

IMAGINATIVE SCIENCE AND TOTEMIC ECOLOGY

BY DAVID WALTNER-TOEWS

As we begin to emerge from the most recent pandemic, some deep questions remain open, becoming painfully urgent. The approach of reductionist science has framed the issue at stake as a war against an invisible enemy. We are pressed once more to think about what health means and how we can make peace with all living beings, starting from the microscopic populations that live in us, with us, from which we all come from.

What kind of science, and more generally what kind of knowledge can we develop to foster a collective health? To make peace with life around and in us?

The 1948 constitution of the World Health Organization states that health is *a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity*. Notwithstanding this idealized definition, in public and professional conversations the word health is most often used as a shorthand for medically-defined conditions, that is, as the absence of diseases or infirmities. This use of disease-absence as a synecdoche for health has been encouraged by a hospital-centered system in which physicians are trained to diagnose and treat medical conditions. A complex commercial, industrial and technological network has been constructed to facilitate this approach

to diagnosis and treatment, drawing on rapid advances in what Thomas Kuhn called Normal Science, a puzzle-solving endeavour.

Fortunately, many of the determinants of health as an ideal state also apply to absence of disease. Historically and academically, health in all its forms has been understood to be associated with social conditions, as well as food, water, air, and the plant and animal environments with which people interact. These disparate determinants have been the subject of discipline-based research, and reported in many scientific, but non-medical, journals. While much of this non-diagnostic information is available, it has been fragmented, with little communication across disciplinary, departmental and professional boundaries.

There is no doubt that puzzle-solving sciences have been very successful in designing and building vaccines, antibacterial drugs, electric cars and military hardware, but have fallen far short of success when applied to ill-defined global challenges posed by wicked, interacting problems such as climate change, infectious disease pandemics, sustainable development, economic inequity, access to medical care, adequate food, and potable water.

Since the 1960s, various intellectual and organizational initiatives have attempted to rectify these shortcomings. These integrative efforts, cobbling together

information drawn from fragmented, puzzle-solving scientific research, have included health promotion, veterinary public health, ecosystem health, ecological integrity, conservation medicine, ecosystem approaches to health, and planetary health.

In the 1990s, in the wake of a world-wide resurgence of infectious diseases, the term One Health vaulted to a place of global prominence as the most recent attempt to corral a range of health-related disciplines under one tent. In 2008, for instance, an International Ministerial Conference on Avian and Pandemic Influenza in Sharm el-Sheikh, Egypt proposed that a One Health framework be used to address "infectious disease control in areas where animals, humans, and ecosystems meet." In 2016, the University of the West Indies, in collaboration with a range of international and national organizations, implemented a project titled *One Health, One Caribbean, One Love*. The specific goal of this initiative was to develop a One Health approach to zoonotic and food-borne disease surveillance, diagnosis and response. In 2015, yet another term, Planetary Health, claiming to be "solutions oriented", was introduced by a joint project of the Rockefeller Foundation and The Lancet.

These integrative initiatives have met with mixed success, at best. Indeed, the recurrent crises in food security, and the emergence of Avian Influenza, SARS, H1N1 and SARS-CoV-2, have laid

bare some fundamental problems in the foundations of the normal sciences being used as building materials for integrative organizations. In 2017, Samuel Stanley, chair of the National Science Advisory Board for Biosecurity in the United States, asserted that Nature is the ultimate terrorist, and that we must be relentless in our struggle against it¹. This understanding of Nature is reflected in almost all of our government and research institutions, from governmental science advisory boards and universities to the framing of responses to pandemics as battles whose success can only be assured with a stronger medical armamentarium. In the haste to fortify medical defence systems, alternative viewpoints have tended to be swept aside.

In an interview in May of 2020 a former Director of the Office of Public Health Preparedness and Response at the U.S. Centers for Disease Control and Prevention declared that their failure to adequately respond to the pandemic as it emerged was not a lack of scientific information or medical weaponry, but a lack of imagination.

What did this mean? Is there a science that can embrace imagination? If so, where can we find such a science?

Across a very deep intellectual and

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¹ Reardon, S. 2018. "US government lifts ban on risky pathogen research", *Nature* 553 (11) doi: <https://doi.org/10.1038/d41586-017-08837-7>

practical chasm from our normal practice of science, there is an alternative to the fragmented, mechanistic view of Nature — a view based on relational, imaginative science. In the Western world, the divide between the puzzle-solving, reductionist science practices, which we have come to view as synonymous and coterminous with science, and alternative, integrative, imaginative sciences, can be traced back at least to the 17th century. Drawing on the observations and thinking of scientists, philosophers and poets such as Alexander von Humboldt, Goethe and Schelling (the so-called “Jena group”) an organic and holistic view of Nature has largely been relegated to the arts and humanities, or to disciplines considered weak or soft, such as human behavior, communication among people and other animals, and ecology, or even, with even more scathing dismissals, to some sort of New Age fringe. Yet in the wake of the most recent pandemic, as well as crises associated with catastrophic climate change and the worldwide dramatic loss of animal and plant species, the relational and imaginative sciences emerging from that view of Nature offer a glimmer of hope for a way forward.

For the past few decades, with community members in Asia, Africa, Europe, Latin America and North America, my colleagues and I have actively pursued a variety of research methods to integrate the health of people, other animals, and the ecosystems we share. Many of these approaches attempted to bring together multiple methods and perspectives.

These included epidemiological studies, laboratory investigations, intervention studies, social action research, reading and conversing with colleagues across a wide range of disciplines, and in the spirit of Joan Didion, who stated that she wrote in order to determine what she thought, writing several books on excrement, insects, and infectious diseases. After several decades of pursuing this work, some of us have been left with the sense that this cobbling together of reductionist sciences did not result in holistic solutions.

Nevertheless, considering both the successes and the failures of this collaborative work, some possibilities of a way forward are beginning to appear.

Post Normal Science (PNS) was proposed in the early ‘90s by Silvio Funtowicz and Jerome Ravetz for situations where facts are uncertain, values are in dispute, stakes are high, and decisions are urgent. The post normal approach for dealing with these kinds of predicament – currently ubiquitous – points to an extension of the community involved in creating, sharing and applying the required relevant knowledge, drawing not exclusively from the realm of science. If we are to find a way through this century’s rubble into a liveable planet, what is required is not merely a PNS based on conversations among extended communities of people, however, but a PNS that embraces all living things, including the viral and microbial populations from which we have emerged.