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The media is now regularly reporting and highlighting global protest movements such as Greta Thunberg's School Strike for the Climate and Extinction Rebellion (XR)¹ alerting us to both the climate crisis and an existential crisis with the possible collapse of our civilisation in the near future. This is due to anthropogenic climate heating resulting in a range of climatic consequences largely caused by increased greenhouse gases especially from CO₂ emissions, plus environmental degradations and mass extinction of our wildlife and biodiversity. While it may be alarmist and some scenarios seem extremist with many of the hallmarks of a moral panic (Cohen, 1973), the science of climate crisis, and the anxiety, fear, existential angst and even anger that blames the current generation for this crisis, is real, especially for many of our young people, so it is too important to dismiss and needs exploring. While for some in philosophy and education, it may not seem necessary to do as Greta Thunberg exhorts us, 'to follow the science' and to challenge those who refute or deny the contemporary climatic and environmental changes in our world, to us it is vital that philosophy of education engages with current world issues, which have ramifications that are in fact practical, economic, political, philosophical, existential, moral and ethical.

In this paper we note the work published by *The Guardian* and their climate pledge: 'we will continue to give global heating, wildlife extinction and pollution the urgent attention and prominence they demand.' As Editor-in Chief, Katharine Viner said: 'People need reminding that the climate crisis is no longer a future problem – we need to tackle it now, and every day matters.' Their latest style guide argues for the following six phrases to be used because 'We want to ensure that we are being scientifically precise, while also communicating clearly with readers on this very important issue' so the style guide sets out: 'climate emergency' or 'climate crisis' instead of 'climate change'; 'climate science denier' or 'climate denier' instead of 'climate sceptic'; 'global heating' not 'global warming'; 'wildlife', not 'biodiversity'; 'fish populations' instead of 'fish stocks.'² These changes have not yet been widely accepted but time will tell. *The Guardian* clearly follows the science of Intergovernmental Panel on Climate Change (IPCC) as detailed in the Paris Agreement and subsequently updated in 2018:

In order to keep below 1.5C of warming, the aspiration of the world's nations, we need to halve emissions by 2030 and reach zero by mid century. It is also likely we will need to remove CO₂ from the atmosphere, perhaps by the large-scale restoration of nature. It is a huge task, but we hope that tracking the daily rise of CO₂ will help to maintain focus on it.

Both Thunberg and Extinction Rebellion go further, taking the stance that there is an imminent climate emergency, and that reduction in carbon emissions by 2030 is insufficient and not soon enough, and that it must start in 2020. A critique of such protest groups and in particular of XR, is that they not only are predominantly white and middle class, but the 'lack of diversity, middle-class-image and glamourisation of arrest puts young black and brown people off' and they appear apathetic yet already live 'a nightmarish present, surrounded by poverty and

austerity. ' What is more, the environmentalists show flashes of ignorance and xenophobia and have not shown solidarity with this community. Athian Akec, a black inner-city teenager from London points out that

'for my cousins in the global south, the dystopian future has already arrived. A staggering 12 million people in Kenya, Ethiopia and Somalia are already facing hunger caused by low rainfall. Deadly tropical diseases are spreading more easily as climate warms, and 780,000 people a year are dying in Africa because of air pollution.'

The lived experience of brown and black youth already means that stopping and being arrested is more likely than for white people and the negative career consequences more devastating for people already facing 'zero-hour contracts, homelessness, poverty and knife-crime.'³

It is pertinent to briefly first briefly consider notions of civilisational collapse that have come to the fore. Second, to present the evidence for establishing the change in geologic time scale time from the Holocene to the Anthropocene epoch. Third, to present just some of the evidence for climate change especially that of the Intergovernmental Panel on Climate Change (IPCC). Last, we briefly consider how we and educators deal with what is now widely considered to be a climate emergency and a potential collapse. We know that many teachers are teaching about climate and environmental changes and some of them and their students are taking action in various ways, but are or should we educate for survival?

In February 2019, Luke Kemp, researcher from the Centre for the Study of Existential Risk, University of Cambridge, in a BBC article asked, 'Are we on the Road to Civilisation Collapse?'⁴ He reflected on the collapse of past civilisations, as many other authors have done (e.g. Karl Butzer, Jared Diamond, Madhusree Mukerjee, Paul & Anne Ehrlich⁵) and notes that:

Collapse can be defined as a rapid and enduring loss of population, identity and socio-economic complexity. Public services crumble and disorder ensues as government loses control of its monopoly on violence.

Virtually all past civilisations have faced this fate. Some recovered or transformed, such as the Chinese and Egyptian. Other collapses were permanent, as was the case of Easter Island. Sometimes the cities at the epicentre of collapse are revived, as was the case with Rome. In other cases, such as the Mayan ruins, they are left abandoned as a mausoleum for future tourists.

What can this tell us about the future of global modern civilisation? Are the lessons of agrarian empires applicable to our post-18th Century period of industrial capitalism?

There is no agreement nor any one factor that leads to civilisational collapse, rather, Kemp notes that there are several explanations: climatic change, environmental degradation; inequality and oligarchy; complexity; external shocks; randomness/bad luck and that 'Collapse is a tipping point phenomena, when compounding stressors overrun societal coping capacity'. Currently many of these stressors now exist and those that caused other societies to collapse are worsening in some parts of the world, but with our ability to learn from past civilisation collapses, to innovate and diversify are points of optimism that we can mitigate or avert disaster. Kemp continues,

We know what needs to be done: emissions can be reduced, inequalities levelled, environmental degradation reversed, innovation unleashed and economies diversified. The policy proposals are there. Only the political will is lacking. We can also invest in recovery. There are already well-developed ideas for improving the ability of food and knowledge systems to be recuperated after catastrophe. Avoiding the creation of dangerous and widely-accessible technologies is also critical. Such steps will lessen the chance of a future collapse becoming irreversible.

We will only march into collapse if we advance blindly. We are only doomed if we are unwilling to listen to the past.

Therefore, without being fear-mongers we ask if teachers should now be preparing students with survival skills and what might these comprise - in effect, practical skills, but also ethical and moral ones for how we might organise society in the event of such catastrophic events occurring.

It is now well established that the Earth is already undergoing the Holocene inter-glacial warming period which began about 12,000 years ago at the end of the Pleistocene geological

time period,⁶ where the series of seven cyclic climate changes in the last 650,000 years are related to 'very small variations of Earth's orbit that change the amount of solar energy our planet receives'.⁷ What is verifiably different now according to the IPCC, NASA and many other scientific reports, is, with 95% probability, that since the mid 20th century current warming results from human activity - it is anthropogenic. Data and evidence have been gathered from multiple sources - ice-core samples, satellites, paleontology records and so on. In particular greenhouse gases we emit continue to increase and sea level rises have accelerated. Challenges to the data have generally been from business interests (or should we say self-interests) and political sources, especially in USA, related to fossil fuels, rather than from a few science sceptics and the consensus about change has grown over time as more evidence has been presented.⁸

With such changes, the current era was first labelled the 'Anthropocene' by the atmospheric chemist and Nobel laureate Paul Crutzen in 2000. While it has led to debate about such naming between geologists and environmentalists, the International Union of Geological Sciences (IUGS) convened a group of scholars to decide by 2016 whether to officially declare that the Holocene as over and the Anthropocene has begun.⁹ Nicola Davison¹⁰ in 2019 outlined much of the debate within geological and stratigraphical circles where the naming of geologic epochs resides with the International Commission on Stratigraphy (ICS) and is ratified by the International Union of Geological Sciences (IUGS). By 2016, Waters *et al*, in a co-authored article by a twenty-four person working group published in *Science* entitled 'The Anthropocene is functionally and stratigraphically distinct from the Holocene' pointed out that this was not simply a fluctuation.¹¹ The abstract states they reviewed:

Climatic, biological, and geochemical signatures of human activity in sediments and ice cores. Combined with deposits of new materials and radionuclides, as well as human-caused modification of sedimentary processes, the Anthropocene stands alone stratigraphically as a new epoch beginning sometime in the mid-20th century.

But to be formally named, evidence from sediment core samples must show 'the golden spike'— a major environmental change clearly through 'a chemical or biological trace in the strata, which acts as the physical evidence of where one unit stops and another begins.' To date, the mid 20th century is favoured as the starting point for the Anthropocene, with what Jan Zalasiewicz called 'the bomb spike':

From the pragmatic stratigraphic perspective, no marker is as distinct, or more globally synchronous, than the radioactive fallout from the use of nuclear weapons that began with the US army's Trinity test in 1945. Since the early 1950s, this memento of humankind's darkest self-destructive impulses has settled on the Earth's surface like icing sugar on a sponge cake. Plotted on a graph, the radioactive fallout leaps up like an explosion. (Davison, 2019)

From the earlier arguments about the term and the start of the new epoch, the Anthropocene has now become a well-established term used with a burgeoning literature across the sciences, humanities as well as popular literature. By 2013 'It appeared in nearly 200 peer-reviewed articles... Elsevier has launched a new academic journal titled *Anthropocene*.' In *Educational Philosophy and Theory* (EPAT) recently there have been several articles, for example: Jason J. Wallin (Wallin, 2017) Pedagogy at the brink of the post-anthropocene; Iris Duhn (Duhn, 2018) After the 'post': anthropocenes; Margaret Somerville (Somerville, 2018) Anthropocene's time; Margaret Somerville & Sarah J. Powell (Somerville & Powell, 2019) Thinking posthuman with mud: and children of the Anthropocene; Robert Stratford (Stratford, 2019) Educational philosophy, ecology and the Anthropocene; Yoshifumi Nakagawa & Phillip G. Payne (Nakagawa & Payne, 2019) Postcritical knowledge ecology in the Anthropocene; Mark Featherstone (Featherstone, 2019) Stiegler's ecological thought: The politics of knowledge in the Anthropocene.

In 2015, the IPCC 5th Assessment report provided the scientific input into the Paris Agreement¹², which

aims to strengthen the global response to the threat of climate change by holding the increase in the global average temperature to well below 2 °C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 °C above pre-industrial levels.

Many countries considered that a level of global warming close to 2 °C would not be safe and, at that time, there was only limited knowledge about the implications of a level of 1.5 °C of warming for climate-related risks and in terms of the scale of mitigation ambition and its feasibility. Parties to the Paris Agreement therefore invited the IPCC to assess the impacts of global warming of 1.5 °C above pre-industrial levels and the related emissions pathways that would achieve this enhanced global ambition.

But subsequent data has raised the level of alarm increasingly higher. The 2018 IPCC Special Report on Global Warming of 1.5 °C states:

... that recent trends in emissions and the level of international ambition indicated by nationally determined contributions, within the Paris Agreement, deviate from a track consistent with limiting warming to well below 2 °C. Without increased and urgent mitigation ambition in the coming years, leading to a sharp decline in greenhouse gas emissions by 2030, global warming will surpass 1.5 °C in the following decades, leading to irreversible loss of the most fragile ecosystems, and crisis after crisis for the most vulnerable people and societies.¹³

If we believe climate change scientists such as the IPCC, an increase of more than two degrees celsius in temperature will mean that humans lose control of the possibility of limiting global warming and the Earth's system will continue to change because of the properties of the system.

A four degree celsius increase will almost certainly be catastrophic: the tropics and much of the subtropics will become too hot for human habitation; areas of permafrost will thaw, as will the polar icecaps and alpine glaciers; extreme weather events will become the norm and will affect not only vulnerable islands, but will mean that large tracts of agricultural land will become unproductive; sea-level rises of 20-40 m will drown coastal land and major cities and knock out infrastructure. In short, the difference between 2-4 degrees will affect the Earth's ability to sustain human life above the one billion mark. The main loss will be 'human civilization' with many predicting a return to barbaric practices and the survival of the fittest. 'Progress' will be a long-forgotten mantra and the Big Mac, a figment of a robust imagination.¹⁴

Will Steffen, Emeritus Professor of Earth System Science at the Australian National University, makes the case:

As with those early human societies, our modern highly-globalised civilisation is designed to operate in the benign conditions of the Holocene. But now, the scientific evidence is mounting that human activity is profoundly affecting the Earth system itself, and pushing us out of the life-friendly envelope of the Holocene.

There has been a massive increase since 1950 in everything from global population and energy use to fertiliser consumption and international tourism – a phenomenon scientists call the Great Acceleration.¹⁵

He suggests that the problem is global overconsumption and we have lost control of the socio-economic system which is good at making some people rich but only at the expense of huge inequalities and irreversible ecological damage.

In October 2019, *The Guardian* series of multiple articles on 'The Polluters' provides considerable details and data detailing the economic and environment connections to greenhouse gas emissions. Some of these revelations are astonishing. It is not enough to follow the science, but also, we need to follow the money. They examine who the biggest polluters of greenhouse gases are, which businesses are involved, how things have changed and are projected to change in these companies since the 2015 Paris Agreement; how social media has been used to resist climate regulations and the

use of groups that term themselves grassroots community organisations but are funded by major companies is known as 'astroturfing.' ... Within the Facebook adverts, the funders tend to be disclosed as

the named group behind the adverts with no information on who ultimately controls these groups. Only through further research does oil company support become more clear.¹⁶

Similar to how the tobacco industry worked to dispute that smoking kills, major fossil fuel companies have worked to cast doubt on the reliability of the scientific research despite the overwhelming majority of scientists supporting it. Since 1989 the Global Climate Coalition has stressed uncertainties. A climate change 'denial machine' and the US 'climate change counter-movement' (CCCM) that delayed action on the crisis emerged in the 1990s (Brulle, 2014; Dunlap & McCright, 2011, 2015). Not surprisingly these movements focussed on conservative politicians, media and thinktanks.

Utilizing IRS data, total annual income is compiled for a sample of CCCM organizations (including advocacy organizations, think tanks, and trade associations). These data are coupled with IRS data on philanthropic foundation funding of these CCCM organizations contained in the Foundation Center's data base. This results in a data sample that contains financial information for the time period 2003 to 2010 on the annual income of 91 CCCM organizations funded by 140 different foundations. An examination of these data shows that these 91 CCCM organizations have an annual income of just over \$900 million, with an annual average of \$64 million in identifiable foundation support. The overwhelming majority of the philanthropic support comes from conservative foundations. Additionally, there is evidence of a trend toward concealing the sources of CCCM funding through the use of donor directed philanthropies (Brulle, 2014, p.681)

Brulle found that

The communications plan involved finding sympathetic scientists, identifying thinktanks to fund that would produce helpful reports, and working through supposed grassroots groups to hold debates questioning the consensus on global heating, along with a constant flow of media briefings manufacturing uncertainty. [The US] thinktanks most identified with spreading doubt are Competitive Enterprise Institute, the Marshall Institute (which folded in 2015), the Cato Institute, the Heartland Institute, the Heritage Foundation and the campaign group Americans for Prosperity ... which has received a very substantial part of its funding from the Kochs, helped make resistance to action on climate a feature of Tea Party rallies in the US. [Likewise the] Institute of Economic Affairs, and the Global Warming Policy Foundation have been prominent publishers of material questioning the consensus on climate science in the UK.¹⁷

From November 2009 we had 'climategate' when the emails of the Climate Research Institute at East University of Anglia suggesting that scientific data had been manipulated were hacked and circulated especially among denier sites. After several enquiries the scientists were exonerated. To attempt to reverse the fallout from this misinformation, *Nature* has provided an online collection that 'brings together all of *Nature's* coverage of the affair and its implications for the scientific enterprise.'¹⁸

Financial details offer a clear picture about why it is so hard to date to cut back on fossil fuels and to instead support renewables, because large asset management companies such as BlackRock, Vanguard and State Street, not only support the fossil fuel industry, but also major investment banks have provided funds for expansion of such resources. To date in the global \$74trillion asset management business, BlackRock, Vanguard and State Street, 'the world's three largest money managers have built a combined \$300billion fossil fuel investment portfolio using money from people's private savings and pension contributions'. They 'oversee assets worth more than China's entire GDP, have continued to grow billion-dollar stakes in some of the most carbon-intensive companies since the Paris agreement' ... 'their effective thermal coal, oil and gas reserve holdings through the companies they manage have surged 34.8% since 2016' ... and 'BlackRock and Vanguard, have also routinely opposed motions at fossil fuel companies that would have forced directors to take more action on climate change' ...¹⁹

The part played by the worlds largest investment banks, reveals that \$700billion has been loaned to support expanding fossil fuel industries since the Paris Agreement which is astounding, as shown in an analysis for *The Guardian* by Rainforest Action Network, a US-based environmental organisation, which used Bloomberg financial data and publicly available company disclosures. It states:

The financing has been led by the Wall Street giant JPMorgan Chase, which has provided \$75bn (£61bn) to companies expanding in sectors such as fracking and Arctic oil and gas exploration, according to the analysis. The New York bank is one of 33 powerful financial institutions to have provided an estimated total of \$1.9tn to the fossil fuel sector between 2016 and 2018.

The data shows the most aggressively expanding coal-mining operations, oil and gas companies, fracking firms and pipeline companies have received \$713.3bn in loans, equity issuances and debt underwriting services from 2016 to mid-2019.

Other top financiers of fossil fuel companies include Citigroup, Bank of America and Wells Fargo.

Figures show fracking has been the focus of intense financing, with Wells Fargo, JPMorgan Chase and Bank of America providing about \$80bn over three years, much of it linked to the Permian basin in Texas.

Although financing levels are on a smaller scale than other parts of the fossil fuel industry, in the years since the Paris climate agreement there has been increased financing for oil and gas projects in the Arctic, led by JPMorgan Chase, which provided \$1.7bn in 2016-18.

Extraction in the region is typically dominated by Russian firms such as Gazprom and Rosneft, about which there is less transparency in business data.

Barclays is one bank showing signs of change. While it remains a significant banker for the fossil fuel industry, its business with the companies most aggressively expanding in the sector has fallen sharply, from \$13.1bn in 2016 to \$5.2bn in 2018. The first-half figure for 2019 shows the bank is on track to record another annual decrease.²⁰

Despite this picture, *The Guardian* notes that there are eight ways we can 'rein in the fossil fuel industry':

1. Put climate on the ballot paper
2. End fossil fuel subsidies
3. Put a price on carbon
4. Scale back demand for fossil fuels
5. Stop flaring
6. Roll out large scale carbon capture and storage
7. Halt investment in fossil fuels
8. Establish market metrics on climate change²¹

Lately things seem to be starting to change as investors and shareholders have become more concerned about the climate crisis. Some may have heard Mark Carney, Governor of the Bank of England, who has led efforts to address the dangers global heating poses to the financial sector, sounding a clear warning that 'Companies and industries that are not moving towards zero-carbon emissions will be punished by investors and go bankrupt'. Furthermore, he says that 'it was possible that the global transition needed to tackle the climate crisis could result in an abrupt financial collapse ... the longer action to reverse emissions was delayed, the more the risk of collapse would grow.'²² Not surprisingly then, as awareness is raised, many shareholders and investors are increasingly demanding divestment from fossil fuels.²³

This scenario whether it is true or likely to happen serves as a moral pointer and direction finder for schools and for national curricula. Can otherwise conservative forces get their act together before the 'last days' to actually address the question of climate crisis and its future environmental catastrophe *before* it happens? Can mitigation efforts work or be sufficient? Is there a possibility of a rapid curriculum and pedagogical transformation that matches the current burst of activist imaginations of young people who are worried about their future? Do schools have a duty to teach survival skills in the age of the Anthropocene? We can stop buying single use plastic bags in the supermarket and hold hands together in student strikes across the world, but can education authorities, teachers and schools find ways to address these questions and more in a meaningful way? Does the impending ecological global disaster require a more activist

kind of learning that will enable students to *do* something that improves chances of survival? Should students even be taught skills of survival? What might those be?

Paul Vare and William Scott observed as a key challenge in education for sustainable development back in 2007 that some such education can make people less sustainable, when the curriculum is designed as specific skills and ways of thinking for the short term, which are agreed upon by a broad community. Describing this curriculum as Education for Sustainable Development 1 (ESD1 and later ESD2), they noted that 'it is assumed that learning leads to change once facts have been established and communicated.'²⁴ They note that this is the historically prevalent approach authorized by top-down authorities such as UNESCO. While this approach is positive because there are clear benefits to individuals and groups and obvious things one can do, not everything is simple. Therefore 'ESD2' is involved with building capacities to think about and what authorities and experts say, emphasizing essential long term skills. In this context they note that 'ESD 2 not only complements ESD 1, it makes it meaningful, because our long-term future will depend less on our compliance in being trained to do the 'right' thing now, and more on our capability to analyse, to question alternatives and negotiate our decisions.' As they go on,

Authorities who promote sustainable development often see formal education in terms of ESD 1. This is worrying for two reasons:

People rarely change their behaviour in response to a rational call to do so, and perhaps more importantly

Too much successful ESD 1 in isolation would reduce our capacity to manage change ourselves and therefore make us less sustainable.

This is a classic double bind: the more we focus on delivering ESD 1, the less likely it is that we will be asking people to think for themselves through essential ESD 2.

Another obvious problem with thinking about survival and the curriculum is the conservative nature of curriculum, as a body of historical facts rather than as the most relevant and up-to-date information.

Arguably school education risks being irrelevant to a new generation of students who are already activist, perhaps more so than at any point in history – more so than the sixties and the era of Vietnam peace protests. Certainly, the current students' strikes are more globally and better organized, thanks to the power of the Internet and social media. The Global Climate Strike of 27-29 September 2019 included 7.6 million people, reportedly the largest climate mobilization in history involving 185 countries.²⁵ Green politics and protest have the potential to spread quickly around the globe and to sweep everything before it. It could be bigger than any existing movement or political party. It may also be the first movement, after encouraging world rebellion, to develop the core beliefs and values for a sustainable Earth. There are battles to be fought and the battle lines are clearly drawn between climate deniers and climate crisis supporters, between those who want to protect and save the Earth, and those who want to continue to profit from it (even up to the last days). Young people seem increasingly drawn to activist groups that want action immediately like Extinction Rebellion that advertises itself by emphasizing 'mass extinction' and the failure of conventional approaches:

We are facing an unprecedented global emergency. Life on Earth is in crisis: scientists agree we have entered a period of abrupt climate breakdown, and we are in the midst of a mass extinction of our own making. ...

We are unprepared for the danger our future holds. We face floods, wildfires, extreme weather, crop failure, mass displacement and the breakdown of society. The time for denial is over. It is time to act.

Conventional approaches of voting, lobbying, petitions and protest have failed because powerful political and economic interests prevent change. Our strategy is therefore one of non-violent, disruptive civil disobedience – a rebellion.²⁶

On the other hand, there may also be a risk of climate crisis and related knowledge and education becoming overly politicized without grounding in this context an understanding of the scientific data that assesses the situation and future models and scenarios that are formulated. In the first place, a sense of urgency infused with fear can cause people to act rashly rather than with information, and to be paranoid of people with differing perspectives. One concern here is that a mainstream environmental movement can be held as overly liberal, with little recognition of the limitations to philosophical liberal views. As Paul Wapner and Richard Matthew (2009) note, there tends to be a focus in frameworks for global environmental ethics on human-to-human relations, to underscore a sense of urgency and a means to move discussion forward. Yet from other cultural views not dominated by a western liberal tradition, with its reverberations of Judeo-Christian philosophies, such a focus ignores life on Earth beyond human life, that humans are not the center of all that has happened or will happen on Earth, and that the natural world and non-human actors also exist apart from humanity, despite the apparent extent of human impact on global environmental systems. Philosophically other traditions may emphasize the limits to human understandings and human capacities to use the Earth for human gains and interests. Such philosophical debate risks being reduced in today's binary, divisive popular culture as one of stereotypically cynical conservatives versus caricatured idealistic and arrogant liberals, without theoretical insights of both views, not to mention views of indigenous communities and others, being considered.

Today schools around the world have crisis management policies. They educate for lockdown in the tragic events of mass shootings in the United States or terrorist attacks elsewhere, for recognizing dangerous snakes and spiders in Australia, and for knowing what to do during an earthquake, tsunami, typhoon/cyclone, or volcanic eruption in other parts of the world. Climate change is being responded to in school and university infrastructural initiatives to use energy sustainably while noting the risks of educational environments becoming too cold or hot or dangerously icy, flooded, and more. In the past, what to do about the risk of atomic warfare was highlighted in schools when bomb shelters were constructed, but luckily the Cold War crises abated (for now.). Yet many of these initiatives have been and remain controversial. Debates surrounding them often relate to the lack of consensus about the likelihood of these risks, as well as the efficacy of possible responses and mediation strategies. In some cases, education to deal with risks may seem like a smokescreen to calm down students and keep them focused on content knowledge and business as usual, as fear, stress, and anxiety are seen to cut down on individual performances in standardized test scores, still the highest value in educational systems around the world. In other cases, whether the solutions can help is questioned; in many cases, such as in the case of typhoons and earthquakes, there may be little one can do, depending on the local geography of the school community. Finally, there are risks that such education can make things worse. Education on school shootings has been seen to in many cases cause more stress and dangers to mental health of students and educators, who become increasingly fearful about shooting risks, despite their relative rarity even in the United States.²⁷

Survival skills required to sustain life in either natural or built environments, to provide basic necessities for human life include water, food, and shelter and proper knowledge and interactions with animals and plants to promote the sustaining of life over a period of time. Survival skills are often associated with the need to survive in a disaster situation. Survival skills are often basic ideas and abilities that ancients invented and used themselves for thousands of years. Outdoor activities such as hiking, backpacking, horseback riding, fishing, and hunting all require basic wilderness survival skills, especially in handling emergency situations. Bush-craft and primitive living are most often self-implemented, but require many of the same skills.²⁸

Many schools already have outdoor education programmes, so it would not be unduly alarmist if schools added basic survival skills into the mix, or if they discussed how societies cope after a disaster. After all New Zealand already has had to deal with recent natural and man-made disasters - earthquakes and terrorist attack. Other places like Australia, the Pacific, Philippines, Taiwan, Hong Kong, China deal with cyclones and typhoons, earthquakes, tsunami, droughts and

so on. Most educators are familiar with Maslow's hierarchy of needs, but for survival, the physical ones are the most important in the first instance. Different sources may suggest more, but eight basic survival skills include:

- finding & purifying water. Nothing is more important in a **survival** situation than having suitable drinking water. ... within the first 24 hours
- starting & tending to a fire
- building a temporary shelter
- navigating & reading a compass (& map)
- hunting & foraging for food
- camp cooking
- dressing a wound ... Basic first aid
- tying a knot

There are specific outdoor education courses (e.g. Outward Bound), many TV programmes (e.g. Survival; Running Wild with Bear Grylls; Man vs Wild etc) and the Internet also has many websites that address survival skills.²⁹

Unlike these scenarios, there seems to be no clear educational response on how to survive in the age of the Anthropocene, nor has this even been considered to date. A curriculum survival might include a focus on skills which are practical, cognitive, social, ethical and political. Beyond demonstration and protests what can we do? What is required to survive? What might a curriculum for survival look like? Maybe a checklist under several sub-headings is a starting point? Do we have a moral, ethical, personal or professional obligation to now begin such conversations in educational and political arenas? Or should we not bother and just do nothing in light of life and death in the anthropocene?

Notes

1. See: Greta Thunberg, https://en.wikipedia.org/wiki/Greta_Thunberg; <https://www.fridaysforfuture.org/>; <https://www.independent.co.uk/topic/greta-thunberg>; <https://www.theguardian.com/environment/2019/oct/12/if-they-dont-do-it-we-will-greta-thunberg-warns-climate-strikers-of-long-haul>
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2. See: Sophie Zeldin-O'Neill, October 16, 2019, 'It's a crisis, not a change': the six Guardian language changes on climate matters. *The Guardian*. https://www.theguardian.com/environment/2019/oct/16/guardian-language-changes-climate-environment?CMP=Share_iOSApp_Other
3. see, Athian Akec, 20 October, 2019, When I look at Extinction Rebellion, all I see is white faces. That Has to change. *The Guardian*. <https://www.theguardian.com/commentisfree/2019/oct/19/extinction-rebellion-white-faces-diversity>
4. Luke Kemp, 19 February 2019, Are we on the road to civilisation collapse? BBC <https://www.bbc.com/future/article/20190218-are-we-on-the-road-to-civilisation-collapse>; see also
5. For example, see: Karl W. Butzer, (2012) Collapse, environment, and society, PNAS March 6, 2012 109 (10): 3632–3639. <https://www.pnas.org/content/109/10/3632>
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Jared Diamond: *Guns, Germs and Steel: The Fates of Human Societies* (1997); *Collapse: How Societies Choose to Fail or Succeed* (2005); *The World Until Yesterday: What Can We Learn from Traditional Societies?* (2012); *Upheaval* (2019).
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