10.3197/JPS.637883049089787

Editorial introduction

David Samways – Editor

The publication of this issue to the *JP&S* coincides with a particularly ugly turn in global human affairs. A combination of events including the COVID pandemic, the war in Ukraine and the effects of climate change have seen inflation in the prices of key internationally traded commodities, most notably fossil fuels and grain. For many in the rich world, inflation will result in hardship, requiring careful choices and the diversion of income toward items defined as 'essential', but for more than two billion of the world's poorest people this conjuncture of factors will lead to dire choices about meeting their most basic needs, and for many there will be no choice at all. (FAO et al., 2021; FAO, 2022)

In an article published in this journal in 2017 Joel Cohen noted that,

> Earth's capacity to support people is determined both by natural constraints, which some will emphasize, and by human choices, which others will emphasize. Many of these choices are decisions made by billions of people in their daily lives (turn off the light when you leave the room, or leave it on; wash hands before eating, or don't bother; pick up litter in the schoolyard, or add to it). The cumulative results of what may be unconscious individual actions amount to major collective human choices: consume more or less fossil fuel; spread or prevent infectious diseases; degrade or beautify the environment. (2017, 40)

This is an important observation and underpins Cohen's contention that the idea of 'carrying capacity' is a specious concept when applied to human beings – it is our manifold choices in the context of the characteristics of the natural world that determine the population the Earth can support. This goes to the heart of much of the controversy surrounding the role of human population size

in our environmental crisis. Many rightly argue that the massive expansion in consumption in the post-War period was the greatest driver of what has been called 'the great acceleration' (Steffen et al. 2015) but it is equally true, as Paul Ehrlich has commented, that concentrating on consumption without factoring in population fails to adequately describe human environmental impacts, in the same way that specifying one side of a rectangle cannot describe the area of that geometric figure (Jowit, 2011). Nonetheless, the inequitable distribution of the consumption of resources is a critical impediment to the meeting of basic needs, let alone the enjoyment of a good life, for billions of people. It is frequently noted that sufficient food is produced to meet the calorific needs of many more people than the current global population but that, amongst other factors including those mentioned above, the use of food crops to feed animals to provide meat for those who can afford it and choose to eat it, or to produce biofuels and other industrial products, means that many are priced out of the global market for food.

While the everyday practices of individuals, in aggregate, are the principal cause of environmental change, the power of individuals to affect positive environmental change is limited. Moreover, how much 'choice' is involved in the everyday and mundane aspects of life such as the food we eat, the fuels we use, the temperature to which we heat our homes and even the frequency with which we wash our clothes and our bodies, is questionable. Environmental change is largely the result of habitual behaviour rather than choice, and the enaction of these norms takes place under social and technical conditions over which we often have little choice, producing unintended consequences of which we are frequently ignorant.

However, even when we are aware of the impact of an action and have the ability to choose to act otherwise, the moral dilemma is less of a consideration than the recognition of our inability to change the actions of millions of others. Mark Beeson's commentary piece, 'The Last Lap', published in this issue, thoughtfully considers such questions in respect of his own and others' choices. The 'lap' in question is his own circumnavigation of his adopted Australian homeland, but also refers to the possibility that our civilisation may be coming to the end of its journey.

Confronting the cognitive dissonance generated by the environmental impact of his fossil-fuelled grand tour, Beeson contemplates the limited ability of the individual to have a significant impact on essentially collective global problems.

Perhaps more importantly, he points up the indifference of many individuals in the rich world to environmental degradation local to them, and their lack of empathy for the poorest half of humanity likely to experience the worst effects of environmental change, let alone the plight of other species.

Clearly, even when well informed and concerned, the individual is largely impotent in the face of such problems and Beeson argues that only global institutions can effectively tackle these issues. However, as populist nationalism increases worldwide and attitudes towards migrants harden, he is not optimistic about the ability of national leaders to see beyond the short-term interests of their electorates and establish the internationally coordinated measures he proposes to tackle the unfolding environmental and humanitarian crisis.

The history of humankind is also a history of migration. From the earliest movement of our species out of Africa (Henn et al., 2012), population growth has played its part in driving migration as people seek better prospects in new lands. The unfolding contemporary global socio-economic situation is likely to see heightened levels of human movement as the effects of climate change, economic and socio-political factors take their toll. Immigration has become increasingly politically divisive, but it would be mistaken to think that concern has been limited to reactionary or xenophobic quarters, with a number of progressive authors expressing disquiet about the traditionally pro-immigration stance of left-leaning liberals (see for example Porritt and Hines, 2017; Cafaro 2015). Several have highlighted the potential environmental costs of domestic population growth, in particular the ability of individual nation states to meet their carbon emission targets (Weber and Scuibba, 2018; Cafaro and Götmark, 2019). Thus, while immigration obviously has no immediate effect on the global population size, and hence no effect on the 'P' of the IPAT equation (impact = population x affluence x technology), it is plausible that it may change the level of consumption through the increased affluence and the adoption of higher consumption lifestyles by migrants.

However, such arguments pay little attention to the wider environmental impact that fiscal remittances from immigrants to their countries of origin might have. Remittances represent an important flow of income into developing countries and have been estimated to be three times the value of official development aid (Ratha et al., 2016). As our paper from Travis Edwards points out, while many have noted

the effects of remittances on fertility, little account has been taken of the overall effect of migration and remittances on greenhouse gas (GHG) emissions. Edwards models the effect of remittance flows on emissions using data from 127 countries collected between 1971–2012. His results suggest that, rather than increasing GHG emissions, higher remittance flows reduce them, lending credence to the notion that the use to which income is put is critically important in understanding the impact of greater affluence on environmental change. Edwards' modelling supports the claim that remittance flows from rich to poor countries are usually directed towards improving the health and education of those communities in the country of origin rather than to increasing consumption of goods or industrial output. The reduction in present and future emissions may result from a number of behavioural changes including diverting locally earned income away from consumption of goods towards education, changes in the source of fuel and lower fertility. While Edwards notes the limitations of his study and the need for further research, he argues that his modelling indicates that calls for limiting immigration on the grounds of reducing GHG emissions are likely to be misguided.

While the environmental impact of migration from one region to another may be unclear, the growth of the global population can be clearly shown to be a major factor in anthropogenic environmental change. However, it has been pointed out that demographic momentum (the forward growth of total population as the large number of offspring of a higher fertility generation go on to have (fewer) children themselves) means that population policy is a poor tool for addressing immediate threats like climate change (Bradshaw and Brook, 2014). This argument should not be confused with the mobilisation of demographic transition theory as a 'grand historical narrative' demonstrating the inevitability of the transition from high to low mortality and fertility due to macro-demographic forces taking place 'behind the backs' of individual agents. This structuralist argument is pitched at a high level of abstraction as an explanation of broad historical trends, but is also frequently employed to show the futility of population policy against powerful demographic forces. In contrast, the position frequently associated with the outcome of the 1994 United Nations' International Conference on Population and Development, usually referred to as the 'Cairo Consensus', focuses on the micro level and the right of individuals to make autonomous fertility choices. While the demographic transition and rights-based approaches come from quite different paradigms, they both reject population policy, the first out of fatalism and the second out of a fear of moral peril.

Chris Tucker's commentary piece published here, 'Bending the Curve by 2030', takes issue with all of the above arguments. Tucker builds on the argument advanced in his 2019 book, *A Planet of 3 Billion*, where he contends that an environmentally sustainable global population, at a good level of welfare for all, amounts to around three billion – the questions addressed here are how this can be achieved and how quickly.

While acknowledging the role of demographic momentum in delaying the effectiveness of population policy, Tucker rejects the fatalism of structural demographic positions and argues that an ambitious and well-funded plan aimed at reducing the global average fertility rate to 1.5 births per woman by 2030 could be achieved with policies which respect and enhance reproductive rights and welfare. Specifically, Tucker argues that improving the education of girls, the greater integration of women into the workforce, unrestricted access to family planning and media promotion of modern reproductive norms could dramatically reduce fertility rates. Tucker asserts that policy techniques and expertise already exist to achieve this ambition and that it is only levels of funding which prevent it becoming a reality.

Modelling the outcome of achieving a global average total fertility rate (TFR) of 1.5 by 2030, Tucker assumes no change in the average age at first birth (25) and an average age at death of eighty. Under these assumptions, he calculates that, while population would continue to grow for a couple of decades after achieving a TFR of 1.5, a global population of three billion could be a reality in the first two or three decades of the next century.

In the absence of such ambitious and thorough population policies, the global population is projected to continue growing throughout this century, with the majority of this growth taking place in Africa. Benjamin Ason and David Kofi Essumnag's article demonstrates the multifactorial nature of the determinants of environmental risks and how population growth and demographic change are intrinsically connected with them. Specifically, Ason and Essumnag's research addresses the levels of knowledge of the health effects of pesticides and other endocrine disrupting chemicals (EDCs) as their use grows in Africa. The growth of the presence of pesticides and EDCs in the environment is known to have important negative consequences for human health and ecosystems, but the effects are often subtle and their significance only becomes apparent over the

longer term. Examining three communities in Ghana, they show that growth in population size and urbanisation, along with associated changes in lifestyle, have been significant factors in the increasing use of pesticides and EDCs, but that the knowledge of possible risks to health is poor. In particular the extra demand created by demographic change has led to increased use of these products to enhance agricultural yields. While knowledge of the risks associated with these chemicals was generally poor, it was particularly so amongst rural communities whose exposure was the greatest. Moreover, Ason and Essumnag note that inadequate investment in education, health, employment, civil infrastructure and waste disposal is exacerbated by unsustainable population growth and that this also indirectly contributes to the vulnerability of people and ecosystems to the effects of pesticides and EDCs. Ason and Essumnag's study demonstrates how the everyday and habitual use of technologies that have played a central role in the expansion of human numbers also harbours unacknowledged dangers.

We close this issue of the *JP&S* with Pernilla Hansson's review of Johan Rockström and Owen Gaffney's *Breaking Boundaries: The Science Behind our Planet* (2021). Hansson argues that, despite the authors painting a clear picture of the extensive impact of humankind on the Earth-system, they view the future with optimism – an optimism which is misplaced in Hansson's view, due to the lack of attention to the impact of a growing population.

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