Think Piece

COVID-19 – and Far Beyond

In the midst of the COVID-19 pandemic, with its major health, social and economic ramifications (particularly for structurally disadvantaged communities), it can be hard to appreciate that this and similar pandemics are in part a symptom of our growing intrusion into nature. It can also be hard to recognise that while the pandemic has these significant impacts, they pale in comparison with the projected health, social and economic consequences – especially for those same disadvantaged communities - of a far larger set of massive and rapid, human-induced global ecological changes currently underway. Given that the drivers of these changes are human-made, this era is referred to as the Anthropocene, *anthropos* being the Ancient Greek for human

The global ecological changes that constitute the Anthropocene are arguably the greatest threat to health in the 21st century, barring nuclear war. If we are to reduce our ecological footprint to the equivalent of One Planet's worth of the Earth's biocapacity and resources, we are going to have to undertake a profound transformation of our entire way of life, our society and our economy. This transformation will be most marked in high income countries such as Canada, where we need to reduce our ecological footprint by almost 80 percent from our current ecological footprint, which is equivalent to 4.75 planet's worth of biocapacity (Global Footprint Network, 2019).

Yet at the same time we want to maintain a good quality of life and good health for all, and we want the transition to a 'One Planet' society to be socially just, and not increase health inequity. The global slowdown to fight COVID-19 has given the world's communities the opportunity to pause, reflect and perhaps make new choices about how to live sustainably . This has important implications for population and public health practice, at all levels from the local to the global. Our intent is to locate this year's summer school in this global ecological context, while grounding it in local public health action and linking it to the emerging debate about the need for transformative societal change and a just transition to a sustainable 'One Planet' society.

Think Globally

Welcome to the Anthropocene

In May 2019 the Anthropocene Working Group of the International Commission on Stratigraphy voted to recognise the Anthropocene as "a formal chrono-stratigraphic unit" with a base "around the mid-twentieth century of the Common Era" (International Commission on Stratigraphy, 2019) – in other words, a new geological epoch. While technically a geological phenomenon, based on the presence of unique human markers in new sedimentary layers, the Anthropocene is the geological expression of a set of global ecological changes that in turn are driven by human activity..

Ecologically, the geological phenomenon of the Anthropocene is a marker of the massive and rapid global ecological changes that human activity has created, particularly since the mid-20th century – a scant 70 years ago (Figure 1). Referred to as 'the Great Acceleration' (Steffen et al, 2015a), the best known of these changes is climate change, which has been described by the two Lancet Commissions on climate change and health as "the biggest global health threat of the 21st century" (Costello et al, 2009) and as posing "an unacceptably high and potentially catastrophic risk to human health" (Watts et al, 2015).

Earth System Trends	
CO$_2$	+ 26%
Methane	+59.5%
Global surface temperature anomaly (^{0}C) v 1961-1990	+ 0.471 vs - 0.036
Ozone loss (2012)	50.8%
• Peak loss (1994)	66.9%
Ocean H ion	+18%
Marine fish capture	+ 4.6 x
Nitrogen flux to coast	4.26 x
Tropical forest loss (compared to 1% in 1700)	27.66% vs 15.65%
Agricultural land % of total (0.08% in 1750)	0.38% vs 0.31%
Terrestrial biosphere degradation (2.8% in 1700)	28.6% (2000) vs 14% (1950)

Table 1: Earth system trends from 1948 to approximately 2010/2012. Based on Great Acceleration Data – Global (October 2014) *Source: International Geosphere-Biosphere Programme.* *igbp.net/download/18.950c2fa1495db7081ebc7/1421334707878/IGBPGreatAccelerationdatacollection.xlsx*

But important though climate change is, the Anthropocene includes many other global scale ecological changes we are creating – all of which have important health implications (CPHA 2015):

- Acidifying the oceans;
- Changing the great cycles of life (e.g. water, carbon, nitrogen and phosphorus);

- Widespread pollution, including polluting entire ecosystems with persistent organic pollutants (POPs), heavy metals and plastic and other nano-particles (Landrigan et al, 2017).
- Using renewable resources at unsustainable rates (e.g. freshwater, forests, fisheries, soils and farmlands)
- Depleting some key non-renewable resources (e.g. fossil fuels, some minerals).
- Creating a sixth Great Extinction.

We are exceeding planetary boundaries for a variety of Earth systems that should not be crossed (Steffen et al, 2015b), and our ecological footprint surpasses the planet's biocapacity every year – globally it is 1.7 times as great (Global Footprint Network, 2019).

Socio-culturally, these ecological changes are the product of our collective social and economic development, and particularly are due to the socio-economic development model espoused in high-income countries and spread around the world in the form of colonialism and what might be called economic imperialism. That model is ultimately rooted in the Enlightenment, and is known as 'modernity'. Here too there has been a 'Great Acceleration' since the mid-20th century. Some of its key features are massive and rapid economic, population, consumption and pollution growth.

Socio-Economic Trends	
Population	2.73 x
Real GDP (2005 US$)	11.1 x
Urban population	4.74 x
Primary energy use	5.14 x
Fertilizer consumption	14.4 x
Large dams	5.85 x
Water use	3.28 x
Paper production	5.38 x
Transportation (vehicle #s)	7.23
Telecommunications (billion landlines & subscriptions)	> 9,000 x
International tourism arrivals	37 x

Table 2: Socio-economic trends from 1948 to approximately 2010/2012. Based on Great Acceleration Data - Global (October 2014)

These ecological changes - and the cultural, social, economic and technological forces causing them - have profound implications for our health. After all, our air, water, food, materials and fuels all come from nature, and we rely on natural systems to cycle nutrients, detoxify wastes, protect the Earth from solar UV radiation and maitain a stable and warm climate; these are the ecological determinants of health (CPHA, 2015). If we undermine these natural systems then we undermine our own wellbeing, perhaps even our very survival, as well as that of the myriad other species with whom we share the Earth.

Ensuring we do not continue down this path has profound implications for our current way of life, at all levels from the personal to the global, requiring transformational change if we are to remain within the carrying capacity of the Earth.

Transformative Change

If it is true that 'every system is perfectly designed to achieve the results it get' then our current system is perfectly designed to plunder the planet and undermine the Earth systems that are our life support systems and that underpin our societies and economies. It is also perfectly designed to create obscene levels of inequality and impoverishment that impair the health and shorten the lives of millions of people around the world – including here in Canada. It is, in short, not fit for purpose in the 21st century.

> *"Every system is perfectly designed to achieve the results it gets."*
>
> *Institute for Healthcare Improvement*

One of the unanticipated impacts of the COVID-19 pandemic is that it has to some extent revealed the price many pay for our way of life. Suddenly we can breathe the air, see the mountains, hear the birds; suddenly life for some is slower-paced and less stressful, with motor vehicle crash mortality dramatically reduced, while for many others there has been job and income loss, absence of basic services such as schools or public transit and many other social and economic challenges. We have learned that many of our essential workers are woefully undervalued, under-paid and with stressful job insecurity, while the adequacies – or inadequacies – of our governance systems have been starkly revealed. We have seen how racism, sexism, poverty and other social forms of inequity have led to certain populations being disproportionately impacted and we can expect these patterns to play out within ecological crises too if nothing changes. We have come to appreciate the value of community goodwill and respect, of good governance with strong social support mechanisms, and of local people, businesses and organisations.

All of this – and much more – has led to increasing calls to use the 'COVID pause' to re-think our way of life and our economy. We see calls for us to 'build back better', (Florizone and Vaughan, 2020); not to 'roar back' to a harmful economy, but to 'bounce forward' to a green, just and healthy recovery (Hancock, 2020a, 2020b). Writing about climate change and capitalism, Naomi Klein (2014) said 'this changes everything'; what really changes everything is not just climate change but the entire range of ecological and social challenges of the Anthropocene. In particular, we will need to transition to a new 'Wellbeing economy' - the approach recently adopted in New Zealand (Government of New Zealand, 2019) – rooted in ecological economics (Hancock, 2020c).

Some of the changes we need to embrace concern the core values that underpin and steer our present, unfit economic system: Progress defined as growth and the acquisition of wealth and 'stuff'; competition with and domination of others, and a separation from the natural world. The required changes are profound, involving the widespread adoption of core values that are rooted in a reverence for nature, a commitment to community and collaboration, to social justice - including the rights of future generations and other species - and to a concept of progress as growth in human and social development within the limits of the Earth. Many of these values are not new, but old, rooted in the values and traditions of Indigenous, racialized and colonized people.

> *"The care of human life and happiness and not their destruction is the first and only legitimate object of good government."*
>
> *Thomas Jefferson to the Republicans of Washington County, Maryland, 31 March 1809*

One way to think about this is to see this as a form of cultural evolution, a profound shift in social norms. We have seen several fairly profound such shifts in recent years, most notably perhaps around the acceptance of gay rights and gay marriage, as well as medical assistance in dying; we may be seeing another around meat eating. This is an area where public health has much experience, from changing the social norms around tobacco use, seat-belt use and drinking and driving to - most recently – physical distancing and face masks.

Many of these changes, while years in the making, appeared to happen quite suddenly when they finally occurred. This is what is meant by a social tipping point (Otto et al, 2019; Lenton, 2020) a concept that has become of great interest to those trying to create the massive and rapid socio-cultural transformations we need to deal with the massive and rapid ecological changes of the Anthropocene that we have triggered. The question now is whether we can better understand how such tipping points occur in complex social systems and whether we can increase the likelihood they will occur, ideally triggering a cascade of beneficial social tipping points (Cascade Institute, 2020).

The good news is that when everything has to change, there are also many opportunities to create new ways of doing things, ((not just doing old things better), new ventures that are ecologically sustainable and socially just.

But for many of us, whose lives and work are more locally-based, the question is not how we change global or national systems, but what we can do in our own backyards, both in our lives as citizens and community members and in our work lives. Hence the focus on the second day of the summer school, after all the big-picture global thinking on Day One, will be on the 'Act Locally' part of our theme. The work of creating healthy, just and sustainable 'One Planet' communities and societies that will be explored through this summer school should give us hope, as well as a sense of meaning and purpose.

Act Locally

The slogan "think globally, act locally', has been with us for many decades, and remains good advice. So how do we take the global concepts discussed above and apply them locally, and what does it mean for public health practice?

Fortunately, public health has a very long and proud history of local action, dating back at least to the mid-19th century, and arguably back to the cities of Renaisaance Italy in the 14th and 15th centuries. Moreover, we have a modern re-invention of that approach in the world-wide Healthy Cities and Communities movement, which has its roots in part in Canada.

But while health promotion was intended to adopt a socio-ecological model and included "ecosystem stability and resource sustainability" as determinants of health in the Ottawa Charter (WHO, 1986), in practice health promotion – and to a somewhat lesser extent the healthy communities movement – has been largely ecologically blind. Our focus from the early 1990s was on the **social** determinants of health, culminating in the report of the WHO Commission on the Social Determinants of Health (2008).

> *"We need to reach a social tipping point before we reach a planetary one."*
>
> *Will Steffen, December 2019*

It was not until 2015 that the concept of the ecological determinants of health was recognised in Canada (CPHA, 2015), at the same time as the emergence of the concept of Planetary Health (Whitmee et al, 2015). In the interim, it has been the environmental movement that has in many ways been doing public health's work in identifying ecological changes and their health impacts. So it was not at all unusual to see Sustainable City or Green City projects co-existing with, but usually unrelated to Healthy City initiatives.

However, the growing awareness of the ecological determinants of health has started to lead to the realisation that healthy communities must be sustainable communities (Hancock, 2000), and to the identification of the health co-benefits of a more sustainable way of life. These co-benefits include:

- The healthier outcomes from an ecologically sustainable low-meat diet (Willett et al., 2019); notably, the new Canada Food Guide is very consistent with this aproach.
- The health co-benefits of a low/net zero carbon energy system, which not only reduces greenhouse gas (GHG) emissions and slows global warming, but reduces air pollution.
- A wide range of co-benefits stemming from active transportation and public transit (and an urban form that supports such a system), including reduced GHGs, air pollution and motor vehicle crash deaths and injuries, increased physical activity and reduced obesity.
- Mental and social wellbing benefits arising from increased 'greening' of communities, enabling greater contact with nature.

In recent years the concept of 'One Planet' living has developed in a way that – finally – links health and sustainability. The first of Bioregional's ten One Planet principles is 'Health and happiness', and the next two are 'Equity and local economy' and 'Culture and community' (Bioregional, 2016). Clearly this approach – which has also been dubbed "Healthy Cities 2.0" (Hancock, 2018) is as much about social sustainability as it is about ecological sustainability (e.g. Muzumdar, 2020).

So local public health in the 21st century needs to be part of the emerging network of community organisations and individuals working to create green, just and healthy communities. We need to find our allies in unusual places, including emerging green/social benefit businesses, faith communities that are working on eco-justice, young people leading climate action, Indigenous people working with traditional knolwledge and understanding, local artists of all sorts seeking to give expression to new ways of thinking, feeling and acting, and local politicians working to achieve these same ends.

These could be very exciting times for public health!

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