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Editorial Introduction

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To some extent, environmentalism has always been concerned with shifting orientations, values and attitudes. Whether it is discouraging littering, encouraging recycling or energy conservation or tackling more fundamental issues such as consumerism or family size, then a change in values and attitudes is likely to be involved. It follows that all of the papers in this issue of the *Journal of Population and Sustainability* (JP&S) can be seen as in some sense being concerned with behaviour change or the consequences of a lack thereof. Three of the papers in this issue touch on the question of our orientation toward nature and the wellbeing of other species, and this reflects the wider concerns in the mainstream environmental literature regarding the ‘anthropocene’ and questions around the primacy of short-term human interests in contrast with the health and sustainability of the biosphere. In the latter part of this editorial introduction I want to take the opportunity to examine a particular attitudinal and value orientation which is somewhat pertinent to these papers (and in particular to the IPAT identity), and which from the beginning of the modern environmental movement has been a source of great concern: anthropocentrism or human-centredness.

I begin with a brief overview of the contributions to this issue. Our first paper, Ugo Bardi’s *A Seneca Collapse for the World’s Human Population?*, examines the concept of the ‘Seneca Effect’ (as developed in his 2017 book of the same name), in respect of human numbers. A Seneca Collapse is typified by a slow growth of one or more of the elements of a system leading to a rapid collapse. Starting with well-documented accounts of collapses in animal populations, Bardi shows how, due to a number of factors, animal populations can follow a typical Seneca curve. Applying the same analysis to historical data relating to human population declines driven by food supply collapse, migration, disease, and active lowering of birthrates – all attended by overdetermining sociological and political

factors -, Bardi shows how similar Seneca Collapses can be observed in human numbers. Bardi concludes that in broad terms the global human population is subject to the same constraints as non-human populations i.e. overshoot of the food-supply, predation (by disease organisms in the human case), and lowering of the birth rate. It is possible that global population could rapidly collapse due to predation by a disease organism, but Bardi thinks this much less likely than overshoot caused by the inability of the global economic system to deliver food worldwide. The attendant misery of this scenario is extremely objectionable, and Bardi speculates that it would be centuries before the system would recover. Finally, the most desirable possibility of a population collapse is one under our own control. Bardi is cautiously optimistic that economic, technical and social factors may lead to an active choice to reduce human numbers before disease and overshoot impose a tragic and dreadful collapse upon us.

Doug Booth's paper *Postmaterial Experience: Economics, Population, and Environmental Sustainability* considers the environmental potential of the emerging 'postmaterial' culture in mature economies. Booth argues that a mostly young, urban demographic, raised in an era of prosperity, experiencing little or no material hardship and engaged in a new, and often creative, service economy has great potential for environmental sustainability. This demographic displays reduced interest in material possessions and an emphasis on consuming individual and shared experiences such as concerts, theatre, travel, extreme sports etc. Usually living and working in the regenerated commercial centres of cities, they are typically more energy efficient and have a greatly reduced reliance on the private car.

Postmaterialism is also positively correlated with concern about the environment. Booth argues that an expansion in postmaterialism globally could have a direct positive effect on environmental sustainability, especially if the environmental values with which it is often associated have an impact on government policies. Booth speculates that postmaterialism might also foster a reduction in human fertility over and above that experienced with conventional 'demographic transition'. He observes that postmaterial values and reduced fertility are correlated but that correlation is not cause, and whether postmaterial values will lead to a reduction in the desire to have children is a question for future research.

Bill Ryerson's paper, *The Hidden Gem of the Cairo Consensus*, looks at the UN's 1994 Programme of Action of the International Conference on Population and Development. He argues that while the document it produced (known as the Cairo Consensus) was both anthropocentric and failed to hold the goal of lowering population growth at the same status as reproductive health and rights, the encouragement to use entertainment media as a means to help achieve gender equality has been a powerful tactic.

Ryerson shows how through the use of soap operas and other dramatic formats broadcast on both television and radio, the Population Media Centre (PMC), of which Ryerson is the President, has successfully and effectively engaged and challenged social norms and attitudes which underpin the social status of women, attitudes toward contraception and norms around family size. All of these factors are significant drivers in population growth in developing countries, and Ryerson demonstrates how, through a variety of dramatic devices underpinned by sound psychological and psychosocial theory, the audience is taken on a journey which challenges established practices and attitudes, whilst also showing the personal benefits for them and their families of family planning and fewer children.

This issue also carries a review by Paul Ehrlich of Tobias and Gray's *Anthrozoology*. As an appendix to Ehrlich's review we have a previously unpublished paper by John P. Holdren on the history of IPAT. Those readers familiar with the IPAT equation ($\text{impact} = \text{population} \times \text{affluence} \times \text{technology}$) will be aware that the identity was first developed by Ehrlich and Holdren in the early 70s, and the paper published here leads us through the development of the equation and defends it against later critiques and misinterpretations. The first publication of the IPAT equation, along with a response from Commoner took place in the *Bulletin Of The Atomic Scientists* in 1972. Holdren argues that his and Ehrlich's position has since been caricatured as asserting population growth as the only important factor. He goes on to show that, in all of the various iterations of their thesis, their emphasis has been on the interconnectedness of population, affluence, technology, and various socioeconomic factors in the environmental impact of humankind.

Anthropocentrism – the origin of environmental degradation?

The 1960s and early 1970s were the crucible of the modern environmental movement. The Ehrlich, Holdren and Commoner debate (1972) exemplifies the enormous appetite for attempting to understand the 'origin' and driving forces of environmental problems. The exchange centred around Commoner's claim that population increase and growing affluence was largely irrelevant to the massive growth of pollution. The actual origin of ecological problems, he argued, was the adoption of inappropriate and destructive technologies in the post war period, and that the solution lay in switching to environmentally friendly production. Ehrlich and Holdren countered that an analysis that focused on technology alone was totally inadequate and misleading, but more importantly did not address fundamental ecological issues like species extinction. They began their critique by pointing out that well before the advent of modern technology people had had a significant impact on the environment.

... serious ecological harm has accompanied man's activities ever since the agricultural revolution some 10,000 years ago. In fact, it may date from even earlier; in the period of intensive hunting and food gathering preceding the advent of agriculture, men may have contributed to a dramatic reduction in the number of species of large mammals inhabiting the earth. (1972 p. 16)

They went on to list examples of ancient environmental degradation including the desertification of the Tigris and Euphrates Valleys beginning around 2000 BCE, deforestation by prehistoric peoples (including hunter gatherers), and the impact of pastoral peoples in North America through overgrazing. Ehrlich and Holdren argued that in most of these examples population had played an important part. It is interesting to note that in his response Commoner did not address any of these points.

While their disagreements were stark, what Ehrlich and Holdren's approach and that of Commoner share is a scientific analysis of the issue, and an attempt to understand the dynamics of technological and economic change and its relationship to environmental degradation. While it was clear that these 'material' factors were the immediate cause of environmental degradation, some argued

that origin of the ecological crisis itself lay deep in the philosophical orientation toward nature at the core of western civilisation.

Anthropocentrism and environmental impact

In 1962 Rachel Carson's *Silent Spring* (1962) not only alerted the public to the catastrophic consequences of pollution as a side-effect of scientific and technical 'progress', but also warned of the inherent danger of the view "that nature exists for the convenience of man" (p. 297). However it was Lyne White Jnr's *The Historical Roots of Our Ecologic Crisis* (1967) that brought the concept of *anthropocentrism* to the attention of the emerging environmental movement. White argued: "what people do about their ecology depends upon what they think about themselves in relation to things around them" (p. 1205). For White, while the enormous power over nature of science and technology was the proximate cause of environmental degradation, science and technology themselves were the product of the Judeo-Christian tradition which placed human beings firmly at the centre of both the moral and natural world. According to White, the pagan animism that Christianity replaced regulated the interchange between human beings and nature and limited negative human impacts:

Before one cut a tree, mined a mountain, or dammed a brook, it was important to placate the spirit in charge of that particular situation, and to keep it placated. By destroying pagan animism, Christianity made it possible to exploit nature in a mood of indifference to the feelings of natural objects. (ibid.)

White's thesis met a number of criticisms, the most important of which pointed out that his interpretation of the Judeo-Christian tradition was very narrow and lacked an account of the notion of *stewardship* present in biblical discourses (see Passmore 1974/1980). In the second edition of *Man's Responsibility for Nature* (1980) John Passmore was doubtful that attitudinal change would have the impact that many environmental writers have supposed (for examples see: Callicott, 1989, 1994, 2012; Callicott and Ames, 1989; Naess (1973); Devall and Sessions (1985); Berry (1988, 1993, 1999); Oelschlaeger (1991); Crist and Kopnina (2014); Washington et al (2017)).

In contrast to Passmore's scepticism regarding a change in values, in a recent UNESCO interview environmental philosopher J. Baird Callicott has argued:

As a philosopher, I am committed to the belief that all our actions are situated in and framed by a worldview... In the last analysis, the only way to protect the environment or make sustainable use of natural resources is an essentially philosophical revolution, a shift in our ideas of Nature, of human nature, and the relationship between humans and Nature, naturally accompanied by a shift in our values from a narrow anthropocentrism to a wider circle of concern. (2012, p. 2)

A connection between ecocentrism, or at least the absence of anthropocentrism, is common to almost all of those who subscribe to the idea that a change in values is essential to diverting humanity from ecological catastrophe. The identification of primal peoples or small scale preindustrial peoples with ecocentrism and environmental sustainability is also common. For thinkers who follow White's general thesis, the values and lifestyles of preindustrial, and especially primal peoples, represent the gold standard in low environmental impact. But what evidence is there to support this? Do societies who have non-anthropocentric values always have a sustainable relationship with nature?

Preindustrial ecological impact

Ehrlich and Holdren had not been the first to point out that significant ecological degradation predated the industrial era. Tuan Yi Fu (1968) was one of the earliest writers to cast doubt on the connection between anthropocentric attitudes and environmental impact by pointing to the considerable deforestation undertaken in European pagan antiquity and in Confucian classical China.

Evidence from anthropological and archeological sources also casts doubt on the idea that non-anthropocentric orientations make any real difference to ecological outcomes. In the anthropological literature for instance, there is little to support the idea that hunter-gatherer societies practice any kind of conservation (see Smith and Wishnie, 2000; Hames, 2007). Rambo's (1985) study of the Semang Orang Asli people of Peninsular Malaysia showed that at the local level air pollution from fires, pollution of water and soil was not quantitatively less significant than industrial society. While no equivalence can be drawn between

the environmental impact of modern society and that of the Semang, Rambo argued that most of the impacts are qualitatively comparable. He concluded that it is not a fundamental difference in orientation to nature that limits the Semang's impact but the limited size and power of their social system.

Krech's (1999) highly respected examination of the ecological practices of Native Americans – possibly the most celebrated bearers of an ecocentric sensibility – shows that contrary to conserving many of the species on which they relied, in many instances they decimated them. Indeed many Native American beliefs may have actually militated against conservation since the idea of reincarnation of animal spirits promoted a belief in fecundity without limits – a conception of limitlessness not dissimilar to those in anthropocentric western discourses.

Furthermore, a wealth of archaeological evidence also attests to the frequently not inconsiderable impact of pre-industrial and often pre-agricultural human beings on every continent. In particular, the migration of people to regions that had been previously uninhabited resulted in species extinctions and or ecological disruption. (see Martin 1967; Johnson et al., 2013; Araujo et al., 2017; Worthy and Holdaway, 2002; Perry et al., 2014; Bahn and Flenley, 1992; Flenley and Bahn, 2003; Diamond 2005; Middleton, 2012)

Attitudes, values and action: conflict and contradiction

Despite the extensive evidence against it, more than five decades on from White's article, the idea that "what people do about their ecology depends upon what they think about themselves in relation to things around them" (op. cit. p. 1205) has lost none of its attraction. Part of its appeal lies in our everyday intuition that values and actions are connected in a straightforward and consistent way. Responding to the evidence of anthropogenic Quaternary extinctions and Tuan's (op. cit.) observations regarding ancient Asian environmental impact Callicott asks:

Do our natural (and social) attitudes and values direct our behavior or, on the contrary, are they a sort of muzak of the mind[?]... Behavior does not flow exclusively from attitudes and values; but neither are attitudes and values simply irrelevant to what people do and how they live (Callicott and Ames, 1989 p. 285).

His last observation is undoubtedly true, but it does somewhat appear to assume that behaviour must be consistent with *all* the attitudes and values held by agents and that all these attitudes and values are consistent and compatible. Yet from a sociological perspective there are good reasons to believe that this is a simplistic conception of the agent.

While there is insufficient space to explore the sociological concept of agency and the self in any depth here, Anthony Giddens' (1979, 1984, 1993) stratification model of the agent might prove a good starting point. The details of this model are not important to us here except to note that it attempts to analyse the motivational sources of action in terms of layers of consciousness, moving from the unconscious, through to practical consciousness (the tacitly held knowledge of everyday life) and discursive consciousness (being able to give reasons for one's actions). Giddens notes that although agents are often very knowledgeable about the conditions under which they act this knowledge is not exhaustive. Action is always bounded by unacknowledged conditions and unintended consequences.

Embracing the idea of layers of consciousness, the concept of the self as a unified and rationally coherent entity must be at least partially suspended in recognition that individuals often hold mutually incompatible beliefs and attitudes, and a hierarchy of desires and wants (see Craib 1992; Stones 2005). A connection between the incompatibility of one motivation/action and another may never be reflectively experienced as incompatible and conflicting, and hence no cognitive dissonance may be experienced.

In practical terms this means that it is perfectly possible for individuals in any society to, at some level, hold ecocentric values but nonetheless engage in practices which contradict these values. The example of 'bison (or buffalo) jumps', found in the North American archaeological record and recorded as late as the early 19th century (Krech 1999), where hundreds of animals were driven to their deaths, and where most of the meat was left to rot, may well be an example of a people holding an ecocentric worldview¹, but being motivated by the immediate

1. As with all prehistoric peoples the values and attitudes that they held are unknown and unknowable, we can only offer speculations based upon the interpretation of artifacts and extrapolation from what we know from the earliest historical accounts of their distant descendants – see Hutton 1991 for an account in respect of prehistoric Britain.

need to provide food by the easiest and most reliable method.² The same conflict of values might also be true of all of the archaeological cases above, but without hard evidence for the values of the people in question this can be no more than speculation.

The postmaterialist demographic identified by Booth in his paper published in this issue might serve as a contemporary hypothetical illustration of value conflict and ranking of desires. As Booth shows, there is a strong correlation between postmaterialist values and concern about the environment. It is clear that some aspects of postmaterialist lifestyles have a lower environmental impact due to reduced energy consumption in domestic heating and local transport.

While this demographic is relatively uninterested in personal possessions they are interested in travel. However, if our hypothetical postmaterialist subject enjoys taking-in far flung exotic cultures, landscapes, flora and fauna, their carbon footprint alone from international flights might well far outweigh all of their reduced emissions from domestic heating and local travel (see Berners-Lee 2010 for relative figures). Moreover it's not just the carbon footprint of travel that is environmentally problematic: hotel construction, water usage, erosion and so on all have significant impacts. Our theoretical postmaterialist subject may well be extremely concerned about climate change, the destruction of natural habitats, mass extinction and so on, and part of their motivation for travel might be due to a deep love of nature. It may be that they never consider their desire to travel and their environmental concerns together, and if they do they may underestimate the environmental impact, or perhaps they simply rank the desire to travel higher than their environmental values. This theoretical speculation might find empirical support in recent research by Alcock et al. (2017) using UK survey data, which shows that while there is a strong correlation between environmental concern and routine pro-environmental behaviour (being energy conscious, using less packaging, recycling etc), no correlation was found with the propensity to take flights.

Booth argues that it may well be that the postmaterialist demographic has a lower birth-rate than average, which according to Wynes and Nicholas (2017) would have a greater positive impact than any other action, greatly outweighing the negative

2. Another reading of such events might also point to the known evidence regarding reincarnation of animal spirits as shown in Krech's (1999) study.

impact of air travel. However, it is unlikely that the choice to have fewer children would be directly motivated by environmental concerns rather than the result of other social factors such as female career choices. Thus, the environmental benefits of this choice would be an unintended consequence of action.

The social context of environmental impact

Beyond attempting to understand possible disjunctions between values and action, we can say something about the social context and the unintended consequences of action. Many have commented on the ecological knowledge of indigenous peoples (for an overview see Inglis 1993). However, this often extensive knowledge does not preclude the possibility of unacknowledged conditions of action and the production of unintended environmental consequences. As we have seen, the archaeological and anthropological evidence clearly shows that small-scale societies with low technology can have significant environmental impacts that are the unintended consequences of their socio-technical practices in everyday life.

Ehrlich and Holdren's IPAT identity provides far greater explanatory power for the environmental impact of a society, whatever its philosophical orientation to nature might be. Thus, in the case of the Native American use of bison jumps, although the technique was extremely effective at killing a large number of animals in one go, Indian populations were simply too small to make a real difference to buffalo numbers. It took a population influx of Europeans for whom the buffalo were an impediment to cattle ranching etc., a high demand for buffalo hides, and new technology in the form of guns and railways to devastate their numbers.

The fact that individual agents are themselves participants in social systems represents another dimension in the ability of any individual to act on all of their values and attitudes without conflict. The participation in a social-technical system not only structurally constrains the actions of individuals by limiting the resources available to them such as their source of energy, but also in terms of the normal expectations of life. Adam Smith noted in 1776 that:

A linen shirt, for example, is, strictly speaking, not a necessary of life. But... a creditable day-labourer would be ashamed to appear in public without a linen shirt, the want of which would be supposed to denote

that disgraceful degree of poverty which, it is presumed, nobody can well fall into without extreme bad conduct. (2007 [1776] p. 676)

In affluent contemporary societies the world-over the range of 'necessities' would extend well beyond decent clothing. Sen (1998) noted that to "live a life without shame" a range goods and services is necessary, and at the present time these might include, a mobile 'phone, broadband, central heating, frequent showers, eating out, consuming out-of-season produce, eating meat every day, foreign holidays, and so on. Affluence has not only driven our consumption of resources in terms of being better able to meet our needs, wants and desires, but has redefined what is required to properly participate in society – all of which has increased our environmental footprint. Combine this affluence with fossil fuel technology and a large population and the environmental problems are inevitable. As Ehrlich and Holdren showed us, this is not merely a problem of technology: transitioning to renewable energy technologies might mitigate climate change, but, following Commoner (1971), environmentally there's no such thing as a free lunch and if issues such as population growth along with a business-as-usual approach to economic growth remain unaddressed then so too will other potentially catastrophic ecological problems.

Conclusion: rehabilitating anthropocentrism

Given the evidence that attitudes to nature make little difference to actual environmental impact, it would seem that the replacement of anthropocentrism with ecocentrism, at least at the level of the individual, would make little difference to behaviour and hence environmental impact. As participants in particular societal and technical systems, the environmental consequences of everyday action are largely out of the conscious control of individuals no matter what their orientation toward the natural world.

Many have pointed out that in the weakest sense all values are anthropocentric i.e. it is only human beings that engage in the act of valuing. Over and above this very weak sense, is there anything in the discourse of anthropocentrism that is worth defending or that might have some utility in our attempt to deal with anthropogenic environmental change? The idea that only human beings have moral value and are the only objects of moral consideration, contained in the strongest version of anthropocentrism, is to many people, including myself,

morally objectionable. However, attempts to demonstrate intrinsic value in nature are not only difficult, but largely entirely unconvincing. In contrast, weaker versions of anthropocentrism that attempt to avoid speciesism and the denial of moral standing to abstract entities such as habitats and ecosystems have been cogently articulated. In these weaker versions of anthropocentrism, by virtue of a discourse of obligation or through philosophical relationalism, human beings are seen as the source of value but not the only object of moral consideration (see Norton 1984; O'Neill 1997; Chan et al. 2016). Those who advocate these weaker anthropocentric approaches argue that they can potentially achieve all that ecocentrism aspires to without the complex and usually laboured attempts to show intrinsic value. However, given the conclusion that the valuing of the natural world by individuals has made little difference to actual environmental impact, are these approaches of any practical use?

While I have made the case that individual value change is not likely to significantly alter individual behaviour, at a governmental and international regulatory level the drafting of policies which are strongly anthropocentric, as indicated by Ryerson in respect of the Cairo Consensus (see Ryerson's paper in this issue), will undoubtedly have outcomes which ignore the balance between human interests and ecological sustainability. However, the adoption of an approach which attenuates human-centredness, such as that outlined in the UN 'Harmony With Nature' project (again see Ryerson's paper), may well produce outcomes which consider the value of the natural world in its own right. The 'Harmony With Nature' project clearly owes much more to the approach taken by weaker anthropocentric approaches than it does to intrinsic value or ecocentric perspectives.

Policies committed to a model of ever-increasing economic and population growth without consideration of the effects on the biosphere are clearly anthropocentric in the narrowest and strongest sense. However, it is clear that such human-centeredness has significant potential to undermine the conditions not only for human existence but also for flourishing (see Kidner 2014 for a thought-provoking discussion). It is in the sphere of domestic and international regulatory policy that a decentering of narrow human interests in favour of a broader sense of the dependence of humankind on the ecological diversity of the natural world can have the greatest impact. By changing the social-structural conditions of everyday life governments and international agencies can moderate excessive

consumption, create conditions for the development and adoption of sustainable technology, and importantly, enable and encourage people to make decisions about family size that not only benefit them, but are also compatible with global ecological sustainability.

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