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Conceptual Foundations of Sustainability

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Overview

Threats to the health of our environment are numerous, ranging from air and water pollution to deforestation, overpopulation, and climate change. Much research in fields such as biology, earth science, and engineering is devoted to documenting, understanding, and attempting to mitigate the harm. The root cause of all such problems, however, is human behavior. As such, changes to human behavior—and the internal processes that drive them—are essential to solutions. Cognitive scientists therefore have a critical role to play in sustainability research and interventions (e.g., Jaipal, 2014; Weir, 2018, 2019).

Psychology has already contributed substantially through work in motivational and social influences on behavior, and, more closely aligned with Cognitive Science, in risk perception, communication, and decision-making. Similar issues are also being grappled with in anthropology (e.g., Brightman & Lewis, 2017), linguistics (e.g., Burenhult et al., 2017), and education (e.g., Schoolman et al., 2014). But also critical to understanding sustainability-related behaviors is the individual's conceptualization of the natural world and the components and processes underlying it. Conceptualizations feed into higher-order processes as well as being, in part, shaped by them. The aim of this symposium is to shed light on how people learn, understand, and represent information about the natural world, which is foundational to how they think, feel, and ultimately act toward the environment.

The speakers of this symposium draw from cross-cultural, linguistic, educational, and social cognitive perspectives as well as traditional approaches to the study of concepts. They examine the nature of conceptual understanding in diverse domains including artifacts, insects, landscapes, and climate.

Together the talks in this symposium address three broad issues. First, we address the nature and content of conceptualizations. Speakers will probe the content of knowledge in these diverse domains, because understanding conceptual content is the first step to linking content to attitudes and behaviors. What role does understanding causal connections among parts of a domain play in fostering pro-environmental thinking? Furthermore, once information is stored in memory, what kinds of contextual variations may influence the content retrieved and thereby drive more or less pro-environmental thinking? Importantly, do domain conceptualizations vary across cultures and if so, how?

Second, we address the acquisition of these conceptualizations. Some learning comes from informal settings and some through formal education; what kinds of inputs are involved, and what kinds of learning result? And how do social and motivational influences interact with bottom-up information in shaping what is processed, understood, and stored?

Last, we address how conceptualizations link to larger-scale processes and outcomes. Important issues here include the implications that conceptualization of everyday, familiar objects, organisms, and surrounds have for how people think about and respond to conservation policies and strategies, and how these conceptualizations relate to even more deeply enmeshed economic systems. We further consider the implications cross-cultural variation in conceptualizations have for how policies and strategies must be shaped.

The symposium will begin with a short introduction to these key issues by Barbara Malt, followed by a series of four talks, each providing unique insights into the Conceptual Foundations of Sustainability. The session will end with a panel discussion in which we invite participants to raise questions that cross-cut individual presentations.

What Does it Take to Love a Bug?

Barbara C. Malt & Jessecae K. Marsh
Lehigh University

Domain knowledge is often considered a minor contributor to environmental attitudes, with factors such as political orientation, values, and social norms instead dominating. Yet this may be an overgeneralization; domains may differ in this regard. Declining insect populations are a critical conservation concern but not prominent in public discourse, potentially giving greater weight to knowledge. We examined American college students' insect knowledge including exemplars and ecosystem interactions, associated valences, and their links to political orientation and concern for insect conservation. Political orientation correlated with conservation concern, supporting a role for worldview even in this relatively non-politicized domain. Mean valences were negative. However, participants who were asked to retrieve ecosystem interactions before other tasks subsequently gave modestly higher property valence ratings and retrieved a pollinator first. These observations support evaluating

whether improving insect knowledge, especially the critical causal roles they play in healthy ecosystems, can boost valence and increase conservation concern regardless of political orientation.

Sustainability and Folk Theories of Artefact Creation

Yoshihisa Kashima
University of Melbourne

Organisms adapt to their environment by constructing their niche. Humanity is no exception—we construct our niche and adapt to the rest of nature by modifying available materials around us. In the era some have dubbed the "Anthropocene", however, human niche construction has gone so far as to threaten the planetary climate system, which has engendered human thriving over the millennia. Sustainability is concerned with how humanity can collectively self-regulate our own niche construction in the environment that we have modified especially since the Industrial Revolution. Folk theories of artefact creation are socially transmitted cultural ideas that capture a significant aspect of the process of niche construction, namely, how we construe the process of transforming the available materials into artefacts (i.e., human-made objects). I argue that by examining folk theories of artefact creation and how to change them, it is possible to participate in and contribute to humanity's collective and sustainable adaptation within the changing complex social-ecological systems. In this presentation, I will outline an analysis of Western folk theory of artefact creation and point to its congruity with the linear economy—human economic activities as a linear process of resource extraction, production, consumption, and waste disposal—and a conceptual separation of humanity – especially our mentality – from the rest of nature. I will then sketch an alternative, a kind of bricolage theory of artefact creation, which may be more compatible with and able to guide our design thinking for crafting our own culture for sustainable futures.

Conceptualisations of Landscape across Cultures

Asifa Majid
University of York

Protecting and managing landscapes is a key area of local, national, and international concern, but stakeholders disagree on priorities and strategies. The European Landscape Convention stresses the importance of gathering diverse cultural viewpoints. Language plays a critical role in this endeavour both as an instrument for collecting data and as a tool for developing policies. Despite this, little is known about how people understand the concept of "landscape" in the first place. Current approaches assume meaning equivalence—e.g., *landscape* in English maps one-to-one with *paisaje* in Spanish—even though there are reasons to doubt this assumption. Moreover, policy documents often stress the visual aspects of landscape overlooking the other senses (e.g., sounds, smells). In this talk, I present cross-linguistic data illustrating how speakers of different European languages conceptualize "landscape". The data suggest the concept of "landscape" is weakly structured and cross-linguistically variable. In addition, the senses are differentially implicated in different parts of the landscape. These results underlie the importance of studying people's conceptualizations of landscape to develop sustainable policies for the future.

Science Doubt, Resistance, and Denial: Implications for Sustainability Education and Communication

Gale M. Sinatra & Jennifer Gribben
University of Southern California

Forging a sustainable future depends on educated citizens who can make informed decisions about scientific issues. This will require sustainability education and communication on a scale not yet attempted in the USA but seen more often in several European countries. In this presentation, I will draw on Sinatra and Hofer's forthcoming book *Science Denial: Why It Happens and What To Do About It*, to examine a few of the psychological factors contributing to sustainability (mis)understanding and (mis)communication. This presentation will focus on the role emotions, identity, and motivated reasoning play in fostering doubt, resistance, and denial of sustainability education and communication.

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