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Confronting the Olympic Paradox: Modernity and Environment at a Crossroads in Downtown Tokyo

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Abstract: The 2020 Summer Olympics will be the hottest ever; due to a combination of climate change and scheduling them when Tokyo is at its most sweltering. Cities have been transformed, with the Games used by governments to unite citizens behind patriotic visions of national success and project a modernist image of a city and nation on the leading edge of global progress. This is the Olympic paradox- being uniquely symbolic of modernity while also complicit in modernity's outcome, including the systematic depletion of the Earth's resources, our destruction of its habitats, and pollution of the biosphere with emissions and effluents which together threaten the sustainability of life on Earth.

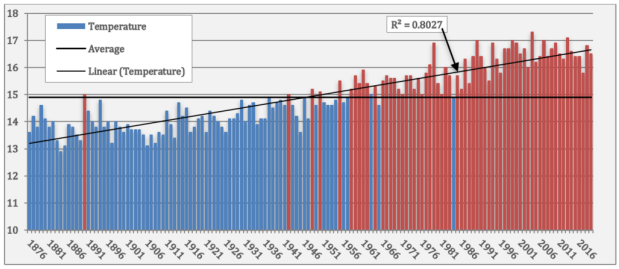

Figure 1. Average annual temperature in Tokyo, 1876-2019. Data Source: JMA (2020).
Notes: Average temperature for the whole period = 14.9°C. Red bars = >14.9°. Trendline R^2 value = 0.80271.

It's Getting Hotter

The world is heating up. So is Japan. And so is Tokyo. In 1876, the average annual temperature for central Tokyo was 13.6°C. In 2019 it was 16.5°. The highest recorded annual average for the city thus far has been 17.3°, in 2004; and the last time the annual average was below 15.0° was in 1984 (Figure 1).

The highest daytime temperature ever recorded in Japan was 41.1°C, in Kumagaya City, Saitama Prefecture, on 23 July 2018. That day, nearby Ome City in northwestern Tokyo Prefecture recorded Japan's sixth highest recorded temperature of 40.8°, while central Tokyo was a relatively balmy 39.0°! Of the 20 highest readings taken throughout Japan since the 1870s, fifteen have been since 2000, four were in the 1990s, and one was in 1933. In 1876 there was one day when the daytime national high was greater than 35°; in 2019 there were twelve, with these clustered around the 21 days that span 20 July through 10 August (JMA, 2020). On 12 August 2013 Tokyo recorded its highest one-day minimum of 30.4°, the first recorded occasion that the city had experienced a whole 24-hour period – from midnight to midnight – without the temperature falling below 30°. The 2020 Tokyo Olympic Games will begin on 24 July and end on 9 August.

A Short History of Climate Science and the Olympic Games

In 1896, the year that the first Olympic Games of the modern era were held in Athens, Greece, and building upon the work of Tyndall, Fourier and others, Swedish physical chemist Svante Arrhenius (1859-1927) published the first calculations demonstrating that the Earth's surface temperature would change according to the concentration of carbon dioxide in the atmosphere (Arrhenius, 1896). Ironically, Arrhenius considered any resulting warming to be a benefit, particularly in northern climes, where he lived.

> By the influence of the increasing percentage of carbonic acid in the atmosphere, we may hope to enjoy ages with more equable and better climates, especially as regards the colder regions of the earth, ages when the earth will bring forth much more abundant crops than at present, for the benefit of rapidly propagating mankind.
>
> Svante Arrhenius (1908: 63)

Is it a coincidence that scientific knowledge about global heating, its occurrence and impacts, and the development of the Olympic Games as the world's foremost sporting spectacle have gone hand in hand in time? Put another way, are not the Games and climate science together the embodiment of European notions of scientific rationality, modernity, and their material expression in modernization?

As a founder of the Nobel Prizes, and a recipient himself, Arrhenius was the quintessential modernist scientist who believed deeply in the contributions of science to human progress. Likewise, Frenchman Baron Pierre de Coubertin (1863-1937) brought modernist ideals about athleticism, amateurism, peace, and progress together to create the modern Olympic Games. Like Arrhenius, de Coubertin went on to win a medal of his own making, the Gold Medal for Literature at the 1912 Stockholm Olympics. (Yes, there were medals for cultural competitions at Stockholm!) It is fun to speculate that perhaps Arrhenius and de Coubertin may even have met, at one of the elite internationalist European soirées among which they must both have circulated.

One can continue to play with coincidences. 1964 was another critical moment in climate science. That year the US National Science Foundation agreed to continue funding Charles David Keeling's work in collecting readings of atmospheric carbon dioxide concentration at the Mauna Loa Observatory in Hawaii. Different stories abound, but it seems the original sponsors considered Keeling's results to be normal and expected, and decided to end his funding and direct him elsewhere. However, Keeling's tenacity in arguing for maintaining the continuity of the data persuaded the NSF (Ziska & Dukes, 2011: 28). The resulting 'Keeling Curve' is now credited as bringing global attention to the accumulation of carbon dioxide in the Earth's atmosphere and considered one of the most important scientific discoveries of the 20th century (Oreskes & Conway, 2010). There is consequently just one gap in Keeling's data, from February through April of 1964 (Chang, 2005). The Tokyo Games were held in October. What if the NSF had decided not to fund Keeling's work?

One could probably find a significant moment associated with knowledge about environmental collapse for every year that the modern Olympic Games have been held; the problem is so pervasive, and so modern. In 1988, the year of the Olympic Games in Seoul, South Korea, the Intergovernmental Panel on Climate Change was established (IPCC, 2020). It's work in synthesizing the science on global heating and climate breakdown has been fundamental in providing the evidence base for

climate change diplomacy through the UNFCCC and associated COP meetings, and is critical in defeating climate change denialism.[1]

And the 2008 Beijing Olympic Games provoked the most extreme environmental reaction to the Games thus far, over the risk to athletes' and visitors' health in what was considered one of the world's most polluted cities. It was partly western media discourse in the lead-up to the Games, including a critical article in the *New York Times* in 2007, that galvanized the Chinese authorities to mitigate the effects of air pollution (Kahn & Yardley, 2007), including the temporary closure of industries and forced reductions in road traffic use (Watts, 2008).

The point here is not to argue that the Seoul Games prompted the establishment of the IPCC, or whether Arrhenius and de Coubertin ever met. Instead it is to acknowledge the weaving in and out of the paths down which modernity flows or is expressed, and discuss how these then come together to create meaning in some not so surprising patterns.

The Tokyo 2020 Problem

Tokyo 2020 faces a similar problem to the one that confronted Beijing; which is the limits of nature's capacity to provide solutions to the outcomes of modernization. Although the 1964 Games were held in October, a beautiful time to show off the country, Tokyo 2020 will be much hotter than 56 years ago, both because of the change of season and the fact that the world is heating up. The highest temperature experienced during the 1964 Olympic Games was 23.3°, on 15 October (JMA, 2020); 17.8° lower than the record temperature set in Kumagaya in 2018.

And it's not just the heat. Japanese summers are notoriously muggy. Throughout the summer, damp and hot Pacific Ocean air steadily blows from the Philippines towards the Japanese archipelago above the warm northwards flowing Kuroshio ocean current. Together they form the 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 *et al*, 2018). It is the heating of this gyre which feeds the increasingly frequent and destructive tropical storms which batter Japan every summer and autumn, such as Typhoon Hagibis, 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). In 2019 the average humidity index for Tokyo showed 89 and 80 per cent for July and August respectively (JMA, 2020).

The decision to hold the Games at the hottest period of the year was apparently to accommodate the preferences of U.S. television networks anxious to avoid clashes with the American sports calendar (Foster, 2018). Nevertheless, the Tokyo organising committee has responded by rescheduling some events for the morning, constructing shelters, setting limits on volunteers' contributions and moving the marathon and long-distance walking events to Sapporo, the largest city in the northern island of Hokkaido. Tokyo Governor Koike Yuriko has publicly expressed opposition to the move, but been unable to prevent it since the decision rests with the International Olympic Committee, who are mindful of the dangers after atheletes collapsed at the World Championships in Doha in 2019, and 40 per cent of competitors in the women's marathon failed to complete (McCurry, 2019).

But aren't these solutions merely sticking plasters used to hide something much deeper and more serious that humanity is as yet

unwilling to get a grip on?

Confronting Modernity

Kuma Kengo's Olympic Stadium nestles into its urban setting in downtown Tokyo. Photo: Peter Matanle, 16 January 2020.

Is there a clearer expression of the consciousness of modernity – its urge towards improvement, progress, and the individual self – than the Olympic Games? Modernity, modernism, and modernization are infused into every aspect of the Games, from the spectacular stadia, through dazzling ceremonies, to sensational athletic achievements. Amid the tendency to be analytical, and perhaps critical, let's first not forget that the Olympic Games is an immense source of inspiration, delight, entertainment, peace, idealism, and sheer unadulterated joy for millions of people around the world. And don't we all need some joy in our lives from time to time?

But in our anticipation of the joy and inspiration to come this summer in Tokyo, let's acknowledge other aspects of modernity that the Olympic Games embodies. The environment has always been a central concern for the Games. Host cities have used the occasion to remodel, renew, gentrify, and clean their cities, in the process investing billions of dollars in new stadia, transportation infrastructure, and technologies. In this sense 'environment' has meant a human-centered expression of the aesthetics of one's immediate surroundings. Cities have been transformed, with the Games used by governments to unite citizens behind patriotic visions of national success and project a modernist image of a city and nation on the leading edge of global progress (Rowe, 2012).

Amid mounting criticism of the costs of the Olympics to the natural environment, however, that word has taken on a more urgent meaning by its association with the enormous material consumption, waste, and emissions generated by the Games, through city remodeling, the hosting of participants and visitors, and the commercialization – or cheapening – of idealism and human achievement with merchandising and sponsorship. We live in a world which is heating up because of our profligate use of fossil fuels. We are facing a catastrophic collapse in the sustainability of life on Earth, and the Olympic Games, despite or because of the inspiration they provide for millions worldwide, are complicit in that destruction.

And let's stop thinking such language is alarmist. Who could deny that a 60 per cent loss of mammals, birds, fish, reptiles, and amphibian numbers worldwide since 1970 is a calamity (WWF, 2018)? Who would question that the contribution of climate change to the severity of the Australian bushfires of 2019-20, and the politically motivated procrastination within that country's government over coal mining, is catastrophic, with more than 1 billion animals now estimated dead (Zee & Torres, 2020)? The world's most eminent scientists writing for the most sober and erudite journals now routinely 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 modernity on nature.

This is the Olympic paradox. In being uniquely symbolic of modernity in achieving what the Olympic motto – 'faster, higher, stronger' –

asks of its competitors, it is also complicit, therefore, in modernity's outcome. For, alongside the global success of modernization in producing longer, healthier, happier and more fulfilling lives for billions of people across the world, comes the systematic depletion of the Earth's resources, our destruction of its habitats, and pollution of the biosphere with emissions and effluents which together threaten the sustainability of life on Earth.

Nowhere has this Olympic paradox been more evident than in the Asian summer games of Tokyo, Seoul, Beijing, and Tokyo once more. Even as each country emphasizes its ancient indigenous heritage in their opening ceremonies, the Games were always intended as an announcement of their successful and successive achievement of modernity, a coming out party and rite of passage into the modern world, and as a welcome into that world by the modern Olympic Movement (Black & Peacock, 2011; Collins, 2012). Indeed, six months before the start of the Tokyo Games, on 28 April 1964, Japan was accepted into the club of rich developed nations, the Organization for Economic Co-operation and Development (OECD, 2020).

Each of Tokyo, Seoul and Beijing enjoyed a construction boom the likes of which their peoples had never previously experienced. Whiting (2014) details Tokyo's reconstruction, while Bridges (2008) describes Seoul's remodeling. Yet, the transformation of Beijing was arguably more impressive. In just seven years the city built and refurbished 37 sporting arenas, including the iconic Bird's Nest Olympic Stadium, extended its subway system, completed a light rail system, and constructed more than 318 km of city streets – including 23 roads around the Olympic sites, two new city ring roads, and high-tech traffic control systems. The city also built a new airport terminal and extended the toll road to the airport (Sands, 2008).

For all three cities the Olympic legacy has been profound, producing an efficient, cleaner and more vibrant urban area that helped launch each country into the next stage of its modern development. Under the Beijing Sustainable Development Plan, implemented as a part of the Olympic legacy, there have been lasting impacts economically and environmentally for Beijing and China more broadly, including considerable investments in anti-pollution and cleansing technologies, with for instance the replacement of up to 47,000 taxis and 7,000 diesel engine buses by vehicles that would meet EU emissions standards (Sands, 2008).

Nevertheless, it is inescapable that, though the Olympic Games are both product and symbol of the progressive idealism of modernity, they are also complicit in its outcome in environmental breakdown. If modernization is powered originally and primarily by the combustion of coal, then the Olympic Games are an accelerant; akin to throwing gasoline on that fire. Here's how.

The Olympic City as Global Field

Tokyo as Global Field. Photo: Peter Matanle, 16 January 2020.

More than anything associated with modernity and modernization, the Olympic Games is a celebration and invocation of the modern global city. No longer walled and arranged around a castle for collective defence, and so much more than a market for economic exchange, the city has become the fountainhead for the expression of identity and fulfillment of creative impulses, a space for coming together and

realizing collective values, and a place for the satisfaction and achievement of individual desires and ambitions. Hence, although the city is both a spatial and a social environment, it is also the primary 'field' of human endeavor within which people cooperate, negotiate, and compete for the resources they need for the achievement of their self-realisation; the ultimate expression of the individual self in modern society (Bourdieu, 1993; Giddens, 1991; Matanle 2003). Small wonder, then, that the modern Olympic Games are awarded to a city and not a country. Indeed, the awarding of the Games confers global status on a city like no other marker, and transforms it into a global field, attracting people, capital and resources from every corner of the world, intensifying inter-urban competition to form a global metropolitan hierarchy, with Olympic hosts at its apex.

Inevitably, all this activity imposes an enormous and growing imprint on the Earth. Already, 75% of natural resources are consumed, and 80% of anthropogenic greenhouse gases produced, in cities (EMF, 2019). Considering the visual and biological impact of material extraction and recombination, such as in the cities we build and industries we run, it is fair to say that humans are the primary geomorphic agent on Earth and that we are now firmly in the Anthropocene epoch (Hooke, 1994; Steffen, Crutzen & McNeill, 2007; Thomas, 2014; Circle Economy).

Indeed, our physical impact on the Earth is accelerating, even as we begin to grasp the gravity of our circumstances (McNeill & Engelke, 2016). The Keeling Curve[2] shows no sign of flattening, passing the historically important 415ppm atmospheric concentration of CO_2 on 11 May 2019, despite the promises made in Paris in December 2015 to reduce our output of greenhouse gases. And the proportion of materials consumed worldwide that is recycled is currently falling, from 9.1 to 8.6 per cent in the year to 2017 (Circle Economy, 2020).

Tokyo is arguably the greatest modern city of all. It is certainly the largest, with around 38 million people – 30 per cent of the country's population – residing in its metropolitan area, which covers a land area of more than 13,300km^2 (UNDESA, 2017: 14; Statistics Bureau, 2020)[3]. Despite national-scale depopulation since 2008, Tokyo continues to draw in people and resources from the rest of Japan, creating a zero-sum game of depletion for the rest of the country (Matanle, 2018). Rather than the stated intention of using the Games to assist with regional rebalancing and reconstruction in tsunami affected regions in the north-east, the 2020 Games are associated instead with reinforcing and intensifying Japan's spatial imbalances (Macnaughtan, 2019; Matanle, 2013; Reconstruction Agency, 2017).

Although the 2020 Games promise a reduced environmental impact, with many venues such as Tange Kenzo's 1964 gymnasium refurbished, and materials recycling is a stated priority, it is unlikely that they will deviate fundamentally from previous patterns. Indeed, discounting operating expenses, this year's Games will be the second most expensive summer games in history after Beijing, with the national and metropolitan governments spending more than USD20 billion on stadia and infrastructure to prepare for the influx of visitors and showcase Tokyo as a modern global city without equal.

**To the south of Yoyogi Park, with the skyscrapers of Shinjuku to the north, Tange Kenzo's 1964 gymnasium is being refurbished for 2020.
Photo: Peter Matanle, 16 January 2020.**

Are we deranged?

Urbanization continues relentlessly, with the most rapid growth occurring in Asia (UNDESA, 2017). The gravitational attraction of cities as a field for the enactment of human desires and ambitions grows ever stronger. As Asia grows and prospers so Asian cities will feed and fulfil Asian people's desires to express their identities and achieve individual self-realization in modernity.

It is not Europe, where the Olympic Games originated, but in Asia, where their association with modernity and modernization has developed its strongest logic. Is it therefore any coincidence that it is in Asia where the problem of anthropogenic environmental breakdown is developing most acutely, with the commitment of its governments to accelerated economic transformation and its confluence with the largest populations on Earth?

'Are we deranged?' asks Indian novelist Amitav Ghosh (2016). Looking back on 2020 future generations might think we were. But I disagree. I think we're struggling to find a way to do what's right while continuing to follow our desires, and we're finding that the two are no longer compatible. Under present conditions it appears impossible for a city to host the Olympic Games and not contribute to environmental breakdown. Yet it is also impossible not to hold the Olympic Games; we love them too much. So we carry on, hoping that somehow all will be OK.

Maybe modernity isn't progress at all but a dead end; a sort of solipsism. That in our focus on the achievement in the present moment of our individual identities, hopes, and dreams we have forgotten, or even refuse to countenance, that we are all connected – not just with each other in the present, but with every living thing that has or ever will walk this Earth. Every day we momentarily disbelieve that our actions have histories and consequences and we forget to take responsibility for ourselves and to cease offloading it onto nature.

Sometimes I feel like we are on a runaway train careening towards inevitable disaster. But as someone who also wants to enjoy the opportunities that life offers me, and who also loves the Olympic Games, who am I to begrudge anyone their chance to visit Tokyo this summer and enjoy the greatest human spectacle on Earth? I hope everyone who does will have a wonderful time; and I will be watching and celebrating too, for now at least.

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Notes

[1] UNFCCC = United Nations Framework Convention on Climate Change; COP = Conference of the Parties (to the UNFCCC).

[2] See here for the full and most up to date representation of the Keeling Curve.
[3] Calculated by adding the land area of the four prefectures of Tokyo, Chiba, Saitama, Kanagawa.