Principles of Sustainable Economy:
An Anthropologist's Perspective

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Abstract

Contemporary economies must undergo a transformation to sustainability if we are to avoid a descent into ecological and socio-political crises of ever escalating severity. In order to achieve such a major reform, principles consistent with sustainable ecosystems and social systems need to be identified and applied systematically. What are these principles in their most fundamental form, how can they become widely accepted, and how can they be applied? To answer these three questions, this article draws on the cumulative insights of anthropology, a bridging science dedicated to the holistic study of humanity across the entire span of our evolutionary development (physical anthropology) and across the full breadth of its cross-cultural diversity (cultural anthropology).* This broad and longitudinal anthropological understanding of human societies will be compared with what we now understand about the characteristics of ecosystem, primarily to show that they are fundamentally similar. An alternative cultural outlook and political procedure is then proposed that—if adopted—would deliver a shared global vision for a socially and ecologically sustainable future and lay firm pathways toward that future in the now.

1. Introduction

The paper begins with a brief synthesis of what we know about conditions that will facilitate healthy and resilient social and ecological systems, and why such conditions are not being created under the currently hegemonic economic and societal paradigm and associated cultural narrative. The key requirements for both kinds of systems to flourish are a high degree of diversification and the maintenance of a dynamic web of mutual interdependence relationships that capitalises from such diversity. These systems' requirements are not recognized within prevailing economic narratives, whose proponents have instead promoted a naïve Darwinism to legitimize and promote self-serving and monopolistic behaviour. The false premises of this narrative are challenged and its negative consequences are charted in order to demonstrate why it must be replaced with a new narrative that will promote human well-being and responsible environmental stewardship.

The social behaviour of human beings is culturally learnt and voluntarily adjustable to a degree not found in other species. Theoretically, this should provide us with the option of

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* Author's note: I do not speak for all anthropologists, and risk oversimplification in providing this very condensed overview of my discipline. Such syntheses must be attempted, however, if scholars are to speak across silos. All errors in the present attempt are mine.

adjusting our behaviour to prevent ourselves from causing a systemic social, ecological crisis, but in practice we seem to lack such freedom. The second part of the paper thus explores the preconditions that would allow us to consciously adjust our fundamental cultural narratives and behaviour as needed to realise the alternative of a socially and ecologically sustainable economics and way of life. The key requirement for freely exercising our cultural options, I shall argue, is an increase in metacultural awareness of the kind routinely pursued as part of the professional practice of cultural anthropology. Such metacultural awareness can be scaled up for the purpose of societal change because it is now spreading also at a more popular level as a side effect of globalisation. This new awareness creates the potential for either a relapse into a fearful populist identity politics or a liberating 'anthropological moment' in the history of human consciousness.

> *"A self-reflexive opening-up to new and better ways of living and a revision of our cultural narrative is not sufficient."*

A self-reflexive opening-up to new and better ways of living and a revision of our cultural narrative is not sufficient. A new culture becomes real when it is put into practice. The replacement of prevailing regimes of practice, however, must be informed by a stocktake and analysis of the objective conditions and systemic trends at the present moment. A brief exploration of this 'demand end' of change will reveal an unmet need for coordination at two levels: At the demand end of change we must recognise that the problem is systemic and cannot be addressed in piecemeal fashion; at the supply end of change, responses must be coordinated across the whole of society and also across societies, which is impossible without a very solid consensus. The article closes with a proposal for an inclusive political procedure that would deliver such a consensus, building on principles of openness, diversity and mutual dependability. Such a procedure is indispensable for generating a shared vision of and pathway to a sustainable Anthropocene age.

2. Understanding and Promoting Sustainability within Social & Ecological Systems: Why prevailing economic narratives have failed us

2.1. The Two Dimensions of Sustainability

Sustainability is often conceptualised dualistically in terms of a hypothetical human-nature divide. From this perspective, sustainability appears to be a condition whereby the rate at which human activities produce ecological footprints does not exceed the rate at which the natural environment is able to erase them. Conversely, when nature fails to keep up with human demands we are said to exceed the planet's carrying capacity. From this perspective, nature is the 'sustainer' and humanity, the sustained. This is a rather anthropocentric and misleading point of view. Other species are no different from humans; they too are sustained by the whole of 'nature' and they too put its carrying capacity to the test. We thus need to ask: In a sustainable world, who is really sustaining whom?

The science of ecology has come to the simple but profound conclusion that individual species are not self-sustaining. Rather, life as a whole is sustained by an inconceivably

complex web of interdependent relationships involving a vast diversity of species, humans included, as well as by reciprocal interactions between living organisms and the complex dynamic systems of inanimate nature. Life is characterised by a paradoxical state of unity in diversity, given that biodiversity is the prerequisite for the web of interdependent relationships that give rise to an encompassing ecological system. Life forms are interdependent and evolve together in a historical process, and thus every species, humanity included, is at once the sustainer and sustained. Particular interdependent relationships can be rather durable (sustained over time), but they are not permanent.

From the relative (non-systemic) perspective of a single species, the basic fact of interdependence is also evident, but it is unevenly distributed. There is a powerful 'interactive proximity' factor. On a planetary scale, for example, life forms are all linked through the exchange of carbon and oxygen via the global medium of the atmosphere. Particular species are more intensely interdependent when they come into more direct contact with one another through interactions within the context of specific ecological systems. They come into immediate contact through specific predator-prey or symbiotic relations. And, finally, individual specimens of the same life form are the most intensely interdependent upon one another, though to variable degrees: some species are hermaphrodites, or provide little parental care for their offspring, or are less social as adults than others. Humans, however, have evolved to become the most mutually interdependent or 'social' of all species. Simply put, social systems are merely the 'near end' of ecological systems.

Importantly, the logic of diversification and the imperative of mutually interdependent existence apply equally to the natural and the social world. Nature is intrinsically interactive or 'social', and society in turn shows all the ecological characteristics of a natural system—because it is a natural system.

2.2. Social Sustainability: The Human Dimension

The spectacular success story of the human species is based on our ability to cooperate socially on an unprecedented scale, an ability underpinned by our unique capacity for language-based communication. Modern economic life bears daily testimony to the complex social interdependencies we have created. As is the case in ecosystems, interdependence in social systems is based on diversification and cooperative mutuality. Within human societies, however, diversity takes new, socio-cultural forms. In the context of economics, for example, diversification is most prominently expressed in the division of labour. Founders of social science like Emile Durkheim and Max Weber already emphasised the importance of diversity in human societies, and noted that increasing diversification and interdependence have been the main drivers of their historical development.

Among hunter-gatherer and subsistence farming societies we find the beginnings of professional specialisation, exploiting differences in aptitude. The livelihoods of specialists for tool making, healing or ritual, for example, are already provided by the surplus primary production of other community members, at least in part. In sedentary farming societies with a large surplus, which first proliferated in fertile river basins in different parts of the world between 8000 and 5000 BC, we see the foundations of village life and urbanisation

and an associated explosion in the division of labour, boosted further by growing systems of specialist training and education, by the invention of writing, mathematics and sciences, and the introduction of money as a medium of exchange. Detailed historical research by Norbert Elias has shown how this process of ever-increasing diversification led to the formation of ever larger and more complex social systems, such as modern nation states, because it created ever-extending webs of interdependence.[1]

This historical trend toward diversification and ever lengthening chains of social interdependence accelerated once more in the wake of the 18th century industrial revolution, and has reached its preliminary climax in our current condition of globalisation, wherein increased mobility and new-media-based interactions as well as increasingly complex flows of goods and services have combined to create a single world system of human interdependence. The global impact of the collapse of the US subprime mortgage pyramid scheme is one illustration of the global reach of social interdependence chains today. Moreover, the drowning of island nations like Kiribati due to the historical carbon emissions primarily of western developed countries further shows that human impacts on the environment can translate back into social impacts, both *in situ* and globally. In other words, social and ecological systems are not just similarly based on webs of interdependence, but the two webs of interdependence are also interlaced within an encompassing socio-ecological system, spanning from the local to the global.

This rapid sketch of two vast fields of research, ecology and social science, may still seem a longwinded way to make a simple argument for the similarity of and intimate connection between social and ecological systems. This argument is vital for this discussion, however: Societies that are ecologically destructive tend to also be socially destructive, because they operate on cultural narratives that violate sustainability principles across social and ecological domains.

2.3. Ecological Sustainability: The Environmental Dimension

Human social systems are ecosystem-like in that their health depends on diversification and mutual interdependence. Humans who recognise that their existence is premised upon social interdependence therefore should not find it difficult to recognize also their dependence on other species and on the whole of life and nature. Indeed, many indigenous societies consider other species as agents with distinctive subject positions or 'perspectives,'[2] and view nature as an intrinsically social world in which humans are embedded.[3] We must set aside for a moment our grave concerns over the current global environmental crisis, and contemplate the remarkable and highly relevant fact that all modern humans have been living in fairly sustainable ways across 99.9% of the time elapsed since modern humans first evolved in Africa, 195-160,000 years ago. Early modern humans did of course have an environmental impact and this impact may have been transformative even before the advent of agriculture, but the impact was not devastating on a systemic level, as it is now. What is true across temporal scales also is true across geographical scales: The great majority of contemporary non-western societies that have been studied by anthropologists were found to have lived sustainably until recently, or continue to do so. Indeed, data compiled by the Global Footprint

Network shows very graphically how western style modernist development (HDI rating) cor-relates with growing ecological footprints.[4] The prevailing economic development paradigm thus continues to undermine the relative sustainability of many traditional societies around the world.

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Without such a broader and more long-term anthropological perspective, one is all too easily led to the false conclusion that humanity is destined to destroy the web of life. The present 'Anthropocene Age,' according to climatologist and Nobel Prize-winning chemist, Paul Crutzen, is the "geological age that man created."[5] Humans are now disrupting the world's ecologies with unsustainable demand for resources, and we are also interfering with the geo-physical system, notably the atmosphere. We are on the brink of one of the most devastating crises in the history of life on Earth, and we are responsible.

The rise of a disruptive species is not unprecedented in the planetary history of life. An interesting case for comparison is the so-called Great Oxidation Event or GOE. The power-ful villains who caused this crisis were cyanobacteria, which had evolved into multicellular life forms some 2.3 billion years ago, approximately 200 million years before the GOE. They were the first microbes to produce oxygen by photosynthesis. Before the GOE, the free oxygen they produced was captured by chemical reaction with dissolved iron and organic matter. The GOE only occurred when these oxygen sinks became saturated, at which point the oxygen was free to escape into the atmosphere. This atmospheric oxygen was toxic to anaerobic life, and also caused massive global cooling, ushering in an unparalleled ice age. Cyanobacteria later entered into a symbiosis with other aerobic bacteria that are the ancestors of all plants and animals today. Admittedly, it has taken humans a mere 200 years—not 200 million years—to trigger a climate crisis (by filling available carbon sinks with our fossil fuel use), but we are not the first species to do so.

The disruptiveness of humans is not due to our physiology, or it would have manifested instantly as soon as humans evolved. Nor is it cultural per se. If human disruptiveness were due to our cultural capacity as such then it would again have manifested very quickly, given that culture-capability is also enshrined in the physiology of modern humans. The problem then must lie at the level of cultural content, and we must ask what are the precise cultural contents that have made us into the cyanobacteria of the present age.

Some argue the trouble with humans began some 9000 years ago with the Neolithic Revolution and the rise of sedentary farming, which in turn was made possible by favourable climatic change during the Holocene interglacial period. This did increase human ecological

impacts significantly, but not to the point of causing widespread devastation. It was not until the advent of the Industrial Revolution in the 18th and 19th centuries and, more so, of global mass consumer society in the post-WW2 period that human activities began to thoroughly devastate ecologies and change the climate and other geophysical systems. Humans thus became a systemic threat very recently and the resulting crisis has unfolded very rapidly. It coincides with the advent of modernity, science and technology, fossil fuel driven industrial production and mass consumption.

If there is anything within human nature that sets us apart from other life forms it is the exceptional speed with which we can change key elements in our way of life. This cultural adaptability allowed early modern humans to disperse out of Africa and around the globe, adjusting their ways of life to suit the conditions of the very wide range of different eco-systems they encountered, from the icy world of the far north to the hot and arid plains of Australia. Progressively branching and dispersing human communities developed their own languages and diversified cultures over centuries. A vital part of localised cultures is their unique knowledge of a specific local environment and their practical strategies for sustainable coexistence, covering the planet with a plurality of human ecologies. Information flows in cultural adaptation are faster than in genetic adaptation, and hence this cultural diversification process was rapid, measured on evolutionary time scales. In today's world of advanced mobility and electronic communication, finally, the exchange and global spread of cultural knowledge and technology have become extremely rapid, reducing the depth of localised cultural diversity to a degree but also creating the foundation for the beginnings of a parallel, global culture, a sphere of shared understanding. It is the hitherto dominant influence of the industrial, modernist culture of Western Europe on this global cultural commons that is largely responsible for the current ecological and social crisis.[*]

The long-term and cross-cultural perspectives on the human story that physical and cultural anthropology provide reveal that culture is at worst ambivalent in its ecological effect: Many cultures have enabled sustainable living, although some became unsustainable at a local level and either changed, migrated or disappeared. But then there is one culture that did not become unsustainable merely at a local level but expanded worldwide and shaped global culture to become a planetary ecological threat. What is it, then, about the contemporary, liberal consumer-capitalist global culture that makes it so extraordinarily damaging to the social and ecological systems on which human survival and well-being depend?

2.4. Today's Cultural Crisis: A Legacy of Individualism and Modernism

Essential to understanding the cultural malaise of contemporary societies and their particular capitalist culture is the question of how societies and economies should deal with the issue of conflict and competition in social life. This question invokes different ideas about human nature, and hence it is often answered by reference to the way in which conflict and competition are presumably dealt with in natural systems. Contemporary capitalist culture

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[*] The military dominance of the western industrialised countries in the age of colonialism and until now has had a great influence on the current content of global culture, but it is nevertheless a hybrid culture with many contributors. Even the modernist element in global culture has not simply been imposed but has also held a certain promise that proved attractive to many.

has answered the question incorrectly because it is based on a mistaken interpretation of nature and also of human nature.

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Central to unravelling this misinterpretation is the following paradox: From one perspective, conflict avoidance through differentiation and mutual interdependence is the typical case, and is a prerequisite for the very existence of a system; from a more localised perspective, however, conflicts of interest between constituent elements routinely arise in social systems, as they do in ecosystems.

Two very different interpretations have been proposed to explain these basic facts: Fatalists tend to emphasise conflict and ruthless competition as the defining feature of social and natural life. Life is intrinsically brutish and human nature makes us incorrigibly selfish—'wolves' even in our relations to one another. This kind of philosophy of life struggles to explain why systems have durability and what makes them resilient to change, and tends to gloss over or deny the relevance of interdependence. The more optimistic alternative interpretation has been that social ecosystems are characterised by cooperation, and that systemic disruptions are temporary aberrations, characteristic only of unhealthy systems. This point of view struggles to explain the dynamic nature of systems, the emergence of systemic crises, and the ability of systems to change and adapt.

I contend that a fatalist, Hobbesian-style view of human nature has been elevated to the status of a foundational cultural narrative within modern, liberal-capitalist societies and in their economies, and therein lays the root of the cultural malaise that has driven social and ecological systems to the edge of destruction. This view simply fails to inspire responsibility toward the socio-ecological whole, on which all life depends. The Hobbesian view has had many critics in formal philosophy, of course, but it has prevailed as a popular ideology because it seems plausible to many in the light of their negative experiences of life, which tend to be more salient. Importantly, this view is also ideally suited as a legitimisation narrative to justify, for example, the imperial domination of 'weak' nations by stronger nations, the destruction of diversified production systems and markets by more powerful cartels, and the domination of weak individuals by stronger ones. This narrative frequently has been marketed as consistent with evolutionary science, and hence as a form of realism.

Adam Smith, though he advocated for free markets, was one of the first to criticise such pseudo-realist approaches in the field of economics. The typical case of economic life is described in Smith's *Theory of Moral Sentiments*,[6] where he characterises societies as systems of mutual interdependence upheld by sympathy for the moral sentiments of others. Focusing on the "Beggar-thy-neighbour" trade policies of mercantilism, Smith also provided

a pertinent example of the atypical case, whereby unsustainable, self-serving economic behaviour becomes a temporary system feature.[7] He argued that the self-serving philosophy of mercantilism was hostile to systemic equilibrium and ultimately self-destructive and irrational because it was blind to the way healthy systems of market interaction produce benefits for all. He pointed out that Beggar-thy-neighbour policies falsely regard trade as a zero-sum game, whereas in fact the comparative advantage of each economy offers gains from trade for all parties.

"Neoliberal capitalism promotes a crisis producing and crisis maintaining form of economic behaviour and, unless it is stopped, it could stagger on until the social and ecological system is destroyed completely."

Remarkably, Smith's contention that 'comparative advantage' within an economic system resolves conflict resonates very strongly with the solutions that evolution has found to resolve competitive conflicts within ecosystems. It turns out that nature in not brutish at all, but keen to avoid conflict. According to Gause's law (the competitive exclusion principle), the systemic effect of competition in ecosystems is not the creation of a Hobbesian all-against-all battle for supremacy (*bellum omnium in omnia*). Rather, competition between species with similar traits drives the diversification of species, and furthers their adaptation to ever more specialised ecological niches.[8] In short, the problem of resource scarcity and associated competition may appear as a competitive struggle from a relative perspective but, overall, ecosystems work to maximise the potential for life, even in very harsh environments such as deserts, as species evolve to occupy different niches. This diversification effect is illustrated by the phenomenon of 'character displacement,' whereby similar and competing traits diverge in the direction of greater specialisation.[9] We can conclude that healthy social ecosystems resolve conflict over time and also exploit it as a motor for continuous diversification, with the ultimate outcome of establishing complex webs of interdependence wherein species are mutually sustained.

From the perspective of particular individuals or groups or species, competition can be painful, and this can make life look the part of a Hobbesian struggle rather than equilibrium. To interpret natural selection from such a personal angle is not uncommon or hard to empathise with, but it is naïve Darwinism. Ferrari and Chi note that naïve biology students (not to mention laypersons) tend to

> *focus on the idea of survival of the fittest, but embed this idea within an event ontology that involves actors struggling to overcome obstacles and achieve goals. Results showed that most naive subjects' evolutionary explanations reflected an event ontology. Furthermore, event ontology attributes were positively correlated with non-Darwinian explanations; by contrast, equilibration attributes, when present, were positively correlated with key Darwinian principles.*[10]

The problem with the pseudo-realist view is the one-sided, negative and naïve way in which it interprets the character of natural systems. This view has been picked up and developed into a global cultural narrative by the currently hegemonic neoliberal economic theory. Hobbes' idea of the social contract as a means of 'taming the wolves' is conveniently forgotten or buried in legal formalism. The event-focused, short-term logic of market fundamentalism, driven by the voracious profit appetite of financial capital, thus rests on a radical articulation and popularisation of traditional fatalist philosophies of life. It does not have a single source and does not apply any single philosopher systematically, but it has a long pedigree pointing back to the origins of capitalism and an associated secularisation and rationalisation within modernist worldviews.[11] According to this logic, when a business systematically engages in unsustainable economic behaviour, maximising private profit and externalising social and environmental (systemic) costs, that behaviour is portrayed not as immoral but as natural and also rational, in a narrow instrumental sense. A compounding factor is that the more such behaviour spreads and succeeds, albeit temporarily, the more it appears to prove its own philosophy of life correct. Neoliberal capitalism promotes a crisis producing and crisis maintaining form of economic behaviour and, unless it is stopped, it could stagger on until the social and ecological system is destroyed completely.

The pursuit of self-interest is celebrated as a heroic effort and, indeed, no effort is spared to reduce the moderating effect of the rule of law to a minimum, justified with disparaging rhetoric about the "nanny state," "overregulation" and "green tape." What regulatory legislation there is must be bent to one's purpose or changed with the help of a horde of lobbyist and hefty political party donations. Within the legal domain, such as it is, the approach promoted by this alt-liberal philosophy of life is again adversarial, and the battle for supremacy is simply fought with different means. Empathy for others is dismissed as naïve romanticism or socialism. The ultra-alienated neoliberal incarnation of *Homo economicus* thus cannot identify with and has no intrinsic moral or rational commitment to the whole. His (more often than her) system-smashing, winner-takes-all mentality resonates with the social Darwinism of an earlier age of liberal, *laissez-faire* capitalism,[*] a pseudo-evolutionary theory about the presumably 'natural' inferiority of less-than-equal social classes, races, ethnic groups and nations,[12] not to mention non-human species, who according to this theory fairly deserve to be exploited and extinguished by their superiors, the chosen few, destined by nature to be the new masters of a dying universe.

The irrationality of the policies that spring from this pseudo-realist logic can be demonstrated in many ways, but one current example is the competitive reduction of corporate tax rates and employer contributions to health and pension insurance (wage costs) among nation states influenced by neoliberal thinking. This 'beggar thy neighbour' strategy appears quite rational from an individual perspective, serving the aim to draw more FDI to one's own country, but from a systemic perspective it is quickly revealed as a runaway competition that eventually only serves to erode the tax base of all nation states and to increase inequality, largely to the benefit of the wealthiest 1%. As the work of Thomas Piketty has famously

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[*] Herbert Spencer and others first promoted the idea in the mid-19th century, but the idea proved persistent and spread beyond the British cultural sphere. For example, the theory helped inspire the extermination of so-called "inferior races" in Nazi concentration camps.

shown,[13] and as the World Economic Forum too is now willing to concede: Inequality has become 'the greatest threat to the world economic system.'[14] It is also producing a wave of public resentment captivated by populist movements, many of which are flying under the false flag of "we, the people" to once again promote the interests of private capital.

"Science too has inadvertently contributed to a sense of complacency, with its excessive focus on the description and rational analysis of facts and its fear of reaching for the future in the only way that we can: By following the moral compass of 'system-friendly' and wellness promoting values, and by utilising the much neglected and maligned human faculty of imagination."

It is not helpful, however, to lay blame solely at the feet of neoliberalism, given that individualism, instrumental rationality and alienation are part of a much wider phenomenon of modernity, and of associated processes of scientific innovation and industrialisation that gave rise to our present global consumer capitalist culture. Nor is it helpful to suggest the current lack of political commitment to transformative change can be attributed solely to vested interests, such as the fossil fuel lobby. Everyone participating in the life of a modern, industrial consumer society is substantively and morally contributing to its maintenance, like it or not, and we all should muster the humility to accept this inconvenient truth. Collectively, it seems, we are trapped by the belief that 'the world as we know it' is the only possible world. Proposals for fundamental change thus cause anxiety, while this old world, no matter how flawed, provides us with a sense of reassurance. Science too has inadvertently contributed to a sense of complacency, with its excessive focus on the description and rational analysis of facts and its fear of reaching for the future in the only way that we can: By following the moral compass of 'system-friendly' and wellness promoting values, and by utilising the much neglected and maligned human faculty of imagination.

Notwithstanding the great speed of cultural evolution compared to genetic evolution, it seems the former proceeds in small steps also. Fundamental cultural shifts are indeed infrequent and often take quite a long time, or only happen under great duress. Today duress is near us and has brought misery to many people already. It is time to shift gear and accelerate change, taking pre-emptive action before irreversible earth systems failures strike.

3. Cultural Options: A Cross-cultural Perspective on Overcoming Change Resistance in Society and Science

This is easier said than done. Projects for systemic change toward a more equitable and sustainable world, of which the UN's set of Sustainable Development Goals is emblematic, are predicated upon a hopeful belief in our capacity to change our culture, our way of doing things. Unfortunately, and of necessity, the most basic cultural narratives that encapsulate

our philosophy and way of life are deep-seated, often unconsciously taken for granted and hence rendered largely invisible, unquestionable and change resistant.[15] Cultural core principles do need some gravitas, because they create, and more or less uphold, 'the world' as we understand it, thus guiding our way of inhabiting the world. To 'allow' a major reset of today's globally prevailing cultural narrative and of prevailing orders of practice to happen, therefore, certain special conditions need to be met. We literally need to permit change to happen. We, as a global community, would need to open up our minds to the positive and achievable vision of a new and more liveable world. I shall argue that such an opening up is possible and that the quantum leap in consciousness it will require can be achieved, by capitalising on a momentous rise in meta-cultural awareness within this global age. Moreover, anthropological researchers from all over the world have long pursued this kind of awareness, and have shown for all to see that it is achievable, and how it can be done.

For more than a century anthropologists have professionally studied societies worldwide across the full of spectrum of human cultural diversity. The ethnographic method of 'participant observation' allows ethnographers not just to observe but also to become wholly immersed in the daily life of another society, and thus they have an opportunity to learn to see the world through a different cultural lens. In the course of tens of thousands of ethnographic studies, ranging from societies whose cultural economies were still based on stone-age technology,[16] to studies of the cultures of corporations and of internationalist institutions such as the World Bank,[17] anthropologists have shown that cultures are perspectives. This recognition of perspectivism is the prerequisite for what I like to refer to as meta-cultural awareness. One's own culture can no longer be taken for granted. One's dependence on it and resistance to changing it are lessened, because one can reflect back on it from the perspective of another culture that has its own positionality and logic and is evidently informing a viable, alternative way of life. To the extent that particular anthropologists can manage to take on a second cultural perspective, with the help of a particular set of professional tools designed to produce a thorough understanding of a second culture (and language), while simultaneously retaining their own native cultural perspective, they first of all suffer a fragmented sense of self. As I have discussed elsewhere,[18] this is not always a pleasant experience: It can be psychologically stressful, and can be unsettling because an individual has no means to resolve dissonance between two cultural perspectives at the level of their own social practice, except to switch codes as needed. Those who persist find, however, that it is a small price to pay. One gains a meta-cultural understanding of how culture shapes our understanding of the world and of the purpose of life, as well as informing the way in which we behave socially and ecologically. The result is a greater ability to examine one's own culture-informed behaviour without misguided attachment and without much fear that the world would collapse if a deep cultural change were to take place. Cultural ways of relating to diverse ecosystems (human ecologies) and of pursuing either sustainable or unsustainable livelihoods are learnt, and hence subject to reflection and change. Making such changes is a serious matter and must be considered very carefully, but it is not impossible.

We have a real chance today to consciously create a culture we can live by sustainably and humanely, and this is due to the meta-cultural awareness now spreading naturally.

Fortunately, such awareness is not restricted to anthropologists, though their professional approach does provide them with exceptional support for coping with this experience and for responding in a more constructive way. The experience itself, however, is becoming rather common in the wake of globalisation, as hundreds of millions of individuals are exposed to cross-cultural experiences through moving to different regions or countries, provided they also learn languages and socially engage. Many displaced persons find the experience threatening to their sense of self, triggered by a disruption of their cultural identity. The people around them, in their new location, may also feel threatened in their identity and invaded, particularly in a context of mass migration. At both ends, people receive little support, let alone professional training on how to learn and cope with unfamiliar worldviews or how to best live in heterogeneous communities. They may become susceptible to the pied piper call of populist parties, who exploit a rising fear of change and a rising fear at the lack of change in a crisis situation. Nonetheless, there is evidence that meta-cultural awareness is taking effect. My own research shows that there is a growing willingness to shift the very foundations of the world's cultures, which are often religious. Interfaith religious movements such as the World Parliament of Religions have been very actively promoting a transformation to social and ecological sustainability,[19] and mainstream religions are now following suit.[20] Countless individuals too, having seen a bit of the world, cannot help but conclude: we are free to decide to reinvent ourselves culturally. We can reconstruct the emerging layer of shared global culture to make it socially inclusive and sustainable, without threatening localised cultures but, rather, by recognising local knowledge as a tremendous resource and local ways of life as a wealth of human diversity that is beautiful as well as indispensable for matching the diversity of ecosystems around the world.

4. Conscious Socio-Economic Change in the Now: Meeting the demand for integrated social transformation and creating supply with a political process of open and inclusive communication

Once the torch of meta-cultural awareness is pointed at cultural practices, and particularly economics, an opening is created for real change at a practical level. This must begin with an assessment of the demand for change, followed by an assessment of possible solutions.

4.1. The Demand End of Sustainability Transformation

I have gone to considerable length to explain how social and ecological sustainability are inseparable, and it is at this point that the argument becomes important. From this perspective, we have a dual crisis with a common cause and similar solutions. The same strategy of unrestrained profit maximisation that drives escalating inequality also drives ecological destruction.

The social inequality crisis includes escalating disparities between rich and poor nations, as well as between rich and poor citizens of particular nations. At both levels, disparity has been growing rapidly, with some local variability. A 2016 report by Oxfam, drawing on information from the *Forbes Billionaires List and Credit Suisse Global Wealth Databook*, notes that today "eight men possess the same wealth as half the world's people."[21] Middle-class

people in affluent nations are not safe from these developments, as the brilliant research of Senator Elizabeth Warren has revealed with reference to the US case.[22] At the extremes of disadvantage, we find that some 795 million people went hungry in 2014.[23] At the extremes of affluence, the meaning of wealth is almost entirely disconnected from individual consumption needs, and becomes primarily a form of power. This concentration of power works to perpetuate and institutionalise inequality through overwhelming influence on national and international policies.

The ecological crisis has been much discussed in the media and academic literature, and also in the field of anthropology,[24] but even for experts it is hard to picture the full extent of the challenge. We all have heard of global warming, ocean acidification and sea level rise, all due to atmospheric carbon emissions; we read about the effects of other pollutants on land, water and living organisms (including nitrate, pesticides, herbicides, plastic, heavy metals, radioactive material, Nano materials and thousands of other harmful substances); and we have learnt about the impact of mechanical destruction (to build cities, roads, industrial plants, industrial farms) on forests and other ecosystems. The world population keeps growing, as does per capita consumption in many regions. Non-renewable resources are peaking, and renewable resources are extracted above their renewal rate. Biodiversity loss is now occurring at a rate that can only be described as catastrophic. According to the WWF 2014 *Living Planet Report*, we lost 52% of biodiversity between 1970 and 2010, a period during which the human population doubled.[25] Resources essential to sustaining the human population are also dwindling, with major water and food supply crises likely. Other ecological threats are less well known but equally serious, such as the fact that half of the life-supporting topsoil of the planet has been lost in the last 150 years.[26]

4.2. The Supply End of the Sustainability Transformation

This dual crisis has reached a critical state and its nature is systemic. On-going discussions around the UN's 2030 agenda in which the author has been involved show widespread consensus that implementation of the SDGs and related work programs of other agencies is likely to fail unless systemic synergies and trade-offs[*] are carefully considered and weighed up.[27] It will be a complex task to decide exactly what to do, locally, regionally and globally. The scientific community should contribute the best available evidence, but the decisions are not just factual. They involve values and interests and hence the process needs to be both rational and politically viable. The main political obstacle for a rapid and integrated response, in my view, is the lack of an effective process for achieving consensus and real commitment around mutually agreed multi-scalar crisis action plans.

Transformation to Sustainability (T2S) plans must be based on a clear understanding of the profound cultural change that will be required to meet the challenge, at both the production and consumption ends of the economy. Increasing product life, repair, reuse, upgrading, closed loop recycling, resource (rather than labour) taxes and a major redirection of investment flows are some of the key measures that need to be applied across the board.

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[*] Biofuels for example may help meet renewable energy targets, but also threaten biodiversity (palm oil displacing rainforest) and food security (ethanol from maize).

Overall economic growth will only be possible in non-material consumption items or in specific areas, such as high value-added sustainable products. Labour will need to be reallocated from declining sectors to the sustainable economy. Available solutions must be implemented resolutely rather than blocked, as the *Desertec* project has been, which had promised a rapid transition to 100% renewable energy use.* Innovation will need to be targeted where solutions are not yet available. More broadly, however, there is a need to develop a new system-friendly and cooperative ethos, rather than a recklessly self-serving one, within the world economy by creating very strong incentives and sanctions to this effect. Profits may need to become less extravagant but more secure. Excessive per-capita material consumption may need to be curbed, but access to essential consumption items must become more secure. For investors and consumers alike, modesty and restraint will be more palatable when satisfaction of basic needs and expectations is guaranteed.

The transformative cultural change must be at a deeper level than usual. The prevailing assumption is that more technology will solve all problems, notwithstanding the fact that the entire dilemma we now face is due to inappropriate use of modern technologies. Regardless of this, the idea still persists that waves of innovation drive the business cycle, leading us onward and upward through ever-greater automation toward a fully mechanised, computer controlled technotopia. Five such 'Kondratiev waves' of innovation and economic transformation have been proposed:[28] The Industrial Revolution (1780-1848) to the Age of Railways and Steam Engines (1848-1873), the Age of Electrification and Heavy Engineering (1895-1940), the Age of Automobiles and Mass Production (1941-80) and The Age of Information & Communication Technology (1980+). The last wave, triggered by the ICT Revolution, according to the authors of a recent book, reached its peak in 2001 and is now in a down-swing phase wherein returns on investment are dropping and demand for innovative new technologies is growing. These new technologies, the authors argue, will be focused on the sustainable economy.[29]

This continuing faith in a technology driven modernist vision of the future is dangerously flawed. It may be that ecological sustainability will be delivered in part by the efforts of innovators, entrepreneurs and investors, but there is much need to beware of the many unintended environmental and social consequences of new technologies. The high-tech, big industry perspective must be tempered by looking very carefully at what is already sustainable right now, or what was traditionally sustainable, whether this makes for a great investment opportunity or not. If we look it this way, we will rediscover the fact that very often 'small is beautiful,' as Ernst Schumacher already pointed out in the early 1970s.[30] A stunning contemporary example of this principle is the global fisheries industry, which is heavily subsidised to destroy biodiversity, create enormous waste, consume large quantities of fuel and threaten the livelihoods of 12 million small fishermen, even though the latter are much more efficient, have less diversity impact, use less fuel and produce less waste.[31] Similarly, local traditional food production tends to be more organic, diversified, sustainable and socially responsible on the whole.[32] These local, small scale economic solutions largely lie outside the frame of reference of contemporary debates about the future economy, and their benefits often

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* http://www.desertec.org

escape standard measurements of economic performance that are focused on GDP rather than human well-being.

Figure 1: Small is Beautiful. Source: Daniel Pauly, University of British Columbia Fisheries Centre[*]

	LARGE SCALE FISHERY	SMALL SCALE FISHERY
SUBSIDIES	$$$$$ 25–27 billion	$ 5–7 billion
NUMBER OF FISHERS EMPLOYED	about 1/2 million	over 12 million
ANNUAL CATCH FOR HUMAN CONSUMPTION	about 30 million tonnes	about 30 million tonnes
ANNUAL CATCH REDUCED TO FISHMEAL AND OILS	35 million tonnes	almost none
ANNUAL FUEL OIL CONSUMPTION	about 37 million tonnes	about 5 million tonnes
CATCH PER TONNE OF FUEL CONSUMED	1–2 tonnes	4–8 tonnes
FISH AND OTHER SEA LIFE DISCARDED AT SEA	8–20 tonnes	very little

A fusion of sixth wave technology and small-scale diversified local solutions may also be possible. The Permaculture Movement is an example. Founders Bill Mollison and David Holmgren started developing ideas about stable agricultural systems in the Australian state of Tasmania in the late 1960s. They saw the dire consequences of rapidly growing indus-trial agriculture, its dependence on non-renewable resources, how it pollutes land and water, reduces biodiversity, and removes billions of tons of topsoil from once fertile landscapes. A new design approach called *permaculture* was their response, which combines technology and innovation with traditional organic farming methods.[33]

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A cultural critique of the modernist and largely science-based method of technological problem solving is thus required, from a perspective of sustainability and social inclusion, along with a greater appreciation for local knowledge of sustainable living. This should be part of a wider self-critique within science of our over-reliance on fact-based intellectual analysis and simultaneous dismissal of the vital role of the values-based human faculty of imagination, which alone can guide us to a more just and sustainable future world. It matters not what science and technology can do, but what it ought to do, given the future condition we would like to create. We need a new values-based, visionary science for human and ecological well-being, not a new science of mass destruction

5. Toward a Shared Vision and Action Pathway: Leveraging the power of diversity through open dialogue

In order to meet the need for systemic, integrated T2S plans that will consider all human actions in their ecological context, we first must change the way we deal with one other, our own 'social ecology.' The political consensus we may arrive at in the end is a question that cannot be answered in advance; it is a social process and individual thinking cannot be a substitute for that. What we can and must ask in advance is how a shared commitment to sustainability that is socially just and inclusive can be achieved. What are the key 'social ecology' principles that would guide us toward such a political consensus?

The following is a preliminary list of some foundational principles that would need to be adopted by participants in conversations about T2S, if such conversations are to be effective in producing a workable consensus. Participants may nevertheless decide to develop and amend their guiding principles in the course of the conversation itself.

5.1. Presence, Acceptance and Openness

Presence is the conscious and honest acknowledgement of what is, of objective conditions at this moment, right now. It requires us to open up to the suchness of the moment and be mindful of dynamic flows of cause and effect from the past to the present and into the future. Conversation partners need to present also to one another, as genuine consensus and cooperative action are built on respect and mutual recognition. Conversations about specific private or local interests and associated conflicts are important, but must not cloud the view of systemic objectives.

5.2. Courage and Collective Responsibility

Full acceptance of the facts, at this time, is enough to inspire fear in any intelligent person and in society as a whole. Fear is an adaptive response to danger that must be matched with courage to inspire evasive action. Otherwise, archetypal ideas of an impending apocalypse will be fed by this fear and inspire a sense of powerlessness and apathy until in the end we are forced to default into a violent scramble for remaining resources in a depleted natural and social environment. Many in the scientific community say we already possess the technical tools today to address most aspects of the challenge, which should inspire us with enough confidence to take courage.

Courage is a key prerequisite for taking responsible action, but it needs to be matched with compassion. There is much cause for us all to look with empathy and compassion at all human beings and all other life, caught here with us, in this precarious moment. Compassion also reminds us that others too wish and deserve to be safe, and that the way forward is through solidarity and cooperation.

"Effective solutions often stem from the imaginations of people at the social margins who are not so invested in the prevailing order as to be blind to its failings."

5.3. Imagination

Taking responsibility for what we will create henceforth, in this Anthropocene age, opens the stage for imagination. Before we can commit to joint action, we must first engage in an act of collective imagining. Imagination is a distinguishing human capability, still poorly understood. It is the creative element in human consciousness that allows us to act not just upon the evidence of observable facts but to bring an imagined future to bear on the present, on the realm of action, thus enabling us to change the default trajectory of our world. Imaginaries of the future need to be openly debated and agreed upon to make this possible.

5.4. Respect for Diversity

The diversity of unique personal and social histories and associated diversity of personal and cultural knowledge is the greatest resource the world possesses. Ideally, if one person or culture was to discover an effective solution in a crisis, all would recognize the idea, enact it, and be saved from calamity. In reality, this does not happen because we do not fully appreciate and respect diversity. Openness to the ideas of others may receive much lip service, but what is needed is a way to ensure that conversations about a shared future vision and action pathways are actively freed of the corrosive effects of exclusion and domination.

Effective solutions often stem from the imaginations of people at the social margins who are not so invested in the prevailing order as to be blind to its failings.[34] Unfortunately, marginal people and their alternative knowledge tend to be ignored and excluded from important conversations and decision-making processes. Even in so-called free and open societies, marginal voices are often mistrusted and silenced by power holders. Knowledge and imagination are frequently distorted or colonised by power. Quite apart from the injustice of it all, such colonisation of knowledge and imagination leads directly to an impoverishment of public discourse and practice. We should not let this risk of distortion discourage us. Humans also have shown a tremendous capacity to share knowledge and values within cultures, and to engage in collective imagination and joint action. We are endowed with a unique ability to generalise knowledge and values through language-based communication, which has enabled unprecedented social cooperation and cultural development. Communication helps us achieve social unity, but unity must not be thought of as synonymous with sameness. Communication

is only meaningful between those who have different things to say. Conversations about a shared vision and collective action toward sustainability thus need to be convened by individuals who are aware of and committed to this final and most important principle, and thus will keep the centre of the conversation open and free of the effects of power.

The rational strength of communicative processes, the health of social systems and, likewise, the resilience of ecosystems, lie in a paradoxical state of unity in diversity. Respect for the value of diversity and commitment to open information flows are the psychological and social foundation for reaching a shared and truly rational (free knowledge exchange-based) understanding of how we can build a socially and ecologically sustainable future together.

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