HOW DO CULTURES EVOLVE, AND CAN WE DIRECT THAT CHANGE TO CREATE A BETTER WORLD?

Ecological economist **Robert Costanza** confronts the question at the heart of conservation – how can we achieve a transition to sustainability?

Western culture – based on a consumerist worldview within which maximising the growth of Gross Domestic Product is seen as the primary path to improving human lives – is ecologically unsustainable. It is also no longer achieving an overall improvement in human wellbeing. The challenge is devising ways to achieve ecologically sustainable and socially just societies. For this we need a theory of societal change. Such a theory must explain how rules, norms, institutions, communities and cultures change, and how that change can be influenced. Just as architects rely on a theory of structural statics to design buildings, so we need a theory of societal change to help us design more sustainable and desirable futures.

Cultural change as an evolutionary process

In biology, evolution is *the* theory of change. Social systems evolve in ways analogous to biological systems – through the same three interacting processes: information storage and transmission, generation of new alternatives, and selection of superior alternatives according to some performance criteria.

Until recently, evolutionary theory has focused mainly on selection at the genetic level, neglecting other levels of organisation and non-genetic mechanisms of inheritance. This has hindered our understanding of evolution, and slowed its integration with the social sciences. There is strong evidence that selection occurs at multiple levels, and that between-group selection may in some circumstances be more important than within-group selection. Understanding selection at multiple levels, according to David Sloan Wilson and Edward O Wilson, 'can help explain the origin and major transitions of life, the structure of animal societies and multi-species ecosystems, and human evolution—even including the rise and fall of empires and the nature of religion.' The rapid rise of *Homo sapiens* is a result of our species' ability to rapidly change behavior through cultural rather than biological evolution. To explain this, evolutionary theory needs to include other inheritance systems, such as social learning and the human capacity for symbolic thought.

At the level of human communities, what has been termed the 'symbotype' (by Wilson and others) replaces the genotype as the carrier of information to the next generation. Symbotypes occur at multiple levels of organisation, from specific rules and norms to the world views that guide the behavior of entire cultures. Like genotypes, symbotypes have almost infinite variety, based on the recombination of their elements, and evolve based on what they cause the society to do. In evolutionary terms, the conservation challenge is to generate new symbotypes that prioritise sustainability and influence cultural selection processes.

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How complex systems change

Human societies have changed rapidly and dramatically – often triggered by a crisis – and a theory of change needs to explain where and how such change occurs.

Systems analyst Donella Meadows has usefully identified 12 levels or 'leverage points' within complex social systems where small shifts can produce big changes. The lowest level is 'parameters' such as taxes, subsidies and standards. Although much effort is focused on changes at this level, they rarely drive substantial changes in society. There is greater potential leverage at levels higher in Meadows' list – in the 'rules' of the system (incentives, punishments, constraints) and in 'self organisation' (the power to add, change or evolve system structure). However, transformative cultural change needs leverage at the higher levels of 'goals' (the purpose or function of the system) and 'paradigms' (the mindset and shared agreements about the nature of reality out of which the system – its goals, structure, rules, delays, parameters – arises).

Leveraging change at these levels requires alternative cultural symbotypes and selection pressure to prefer one of the alternatives. Work by Paul Ray and Sherry Anderson suggests that this has been happening, as basic symbotypes in western cultures have been rapidly changing in the past few decades. They have surveyed people in the United States for their worldviews and values, and grouped them into three broad symbotypes: (1) modernists, who hold the dominant worldviews about the benefits of markets and economic growth, (2) traditionalists, who are nostalgic for earlier, often more religious, times and (3) cultural creatives, whose worldviews are based on sustainability, equity, and sufficiency and who are 'disenchanted with owning more stuff… materialism…status display and the glaring social inequities of

Photos: John Englart (part of an extensive gallery of photos of protests that can be accessed on the Flickr site of Takver)

race'. The proportion of traditionalists in the US population has declined dramatically from 47% in 1965 to 26% in 2000, while the proportion of cultural creatives has surged, from 3% to 28%.

A theory of change can help us understand these trends, and forecast how and when a major cultural transformation might occur. On current trends, the fraction of the population motivated by the cultural creative worldview will come to dominate in the not-too-distant future and, assuming a democracy, will begin to change goals, rules, policies and all the lower levels in Meadow's list to support the cultural creative symbotype.

Designing a desirable future

One way that cultural evolution differs from biological evolution is that it is reflexive – our goals and foresight can affect the process. As Rachel Beddoe and others (including myself) wrote in 2009, 'To a certain extent, we can design the future that we want by creating new cultural variants for evolution to act upon and by modifying the goals that drive cultural selection.' A theory of social change can guide us in designing strategies to direct a transition to sustainability. We can better anticipate required changes and more efficiently design new institutional variants for selection to work on. Beddoe and colleagues say a period of cultural crisis is 'a necessary part of the process', for that is when selection pressures grow strong enough to allow new variants of worldviews, institutions, and technologies emerge.

A theory of change must also analyse impediments to transition. Like other evolutionary processes, cultural evolution is prone to blockages such as path dependence, multiple equilibria, lock-in and traps. Cultural inertia can be seen as a form of addiction to the current system, even after it has become maladaptive. Past civilisations have collapsed by failing to escape these processes. Although the ancient Maya, for example, were sophisticated in their development of agriculture, writing, architecture and elaborate trade networks, they failed to adapt to recurring drought cycles. They and other collapsed societies evidently lacked the ability to envision radically different world views, institutions and technologies and to make intentional transitions.

Biological evolution has no foresight and can act on and select only from existing alternatives. In contrast, humans are rapidly improving their ability to build complex models and simulate future possibilities and to select preferred alternatives from a wider range of possibilities. Scenario planning is one technique that can be used at community, national, and even global scales to discuss and develop consensus about what social groups want. Predicting the future is impossible. But what we can do is explore plausible scenarios and lay out the choices facing society in whole-systems terms. In evolutionary terms they can be regarded as alternative possible symbotypes for selection.

One of the most compelling examples of scenario planning was a 1992 workshop in South Africa with leaders from both white and black political parties to plan for the post-apartheid transition. The facilitator, Adam Kahane, convinced these leaders to go beyond recriminations and to create four possible future scenarios, one of which – the 'flight of the flamingos' – envisioned a shared country with everyone rising together with truth and reconciliation. Its adoption helped achieve a relatively smooth transition after apartheid ended.

Making the transition to the world we want will not be easy. In many ways we are locked-in, trapped by, and addicted to the current regime. Growing knowledge of how to overcome individual addictions may help here. We know that directly confronting addicts to try to scare them into changing leads to denial and is usually counterproductive. And yet this is exactly what we are doing at the societal level with issues like climate change. With addicted individuals, developing a positive vision of a better life is often the most effective therapy. This is what scenario planning and envisioning can provide at the societal level. In cultural evolutionary terms, we can produce positive hypothetical symbotypes to speed up and direct the process. So, we need not only a science of intentional change, but also a process to develop and test alternative models and visions of the world we want and to help us get there.

It is impossible to predict the future, but we can do much more to influence the cultural evolutionary process to create the future we want. ■

READING: This article in based on Costanza R. 2014. A theory of socio-ecological system change. *Journal of Bioeconomics* 16:39–44 ■ Beddoe R, Costanza R, Farley J, et al. 2009. Overcoming systemic roadblocks to sustainability: The evolutionary redesign of worldviews, institutions, and technologies. *Proceedings of the National Academy of Sciences of the United States of America* 106:2483–89 ■ Meadows D. 2010. Leverage points: Places to intervene in a system. *Solutions* 1:41–49 ■ Wilson DS, Hayes SC, Biglan A, Embry DD. 2014. Evolving the future: toward a science of intentional change. *Behavioral and Brain Sciences* 37(4):395–416 ■ Wilson DS, Wilson EO. 2007. Survival of the selfless. *New Scientist* 196:42–46.

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