

Flourishing diversity: being contemporary in the Anthropocene

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'Progress! Develop! Modernize!' are concepts that destroy our ability to be contemporary. Such directives push those to whom they are uttered to put their efforts into trying to achieve an elusive future state, rather than take stock of the present moment and respond appropriately. Being contemporary to our current predicament, as Bruno Latour (2017) reminds us, is the most challenging issue facing humanity today. We most urgently need to take stock, and ask ourselves what an adequate response to the current global crisis might be.

To generate the kinds of solutions planet earth requires we have to 'stay with the trouble' as Donna Haraway requests (2016). That trouble can be loosely described as 'modernity'. Striving to achieve this ill-defined future state ideologically dominates all major political and economic institutions, and drives international relations and most progressive organisations, yet it is rarely questioned. Arturo Escobar refers to it as the 'One-World doctrine' (2017), for the one-size-fits-all approach it takes to landscapes, species, peoples, economics, politics, education and environmental management. Yet, the ubiquity of the language of crisis when referring to planetary resources, the climate, ecological stability, social, political and financial conditions, is evidence that the One-World doctrine of modernity can not respond adequately to our contemporary situation. By considering two key life processes – evolution and thermodynamics – I want to share some reflections on what will it take to ensure a future liveable earth.

Most people have some understanding of Charles Darwin's theory of evolution by natural selection and the explanatory value it provides to understand how life must constantly adapt to ever-changing circumstances, or die out. Yet we are strangely reluctant to apply such an analysis to our current predicament. As Anna Tsing reminds us 'Business as usual is killing us! Nobody can continue to shut their ears, especially if they care about our collective future.' (2017). From a Darwinian point of view, humanity's need to be contemporary is the need to adapt to our current situation. What it will take to ensure a future liveable earth must take into account the vital processes on which all life depends. Key to the process of natural selection is that over time life forms become increasingly diverse, enabling them to respond and adapt to changing circumstances. Sexual reproduction assures this by making each new individual somehow unique.

The significance of diversity as a principle sustaining life is more important than many appreciate. Based on the second law of thermodynamics, Nicholas Georgescu-Roegen (1975) explained that life needs three basic elements: matter, energy and low entropy (diversity). To obtain energy living organisms need low entropy matter (many different things), which they consume from their environment and degrade into high entropy (uniform waste). It is this constant flow of low entropy that maintains each biological

body in good order and supports its activities. In other words, life depends on the conversion of highly diverse matter into energy through processes that irrevocably degrade the diversity into a uniform mix no longer able to provide energy to the organism that produced it. Diversity (low entropy) is a necessary condition for life.

Thermodynamics in the Anthropocene

Modern lifestyles have established a new geological era, the 'Anthropocene', in which humankind is a major cause of physical change on a geological scale. We dwell in the Earth System, and our actions are profoundly affecting it. Through studying the Earth System, scientists now realise that the notion of distinctive individual species is a heuristic construct rather than an accurate reflection of how living organisms exist. From the micro to the macro, organisms are nested one within the other, constituting each other's conditions for existence by mutually coordinating the material flows between them. Organisms cannot exist separately, but only by virtue of the relations they maintain with the other organisms around them.

The scientific notion of environment now covers everything from the molecular to the biome. Environments are multiple and nested, never singular. Microbiology and epigenetics are changing our understanding of what our own bodies are, revealing that the human body is not a closed system, but a set of nested ecologies composed of microbial and human cells, and microbial and human genes. A healthy adult body is composed of ten times more bacterial cells than cells inherited from their parents. The human body is not a singular organism, but contains, in mutual symbiosis, complex bacterial, viral and other communities. Each human body is a series of nested environments composed of several multispecies living arrangements structured by multiple 'more-than-human socialities' (Tsing 2013), which are themselves affected by being embedded in larger systems. Human microbiomes reflect our daily habits, diets and cultural traditions, and our health. There is much variation in these arrangements between individuals and groups but it is a common feature of all living forms.

The bodies and the environments we dwell in, and will dwell in in the future, are the materialization of multi-species social relations. Plants and animals do not automatically occupy places in a landscape, their existence is the result of cross-species interactions. To become contemporary again we must pay more attention to the cross-species socialities on which we all depend. We must not lose sight of how culture, economy and politics can have as significant an impact as weather or epidemics on the environments that we all depend upon. But unlike the weather or epidemics, our culture, economy and political systems are within our control. We produce them and we can change them.

So it matters to acknowledge that the anthropos responsible for the Anthropocene lives in modern growth-based market economies that have intensified resource extraction and consumption around the world, mostly externalising the costs to non-human species and environments. Servicing the unrestricted demands of massive modern urban populations has replaced so much biodiverse biomass with human biomass and plantation monocultures that it has resulted in mass extinctions at a rate only recorded after massive global catastrophes in the past. Anna Tsing describes this process as ‘Anthropocene proliferation’:

‘At the heart of these modern projects are a combination of plantation ecologies, industrial technologies, state and imperial governance projects, and capitalist modes of accumulation. Together, these have moved more soil than the glaciers did and changed the earth’s climate. They have done this by allowing investors to engineer large-scale projects across long distances for converting places to plantations. Meanwhile, extinction rates have rocketed. Anthropocene, then, is an epoch in which multispecies livability has become endangered.’

Anna Tsing 2017.

Contrast this with the previous era, the Holocene, which began around 12,000 years ago when the glaciers melted at the end of the last Ice Age. This melting exposed new areas for colonization by those species that survived in refugia beyond the ice. In effect, as they colonized new places their diversity increased in interaction with the new environments and each other, creating a resurgence of life in many forms on previously barren ice. This process of remaking livable landscapes such as forest, wetlands or meadows Tsing calls ‘Holocene resurgence’. Such resurgence is the result of many organisms negotiating their differences over time to establish multispecies assemblages to support their combined lives. All ecosystems are so composed. Without such resurgence, human livelihoods cannot continue.

By contrast to Holocene resurgence, Anthropocene proliferation is an ecological phenomenon caused by the extraordinary force of plantation ecologies that engender new forms of biological interaction that block resurgence. Justified by the ever-growing demands of urban populations, plantations are rationalised and simplified ecologies established to create assets for future profit through supplying urban demand. They kill off beings that are not recognised as assets and often favour the proliferation of many identical bodies. This novel ecological form has consequences for both the asset organisms – the oil palm, spruce tree or chicken – and for their pathogens. Plantations both cultivate and spread pathogens. The proximity of so many identical meals to a pathogen can augment its pathogenic abilities and sometimes change them. Over time in non-plantation ecologies, pathogens are forced to adapt their virulence to the population dynamics of their prey species. In plantation ecologies the supply of victims is constant so pathogens are not under selection pressure to be less virulent. As Tsing wryly observes:

‘Welcome to the Anthropocene, in which alienated and disengaged organisms, including humans, multiply and spread without regard to multispecies living arrangements.’

Responding appropriately

Being contemporary in the Anthropocene requires us to focus on how to ensure a future liveable earth. Not in terms of maintaining what went before as resilience thinking or mainstream sustainability directives suggest, but as a process that prepares us for an unpredictable future by supporting and encouraging diversity in all its forms, while also confronting head-on the causes of the crises we face. Under circumstances of rapid change, when past experiences can no longer serve as a baseline for expectations to even the near future, we need a better understanding of unpredictability.

Nassim Taleb labels unpredictable events ‘Black Swans’ (2008), evoking the philosophical observation that you might believe that "all swans are white", but no matter how many white swans you see, you can never prove it. However, an unexpected sighting of a single black swan completely disproves the statement, so changing what the world was once thought to be. Black swan events are by definition unpredictable, shocking for those that experience them, recalibrating future possibilities and shutting down previous certainties. Such unforeseeable events play vastly larger roles in determining future possibilities than more regular, predictable and orderly occurrences. As the effects of anthropogenic climate change intensify, their unpredictable consequences are transforming what was hitherto felt to be normal and predictable.

The Anthropocene challenges assumptions that our future is in any obvious way based on ensuring future predictability or about remaining in ecological balance with ‘nature’. Our strategies for addressing the future must embrace the uncertain and the unexpected: nature is changing fast, and we need to too. Such a view is difficult to reconcile with resilience or sustainability strategies that aim to perpetuate bounded or predictable systems over time. In the Anthropocene the environment is expansive and unforeseeable, not regular. The question of how we respond to climate change is not a simple matter of making choices about remaining or moving away in some future, it is a constant and pressing need to assess the opportunities of the present, and to reason consistently about them on the basis of all available knowledge – because it is now that future liveability is being shaped.

Taking these insights into consideration clearly challenges current conservation and sustainability practices that presuppose a predictable future where economic and political relations remain roughly constant over time. Rather, the evidence suggests that we need to collectively work to cultivate cultural, economic, political and ecological plurality, in order to be more likely to respond adequately to unpredictable events in future. Given

the likely scale of the impact of the unknown, ensuring a collective liveable future demands practices that will foster, prize, support, defend and generate diversity at every possible level.

Resisting Anthropocene proliferations

This requires that we cherish, cultivate, nurture, support, difference in all we do. The intrinsic value of diversity – whether cultural or biological – emerges as the foundation stone of hope for a livable future earth. In the Anthropocene, this now requires dominant societies be willing to learn from those most removed from industrial-capitalist modernity.

Using the case of agricultural biodiversity – agrobiodiversity - Manuela Carneiro da Cunha (2017) reminds us of the role indigenous and traditional people play in producing diversity. Out of over 350,000 globally identified plant species (www.theplantlist.org) 7,000 species have been used by humans as food. Today, in the Anthropocene, 75% of the food eaten by human beings is composed of just twelve crops and five animal species. Since the 1950s the Green revolution has focussed on maximising agricultural production by selecting crops with the greatest yields. In the process, great numbers of varieties of rice, wheat, corn, potato and many other foodstuffs have been lost. This has an impact on food diversity and food security. The classical historical example of this is the Irish potato famine from 1845-49 which was mainly due to too few potato varieties being grown, and so none were able to resist potato blight. This resulted in around one million deaths and one million people migrating abroad. The scale of this tragedy illustrates the importance of genetic diversity for food security, since some varieties are likely to have some degree of resistance to biotic attacks (parasites, fungi, virus and pests), and abiotic (such as climate) changes. By contrast Andean peasants have selected over 1000 potato varieties since first domesticating it some 6000 years ago.

Those producing the diversity of agricultural crops are rarely acknowledged, but their work is vital for assuring a future liveable earth. Take the example of manioc, a staple across many tropical regions, making it a very important food for humanity. Yet it is mainly among indigenous Amazonian societies that selection for manioc diversity takes place by cross-fertilizing different varieties to produce new varieties when fields are burnt, and using cuttings to clone and maintain the new. Impressive cultivators of manioc diversity include the Amuesha people in Peru with 204 manioc varieties, half of which are “sweet manioc” (Salick et al. 1997:7); the Huambisa who have around 100 (Boster 1983:61), as do the Tatuyo (Dufour 1993:51). In the Rio Negro basin indigenous groups Tukano/Desana have 89 manioc varieties (Emperaire 2000), and more than one hundred among groups in the middle Rio Negro (Emperaire et al. 2008). These formidable cultivators and collectors of agricultural diversity are indigenous and traditional people who assist diversity to flourish in all their crops: sweet potatoes, yams, capsicum, bananas,

and so on. Many of them discuss this in terms of an aesthetic principle: that crop diversity makes gardens beautiful.

Agrobiodiversity is just one example of a widespread tendency for cultural diversity and biological diversity to co-exist and to be mutually reinforcing. There are many others, and it is for this reason that scholars increasingly study biocultural landscapes. Many landscapes beloved of conservationists, are not the product of wild nature but have been shaped by a wide variety of human activities over many generations. We moderns need to urgently embrace such activities too: so that we support a flourishing of diversity in all domains.

Anthropogenic ecologies can be sustainable, but this requires a recognition that future liveability requires multispecies resurgence, that is, the remaking of livable landscapes through the actions of many organisms. We must not lose sight of the common work that it takes to live on earth for both humans and non-humans. When human societies maintain themselves over many generations it is because they are aligned with the dynamics of multispecies resurgence. Rather than productivity, it is an ethic of encouraging, cherishing, celebrating, protecting and producing diversity that is at the heart of ensuring a future liveable future.

Beyond agrobiodiversity: The challenge to conservation

Bill Adams (2017) characterises dominant efforts to manage vital landscapes as 'conservation from above'. Strongly informed by the neoliberal enthusiasm for involving the private sector and the state in conservation, and an associated zeal for market-based approaches to addressing conservation issues. The outcome is an increasing commitment to conceiving of nature as 'natural capital', to be valued in financial terms and exchanged in global markets; and an increasingly direct role for conservation organisations in the valuation, control and marketing of nature through strategies such as payments for ecosystem services or eco-tourism. Another dimension of 'conservation from above' is its dependence on hierarchies of knowledge that devalue local perspectives and practices, instead privileging scientific practice and the development of corporate patterns of decision-making. Yet the evidence is mounting that in many regions conservation from above is failing (Pyhälä et al 2016). Rather, global analysis suggests that local traditional and indigenous people are better custodians of biodiverse environments than governments (Stevens et al 2014), and a global survey of tropical forests found that government-protected forests were cut down four times faster than community-managed ones (Porter-Bolland et al 2012).

Supporting flourishing biocultural diversity will require serious and committed engagements with the messy processes of politics, and more fundamental issues of

political economy: justice, inequality, wealth, poverty, and powerlessness. To make itself contemporary again conservation needs to bubble up from below, fostering a diversity of claims for a livable future. Conservation from below includes ‘things people do to establish or maintain good relations with nature’ (Sandbrook 2014). This can include not only indigenous practices, but also many other things such as ethical attitudes to animal welfare, recycling, choosing local or organic food, reducing pollution, or resisting extractivism and plantation ecologies. In practice, conservation from below is central to the future of our Earth System. The future of conservation demands nothing less than a re-imagining of conservation itself. A focus on encouraging the flourishing of diversity at every level provides just such a reorientation.

Some of the clearest guidance can be found among those that have not acquiesced to the One World doctrine. For instance, the Mexican Zapatista express an alternative in terms of fostering the conditions for “a world in which many worlds fit.” Archbishop Desmond Tutu proposed an extension of the Ubuntu principle – usually explained as “I exist because you exist” – to the entire realm of the living on Earth. Within these traditions, humans are embedded within the Earth System, not as individual consciousnesses existing in an inert world, but as that part of nature that can reflect and act upon itself. Arturo Escobar (2017) reports a Nasa indigenous leader from Southwest Colombia who expressed it thus: “We are extensions of the earth, let us think from the earth’s heart!”

Diversity must flourish again!

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* For those interested in these issues, a fuller discussion can be found in

Brightman, M. and J. Lewis. 2017. *The Anthropology of Sustainability: Beyond Development and Progress*. Palgrave Studies in the Anthropology of Sustainability. Palgrave: New York.

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