We are privileged to be alive at a pivotal moment in human history when all the settled assumptions of the last two centuries are up for renegotiation. New economic, political and social paradigms are evolving right now in response to the converging crises of climate change, energy insecurity and global economic instability. While undoubtedly alarming, the realities of our historic moment also present a window of opportunity to lay the foundation for a new set of social and ecological relations, rooted not just in sustainability but in regeneration. As educators, we can play an important role in preparing our students to play a constructive part in this regenerative project.

Our historic moment

In 2007, the American think-tank Center for a New American Century published a report called The Age of Consequences: The Foreign Policy and National Security Implications of Global Climate Change which explored the ramifications of climate change for the security of states. The report takes its cue from Winston Churchill’s observation in the late 1930s in relation to Nazi Germany: “The era of procrastination, of half-measures, of soothing and baffling expedients, of delays, is coming to a close. In its place we are entering a period of consequences.” The Age of Consequences report saw in our present time that “we are already living in an age of consequences when it comes to climate change and its impact on national security, both broadly and narrowly defined.”

Of course, the findings of this report, broadly speaking, are not new. As early as 1972, Donella Meadows et al’s famous study The Limits to Growth warned of a peak in food production and industrial output around about now after a long lead time of natural resource depletion. Our time has been labelled with other monikers, such as the Anthropocene, the Age of Limits, and the Long Emergency, among others, whose commonality is the identification of our time as a period of great societal transition, driven by related ecological, economic and political threats. The phrase ‘Age of Consequences’ is an apt descriptive term for our time because it conveys the idea that human societies are experiencing the bitter harvest sown by the ecological, economic and political contradictions of two centuries of industrialisation.

The symptoms of the Age of Consequences are beginning to re-shape the modes of production, economic systems

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and the relationships of power that spring from them. Our political institutions, founded on the basis of nineteenth century ideologies and class conflicts, struggle with emerging ecological, social and economic upheavals that are as tectonic in scale as those that accompanied the Industrial Revolution. The sustainability discourse that has come to dominate discussions about development and environmental protection is an inadequate response to these tectonic shifts.

**Sustainability vs regeneration**

The classic definition of sustainability was articulated in 1987 by the World Commission on Environment and Development, chaired by Norwegian Prime Minister Gro Harlem Brundtland, in a report entitled *Our Common Future*: “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” *Our Common Future* argued that economic growth was the key to reducing ecological degradation and that economic development could provide the jobs, money and infrastructure necessary to reduce environmental harms and satisfy the development needs of poorer countries. Because this definition of sustainability was compatible with the hegemonic political mantra of economic growth and development, it has become the dominant environmental discourse in public policy and business. Unfortunately, the *Our Common Future* interpretation of sustainability is conceptually flawed, based on the idea that sustainability occurs at the intersection of environment, society and economy as if those systems are separate entities. This interpretation is symptomatic of a problematic ontology in which humans are conceptualised as separate entities from the natural world, an ontology that underpins the ideologies of limitless growth to which our politicians, financiers, captains of industry and the educational institutions that support them are captive.

This leads us to the recurring question in global environmental politics: can development and environmental protection always be harmonised? The unpalatable political reality is that protecting the environment inevitably incurs economic costs. Sustainable development has been accused of being a massaged compromise that does not demand the transformative economic reform or the change in worldviews and social practices required to prevent ecological collapse. Sustainable development is also accused of having an unwarranted faith that technology can overcome environmental problems without any accompanying social and cultural change. Its harshest indictment however is that, despite over two decades of advances in sustainable development, aggregate growth in ecological degradation continues.

We require a more appropriate definition of sustainability which considers the environment, societies and economies as ‘nested systems’. Economies are social constructions of human societies, which are themselves dependent on the natural environment in which they exist. As the natural world changes, so inevitably must the human [Nested Systems Diagram Earth-Society-Economy](image)

All photos in this article are courtesy of Dr Benjamin Habib.
systems nested within it. We urgently need to face the inescapable reality that we live on a finite planet. All our material wealth, all of the goods we consume, are made with resources that have been extracted from the Earth. There are limits to the amount of resources we can extract and the amount of waste we can pollute beyond which the biological processes of the planet (and therefore human societies that depend on them) come under threat. Consequently, human societies, along with the economies that facilitate the exchange of goods and services within and between them, can only grow to the extent that the physical limits of the natural world will allow. As ecological economist Erick Zencey suggests, a system is sustainable if it doesn’t undercut the ecological pre-conditions of its existence.

Given the advanced stage of environmental degradation which has been shown to be undermining the pre-conditions for human life, sustainability as a goal is unlikely to be enough. We also need to reverse processes of environmental degradation and restore the ecosystems that support us to a healthy state. As environmental development expert Herbert Girardet has stated, we need “an environmentally-enhancing, restorative relationship between humanity and the ecosystems from which we draw resources for our sustenance.”

Regeneration in practice

A regenerative practice for our time starts with a change in consciousness. As a foundation, our regenerative project needs to recognise our inter-dependence with each other and with the natural world. It should mitigate the causes and respond adaptively to Age of Consequences problems. It should involve not only acts of omission, commission and protest (a la traditional activist models) but also active construction of viable new, economic and social systems. It should send tangible political, social and market signals to existing institutions and give its practitioners leverage in relation to these structures. It should undercut the material and political power of the vested interests in the old economy that are driving ecological degradation. It should draw on the insights and experience of other social justice movements through networked interaction, creating a momentum for justice across all segments of our society. It should establish a practical model of right living and, in so doing, demonstrate a constituency for change for others to adopt and political institutions to react to. It should be the embodiment of Gandhi’s dictum “be the change you want to see in the world.”

There are a number of tools we might use to “change facts on the ground,” a phrase that’s more often used in the context of military strategy, to put our regenerative project into practice. Recognising the overwhelming scientific evidence that business-as-usual economic development is ecologically destructive, these tools combined hold the promise of changing altering economic production systems and the economic and political relationships that emerge from them, such that we can mobilise a constructive, regenerative response to the maladies of the Age of Consequences.

Such tools could include, for example:

- Self-sufficient local food production and local-scale renewable energy technologies, deployed using ecologically-sound design principles (such as permaculture and agro-ecology) could help people and communities re-establish sovereignty over their means of subsistence.
- Gift economies could facilitate the exchange of goods and services without any explicit agreement for immediate or future rewards, ideally taking place in recurring gift exchange that circulates and redistributes wealth throughout a community and serves to build societal ties.
- Cooperative organisational models could help to re-localise economic production and have proven capable of democratising internal organisational decision-making and increasing the resilience of individual businesses to economic shocks.
- Zero marginal cost technologies, which are infinitely or close to infinitely replicable at no cost, could allow people to locally manufacture and disseminate useful products across communities at a fraction of the price that similar products made and distributed through global production chains are sold for.

Collectively, these interventions could reduce the economic imperative for people to engage in wage labour to acquire the money (and debt) necessary to obtain those products from market transactions. They could reverse our alienation from many of the processes of economic production upon which we depend and help us step away from having to participate in ecologically-destructive economic activities out of the need to earn a wage. There is scope here for increased levels of personal freedom and community autonomy if these changes proceeded in a positive direction, with profound implications for the distribution of political power. As permaculture co-creator David Holmgren has argued, the way the global middle class chooses to live is their biggest political leverage point. People who are saddled with debt and dependent on market transactions for their subsistence do not
possess that leverage and are often reduced to shouting at politicians to legislate for positive environmental change. If successful, a holistic regenerative project of this kind creates political pressure on governments to take bolder positions in international multilateral forums like the UN Framework Convention on Climate Change and gives them room to manoeuvre in their negotiations with other countries. Similarly, the demonstration effect can work to influence people in other countries through a networked contagion, creating the same pressure for bolder action among several negotiating parties.

It is not possible to change the facts on the ground, to implement a regenerative practice, by acting alone. It is sobering to recognise the systemic shortcomings that leave us vulnerable to chaotic social upheaval in the Age of Consequences. Many people have a strong aversion to being cogs in the many vertically-stratified, hierarchical institutions that have come to dominate our lives. The overwhelming urge is to escape the system, to strike out on our own. This is a seductive dead end; when we remember that we exist interdependently with other humans and the world around us, it is obvious that the escapist urge is flawed. A more appropriate adaptive response is to cultivate networks of trust and reciprocity with fellow travellers. Networks overcome problems of scale for grassroots activities, without need for large hierarchical institutions, and speed up organisation and information dissemination.

**Conclusion**

We stand today straddling the juncture between two different worlds. We stand with one foot in a dying paradigm, in a global, capitalist economy largely powered by fossil fuel energy and underpinned by ideologies of rapacious neoliberal economics, the cancerous ideal of perpetual economic growth and ontological separation from everything non-human. Our other foot stands in an emerging post-growth society based on sustainable existence within the natural world on which we are entirely dependent. Given the scientific evidence of global, environmental degradation, it is not hyperbole to suggest that the perpetuation of our society as we know it, and possibly even the survival of the species itself, depend on the timely success of the transition from the old model to the new. As educators we are failing our vocational duty if we do not prepare our students for the serious environmental realities of our time.