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Integrating cultural services and social value: Novel directions for ecosystem service management, valuation, and complexity

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ABSTRACT
Traditional valuation methodologies tend to focus solely on the biophysical and economic dimensions of ecosystem services. It has been argued that "cultural" and "social" values of ecosystem services must also be incorporated in decision-making to provide accurate valuations that reflect tangible and intangible dimensions of human-environment interactions. Broader conceptions of valuation, though deemed important, have been difficult to operationalize due to incommensurable philosophical epistemologies. In this paper I argue that the biophysical and economic importance of services can be considered alongside the value and experiences ascribed to those services by stakeholders using a socioecological systems perspective. Ultimately, these arguments will help researchers and resource managers be better equipped to deal with the complex and pluralistic nature of ecosystem service management and provision.

Keywords: economics, human dimensions, interdisciplinary, pluralism, socioecological

The integration of cultural services and social value: Novel directions for ecosystem service management, valuation, and complexity

Is there Value in the Intangible?

Under the purview of ecosystem services (ES), a tremendous gap exists between market-based, stock-flow valuation techniques that dominate this research area and of the study of cultural ecosystem services and social values that help determine resource utilization and allocation. The central problem of integrating *cultural ecosystem services* into decision-making frameworks originates in the diverse approaches to conceptualizing and measuring the idea of "value." New approaches must set out to bring together biophysical, economic, and social scientists who work within disparate paradigms. Incorporating theories and methodologies to operationalize non-use values associated with cultural ecosystem services will help to confront this dilemma in natural resources management. In this paper I advocate for the utilization of a socioecological systems perspective in which scientists and managers view ecosystems as a coupled human and natural systems. In doing so they can explicitly addresses the complex system interactions and feedbacks associated with the mutualistic relationship between biophysical, economic, and social dimensions.

Cultural services have been sidelined by their intangible characteristics and perceived incommensurability with traditional ecosystem service valuations (ESV). For instance, ecotourism and recreation are the most widely studied and cited cultural services because they are easily commodified and fit within a market valuation framework (Seppelt et al., 2011; Vihervaara et al., 2010). By limiting ESV to only market-based approaches, scientists run the risk of marginalizing the term "ecosystem services" (i.e., its use becoming an arbitrary buzzword

similar to how some see and use the term “biodiversity”). If the multi-faceted, scalar dimensions of ES are not recognized the concept of ESV may face the same fate. An additional challenge to incorporating cultural ES into decision-making is grounded in their abstract nature and inherently immeasurable qualities. It could be that ES frameworks become ostracized by policy makers, environmental managers, stakeholders, and the public at large if broader conceptions of non-material values are not reflected in policy outcomes. A deeper understanding of cultural ES values can provide insight into the receptiveness of stakeholders to environmental management (Stern, 2000), anticipation of conflict over competing consumptive and non-consumptive activities (Yung et al., 2003), and differing values the public holds towards federal forests (Steel et al., 1994). It is thus incumbent upon social and natural scientists to integrate cultural services into ESV research to align conservation and resource management prioritization with stakeholder interests.

Cultural and non-use dimensions of ES value are difficult to analyze and incorporate into resource management practices. The framework of the Millennium Ecosystem Assessment (MEA) defines ecosystems services as those supporting, provisioning, regulating, and cultural benefits people obtain from ecosystems. Cultural ES are defined as “the nonmaterial benefits people obtain from ecosystems through spiritual enrichment, cognitive development, reflection, recreation, and aesthetic experience, including, e.g., knowledge systems, social relations, and aesthetic value”; specifically, this includes “cultural diversity, spiritual and religious values, knowledge systems, educational values, inspiration, aesthetic values, social relations, sense of place, cultural heritage values, recreation and ecotourism” (MEA, 2005, pg. 40). Chan et al. (2012a) further refined the definition to: “ecosystems' contributions to the non-

material benefits (e.g., capabilities and experiences) that arise from human–ecosystem relationships."

The majority of studies tend to focus on the tangible, biophysical elements of ES (i.e., the capacity of an ecosystem to deliver benefits to human well-being) or on the economic (market) value of ES. The implication of studies that focus only on services with market and monetary value is the assumption that the economic framework of valuation is complete, thus distorting values that do not elegantly fit within decision-making frameworks (Chan et al., 2012b). To better integrate ES into the realm of decision-making and policy-making, research will have to vastly improve their recognition and incorporation of relevant cultural ES and be prepared to confront the psycho-social dimensions that shape human behavior (e.g., attitudes, motivations, norms) that shape ESV (Kumar & Kumar, 2008). That is, ES cannot be defined and measured without consideration of constructs that take into account human values (Daniels et al., 2012). Those who use the MEA framework must understand the need to recognize all aspects of ES, including cultural services. Furthermore, the neo-classical economic assumption that ESV appropriately represents human rationality is a vast miscalculation. As mentioned earlier, the inherent complexity and intangibility of cultural ES more often than not eliminates them from ES research priorities.

The Current Challenge

The tangibility of market and use values associated with provisioning, regulating, and supporting services ensures their commensurability with economic valuation techniques. Values in the context of cultural ES result from stakeholder perceptions and experiences and not necessarily from the material characteristics of biophysical phenomena (Chan et al., 2011).

This context presents a unique problem of utilizing valuation methodologies that accurately and effectively describe and integrate intangible "social" values. The philosophical basis of defining social values with regards to the natural environment has been broadly explored in past research (Rokeach, 1973; Brown, 1984; Kellert, 1996; Lockwood, 1999; McIntyre et al., 2008; Fisher et al., 2009; Chan et al., 2011). However, difficulty arises when methodology developed from an economic perspective is employed to operationalize social values associated with cultural ES. Quantitative and qualitative methodologies assessing social value are employed to gather data on cultural ES. Analytical techniques such as contingent valuation, contingent choice, avoided/ replacement/ travel-cost, and hedonic pricing methods are utilized for ESV and investigations of cultural ES. These techniques focus on placing monetary values on the services in question. Here it is necessary to clarify; we must be careful not to conflate social value with economic value.

The concept of social value is one method for operationalizing cultural ES (Chan et al., 2011). The conceptual framework of the MEA was designed to address societal demands and respond to research findings; it should be seen as an evolving theory. This becomes even more apparent when we recognize the limitations that can be placed upon researchers and practitioners when entrenched methodologies of ESV are coupled with incomplete MEA concepts. Additionally, ecosystem services are not singular entities, instead, services and benefits rely on other ES within a particular biophysical and social context (Raudsepp-Hearne, 2010; Martin-Lopez et al., 2012). The plurality of ES requires a great deal of attention and diligence prior to ESV assessments, especially in the integration of cultural ES and subsequent social/non-use values into decision-making. The bias towards ecological and economic research

with only minor and cursory contributions of social science research is detrimental to the science of ecosystem services and management which would ideally focus on the full spectrum of resource allocation and utilization including biophysical, economic, and social science considerations (Vihervaara et al., 2010). Conversely, a majority of social science research has historically focused on phenomena in isolation from biophysical surroundings with undercurrents of human exemptionalism being prevalent in ecological, economic, and social science theory. These arguments draw upon the need for research to incorporate a socioecological systems perspective within ecosystem service valuations and resource management prioritization.

Various standardized frameworks and methodologies for approaching issues from a socioecological perspective have offered promising insights into the areas of complexity and systems theory (Straton, 2005). Such conceptual frameworks account for both the intrinsic and subjective elements of value and integrate the approaches of economists and ecologists for the allocation of biophysical resources. New approaches must set out to be multidisciplinary and interdisciplinary, incorporating researchers, theories, and methodologies from diverse disciplines, with funding opportunities following suit. Bringing together social and natural scientists, at present, is the most pressing issue which has been reiterated by a range of disciplines across the globe.

A Way Forward?

Research that examines the dynamics of socioecological systems explicitly addresses the complex interactions and feedbacks between human and natural systems. Ecological systems and their associated goods and services create complex dynamics and often unexpected

outcomes not observable from traditional, reductionist approaches. People and nature interact reciprocally, forming complex feedback loops that may manifest unforeseen phenomena such as nonlinearity, thresholds, surprises, legacy effects, time lags, resilience dynamics, and heterogeneity (Liu et al., 2007). Methodologies such as general systems theory (Bertalanffy, 1969; Meadows, 2008), resilience and panarchy (Gunderson & Holling, 2001), chaos theory (Gleick, 1988), and adaptive management (Holling, 1978; Walters, 1986) are needed to fill the gap between stock-flow models and the inherent complexity of socioecological system and address the need for methodological pluralism (Norgaard, 2010). Liu et al. (2007) reviewed case studies with multiple spatial, temporal, and organizational contexts to elucidate the utility of complexity and systems thinking in coupled human-natural systems. Their conclusions are in agreement with the arguments made in this paper that issues related to human-environmental interactions are not necessarily best viewed from the lens of natural or social sciences by themselves. They also conclude that new theoretical approaches for integrating social and biophysical issues in complexity and systems thinking frameworks are necessary to better inform environmental policies and management decisions.

It is interesting to take a step back from the scientifically laden realm of ES and ESV and gain a broader perspective on the role of cultural and social values in decision-making. By removing the ES lens we can gain a perspective in which the biophysical and social create feedback interactions and, in essence, becoming a self-organizing system. Additionally, given that cultural and social values are both are temporally and spatially pertinent to the formulation of methodology and analysis, they are also influential *a priori*, informing and shaping biases associated with scientific inquiry and resource management:

> "The enterprise of science has always coevolved with dominant forms of social organization, available technologies, and the range of social values as well as with nature and environmental problems as perceived at the time…ecology will coevolve with the dominance of market thinking and how this dominance affects whose needs are expressed…a stronger, broader awareness of how science coevolves in society could help science coevolve more richly to benefit a broader constituency including future generations" (Noorgard, 2010, pg. 1222).

From this philosophical perspective we find that ES are incredibly context dependent and provisional. Therefore, ambivalence will impede the incorporation of these values into effective conservation efforts until standardized frameworks, methodologies, and theories are developed *and/or* there is general acceptance and understanding that values are inherently pluralistic.

"Basic" science must continue but so too is there an overwhelming need to utilize and emphasize novel approaches that seek to understand dynamic processes in socioecological systems girded by interdisciplinary knowledge. Human decisions, from individual to institutional levels, affect ecosystem processes that feed back into the quality and quantity of ES that influence human well-being; vice-versa, as Liu et al. (2007) state, "changes in ecosystem services feed back to alter human outcomes." Linkages between human and natural systems arise from an understanding of the ecological importance of ES but also the value and experiences ascribed to those services. This in turn conditions human actions and responses to their environment. Nuanced understanding of socioecological systems that is hypothesis driven, iterative, and scalable are necessary for intergenerational equity and allocation of ecosystem services benefits.

Developing socioecological systems thinking alongside cultural service valuation becomes difficult considering the requirements of modern scientific inquiry into resource and ecosystem management. Scientists, researchers, and managers are burdened with the reality that "scientific inquiry and practical application are commingled" (Carpenter et al., 2009). We are on the frontlines; novel inquiry/methods and pragmatic action are expected concomitantly. Some view this as an opportunity to include multiple types of knowledge within and across multiple complex temporal and spatial scales, integrating approaches that "do not assume scientific primacy or exclude alternative epistemologies" (Daniels et al., 2012). Others see this (as evidenced from tendencies to avoid cultural ESV) complexity as a distraction and divergence from practical economic consideration and efficient policy-making. But as this review has shown, it is quite the opposite; the burden of proof lies on the assumptions of traditional ESV to show their merit as a burgeoning socioecological perspective disseminates through resource management disciplines.

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