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Earth is Our Locale
Decentering and Decelerating the Human in the Anthropocene

By

Peter Matanle
School of East Asian Studies
University of Sheffield
p.matanle@sheffield.ac.uk

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Earth is Our Locale
Decentering and Decelerating the Human in the Anthropocene

Peter Matanle
School of East Asian Studies,
University of Sheffield, UK
p.matanle@sheffield.ac.uk.

Abstract

Every locale is a realisation of its own deep history and geography. As humanity continues to push beyond the limits of nature's capacity to provide solutions to the outcomes of modernization, in 21st century Japan everything is rendered local and global, particular and universal. In this chapter I examine the geology, ecology, and climate of Japan within the context of present-day environmental breakdown. Taking examples mainly from Tokyo Prefecture as a global locale, I show how Asia, with Japan in the vanguard, has emerged as a leading participant in the Great Acceleration of the depletion of the Earth's environmental capacity. Although Japan and Tokyo are by no means the only culprit, the consequence is that the Earth is passing from the stable Holocene into the Anthropocene epoch, where instability and unpredictability are the new, less forgiving, normal. I end by concluding that the Anthropocene disruption will force us to decentre and decelerate our humanity, and acknowledge that we are all connected; that Earth is our locale.

Bio

Dr Peter Matanle is Senior Lecturer in the School of East Asian Studies, University of Sheffield, UK. Peter's research interests are in the social and cultural geography of Japan in the Asia-Pacific, focusing on population, development, and environment. His most recent publications on these subjects have been two articles in the *Asia-Pacific Journal: Japan Focus* ('Imagining Disasters in the Era of Climate Change', 2019, with Joel Littler and Oliver Slay; & 'Confronting the Olympic Paradox', 2020), and a chapter entry in the *Routledge Handbook of Contemporary Japan* ('Japan and the environment: industrial pollution, biodiversity loss, and climate change', 2020).

Introduction

Just as they do every year, during the spring and summer of 2020 each of the five naked-eye planets of Mercury, Venus, Mars, Jupiter and Saturn appeared at different times over the south-western horizon of my back garden in Sheffield. Except, 2020 was different. We were confined to our homes, and close contact with others, even family, was impossible. Yet the planets of our solar system continued to shine down brightly on all of us, like comforting and reliable neighbours, regardless of who we are.

Likewise, we have come to appreciate that the COVID-19 virus does not discriminate. It has no conscious volition. Its species crossover, paths of global transmission, and differential impacts on communities and locales have entirely human political, economic, social, and cultural origins. Early on, Japan's scare with the Diamond Princess cruise ship appeared to indicate that the country was heading for a disaster; but then the country turned a corner and has thus far been able to control the spread of the virus relatively well, even becoming something of an example to follow (Chang, Hong & Varley, 2020). Britain has travelled in the opposite direction. As the chapters in this volume demonstrate, therefore, locale has both meaning and consequences. For, beyond the fraught and contested media reports, as the COVID crisis has unfolded the emerging story globally has been that within country variation has been at least as significant as variation between countries, revealing not just regional differences, but diversity of experience among communities even within the same locales (Han & Tan *et al*, 2020).

At their closest Venus and Earth come within 160 million kilometres of each other. That's 17,000 times the distance between Sheffield and Niigata; two cities in the UK and Japan where I have lived. When viewed against the vastness of space beyond our solar system, however, the two planets are very close. Close enough, in fact, for human-manufactured spacecraft to have landed on or flown by every planet in our solar system, taken photographs and gathered data, and sent the information back to Earth.

The physical universe frames all our everyday local experiences. Earth, for example, orbits the Sun inside the 'habitable zone', allowing liquid water to remain on the planet's surface. But depending on where we are, water may be frozen, abundant, or almost absent. And the chemical composition of our planet was determined at its inception in the solar nebula, just like all the planets, so that the variability of our geology, soils, atmosphere and oceans all play a part in forming the specific character of every locale.[1]

[1] See Ganseforth, Chapter XX, this volume.

Yet, despite our local differences, seeing the planets shining down from the evening sky through these difficult months was an antidote to the disease's emotional destructiveness, and brought home to me, as it has done for countless others, how we share a singular locale: this Earth.

Localising and Globalising the Deep History and Geography of the Japanese Archipelago

Geology

Each locale is consequently a realisation of its own deep history and geography. Throughout the almost 40,000 years of human settlement in the Japanese archipelago people have repeatedly experienced the effects of the geology under their feet. Located at the north-western edge of the Pacific Ring of Fire, Japan inhabits the most active tectonic region in the world. The result is that the country experiences major terrestrial and undersea earthquakes, volcanic eruptions, and secondary consequences such as tsunami, landslides, floods and fires.

Even the most powerful tectonic events are unique to their locale, which challenges our desire to systematize our knowledge for the purposes of predictability, of the events themselves and their likely impacts (Smits, 2014). For sure, the Great East Japan earthquake, tsunami and nuclear meltdowns of March 2011 was a moment of national and international significance, triggering the declaration of a national nuclear emergency and prompting the German federal government to decommission its nuclear energy programme. However, as the world focussed on the drama at the Fukushima Daiichi nuclear power plant, it's easy to forget that the majority of the physical and human impacts from that tragedy were non-nuclear, and mostly confined to the small and isolated coastal communities of Iwate, Miyagi, and Fukushima prefectures (See: Matanle, 2011). Indeed, one analyst was prompted to speculate that, despite being the fourth most powerful earthquake on Earth in modern times, the 2011 disaster was too small to effect the national transformation that Prime Minister Naoto Kan had called for (Dickie, 2011). And he was correct. Any lasting impacts beyond Tōhoku have largely been local, rather than national, among the communities that host Japan's nuclear energy facilities.[2] Coincidentally, that day I was in Kyoto, visiting a local museum and library, and felt nothing from the earthquake itself. It was a perfect spring day, changed only by the news from Tōhoku. The community surrounding Okawa elementary school in Ishinomaki City, Miyagi Prefecture, however, will forever be scarred by the decisions taken that day (Parry, 2017).

More so the eruptions of Mt. Unzen in Nagasaki Prefecture in the early 1990s, one of which released pyroclastic flows incinerating 43 scientists, journalists, firefighters, and others who had camped out on its slopes, and partially destroyed nearby Shimabara Town, emphasise the localness of Japan's

[2] See Katramiz, Chapter XX, this volume.

geology. Despite being carried on national and international news, and requiring national intervention for reconstruction, elsewhere in Nagasaki Prefecture, let alone the rest of Japan, remained untroubled. In these circumstances 'globalisation' ordinarily understood resonates little among people directly affected. Why should it? Amid a disaster, locale is everything. Understood through the lens of Earth systems, however, and within the context of the deep history and geography of the Japanese archipelago, we can grasp that these moments are national and global, but in ways that we too often don't consider. Indeed, the Earth doesn't move to the sensitivities of human perceptions. Just like the COVID virus it has no conscious volition. It is when we decentre the human that we become conscious of our entwinement within global webs, which then require the expression of agency for our local survival, prosperity, and sustainability.

It follows that just as humans experience our own local disasters, so we enact our own local restorations, and generate our own local forms of resilience, even as external – often national – agencies seek to regulate, systematise and control (Takezawa, 2016). Prior to 2011 tiny Taro Town on the picturesque ria coastline of Iwate Prefecture had twice in modern times been devastated by tsunami originating from earthquakes in the Japan Trench, in 1896 and 1933, and had decided to build its own defensive seawall. Sadly, this was insufficient for what followed in 2011, and it is once more reliving its own restoration in the hope that next time will be different. We know, however, that sea level rise under global heating induced climate breakdown is accelerating, has the potential to rise abruptly, and may alter the dynamics of the next tsunami to the extent that a repeat of 2011 becomes possible (Li & Switzer *et al*, 2018; Matanle, Littler & Slay, 2019).

Hence, each locale's encounter with the intersections of the history and geography of its present-day circumstances inevitably produces an outcome that is a hybrid of the local, national, and global, and which is rendered into being by what Klien (this volume) refers to as the 'fuzzy accumulations of human interaction and flows'. Indeed, Japan's development as a modern nation-state perfectly illuminates the sensitivity and susceptibility of all our locales to complex techno-environmental shocks (Matanle 2011), as humanity continues to push beyond the limits of nature's capacity to provide solutions to the outcomes of modernization. Ominously, with sea-level rise the cities skirting Tokyo Bay, with their high density of residential, industrial, and transportation infrastructure, are at increasing risk of a cascading compound event comparable to the 2011 tsunami and nuclear shock, only larger (See: Nagai & Takabatake *et al*, 2020). In 21st century Japan everything is local and global, particular and universal, and all that is in-between.

Ecology

Japan is notable, in addition to its geology, for its high levels of terrestrial biodiversity and species endemism, the latter being by definition a local attribute. This is due to the archipelago's

geographical location away from the eastern edge of the Eurasian landmass, its varied climate and mountainous terrain, the large number and wide dispersal of its small island habitats and, until the modern era at least, its relative isolation from the mainstream of human globalization (See: Kubota, Shiono & Kusumoto, 2014; Mittermeier *et al*, 2004).

In addition to its terrestrial life, Japan's marine biodiversity is especially noteworthy, being one of only a handful of countries whose waters are host to more than ten per cent of the world's marine species (Fujikura & Lindsay *et al*, 2010). Less well appreciated is that, on the vertical plane, the Japanese islands and their marine environs have some of the greatest habitat variation of any country on Earth, ranging from the high-altitude frozen mountaintop of Mt. Fuji at an elevation of 3,776 metres above sea level, and plunging 8,046 metres below sea level to the deepest point in the Japan Trench subduction zone. Hence, with more than 6,000 islands scattered over approximately 14 million km^2 of Pacific Ocean and stretched along an island arc of 3,000 km in length northeast to southwest, Japan has an extraordinary range of natural habitats. In turn these have contributed to the diversity of local characteristics, and identities, expressed by Japan's human settlements.

Table 1. Numbers of plant & vertebrate species endemic to & occurring in (E & O) Japan.
Source: Mittermeier *et al* (2004).

Hotspot	Plants		Mammals		Birds		Reptiles		Amphibians		Freshwater Fishes	
	E	O	E	O	E	O	E	O	E	O	E	O
Japan	1950	5600	46	91	15	368	28	64	44	58	52	214
% Endemic	35		52		4		44		76		24	

Table 2. Original & remaining terrestrial habitat extent in Japan & worldwide.
Source: Mittermeier *et al* (2004).

	Original Habitat (km2)	Remaining Habitat (km2)	% Remaining Habitat
Japan	373490	74698	20
World Total (WT)	23490101	3379246	14
% Japanese of WT	1.6	2.2	

Japan is designated as one of the world's 36 'Biodiversity Hotspots'; defined as having more than 1,500 species of endemic vascular plants and having lost more than 70 per cent of its original vegetation (Mittermeier *et al*, 2004). This is in recognition of the country's global ecological importance in combination with the severity of the human threats its local habitats face. Hence, over half (51%) of Japan's mammalian species and three-quarters (76%) of amphibians are endemic (Table 1). Among endemics the Ministry of the Environment (2020) lists 22 extinctions and 120 species vulnerable to extinction. Five extinctions are of mammals – two species of wolf, one sea lion, and two

species of bat. Of these, the latter two were each endemic to small island habitats; the Okinawa flying fox (*Pteropus loochoensis*) to Okinawa Island, and the Bonin pipistrelle (*Pipistrellus sturdee*) to Hahajima in the Ogasawara Pacific Ocean island chain.

Although the Ogasawara Islands are administered by Tokyo Metropolitan Government and are a part of Tokyo Prefecture, their habitats were not only extremely localised, but are now transformed by their colonisation. Indeed, despite being part of the same country, even prefecture, geologically, ecologically, and historically the Ogasawara Islands and Tokyo Metropolis could hardly be further apart, with Tokyo located near the south-western boundary of the North American and Philippine plates, and Ogasawara stretching more than 1,000km to the south-east on the Pacific plate.

Uninhabited by humans until the modern period, and never connected to a continent, a globally important ecology has evolved on this long group of tiny islands, and a unique history has developed, which places them at the intersection of major globalization events linking Asia, North America, and Europe. These range from playing a critical role as a staging post for Commodore Matthew Perry's notorious visit to Japan in 1853, through Iō-tō (Iwojima) being the site of a crucial military defeat that helped turn the tide in the Pacific War decisively against Japan, to Chichijima being a secret storage location for nuclear weapons owned by the United States during the Cold War. Indeed, at various times the Islands have been described as either the 'Galapagos of the East' or the 'Gibraltar of the Pacific' (Norris, Arkin & Burr, 2000; Tyner, 2015).

The transformation of the Ogasawara Islands began in the late 1820s with settlement by European (mainly British) whalers and Pacific islanders, who brought domesticated animals such as pigs, goats, deer, cats, and dogs with them to support them in their marine hunting expeditions. Almost immediately the islands' ecologies were affected, with the newly arrived pigs devastating the large sea-turtle population by eating nearly all their eggs. Starting around the 1880s with the successful establishment of the Japanese claim to the islands, the Ogasawara Islands would later come to be known as 'Tokyo's largest natural greenhouse' with the introduction of industrial plantation agriculture (Tyner, 2015: 158). The islands then became more heavily settled in the 20th century with their construction as an island fortress by the Japanese military in the service of imperial expansion. The end result has been the colonisation of the islands not only by humans, but by invasive species brought deliberately and inadvertently by humans, which have driven out native species and naturalised themselves by carving a niche and finding a 'home' there. By the late 20th century, with greater ecological awareness internationally, and with relative inattention from Tokyo, the islands had become 'wild'(er) again with regrowth, to the extent that a successful campaign ensued for recognition as a UNESCO World Heritage site in 2011, which conferred a renewed identity on the island communities as inhabiting a 'pristine and unpolluted environment' (Tyner, 2015: 170).

Although there is no doubting the ecological importance of the Ogasawara Islands and recent efforts at conservation and restoration, mainly by the islanders themselves supported by academics and environmentalists in Tokyo proper (Guo & McCormack, 2001), UNESCO recognition to some extent conceals the islands' troubled ecological history and their encounter with modernity, globalization, and the logic of the Japanese construction state (See: Guo & McCormack, 2001; Tyner, 2015). Rather, this identity is being promoted in part to bring the islands' ecologies within and to extend those logics by repositioning them for ecotourism, community revitalisation, and the deepening of Japan's geostrategic-economic position in the north-western Pacific. Since the UNESCO designation, for example, and in contradiction to many islanders' stated preference for seaplanes (Guo & McCormack, 2001), Tokyo Metropolitan Government has revived its long-shelved plan to build an airport in Chichijima just outside the World Heritage designated area, but which threatens the biosecurity of the UNESCO site and would require changes to the areas protected under Japan's Natural Parks Law (*The Mainichi*, 2018).

The Ogasawara Islands are comparatively recently colonised, yet their ecological and geographical characteristics have been an ever-present feature of the evolving and contested identities of the diverse communities that have lived there. If we decentre the human, however, we become aware of the reverse, which is the transformative imprint of human settlement on the islands' ecologies and geographies. The result, paradoxically, is that decentring the human gives us the opportunity to reflect on the increasing risks of anthropogenic environmental change to our own sustainability and survivability.

Prior to Japan's modernization and urbanization most Japanese settlements tended to be small and isolated. A diversity of local and regional identities flourished, which was facilitated by the pre-modern political structuring of Japan into semi-autonomous feudal domains.[3] In Japan, however, as elsewhere, there has undoubtedly been a homogenization of identities away from the local, initially with modernization and urbanisation, and the development of an integrated nation-state, and lately with globalization. This has corresponded closely with an 80 per cent loss of its original habitat (Table 2). More so Britain, which has lost approximately 90 per cent of its original habitat, and is one of the most nature-depleted countries on Earth (WWF, 2018).

Nevertheless, with greater appreciation for our environmental and human histories there has been a reconfiguration of perspectives in Japan and Britain to form hybrid identities around emerging local

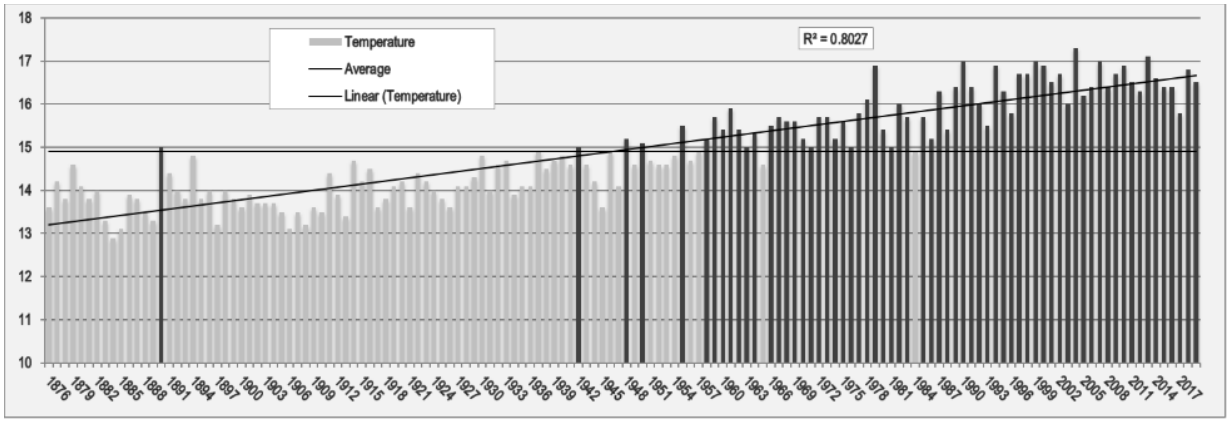
[3] Kelly, Chapter XX, this volume.

environments and ecologies, which include developments in agriculture and marine resources.[4] Despite these local gains in human identity formation, however, both countries' ecological heritage continues to deplete, with Japan losing 2.7 per cent of its tree cover (714kha) since 2001; while the UK lost 12 per cent (458kha) over the same period (GFW, 2020). Moreover, among the more than five thousand species listed by the IUCN as occurring in Japan, including marine species, since 2016 the number assessed as being threatened has increased from 404 to 517, with 132 of those under threat due to climate change (IUCN, 2016 & 2020), a subject to which we now turn.

Climate

Figure 1. Average annual temperature in Tokyo, 1876-2019.

Data Source: JMA (2020).



Notes: Average temperature for the period = 14.9°C. Dark grey bars = >14.9°. Trendline R2 value = 0.80271.

Asia is where the problem of population and development is most pressing (Ghosh, 2017). While the East Asian modern development achievement, driven initially by Japan, has been a seminal moment in human history in lifting hundreds of millions, if not billions, of people out of poverty and into longer and healthier lifespans within a few short decades, the region has emerged as a leading participant in the Great Acceleration of the depletion of the Earth's environmental capacity in the post-war period (Matanle, 2020; McNeill & Engelke, 2016). Japan is once more in the vanguard.

In 1961 Japan's average bio-capacity deficit was –2.0 global hectares (gha)[5] per person per year, being the difference between the country's per capita bio-capacity of 1.0gha and its ecological footprint of 3.0gha (GFN, 2020). With Japan's accelerated post-war economic expansion, by 1973 that gap had widened to –4.8gha before levelling off at –5.0 by 1997. Since then, Japan's deficit has

[4] See: Hansen, Chapter XX; Kingsbury, Chapter XX; & Ganseforth, Chapter XX, this volume.

[5] 'A global hectare is a biologically productive hectare with world average biological productivity for a given year. Global hectares are needed because different land types have different productivities.' See GFN, 2020.

gradually declined to –3.9gha in 2016. Although we must acknowledge Japan's own efforts in environmental mitigation, the reduction in Japan's ecological footprint is largely a consequence of the dematerialisation of the Japanese domestic economy and its re-materialisation globally (Hall, 2009; Van Neuss, 2018). Indeed, the acceleration of Japan's global industrial and trading power since the 1960s has been breathtaking, from reaching into the heart of Amazonia for iron ore to supply its worldwide automotive industries, to fishing in the Eastern Mediterranean for Bluefin tuna to put on the tables of Tokyo's and New York's restaurants (Bunker & Ciccantell, 2007; Clover, 2005). The cumulative effect has been an acceleration of resource depletion, pollution, and planetary warming arising from the technological transformation and up-scaling produced by globalisation's distanciation effect (Bunker & Ciccantell, 2007). For instance, even as Japan appears to be progressively decelerating its own growth first regime, China's footprint has widened from –0.2gha in 1970 to –2.6gha today (See; Dong & Dai *et al*, 2017; GFN, 2020).

To be sure, Japan is by no means alone in producing these effects, is not the worst culprit, and Asia's so-called economic miracle was an active decision to develop themselves, with Japan serving as an inspiration, investor, and supplier of resources and know-how. Nevertheless, there is a growing recognition among geo-scientists that the Earth is passing from the stable Holocene into the Anthropocene epoch, where instability and unpredictability are the new, less forgiving, normal (Crutzen, 2002; Zalasiewitz & Williams *et al*, 2010).

Asia is at the centre of the gathering storm. To appreciate what may be in store, for the 800,000 years of Earth time prior to 1900, which includes seven advances and retreats of polar ice and variations in sea level of tens of metres higher and lower than now, the concentration of carbon dioxide in the Earth's atmosphere fluctuated between 170 and 300 parts per million. Yet, within the space of 120 years since 1900 that upper figure has risen by more than 38 per cent to pass 415ppm in May 2018, and is approaching 420ppm today (Scripps Institution of Oceanography, 2020). It is inconceivable that this would not have a dramatic impact on the behaviour of Earth systems. The question is not if, but how, where, and when?

Although the climate emergency is global in its extent, its causes and impacts are variable according to multiple geographical and human factors, including regional and local characteristics, and socio-economic and political inequalities (Gore, 2020; Takao, 2012). It is well known that the global rich produce the largest proportion of greenhouse gases from their economic and leisure activities, with the richest 10 per cent of the world's population – 630 million people – responsible for 52 per cent of humanity's cumulative carbon dioxide emissions between 1990 and 2015 (Gore, 2020). Approximately 10 per cent of those richest people are Japanese – at 63 million being half the country's population – with the greatest wealth concentrated in Tokyo (Credit Suisse, 2018; Zhang,

Nozawa & Managi, 2020). Unsurprisingly, therefore, Japan's contribution to anthropogenic change in Earth systems has been greater than nearly every other country. By country it is sixth in terms of its cumulative historical emissions of greenhouse gases, with 3.98 per cent of the world's carbon dioxide emissions since the beginning of the industrial era, after the UK, with 4.89 per cent of the global total (Ritchie, 2019). Indeed, Moran & Kanemoto *et al* (2018) currently place the Tokyo city region as the fourth largest urban cluster on Earth, and with the ninth largest carbon footprint, emitting 132 Mt of CO_2 annually.

Notwithstanding that the greatest impacts are yet to be experienced, irrespective of the effectiveness of current mitigation efforts, climate breakdown is a present-day reality: globally and locally. Since the beginning of Japan's industrial era, for example, as the Tokyo metropolis has continued to expand, global warming and the urban heat island effect have combined to produce a rise in the average surface temperature in the city centre of around 3° Celsius, from 13.6° in 1876 to 16.5° in 2019, reaching 17.3° in 2004 (Figure 1). This is greater than double the average global rise.

The highest daytime temperature ever recorded in Japan has been 41.1°C, in Kumagaya City, Saitama Prefecture, on 23 July 2018. That day, Ome City in north-western Tokyo Prefecture recorded Japan's sixth highest temperature of 40.8°, while central Tokyo was a relatively balmy 39.0°! Five years earlier, on 12 August 2013 Tokyo recorded its highest one-day minimum of 30.4°, the first known occasion that the city had experienced a whole 24-hour period – from midnight to midnight – without the temperature falling below 30°. Indeed, the last year that the average temperature in Tokyo was below its own 1876-2019 average of 14.9° was 1984 (Figure 1). Ominously, Tokyo's heating continues. Both July and August 2020 exceeded the equivalent 2004 average monthly summer temperature, each by 0.6° (JMA, 2020).

In October 2019 Tokyo and its peripheries felt a portent of the future. Situated on the east coast of Honshu, Tokyo lies close to the north-western edge of the North Pacific Subtropical Gyre which, incidentally, is simultaneously the world's largest biome and the site of the Great Pacific Garbage Patch, to which Japan is a major contributor, in part due to the debris produced by the 2011 tsunami in Tōhoku (Lebreton & Slat *et al*, 2018). It is the heating of this gyre which feeds the destructive tropical storms which batter Japan every summer and autumn, such as Typhoon Hagibis, which travelled across the Tokyo region and whose cyclonic system interrupted the 2019 Rugby World Cup with wind and rainfall of such severity that it was described as an 'atmospheric river' carrying possibly twice the volume of water that flows down the Amazon (Normile, 2019; Wang, Wang & Cao, 2019). Although Japan experiences powerful typhoons from time to time, Hagibis produced the highest storm surge ever recorded in Tokyo Bay of 2m above normal and stands out for its intensity, lack of weakening over land, and the quantity of rainfall and speed of its delivery. Highly populated areas

around Tokyo Bay didn't experience heavy damage, however, partly because the peak storm surge occurred during a low spring tide (Freedman, 2019; Shimozono & Tajima *et al*, 2020).

In addition to the expected increase in the frequency, intensity, and duration of super-typhoons, and accompanying floods and landslides, is the impact of global heating driven sea level rise, in a country where a quarter of the population (30 million) lives in coastal zones of below 10m elevation (Neumann & Vafeidis *et al*, 2015). It is the combination of large populations living at low elevations near the coast or alluvial plains in steep sided valleys, more powerful and higher storm surges, tsunami vulnerability, plus the number of smaller isolated municipalities with older populations situated along more rural coastlines, which marks Japan's locales as especially prone to disasters (Matanle, Littler & Slay, 2019).

Conclusion: Decentering and Decelerating the Human in the Anthropocene

Many ordinary people worldwide have known about environmental breakdown for decades, through their sensitivity to the frequency and severity of natural events in their lives and by observing permanent changes in their locales, even if their experiences and observations have mostly gone unacknowledged (Ghosh, 2017). While researching in the inhospitable winter climate of Sado Island in Niigata Prefecture I interviewed older farmers who would regale me with tales of declining snowfalls and longer growing seasons since their youth. Japanese persimmon trees need a good winter frost to grow higher quality fruits, and the farmers complained that the shorter and warmer winters reduced the quality of their autumn harvests.

Few would argue that the painstaking scientific research on environmental collapse accumulating in the record is not fundamental to achieving mitigation, abatement, and adaptation. However, personal, direct, and local experience is an influential marker of whether someone is likely to accept climate breakdown as a valid description of a real-world phenomenon, and to change their behaviours. Despite the temperature rise in Tokyo, the impacts of environmental change are necessarily experienced locally, and most keenly in rural and agricultural locales; particularly in less developed countries where people's livelihoods and security are most at risk, while those living in urban areas within developed countries are usually insulated by technology and wealth (Ghosh, 2017). It is therefore vitally important that local experiences are both heard and shared, and reported in the scientific record.

Yet, assailed by corporate denialism and consumer apathy, and despite observing species extinctions and knowing about the greenhouse effect since the late 19th century, many scientists and governments have, unfortunately, either exhibited too much caution (Hoggett & Randall, 2018) or been too willing to accept manufactured doubt (Oreskes & Conway, 2010). It was, for

example, only in 2019 that Japan Meteorological Agency scientists reported for the first time that an event 'could not have happened without human induced global warming', regarding the July 2018 record high summer temperatures in the Tokyo region described above (Imada & Watanabe *et al*, 2019: 8).

It is gratifying, therefore, to see the tone of scientific reporting incorporating affect as a device to reflect more candidly what is observed, experienced, and felt throughout the world by ordinary people daily. Indeed, in the 21st century the world's most eminent scientists writing for the most sober and erudite journals increasingly use words such as 'annihilation' (Ceballos, Ehrlich & Dirzo, 2017), 'catastrophe' (Williams. Bolitho & Fox, 2003), and 'cataclysm' (Campbell, ed., 2008) when presenting evidence of the impacts of humanity on nature.

While journalists and broadcasters have in the past led in environmental communications beyond the scientific community (See: Galeano, 1997 [1973]; Monbiot, 1989), academic historians, anthropologists, and political scientists are critically engaging with environmental change with greater vigour, and drawing Japan into global conversations (Broadbent, 1999; Thomas, 2014; Walker, 2011). When considering Japan, however, we must acknowledge the global injustice that comes with privileging particular voices and tropes. Japan as a country bears a large responsibility for the climate emergency, and it possesses enormous resources to adapt to and defend against those risks. On the other hand, in another East Asian archipelago not far from Japan, the Filipino people experience a disproportionately large burden of damage from climate change, but bear a fraction of Japan's responsibility for its causes (Holden & Marshall, 2018).

Not only is the Anthropocene disruption opening new modes of human inequality, but the global transformation to modernity has also opened a metabolic rift between humanity and the environment that sustains all life – a rift that is widening and deepening as we accelerate our depletion of nature towards exhaustion (Foster, Clark & York, 2010; McNeill & Engelke, 2016). At first the silver lining that the COVID-19 seemed to offer was a pathway towards a cleaner and greener future, with less pollution and emission. Early in the crisis, satellite images showed large reductions in atmospheric pollution over Wuhan in China during its confinement, and initial reports showed a 17 per cent reduction in CO_2 emissions (Le Quéré & Jackson *et al*, 2020; NASA Earth Observatory, 2020). Instead, however, 'The industrial slowdown due to the COVID-19 pandemic has not curbed record levels of greenhouse gases … any impact on CO_2 concentrations – the result of cumulative past and current emissions – is in fact no bigger than the normal year to year fluctuations' (WMO, 2020).

In 2013 Roy Scranton began urging us to start 'Learning How to Die in the Anthropocene', that we might learn how to live under massive environmental transformation (Scranton, 2013). Although we

experience our environment locally, we cannot allow that to cloud every person's duty to take responsibility for the Earth as a whole, which requires another massive transformation, this time in us.

Modernity's error was to let us continue to place ourselves at the centre of things and to believe that we could forever make things better. The outcome has been the Great Acceleration and the Anthropocene disruption. For all the local diversity that human society exhibits on Earth, in Asia, and in Japan, it is undeniable that we are all globally interconnected. We all inhabit the same biosphere, whose air and water we share.

We know now that humanity has two options ahead; one that is catastrophic, and the other that is less bad. Utopianism is finished. We must decentre ourselves and decelerate our lives by learning to appreciate that we humans don't actually matter that much; that everything, however small, is connected and simultaneously local and global; that within the vastness of the solar system and universe, Earth is our locale.

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