What is Sacred? Spirituality and Fourth Technological Age

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Betsan Martin

The fourth technological revolution is not new, and nor is it an event. It is a process that could be said to originate with human interventions of long ago such as the use of water for the steam engine. As machines have advanced we have always been effects on humans and on nature.

Technological invention brings intensified pollution. Factories are the obvious examples. Industrial agriculture is the source of massive pollution in multiple dimensions – the use of fossil fuel based fertilizer, genetically modified crops, monocultures which destroy biodiversity.

Thus we see what is writ large in the fourth technological age – a situation of global interdependence. While this has always been true of the dynamics of human life and the planet, the evidence of the inter-connected effects of humans and nature is more intensified in the conditions of a globalized, industrialized world. Climate change is the most compelling evidence of the inter-related dynamics of life.

As science opens our understanding of human impact on planetary ecosystems, we are compelled to take account of human ethics as part of spirituality, and in practical terms, the sustainability agenda.

The way in which all things are inter-related and connected is perhaps the first element of the sacred.

Climate Change and Technology

Climate change is about pollution at a vast and accumulative scale. It is fundamentally about the emissions of green house gases, mainly CO2, methane and nitrous oxide, at a level that is altering the temperature of the atmosphere and disrupting the climate system. These gases vary in stability and one of the critical issues is that CO2 remains in the atmosphere for thousands of years, whereas methane breaks down after 12 or so years.

An additional dimension that is being brought to the table of the climate agenda from the Pacific region, is the impact of CO2 on oceans. Approximately thirty percent of CO2 in the atmosphere is being absorbed by oceans, and ninety three percent of carbon dioxide is stored in algae, vegetation and coral. The additional absorption of carbon dioxide is causing acidification and altering the ecosystem dynamics of the biodiversity associated with oceans.

The climate system has been relatively stable for ten thousand years and this has allowed human life to evolve as we know it. Life is sustained in the narrow band of about 2 degrees of temperature variation as understood in earth systems science.

In addressing policy for transitions to zero carbon economies we face the question of the scope of such policies. Do we simply address energy and the move to renewable energy sources? Do we take a system-wide approach which recognizes that climate change is symptomatic of a system of exploitation that has some wealth creating benefits as well as

human and environmental negative consequences. Are we just going to use technology to reduce carbon emissions, and carry on exploiting, with biodiversity loss, and growing inequality, happy to have achieved 2 degrees, or even 1.5 degrees warming?

Here are some ideas for using technology to mitigate climate change:
One approach involves a fleet of 1500 unmanned ships dragging turbines through the water to create sea spray that is then pumped some 25 metres into the air as vaporised salt. This spray would cause existing clouds 1km above the Earth to become brighter, which would then reflect more sunlight back into space and take heat out of earch's atmosphere.

Another geoengineering idea involves pumping 100,000 tonnes of liquid sulphur dioxide into the stratosphere every year creating aerosol clouds of sulphates that would effectively act as a sunshield.

Biodiversity and Biotechnology

In New Zealand we have intensive attention to management and eradication of invasive species, as our environment,, we are beset by the consequences of introduced plants and animals and insects which have radically disrupted biodiversity and the original indigenous ecosystems.

The momentum to recover indigenous biodiversity such as forests, birds, fish presents us with an enormous challenge of removing pests species.

Gene technology is being investigated for the eradication of invasive species and consideration is being given to the use of gene drives to edit the genome of pests to stop reproduction.

Research into biocontrol technology is being done on vector bearing malaria mosquitos. In normal reproduction the male and female genes are randomly selected for inherited traits. The use of gene drive technology can intensify the probability of a trait, such as interfering with the reproduction of the female genes.

Gene drives are a introduced into the genetic system of mosquitos in a way that edits out the female sex of the species, with a result that only male species are reproduced, and within one or two generations, with no females, reproduction is stopped. The effect of this intervention is to change the laws of inheritance.[1]

It is assumed that gene drives are not subject to the rules of evolution. However in reality the mosquito species develops resistance to gene drives because the genomic sequence recognizes the gene drives. Applying pressure on fertility leads to a mutational response and development of a super species that survives these interventions.

The response from the technology researchers is to intensify the application of the technology to get more effective penetration, with a further technology called multiplexing. Victoria University scientist Eric Linklater says you can't over-ride evolution; gene drives won't remove characteristics of a species, they may minimize them for a period of time. Removal raises the scepter of editing across the entire ecosystem.

What are some of the ecological effects and the unintended consequences of these interventions? If you remove a species from the food web what are the effects among the

[1] Radio NZ interview with scientists Tony Nolan and Eric Linklater, 11 November 2017. http://www.radionz.co.nz/audio/player?audio_id=2018621173

food chain? Intervening into natural order brings ecological cascades – for example if we eradicate rats there will be a proliferation of stoats and other predators.

If we take as a premise that spirituality is about relationships, and ethics is about respectful, non-objectifying relationships, then we could ask serious questions about the extend of intervention in systems that form the web of life.

What then is sacred?

It is difficult to put a line in the sand of what is sacred, in the sense of what should not be tampered with. Humankind has a remarkable and infinite quest to expand the horizons of knowledge.

For this discussion, restoring humankind's relationship with earth based on recognition of the kinship of all forms of life is an underlying premise for spirituality and safeguards for what is sacred. We have only just begun to grapple with human interdependence with nature, and to appreciate the complexity of all forms of ecosystems. We do well to start with approaches which recover a relational way of living and relating, including with technology, that include an account of all the effects of human exploration, including pollution. Compassion and responsibility are both aspects of human relating which arise from a sense of the sacredness of relationships with each other and with all forms of life.

Responsibility is borne out of the relational human condition, and it is also an ethical value with a dimension of accountability – accountability that might put limits on the far reaching unintended consequences of technological inventions and interventions. When these may cross millennia it is hard for these to be foreseen, and to see that such wisdom will prevail.