Ecological civilization: A premise, a promise and perhaps a prospect

Two broad approaches to ecological civilization are here distinguished: the *reformational* and the *transformational*. The reformational approach seeks to limit the ecological impact of modern industrial civilization without changing its underlying human/nature dualism. The transformational approach seeks to change that premise by instituting entirely new modes of praxis that integrate economic production with ecological functionality: forms of economic production are proposed which do not merely limit the impact of production on the biosphere but contribute positively to its ecological health and functionality. *Biomimicry*, understood as a principle of design, is considered as an operating principle for such an economy but is rejected in favour of *biosynergy*, understood as a protocol for engagement. Defined in terms of the twin principles of *conativity* and *accommodation and least resistance*, biosynergy is proposed as a fundamental protocol of living systems. Modes of production guided by biosynergy would not seek to create artificial systems modelled on the design features of living systems; rather, they would engage collaboratively with living systems in ways that encouraged them to provide for human needs while simultaneously enhancing the functionality of those systems. Crucially, this would require us as humans to adapt our ends to those of such systems; in a word, to desire what our ecological-others need us to desire.

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Citation

Mathews F (2020) Ecological civilization: A premise, a promise and perhaps a prospect. *The Ecological Citizen* **3**(Suppl C): 47–54.

Keywords

Visions

What is civilization? By civilization I mean those expansive cultural formations established by the sedentary, stratified, usually literate, administratively centralized societies that originated in the northern hemisphere in Neolithic times and predominate in the world today. Such societies were based on labour-intensive, agrarian forms of production. Whereas pre-agrarian societies had looked to natural ecologies to furnish their livelihoods, civilised societies carved out spaces of their own within their environments, dedicating those spaces exclusively to human use. They achieved this, at the cost of great effort, through land clearing, cultivation and domestication – often of exotic species – and through the construction of permanent settlements. Such cultivated and, eventually, engineered scenarios gradually began to replace natural landscapes. Recourse to human effort and artifice rather than reliance on nature ultimately gave rise not merely to agrarian economies and the urbanization of society but to industrialism, and it is in this industrial form that civilization dominates the world today.[1]

Members of pre-agrarian societies, by contrast, depended on the affordances of local ecologies for provender, shelter and other requisites. Whether they were true foragers or what I have elsewhere called *custodials*, practising sophisticated forms of ecological management, their cultures reflected a sense of enmeshment in, and responsibility for, an intricate set of ecological interdependencies (Mathews, 2019). Intimate knowledge of these interdependencies enabled people to ensure, by way of relatively small interventions, that ecosystems themselves would do the work of providing for them. So, in pre-colonial Australia, for example, just by walking through country with a firestick, practising highly selective burning of plant communities, people could promote grasslands and so ensure an ongoing abundance of game (Gammage, 2011); or, by selectively digging out wild yams, they

could ensure increased propagation of yam daisies in subsequent years (Pascoe, 2014). Such practices, or forms of praxis, relied not so much on effort as on a sophisticated understanding of ecological systems, and on how to tweak them.

For agrarian peoples, sweating in their fields, a knowledge of planting and husbandry was of course indispensible, but otherwise the environment, as a realm of natural ecologies, was relatively discounted, as outside the sphere of the praxical and hence ultimately as outside the sphere of the cultural. 'Nature' in other words tended to become progressively backgrounded to the sphere of human agency – ignored and little understood, it was expected to take care of itself. A deep human–nature dualism thus lies at the core of traditional forms of civilization – a tendency to construct culture as set apart from nature and as the exclusive focus of interest and value.

In the contemporary world, civilization under its industrial aspect has largely overtaken the natural environment. In its ignorance and discounting of the processes and principles underpinning the integrity of natural systems, this form of civilization has, often with little awareness of what it is doing, ransacked and ravaged nature, with the consequence that the health and integrity of the entire biosphere is now under grave threat.

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What is ecological civilization?

Ecological civilization, a term of great significance in contemporary China, is here defined by its aim of rendering civilization, as a social formation, consistent with the repair and ongoing renewal of Earth's life in all its abundance, beauty and ecological diversity.

Approaches to ecological civilization have thus far taken two broad forms. The first seeks not to overturn the existing parameters of industrial civilization, nor the dualist ideologies that reinforce those parameters from within, but merely to limit their impact on the biosphere. We might call this the *reformational* approach. The second does challenge those parameters, seeking to replace them with new parameters enabling economies to be re-integrated into ecosystems in such a way that economic functionality becomes interdependent with ecological functionality – a state of affairs that would in turn reconfigure the inner ideologies of civilization. Since this latter approach would require a complete overhaul of currently prevailing socioeconomic arrangements, we might call it a *transformational* approach to ecological civilization.

The reformational approach

Examples of the kind of strategies used under the first, reformational approach include the following.

- Current capitalist modes of techno-industrial and economic organization are maintained but drastic reductions are effected in either levels of production and consumption, or levels of human population, or both.
- Current capitalist modes of techno-industrial and economic organization are maintained, but areas of land and sea reserved for conservation are vastly expanded, where this affords space for the recovery and regeneration of biosphere processes.

An influential example of the latter approach can be found in the *Ecomodernist Manifesto*, which seeks further to intensify and centralize industrialism – fully 'decoupling' it from nature by restructuring it along circular economy lines – with a view to thereby freeing up land currently under industrial and urban usage for conservation instead (Asafu-Adjaye *et al.*, 2015; *cf.* Wilson, 2016).

Arguably, however, as long as the dominant techno-industrial modes of production prevail, holding the dualistic ideological core of civilization in place, the biosphere will continue to be seen as subordinate to human interests, and the biological resources of the planet will continue to be regarded as the rightful property of humanity, ever available for new forms of exploitation. The end-point to which such an attitude leads in the long

run is total exploitation: a biosphere that retains only those ecological components with demonstrated utility for human purposes. Currently such components cannot be definitively identified: no one can determine which of the myriad existing species, planetary cycles and systems are truly necessary as underpinnings for human civilization. However, it is already clear that many species are dispensable and, with the development of ever-more-elaborate geo-engineering systems that may replace natural systems with artificial ones, it may turn out that most ecosystem processes will prove dispensable or substitutable by artificial processes in the future.

Logically then, failure to replace the kinds of praxis which give rise to dualist attitudes with forms of praxis conducive to a more integrative view of the relationship between humanity and nature seems likely to undermine any attempt to establish a new – ecological – form of civilization truly consistent with the repair, integrity and ongoing flourishing of the biosphere.

The transformational approach

It might seem then that a transformational approach is required – that it is not enough merely to clean up the impacts of an economic system fundamentally at odds with the biosphere, but that our economic praxis needs to be intimately tailored to the needs of the biosphere from the start. Of course, this is not to say that we might not want to incorporate into our transformational approach strategies identified under the reformational approach, such as population control and the reservation of large tracts of land and sea for conservation. But it is to say that such strategies may prove ineffective unless we also transform our fundamental modes of production in ways calculated to generate new, more integrative, attitudes to nature in place of our traditional dualist ones.

In prefiguring the transformative approach, we need again to distinguish at least two different pathways to transformation.

The first pathway is the approach known as *bioregionalism*. It calls for devolution of the present global, high-impact, hungrily extractive economy into a multitude of small, local, adaptive and low-impact economies. Societies built on this model would substitute simpler, decentralized, ecologically informed, place-identified, value-rich but technically minimal and scale-appropriate forms of cultural and material life for current regimes of centralized, de-regionalized, high-tech mass production and global distribution and consumption. We might call this the *bioregional* version of the transformational approach (Sale, 1985; Snyder, 1995; McGinnis, 1999; Crist, 2019).

Although bioregionalism undoubtedly represents in many ways an optimal contemporary pathway to an authentic non-dualist – ecological – consciousness, and hence to a genuinely ecological civilization, its disadvantage is that it seems, in the context of today's geopolitical realities, a utopian one. A transition towards bioregionalism would require not merely a reconfiguration but a reversal of our prevailing political and economic arrangements. In a world in which net demographic trends are, for a multitude of economic and techno-cultural reasons, strongly towards urbanization and ever greater concentrations of production and of high-density living, conditions for the kind of decentralization and industrial downscaling required by bioregionalism appear unfavourable – unfavourable enough, at any rate, for us to consider a second, less idyllic but perhaps more realistic, transitional version of the transformational approach.

This second pathway to transformation I term *biosynergy*. From this viewpoint, it is not necessary to reverse the demographic tendency of modern civilization. What is required is rather a *design* revolution. Neither capitalism nor techno-industrialism *per se* would need to be given up, but productive practices, as they pertain to the whole manufacturing, agricultural and architectural fabric of our material culture, would need to be reconfigured so as to

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render these practices productive not only for us but also for biological systems.

Such an approach would involve designing human production systems with reference to biological systems, rendering society materially integral with biosphere processes rather than antagonistic to them. If all production systems, together with our ways of organizing and administering them, were reconfigured so that these systems afforded ongoing sustenance for the biosphere as well as for us, then there would be less need to curb industrialism *per se* or reduce population in the interests of sustainability (though upper ecological limits on human population would necessarily still apply). Like the activities of the legendarily industrious ant, the total biomass of whose many species on Earth is greater than the total biomass of humanity, our own industriousness could nourish and replenish the life-community, rather than obliterating it (McDonough and Braungart, 2002).

> "As a key to designing an ecological civilization the philosophy of biomimicry is problematic."

One name that has been proposed for such a design approach to ecological civilization is *biomimicry*. This design philosophy was originally popularized by biologist, Janine Benyus, economists, Amory and Hunter Lovins, and architect William McDonough. Benyus (2002: front matter; emphasis in original) writes that:

> Biomimicry is a new science that studies nature's models and then imitates or takes inspiration from these designs and processes to solve human problems, e.g., a solar cell inspired by a leaf [...] Biomimicry is a new way of viewing and valuing nature. It introduces an era based not on what we can *extract* from the natural world, but on what we can *learn* from it.

Benyus identifies various principles she considers as characteristic of life processes generally, and hence as underlying nature's designs. Nature, she proposes, runs on sunlight, uses only the energy it needs, fits form to function, recycles everything, rewards cooperation, banks on diversity, demands local expertise, curbs excesses from within, and taps the power of limits (Benyus, 2002: 7). Such principles are accordingly proposed as the guidelines for biomimetic design. Were our industrial and urban systems modelled along these lines, those systems would, according to advocates of biomimicry, become as productive for the larger community of life on Earth as are the industries and built structures of ants.

As a key to designing an ecological civilization, however, the philosophy of biomimicry is problematic. In itself, such a philosophy can as easily lead to ecologically dystopian as to utopian outcomes – to a form of ostensible 'sustainability' that would replace actual biotic communities with artificial systems designed for the exclusive benefit of humanity. Following the lines of an autonomous, organic architecture that self-constellates and self-regulates in adaptation to the environment, exemplified in solar cities that photosynthesize and industrial aggregates that cycle water and carbon and morph in accordance with variable conditions, such 'genetic architecture' could be built from the inside out in accordance with the morphogenetic principles of life itself (Chu, 2004). This would pre-eminently qualify as biomimetic, but at its limit, it could dispense with nature altogether, securing a state of 'sustainability-without-nature' – that is, a state of sustainability for humanity that spelled death for other-than-human nature (Mathews, 2011).

In other words, it is not enough to *imitate* nature in our production systems. While imitating another does imply a certain respect for their qualities – or in this case for their operating principles – it by no means entails actual consideration for their interests. Consider the Romans' imitation of the Etruscans: what the Romans learned from the Etruscans helped them not only to overpower and displace the Etruscans but eventually to erase most independent traces of Etruscan existence. Imitation is, in other words, consistent with a brutal plagiarism that results in appropriation and displacement.

If imitation or mimicry, then, is not the appropriate category on which to found an ecological civilization, what category

might serve? I think it is true that we do need to 'follow nature' in the design of our production systems if we are functionally to integrate these systems with the biosphere. However, 'following nature' in this connection may be not so much a matter of imitating specific mechanisms observable in natural systems but rather of adopting the behavioural protocols underlying those systems. In other words, to reconfigure our modes of production may be a matter not merely of "remaking the way we *make* things," as McDonough and Braungart put it in the subtitle of their 2002 book, but of emending the way we *engage* with our environment.

The root-protocol observable in nature has twin, co-defining aspects: *conativity* and *accommodation and least resistance*. *Conativity* denotes the impulse of all living things to preserve and increase their own existence. It is only by virtue of this drive towards self-existence that living things count as living at all. But in nature this drive is qualified by the principle of *accommodation and least resistance*: organisms which conserve their energy by adapting their ends as far as possible to the ends of the organisms with which they are in systemic interaction will be naturally selected over organisms which needlessly provoke resistance and competition. We might describe such an evolutionary tendency towards the cross-referencing of conativities as *synergistic*. Synergy is here understood as the adaptive process whereby the ends, indeed the very conativities, of two or more parties are continually mutually refracted via their collaboration. I use the term *biosynergy* to denote the way in which this protocol plays out in the natural world.

Biosynergy has affinities with the Daoist principle of *wu wei* – a term which translates literally as *non-action*, where this may understood not as passivity but as a process of accommodation and adaptation to the ends of others. *Wu wei* enables one to conserve one's own energy, and thereby increase one's own existence, by (i) desiring what simultaneously complements the desires of others, rather than pitting oneself against them, and (ii) desiring what others, following their own conativity, are already incidentally providing, thereby saving oneself the effort of providing it (Mathews, 2011).

In the biosphere, the conativity of most species is broadly shaped by biosynergy because this is the strategy that, being energy-conserving, tends to result from natural selection. Conflict, competition and predation do of course still occur in nature. In the case of predator–prey relationships, synergy may occur at the level of the species rather than that of the individual: predation is often a necessary condition for prey population stability. Where the interests of particular parties cannot find a synergistic fit, outright conflict may result. But such conflict will always entail an energy-cost for the parties in question. In order that this cost be minimized, modes of conflict themselves will in turn be shaped by the principle of accommodation and least resistance. At the end of the day, the imperative to internalize the conativity of others by desiring what they need one to desire will be what ensures that every living thing, in seeking its own self-existence, at the same time perpetuates the larger system.

Biosynergy in this sense is clearly a fundamental ecosystem dynamic, well illustrated by the activity of those species described as ecosystem engineers. Beavers, for example, desire quiet shelters, safe from turbulence and predators. They accordingly dam waterways to create still ponds in which stick lodges may be conveniently built. Beaver dams modify and redirect stream flows, in the process hydrating the landscape, mitigating floods, filtering runoff and creating wetlands that provide habitat for myriads of other plant and animal species – where these biodiverse and healthy wetlands afford necessary conditions for healthy waterways and hence for healthy beavers. Healthy ecosystems are held together and continually regenerated by countless such synergies.

As humans, we have the capacity to depart from the evolutionary logic of biosynergy. Throughout the history of civilization,

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we have substituted external sources of power, such as domestic animals, slaves and, more recently, fossil fuels, for the energy available to us from our own bodies. This has enabled us – unlike other species which seek to pit themselves against their biotic fellows but suffer exhaustion and selective disadvantage as a result – to impose ourselves on our environment with impunity. Moreover, through our highly developed reflexivity – our capacity to reflect on and hence change our behaviour – we can also substitute arbitrary, culturally mediated ends for the ends imprinted in us through evolution. In our modern societies we have entirely forgotten about desiring only what Earth-others need us to desire – and, so far, we have gotten away with this.

It is this break from the evolutionary logic of biosynergy that first gave rise to and has since perpetuated our dualistic sense of separation from and superiority to the rest of the natural world. And perhaps we can continue to get away with flouting evolutionary logic in this way, replacing the life-world with techno-engineered systems designed to serve human interests exclusively. But if we wish to restore a rich and flourishing biosphere, we shall have to recover this logic. Thanks to our capacity for reflexivity, it is not impossible for us still to do so, and thereafter to review and revise our desires in order to re-align them with what Earth-life needs us to want.

Biosynergy, understood as a proto-moral principle of adaptative accommodation to the needs of the rest of Earth-life, broadly equates not only to *wu wei*, in ancient Daoist tradition, but to the normative principle, or Law, that is core to Australian Aboriginal cultures and that Aboriginal people read from land itself (Mathews, 2020). Just as negotiating their environment in accordance with Law requires of Aboriginal peoples intimate attunement to the multiple conativities intricately at play in local ecologies, so we too will need to decipher at least the contours of the conativities surrounding us before we can begin to reframe our desires and hence our praxis along biosynergy lines. Discovering these contours, which are none other than the contours of other-than-human inner life, will draw us into social and communicative relationship with our prospective ecological partners and allies, where this means these actors will inevitably enter our culture via stories that pull us into social and affective relationship with them. Biosynergy will in this sense become enshrined as a root-norm in our culture as much by story as by science.

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Biosynergy as a guide to ecological civilization

How then might biosynergy as a protocol or normative principle apply in practice in the circumstances of our 21st century global civilization?

To begin with, there is, on the largest scale, the question of how efficaciously to tackle the problem of climate change. To adopt a biosynergy approach in this connection would involve not the heroic, impose-and-control methods of the dualistic mind-set, such as pumping sulphate particles into the atmosphere, erecting giant mirrors in space or artificially whitening clouds, but, first, acknowledging the conativity of the Earth-system, then considering how that system, left to itself, would correct the problem. Left to its own devices, the biosphere would undoubtedly simply re-vegetate itself. Vegetation is the basis of Earth-life, and maintaining and increasing vegetation is the conative imperative of the biosphere. Re-vegetation would, of course, draw down carbon dioxide and hence in due course re-balance the composition of the atmosphere. A biosynergy, *wu wei*–type approach to climate change would thus simply be to let the biosphere get on with its own business, at most assisting it to do so. In addition to obvious strategies such as re-afforestation, assistance might take the form of providing opportunities for plants such as the fast-growing freshwater fern, Azolla, to repeat the remarkable feat of global cooling it achieved 50 million years ago – the so-called Arctic Azolla event, when the spread of Azolla across a land-locked arctic sea sequestered so much carbon that it converted a greenhouse

climate to an icehouse one (Brinkhuis and Schouten, 2006).

An ecological analogue to Azolla in present-day circumstances might be giant kelp: with the aid of artificial tethers, marine afforestation with kelp (and other seaweeds) could be conducted in the open ocean. These (unenclosed) kelp forests would not only draw down carbon at a rate and scale comparable to ancient Azolla, but would de-acidify surrounding seawater, affording rich habitat for many marine species, particularly shellfish – to the extent that, with a very minor set of interventions on our part, such marine forests could support sustainable fisheries apparently capable of providing 200 kg of seafood per year, per person, for 10 billion people (Flannery, 2017).

A biosynergistic approach to climate change would thus consist in our assisting the biosphere to get on with its own business of revegetating itself, but ideally in ways that could at the same time incidentally provide for our human needs. For this to work, however, we humans would have to be prepared to adapt our desires to what the biosphere needs us to desire – which, in the case of the kelp scenario, would be seafood as our staple, rather than, say, beef or pork. A deeper understanding of the ecology of climate dynamics would reveal innumerable other ways in which restoring ecological functionality would ameliorate current climate distress, with possibly other incidental benefits for us.

For a further case study pertaining to food provision, we might look to the Veta La Palma aquaculture farm in Spain (see www.vetalapalma.es). The 8000-acre fish farm is part of a larger estate on a marshy island in the Guadalquivir River. Degraded by inappropriate livestock farming in the first half of the 20th century, the marshy parts of the estate were restored in the 1970s and an 'extensive' (as opposed to intensive) form of fish farming begun. Extensive farming relies mainly on the natural ecology of farmland to provide for the species farmed. In the case of Veta La Palma, this means that a variety of fish species are sustained by abundant crustaceans and other naturally occurring aquatic life. Optimum habitat health is maintained by large populations of waterfowl, numbering up to 600,000 at times, and comprised of up to 250 species. Instead of regarding birds as competitors for fish, Veta La Palma sees them, in classic biosynergy, *wu wei* style, as allies – as assistant farmers helping to do the hard work of maintaining conditions conducive to fish flourishing. Human input into the farm is minimal. Staff do regulate the hydrology of the marshlands by way of a network of fish ponds that are artificially flooded to ensure the physical and microbiological quality of the water. More than 100 islands have also been created for the nesting of waterfowl and 93 miles of banks have been revegetated. Twelve thousand acres of the estate have been set aside as a marshlands habitat reserve. The end result of this edifying exercise in intentional biosynergy is provision of seafood of exceptional quality and the creation of the largest waterfowl sanctuary in Europe.

Numerous other examples of an ecological approach to food provision could be cited here. Making full use of ecosystem services and taking advantage of, yet at the same time regenerating, ecological relationships, has long been central to alternative farming and horticultural philosophies, from the "one straw revolution" of Fukuoka, to companion planting of organics, to permacultural synergies between selected plant and animal species that deliver outcomes farmers themselves would otherwise have to labour to achieve.

All such strategies exemplify the biosynergy approach: by accommodating stakeholder-species, by inviting them into synergy with us via the creation of conditions conducive to their flourishing, we can enlist them as allies in the provision of our livelihood, allocating to them the major burden of effort required for such provision. For them, such effort is not an imposition because it is made with, rather than against, the grain of their conativity.

Biosynergy-driven alternatives to traditional agriculture are then readily

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conceivable. I do not have space here to explore the more challenging question of how manufacturing as well as agriculture could be revisioned along biosynergy lines. For the moment it may be enough to show how, even in our contemporary mass societies, we could in principle return to ways of feeding ourselves that retain continuity with pre-agrarian modalities. In doing so, we would perhaps lay down ideological foundations for a more ecologically adaptive and collaborative relationship with the biosphere that would in time articulate itself through all our systems of production, emanating at last in a new blossoming of planet-wide mutualism properly describable as an ecological civilization. ■

Notes

1 This thumbnail definition of *civilization* of course misses many intermediate forms of society, such as pastoralism, village horticulture combined with periods of herding or supplemented by hunting or forest gathering, maritime societies reliant on trade with agrarian societies, and so on. For present purposes, however, the simplified contrast between agrarian and pre-agrarian will suffice.

References

Asafu-Adjaye J, Blomqvist L, Brand S et al. (2015) *An Ecomodernist Manifesto*. Breakthrough Institute. Available at https://is.gd/P6IYP6 (accessed November 2019).

Benyus J (2002) *Biomimicry: Innovation inspired by nature*. Harper Perennial, New York, NY, USA.

Brinkhuis H and Schouten S (2006) Episodic fresh surface waters in the Eocene Arctic Ocean. *Nature* **441**: 606–9.

Chu K (2004) Metaphysics of genetic architecture and computation. *Perspecta* **35**: 74–97.

Crist E (2019) *Abundant Earth: Toward an ecological civilization*. University of Chicago Press, Chicago, IL, USA.

Flannery T (2017) *Sunlight And Seaweed*. Text, Melbourne, VIC, Australia.

Gammage B (2011) *The Biggest Estate on Earth: How Aborigines made Australia*. Allen and Unwin, Crow's Nest, NSW, Australia.

Mathews F (2011) Towards a deeper philosophy of biomimicry. *Organization and Environment* **24**: 364–87.

Mathews F (2019) Biomimicry and the problem of praxis. *Environmental Values* **28**: 573–99.

Mathews F (2020) From wilderness preservation to the fight for lawlands. In: Bartel R, ed. *Rethinking Wilderness and the Wild: Conflict, conservation and co-existence*. Routledge, London, UK: in press.

McDonough W and Braungart M (2002) *Cradle to Cradle: Remaking the way we make things*. North Point Press, New York, NY, USA.

McGinnis M, ed (1999) *Bioregionalism*. Routledge, London, UK.

Pascoe B (2014) *Dark Emu Black Seeds: Agriculture or accident?* Magabala, Broome, WA, Australia.

Sale K (1985) *Dwellers in the Land: The bioregional vision*. Sierra Club Books, San Francisco, CA, USA.

Snyder G (1995) *A Place in Space: Ethics, aesthetics, and watersheds*. Counterpoint, Washington, DC, USA.

Wilson EO (2016) *Half Earth: Our planet's fight for life*. Liveright, New York, NY, USA.

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