originated in experiments at the Wuhan Institute of Virology, which for several years has conducted research on adaptation of coronaviruses

to humans, with financial support from the U.S. government. Wuhan scientists became infected in field research on covid-bearing animals, then continued their experiments in laboratories without adequate protection. Some lab workers were infected. The first covid cases appeared in neighborhoods close to the Wuhan laboratory. “We are now living through two concomitant massive pandemics that are the result of spillover from animal to human hosts, the H.I.V. and the covid pandemics,” observed Wafaa El-Sadr, a tropical disease specialist at Columbia University who visited Wuhan. “Never in history has humanity experienced something along this scale and scope.”

A century ago, Spanish flu was a global event that still haunts many epidemiologists, from which many lessons have been learned. “It is possible that the 1918-19 pandemic was, in terms of absolute numbers, the greatest single demographic shock that the human species has ever received,” Alfred Crosby wrote in *The Cambridge World History of Human Disease*. “The Black Death [of the Middle Ages] and World Wars I and II killed higher percentages of the populations at risk, but took years to do so and were not universal in their destruction. The so-called Spanish flu did most of its killing in a six-month period and reached almost every human population on Earth.” Since then, estimates of the dead from Spanish flu ranged widely, from 22 million to 100 million, overlooking many deaths in Asia and Africa.

In Brazil, the Spanish flu claimed 300,000 deaths, including that of President Francisco de Paula Rodrigues Alves. In Rio de Janeiro, pharmacies closed in 1918 for lack of healthy employees. In cemeteries, coffins were strewn above ground for lack of gravediggers. São Paulo installed electric lights in its cemeteries so burials could continue at night. Among the city’s population of 500,000 then, some 350,000 were said to be infected and 5,300 died.

The Spanish flu was an offshoot of World War I, which stimulated a financial and industrial boom, whereas today the world economy is growing slower and has assumed expensive social commitments that did not exist then. “The most astonishing thing about the [Spanish flu] pandemic was the complete mystery that surrounded it,” observed Maj. George A. Soper, a sanitary engineer writing in 1919, when he first saw influenza as a bacterial infection. Viruses were still unknown to science, only to be discovered in the 1930s. Influenzas, such as covid, were not confirmed to be viral until the 1990s. During the three years (January 1918>December 1920), the Spanish Flu pandemic infected some 500 million people, or one-third of the world’s population, killing at least 50 million, including 550,000>675,000 in the United States, or 0.66% of its population, according to researchers at the U.S. Federal Reserve and MIT. If the same proportions applied today, the current pandemic would kill nearly two million people in the United States, in line with some current projections. By 2020 covid deaths in the United States led to an increase in general mortality of 16%, greater than in the 1918 flu pandemic.

6. Economics and the Dance of Life



Wildcat mining in Serra Pelada, Pará - Photo by Norman Gall, 1981

The gold of our time

Life is known, to a reasonable degree, but the future of life is unknown. The world economy is shaken by a sudden storm, moving with speed and scale never before seen in times of peace. According to the Bank for International Settlements (BIS), the coordinating agency for the world's central banks:

The past year has felt like an eternity. It is probably too early to tell, but future economic historians might consider the covid-19 pandemic a defining moment of the 21st Century. When, just over a decade ago [in 2008], the Great Financial Crisis hit the global economy, it was rightly considered such a moment. The pandemic's legacy could be even deeper and longer-lasting.

While the world continues worrying, thousands of wildcat gold miners, called *garimpeiros*, multiply in Amazonia, dredging the sandy bed of the Madeira River with diesel-powered drills to reach rich alluvial deposits. Nomadic *garimpeiros* have been digging into Brazil's streams since colonial times with primitive methods. Attracting migrant laborers from the rest of Brazil, and from distant places such as Haiti, they now have mechanized

with financing by entrepreneurs and politicians who own hundreds of illegal barges, buying and selling unrefined gold in Porto Velho, the capital of the frontier state of Rondônia.

Garimpeiros still work the river bottom, multiplying in number with surges in the price of gold in recent decades, provoked by worries in diversified and fast-growing financial markets. Logistics and marketing have improved, using new technologies of internet communication.

But the *garimpeiros* also have run into conflict with organized society. In the Amazon state of Pará, they have dug their way into the support infrastructure of the great hydroelectric dam of Belo Monte, which sends crucial supplies of power over 2,000 kilometers to the cities of southern Brazil. Belo Monte and its long-distance transmission network are now controlled by the Chinese electricity conglomerate State Grid. *Garimpeiros*, using heavy machinery, resist or evade police efforts to remove them, deepening conflicts between marginal and institutional forces.

The gold of Rondônia fed into a global financial boom, breeding new forms and styles of investment and speculation, such as new cryptocurrencies that operate anonymously and electronically, mostly beyond the reach and supervision of central banks.

“In Brazil, the flow toward financial markets was caused by the dramatic fall in real interest rates, maintained for a long period, obliging us to live with negative interest rates,” said Roberto Teixeira da Costa, founding president of Brazil’s Securities and Exchange Commission and a member of the Braudel Institute. “Here and abroad, this behavior is justified by the availability of great volumes of international liquidity.”

“The torrent of money has benefited all types of businesses”, *The Wall Street Journal* reported. Corporations used cheap money to borrow heavily to increase reserves and to buy other companies. In the United States, nonfinancial companies borrowed \$1.7 trillion by selling bonds in 2020, raising their total debt to \$11.2 trillion, half the size of the U.S. economy. Lawrence Summers, who was President Bill Clinton’s Treasury Secretary in the 1990s, warned: “Inflationary pressures are mounting from the boost in demand created by the \$2 trillion in savings that Americans accumulated during the pandemic,” from large-scale central bank buying of private debts, zero interest rates, \$3 trillion in government spending passed by Congress, and soaring stock and real estate prices.

Less growth in the world economy reinforces a painful process of geographic dispersal and local and regional consolidation. Recovery from the pandemic is largely concentrated among the one billion people living in richer countries, benefiting from better public health infrastructure and research facilities, while the seven billion people in poorer countries suffer more from vaccine shortages and emergence of new covid variants. With opportunities in formal employment shrinking throughout the world, especially among low-skilled workers, millions of people remained out of work, even in rich countries.

Global supply chains may have absorbed the biggest lasting impact of this restructuring, as global trade volumes fell by 13%–32% in 2020, shrinking logistics capacity of global supply chains and the movement of critical industrial and consumer goods. Global trade is reviving, but many trucking and shipping companies have gone out of business, with many small firms absorbed by big firms. With the resurgence of international trade after the first phase of the pandemic, ports are clogged, shipping capacity overwhelmed, with railroads lacking staff to manage the enormous flow of goods. “The global supply chain was not built for this,” said one shipping executive.

The Fed poured so much cash into the U.S. economy that stock markets boomed while real estate, industries and consumers remained in depression. Commercial property investment was in deep crisis. Tenants stopped paying rent and debt payments on commercial properties are late. Shopping malls, especially those in smaller communities, are in trouble, with many facing demolition or conversion to warehousing or to public hous-

ing projects. Borrowing costs for governments and banks are near all-time lows. Private banks in Europe, with staggering burdens of unpaid commercial loans, borrow heavily from central banks. With central bank interest rates around zero, we may be facing the end of a long-term cycle of credit expansion that began at least as far back as the 1920s and accelerated continually after the Second World War, with chronic inflation or prolonged economic contraction now threatened.

Parallels emerge with inflation crises of the past in several countries. Efforts to mitigate the pressures of chronic inflation through increases in social spending and escalating currency devaluations create vulnerabilities that can surge out of control. The United States, which prints the world’s dominant currency, could learn from Latin America’s inflations of the 1970s and 1980s, when social spending and public debt ran out of control. Most South American republics have learned lessons from past episodes of soaring spending and chronic inflation.

There are parallels between the global credit expansion today and the 1920s. Both were sustained by the flow of credit from the United States. But today emerging economies play a much bigger role, generating 60% of global GDP as against 40% in 1980, posing bigger risks to global flows of trade and credit. The prolonged macroeconomic stability in emerging markets is at risk, with outbound capital flows in 2020 were five times greater than those after the collapse of the New York investment bank Lehman Brothers in 2008 during the financial crisis of the past decade.

The 21st Century saw history’s greatest growth of central bank foreign exchange reserves, from 1.4 trillion in 2000 to \$11 trillion in 2020. Now debtor nations drain borrowed reserves to meet loan payments. Some leading economists argue that covid-19 could well leave a lasting negative effect on the supply side of the economy, as poorer countries find it harder to invest and trade. Globalization could be dramatically rolled back.

Public agencies in the United States, Brazil and many other countries are struggling with the enormous task of registering and sending emergency support to many millions of workers globally who are suddenly without jobs and income. In the United State, a hunger-relief network called Feeding America, embracing 200 food banks and 60,000 local meal programs, said that 17 million people faced food insecurity in 2020.

A polarization of wealth and labor markets favored the prospects of university graduates, while leaving less-educated workers with diminished earnings and job prospects. Stock markets rose to new highs despite surging unemployment, as easy central bank money drove mass speculation in exotic low-grade stocks that in the past led to financial crashes in past centuries, like the South Sea Bubble of 1720. Home prices also surged to

new highs as middle class families saved government emergency relief payments and spent them on new housing, as construction had stagnated in recent years and young families were seeking new homes. The Fed is growing the money supply to sustain consumption, but President Joe Biden's huge expansion of federal spending, to relieve suffering and modernize the economy, now stokes fear of inflation.

Future waves of public spending to provide relief to populations and companies will be hard to predict and contain and even harder to finance, either through austerity, financial repression or inflation, or by some combination of the three. Meanwhile, poor countries depending on exports to rich countries were hit hard, especially makers of basic clothing and shoes such as Bangladesh, Myanmar and Vietnam, impacted by the closing of shopping malls and the bankruptcy of major retailers, with shopping centers in Brazil, following a huge expansion, suffering similar impacts. The Chinese economist Andy Xie, a veteran of the IMF and Wall Street, argues that "globalization, as it was, is finished. This globalization of supply chains that minimize costs is fragile and vulnerable to shocks like this one. Governments now want factories that can produce for their own country. Having production capacity in each country is important. Supply chains cannot be based only on minimizing costs."

While the world grew, Brazil's economy stagnated over the past decade. Living standards declined as per capita GDP shrank by an annual average of 1.2% in 2014-2019. So far, Brazilians took these losses passively, without political mobilizations except for the occasional banging of pots and pans from windows and balconies of apartment buildings. The Institute of International Finance, a consortium of major banks, foresaw a 5.4% contraction in world economic activity, with Brazil and other developing countries drawing heavily on reserves to support capital outflows. These countries depend more than in the past on private financial sources—asset management firms, hedge funds and bondholders-- that hold 36% of external public debt in emerging markets, twice the share of a decade ago, when governments borrowed more from banks and public institutions.

For Latin America generally, the investment bank Goldman Sachs warned of "a deeper and prolonged contraction of activity increasing the risk of scarring effects i.e. the risk of structural damage to the labor market and productive capacity of the economy (through bankruptcies), which could cause widespread loss and delay and undermine the recovery once the viral outbreaks are brought

under control." Fear is widespread of permanent loss of jobs that existed before the pandemic. "The pandemic decimated the labor market at record speed," the IMF reported, especially in low-level service jobs requiring less education.

The coronavirus pandemic brings into new focus what Adam Smith observed 246 years ago, in *The Wealth of Nations*, that "the demand for men, like that for any other commodity, necessarily regulates the production of men; quickens when it goes on too slowly, and stops it when it advances too fast. It is this demand which regulates and determines the state of propagation in all the different countries of the world."

A shrinking "demand for men," as well as environmental constraints, is shaping the population dynamics of the 21st Century. A new study published at University College London, surveying 195 countries by a large group of scientists on "Fertility, Mortality, Migration and Population Scenarios," foresees a shrinking of population numbers in this century, independently of any wars, famines and natural disasters. The exception would be sub-Saharan Africa, where population would

triple to 3.1 billion during this century and to keep expanding fast in the 22nd century. But these projections fail to account for food shortages in Africa and, with weak public health infrastructure lacking vaccines, the deadlier impact of covid and other epidemic diseases.

Changes can be dramatic as births fall below replacement levels and aging prevails. China's population would decline by half in this century, from 1.4 billion to 732 million. Russia's, which stagnated since 1993 as the Soviet regime ended, would shrink by 38% to 106 million by 2100. Japan would end this century with less than half of population it had in 2000. Some ups and downs would surprise. India's population would peak at 1.6 billion at mid-century, then shrink by nearly one-third by 2100. The populations of Italy, Spain and Greece would fall by half, but those of Britain, France and Germany would be relatively stable, backed by intelligent immigration policies.

The peoples of the Americas are fortunate. They are generating less population pressure than other regions, enjoying access to more abundant natural resources. If immigration remains strong, the population of the United States would remain relatively stable throughout this century. The populations of Mexico, Peru and Bolivia may grow fast, but Brazil's would fall by one-fifth to 165 million by 2100. Most important for the future of these republics would be strong and intelligent investments in education and infrastructure.

Latin America learned from past episodes of chronic inflation.

7. We Need Consolidation



Madrid Emergency Service (SUMMA) workers disinfect a UVI-4 unit's ambulance - Reuters Wider Imagee

We do not know whether the pandemic will subside with mass inoculations in privileged and targeted populations, whether herd immunities gained from prior waves of infection by other diseases will protect more people, whether outbreaks will return repeatedly, or whether covid-19 will remain embedded in populations like other endemic diseases, as a low-level threat to most people but deadly to a few.

What we do know is that the present pandemic accelerated basic changes already evolving in human societies. It impacts political priorities, costs, economic security of populations, natural resource limitations, the organization of business and work, the structure of world trade and opportunities of young people for education, jobs and creative activity, among many other contin-

gencies. Many complex societies are weakened by rigidities in the sharing of wealth that must be renegotiated. In contending with these difficulties, and facing stringencies in public finances, governments face hard choices between repressed consumption and chronic inflation.

The issues of overloaded systems that we now face have been evolving for decades, but they became clearer in the years following the financial crisis that began in 2008. In *Crashed: How a Decade of Financial Crises Changed the World*, Columbia University historian Adam Tooze asks:

How does a great moderation end? How do huge risks build up that are little understood and barely controllable? How do great tectonic shifts in the global order unload in sudden earthquakes? How

do the 'railway timetables' of giant technical systems combine to create disaster? How do anachronistic and out-of-date frames of reference make it impossible for us to understand what is happening around us? Did we sleepwalk into crisis or were there dark forces pushing? Who is to blame for the ensuing human-induced, man-made disaster? Is the uneven and combined development of global capitalism the driver of all instability? How do the passions of popular politics shape elite decision-making? How do politicians exploit those passions? Is there any route to international and domestic order? Can we achieve perpetual stability and peace? Does law offer the answer? Or must we rely on the balance of terror and the judgement of technicians and generals?

What seems clear is that we have entered a new era. The risks are great and knowledge of them is incipient. We may trace the evolution of skills and knowledge since at least as far back as the 18th Century to understand how overloaded institutions are being tested. Let us hope that covid-19 and the ensuing financial crisis instruct our will to survive. It is testing the idea of a social contract that has evolved in recent centuries, becoming one of humanity's great trials, testing the skills, burdens and moral strength of complex societies. It may deepen the polarization of the world economy, both within and beyond the borders of states, in terms of knowledge and productivity. Along with unprecedented economic and population growth, this polarization has been evolving slowly since the 1980s, with irresponsible financial expansion backed by governments and in successive debt crises, leading to the covid pandemic.

Democracy and complex societies evolved faster with modernization of printing and mass education and since the mid-19th century. Now people read less, which is a threat to democracy and complex societies. On a global scale, families, businesses and governments are running out of time and cash. Job losses dislodged notions of full employment. Supply chains were truncated and paralyzed. Schooling was interrupted. Public debts are accumulating that can be managed only through inflation, renegotiation and default, or through some combination of these options, in order to sustain civilized life at something like present levels of complexity.

Complexity can quickly dissolve into parochial disputes, as in Russia's recent invasion of Ukraine. Many see a threat of Russia restoring its imperial dominion in Eastern Europe, dissolved with the collapse of the Soviet Union in 1989, provoking collateral damage in the United States, China and Europe, altering patterns of world trade and political cooperation.

Pandemics and prosperity make strange bedfellows. The surge of covid mortality in the United States, with rising death rates expected in coming

months, encountering widespread indifference amid a surge in its economic growth. Many other countries suffer sharp rises in death rates, especially in poorer economies. Russia is among those impacted the most as it presses a savage war with Ukraine, cutting food exports from both countries and creating panic in poorer nations struggling with sudden cutoffs in supplies. Guaranteeing stability in food provision becomes a major diplomatic issue worldwide.

The parameters of organized economic life are shifting. The boundaries of elasticity become narrower, even as political institutions contend with broader and heavier demands. The Russian invasion of Ukraine clarifies these choices, as political institutions worldwide seek to control the covid pandemic. The goal for most is stability of democratic institutions, opposed by servants of authoritarian rule. There is no middle ground.

"The Russian invasion of Ukraine has put an end to the globalization we have experienced over the last three decades," warned Larry Fink, head of the giant investment bank BlackRock, predicting a shrinkage in overseas investments that will reduce the reach of supply chains and inflate costs. Inflation becomes, once again, a major issue in the United States, with consumer prices rising in the fastest surge in four decades. With the central bank paralyzed by political demands and controversy, successive surges of emergency spending in the pandemic totaled 25% of GDP, the highest on record in peacetime, helping to drive a new wave of global economic expansion. This drive reached a climax with U.S. intervention, with money and weapons, on the side of democratic forces in Ukraine resisting a Russian invasion.

Cooperation is one of the mysteries of evolution. Despite shocking episodes of disease and warfare, humanity has repeatedly reorganized and improved the quality of life. Epidemics of the past, costly in lives and suffering, nevertheless yielded new standards of civilization. The Black Death of bubonic plague in early modern Europe led to the invention of quarantine practices, a new price for labor, redistribution of land tenure and cultural developments such as expanded literacy and the invention of printing. The cholera epidemics of the 19th Century drove new public health practices and better physical and social infrastructure.

The economic and public health crises of the past, when overcome, inspired new thinking and new priorities. The expansion of the world economy, measured in centuries or decades, has paused for now, posing new challenges. We need consolidation, as humanely as possible. These challenges demand new levels of human cooperation, involving more productive public investment, more just taxation, better education, more opportunities for young people and reduction of privileges. It will be hard to escape the choices posed by this need for cooperation.