



Reflections on COVID-19

I sit at my desk at home, enveloped by an unreal silence broken only by the sound of peacocks calling in the heart of the city. Completely absent is the constant thrum of traffic on the street, punctuated by the occasional plane passing overhead. Who could have imagined, even just a few weeks ago, that the world would suddenly be catapulted into a scenario akin to a futuristic science-fiction movie? A world where country after country has been locked down, where city streets are deserted, except for those few masked individuals tending to essential services, where one's contact with the world outside has been reduced to the phone and internet, and where thousands have suddenly been rendered refugees in their own country, jobless, with no means to get home to their families.

Though COVID-19 has taken most of the world by surprise, epidemiologists have been predicting a pandemic such as this for some time. The numerous relatively localised disease outbreaks we have witnessed in the last couple of decades—Chikungunya, or Ebola, Nipah or Zika, SARS or MERS—have been a series of red flags. The opening acts before the headliner.

In my work as an ecologist, I study invasive species. These are plants, animals, diseases, typically brought from elsewhere, so-called 'alien species.' Arriving in new environments, and finding release from factors that would have kept them in check at home, they spread uncontrolled, causing significant ecological and economic damage. It isn't only alien species that can become invasive. Native species become invaders too, given a chance. For instance, a relatively inconspicuous light-demanding herb or fern, surviving in forest clearings, could very quickly become rampant if extensive deforestation were to reverse the balance of habitats—more clearing, less forest—allowing it to thrive. Some of the diseases that we have seen in recent years are no different. Our growing human footprint is increasingly disrupting natural systems, giving adaptable organisms an opportunity to invade new habitats (or hosts, in this case)—whether it be the Ebola virus jumping from chimpanzees to people, or the Nipah virus moving from fruit bats to humans. Add to that our unprecedented interconnectedness today, and a local outbreak can very quickly encircle the globe.

Some ecologists have likened invasive species to symptoms signalling an underlying malaise. That apart from the particular characteristics that confer on a species the ability to be invasive, invasive species are aided by disruptions (disturbance, or degradation) that make habitats vulnerable to invasion. It has parallels in the emerging field of planetary health. This area looks at humanity's growing ecological footprint to ask whether our continuing disruption of earth's systems are undermining resilience and bringing it to a tipping point that could threaten our own life on earth.

A well-recognized example is that of increasing atmospheric carbon dioxide and global warming. While warmer temperatures and more carbon could increase agricultural productivity, we are already starting to see a reduction in the nutritional content of staple crops. This could translate to significant protein deficiency for millions of people—a widespread 'hidden hunger'



that could compromise immunity and make people more vulnerable to disease outbreaks in the future. Unlike the silent, unseen reduction in the nutritional quality of the crops we consume, the COVID-19 pandemic is a more strident wake-up call to us as a society. And as we tide over the current lockdown, and in the weeks and months that it will take us to recover from it, we have a chance to reflect on how we as a society will move forward. Will it be back to business as usual? Or will we have learnt something not just about the proximate driver, SARS-CoV-2, but about the ultimate drivers that have brought us to this point? Will the tremendous human and economic costs that this pandemic is exacting from us give us pause to reconsider the economic and technological growth trajectory that we are on, in light of the sustainability and resilience of earth's systems? One can only hope so.