Problem solving in the Anthropocene

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Abstract

Despite the technological advances that characterize the Anthropocene, it will be necessary to address and solve some key environmental problems in order to mitigate societal risks and avoid undesirable impacts. Success will require more effective interactions between scientists, policy makers, the business community, technological innovators, thought leaders and the public-at-large about the key issues – climate change, extinctions, ecosystem loss, pollution and population overgrowth – and their practical solutions. Here we introduce one example of how such interactions can begin.

Keywords

Anthropocene, climate change, ecosystem loss, extinctions, human life support systems, pollution, population growth, scientific consensus

Problem solving in the Anthropocene

Given that human impacts already set aside the Anthropocene from all other time on Earth, and that those impacts are almost certain to increase as the human population grows from its present 7 billion to over 9 billion by the year 2050, it is inevitable that *Homo sapiens*' place in the biosphere will continue to evolve. A key question – in fact, a key challenge – is whether we will decide to simply continue business as usual and hope for the best, or try to actively guide the planet's future such that what is now healthy and productive for people and other species remains so, and what is now broken is repaired.

The second choice, to guide the future, is in many ways something new for humanity. In the past, it has worked pretty well to simply assume that the planetary resources we depend upon, such as abundant clean air and water, a climate that has varied relatively little and under which complex societies became established in their present configuration, and a diversity of other species and 'wild' places that provided what we want from them, are constants for the human experience. We

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now know that not to be the case. A growing body of scientific studies going back more than three decades has firmly documented some human impacts that, if they keep going in the directions they have been, in the best case pose serious risks for maintaining a quality of life that is at least as satisfactory as humanity now finds it, and in the worst cases have great costs to people, other species and the planet in general.

Those impacts take the form of five dangerous trends, all of which are well substantiated with scientific data and observations, and all of which have been accelerating since about 1950: increasing climate disruption; growing numbers of extinctions; loss of non-human-dominated ecosystems; growing pollution of air, land and sea; and rapidly growing human populations. None of these are small problems, and combined they can synergize to create a maelstrom, yet all will require solution in the Anthropocene.

Solving such global issues will depend on much more than science and technology – solutions at the grand scale that is needed will require the actions of, and interactions between, people in all walks of life: scientists, policy makers, the business community, technological innovators, thought leaders and the public-at-large. In this issue, we publish one such effort at action and interaction, the 'Scientific consensus on maintaining humanity's life support systems in the 21st century: Information for policy makers' (Barnosky et al., forthcoming, this issue). Developed by a team of 16 global change scientists in response to the need for information requested by the leader of the world's 9th largest economy, Governor Edmund G 'Jerry' Brown, the statement was quickly endorsed by 522 leading scientists from 41 countries, and after its release on 23 May 2013, was translated into Chinese and Spanish, and promptly used in helping to forge greenhouse-gas and green technology agreements nationally and internationally, details of which will be presented in a later issue.

For now, the Consensus Statement continues to garner additional endorsements by practicing scientists and others, and to be used in communicating the basic scientific underpinnings of some of the Anthropocene's most pressing problems and, importantly, their broad-brush solutions to those who need the information most (http://consensusforaction.stanford.edu/). It also offers a key lesson: making the Anthropocene the best it can be will require not only communicating across disciplinary boundaries within academia, but also making sure that what we learn in the Ivory Tower does not stay there.

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Reference

Barnosky AD, Brown JH, Daily GC et al. (forthcoming) Scientific consensus on maintaining humanity's life support systems in the 21st century: Information for policy makers. *The Anthropocene Review*. DOI: 10.1177/2053019613516290.