Conservation Biology

Essay

Why social values cannot be changed for the sake of conservation

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Abstract: *The hope for creating widespread change in social values has endured among conservation professionals since early calls by Aldo Leopold for a "land ethic." However, there has been little serious attention in conservation to the fields of investigation that address values, how they are formed, and how they change. We introduce a social–ecological systems conceptual approach in which values are seen not only as motivational goals people hold but also as ideas that are deeply embedded in society's material culture, collective behaviors, traditions, and institutions. Values define and bind groups, organizations, and societies; serve an adaptive role; and are typically stable across generations. When abrupt value changes occur, they are in response to substantial alterations in the social–ecological context. Such changes build on prior value structures and do not result in complete replacement. Given this understanding of values, we conclude that deliberate efforts to orchestrate value shifts for conservation are unlikely to be effective. Instead, there is an urgent need for research on values with a multilevel and dynamic view that can inform innovative conservation strategies for working within existing value structures. New directions facilitated by a systems approach will enhance understanding of the role values play in shaping conservation challenges and improve management of the human component of conservation.*

Keywords: cultural adaptation, multilevel analysis, social–ecological systems, social stability, value shift

Por Qué los Valores Sociales No Pueden Ser Cambiados por el Bien de la Conservación

Resumen: *La esperanza por crear un cambio extenso en los valores sociales ha perdurado entre los profesionales de la conservación desde las primeras peticiones de Aldo Leopold por una "ética de la tierra". Sin embargo, en la conservación se ha prestado poca atención seria a los campos de investigación que tratan con los valores, cómo se forman y cómo cambian. Introdujimos una estrategia conceptual a los sistemas socio-ecológicos en los que los valores no son sólo vistos como objetivos motivacionales que las personas tienen, sino también como ideas que están arraigadas profundamente en la cultura material, los comportamientos colectivos, las tradiciones y las instituciones de la sociedad. Los valores definen y unen a los grupos, organizaciones y sociedades; cumplen con un papel adaptativo; y comúnmente son estables a lo largo de las generaciones.*

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Cuando ocurren cambios abruptos en los valores, son en respuesta a las alteraciones sustanciales en el contexto socio-ecológico. Dichos cambios se basan en las estructuras previas de los valores y no resultan en un remplazo completo. Dado este entendimiento de los valores, concluimos que los esfuerzos deliberados por orquestar cambios en los valores para la conservación tienen poca probabilidad de ser efectivos. En su lugar, existe una necesidad urgente de investigación sobre los valores con una visión multi-nivel y dinámica que puede informar estrategias innovadoras de conservación para trabajar con las estructuras existentes de valores. Las nuevas direcciones facilitadas por una estrategia de sistemas mejorarán el entendimiento del papel que juegan los valores en la formación de los obstáculos para la conservación y perfeccionarán el manejo del componente humano en la conservación.

Palabras Clave: adaptación cultural, análisis multi-nivel, cambio de valores, estabilidad social, sistemas socio-ecológicos

Introduction

The conservation sciences document a wide array of devastating ecological effects brought about by humans (Pimm et al. 2014). What remains perplexing to some conservation professionals is society's indifference to these findings. Why do people seem unconcerned about the unprecedented loss of biodiversity, and why does society fail to act in the face of calamitous predictions? Research provides a rather disconcerting answer to this question: a great many people simply do not prioritize the environment as an important concern relative to other issues in their lives (Pew Research Center 2015).

Social values are the cognitive foundation on which people's prioritizations are built. Values are conceptualized as fundamental, stable human goal structures (Schwartz 2006). White (1967) was one of the first to suggest that Western cultures' expanding ecological disaster emanates from Christian values of mastery over nature. Without a new set of values, he predicted, there would be a worsening ecological crisis. Likewise, Diamond (2005:433), in his book *Collapse*, stated: " . . . [p]erhaps a crux of success or failure as a society is to know which core values to hold on to, and which ones to discard and replace with new values, when times change." Echoing this sentiment, Schultz and Zelezny (2003) suggested that value shift might be the only path to sustainability.

The value-shift argument has permeated the conservation sciences for many years. In *A Sand County Almanac*, Aldo Leopold (1949) presented his land ethic through which he proposed a shift away from an orientation of domination over the environment to one in which humans are more responsible stewards of the land. Martin et al. (2016) suggest a central task of the conservation social sciences is to effect this shift.

Although there is an extensive literature in the social sciences that deals with attitude and behavior change, research on induced value shift is sparse. Among efforts discussed, environmental education (Smyth 2006), government policy (Hoff-Elimari et al. 2014), and deliberation (Dietz 2013) have been proposed as vehicles for creating value change. Moreover, formal initiatives such as the Common Cause (Crompton 2010) and Great Transition Initiative (2015) claim value shift as their goal. Nonetheless, most social scientists would support the view expressed by Heberlein (2012) that deliberate value shift is improbable.

How does value shift occur and can conservation professionals effect it (i.e., induce a values fix)? If not, why? Given the profound implications associated with these questions, it is critical to address them directly. Based on theory and case studies from the social sciences, we propose a multilevel systems approach to values that can help guide the formulation of answers to these questions. Although acknowledging that a human-engineered shift may be untenable, this approach offers new directions for future research to inform innovative conservation strategies that can account for existing values as an integral part of the social–ecological context.

Current Approaches to Examining Values in Conservation

The term *values* is used across many disciplines to describe a variety of concepts. (For an interdisciplinary illustration in conservation, see Kenter et al. [2015].) We used a social–psychological approach, following Rokeach (1973) and Schwartz (1992), to conceptualize values as transsituational goals and principles that guide human behavior. Table 1 contains details on the values terminology we used. For both individuals and groups, values serve as standards for evaluating whether actions, events, and people are desirable or undesirable. Values guide what people attend to, what they perceive, and how they interpret and process information. If values change, corresponding behavioral changes typically follow across many situations. Individuals' values are largely shaped in youth and remain relatively stable throughout their lives (Inglehart 1997).

The conservation and environmental fields frequently apply the values concept as a way to understand the foundation of people's actions and beliefs. Specifically, researchers have applied this concept to describe values,

Table 1. Overview of values terminology used in this paper.

Values	*Underlying motivational goals*
Individual values[a]	
self-transcendence	helpfulness to friends and family (benevolence); equality, justice, and tolerance for all (universalism)
self-enhancement	success and ambition (achievement); control over resources and people (power)
openness to change	pleasure and sensuous gratification (hedonism); freedom of thought and action (self-direction); excitement, novelty, and change (stimulation)
conservation	compliance with social expectations (conformity); devoutness and humility (tradition); safety, stability, and order (security)
Cultural values[b]	
harmony	accepting, preserving nature and society as is
mastery	mastering, changing nature and society; progress
hierarchy	productivity through hierarchical role distribution
egalitarianism	productivity through voluntary cooperation by all
embeddedness	promoting group solidarity, goals, and traditions
affective autonomy	cultivating and expressing own individual feelings
intellectual autonomy	cultivating and expressing own individual ideas
Wildlife value orientations[c]	
domination	view of wildlife that prioritizes human well-being over wildlife and treats wildlife in utilitarian terms
mutualism	view of wildlife as capable of relationships of trust with humans and deserving of rights and care
Independence values[d]	
independence	focused attention, oriented toward personal happiness and egocentricity in social relations
interdependence	holistic attention, oriented toward social happiness and other-centric in social relations

[a]*The 4 higher-order values (e.g., self-transcendence) are composed of 10 basic individual-level values (e.g., benevolence). Hedonism has elements of both openness to change and self-enhancement. For more information, see Schwartz (1992, 2012).*
[b]*Cultural values represent preferred ways of responding to 3 problems all societies face: regulating the use of human and natural resources (harmony vs. mastery); distributing societal power to maximize productivity and coordination (hierarchy vs. egalitarianism); and defining optimal relations and boundaries between individuals and groups (autonomy vs. embeddedness). For more information, see Schwartz (2006).*
[c]*For more information, see Manfredo et al. (2016).*
[d]*For more information, see Kitayama et al. (2010).*

understand the basis of social conflict, and predict behavior. Common among studies describing the values held by groups of people are value typologies and attempts to link values to resource uses, preferences, or benefits desired from ecosystems. Some researchers in this area have developed resource-specific value orientations (e.g., wildlife value orientations [Manfredo et al. 2016]), whereas others have applied a more general typology of human values to conservation. In line with the latter, Hicks et al. (2015) recently applied Schwartz's (1992) frequently used value typology (Table 1) to 28 coral-reef fishing communities in the East Indian Ocean. Their work ties desired ecosystem services to the communities' prevailing values, and they suggest that an understanding of those values would guide the development of more effective conservation initiatives. A second area of application has been in understanding the basis of social conflict over conservation issues, which is often rooted in differences in values among groups. For example, Manfredo et al. (2016) describe 2 primary value orientations that shape human–wildlife relationships in the United States, domination and mutualism. They found that the potential for conflict over an array of wildlife-related issues is higher in states where the different value types are equally distributed. Another area of application for values research has been in predicting conservation behavior. A resurgence of interest in behavioral prediction in the 1980s and 1990s resulted in models that integrated values with concepts such as beliefs and norms (Stern & Dietz 1994) and attitudes and behaviors (Homer & Kahle 1988). This research suggests conservation practitioners can anticipate behaviors from an understanding of people's values. For example, research using Schwartz's (1992) value typology in 14 different countries showed that proenvironmental behavior was positively related to self-transcendence and negatively related to self-enhancement values (Schultz & Zelezny 1999).

A Systems Approach to Values

Although current conceptual approaches to values have been useful in conservation applications, they are not well suited to answering questions about the malleability and stability of values over time. To embrace this broader view, we structured our review in the context of a social–ecological systems (SES) approach. In an SES approach humans are viewed as an integral part of ecosystems and it is recognized that they both affect and depend heavily on natural environments. Moreover, social and natural systems are multilevel, dynamic, and joined through a complex series of feedbacks (Berkes et al. 2003).

A systems view of values differs from the static-entity approach common in the values literature (Kitayama 2002). The latter suggests values are learned ideas that

exist in the minds of individuals. In a systems view, values include what goes on in the mind (e.g., one's fundamental goals, what one believes is true, what one believes is important), but they are also intertwined in everything in one's environment. Values are integrated in verbal and nonverbal symbols, communication patterns, daily routines, material culture, social institutions, and the ways people structure and relate to their natural and social surroundings. For example, the predominant cultural value orientation that Schwartz (2006) identified in Sweden (emphasizing harmony with the environment) would lead people to be far more receptive to conservation initiatives than value orientations he identified in Zimbabwe (emphasizing mastery over the environment). These 2 countries differ not just because their inhabitants hold different values but also because those values have shaped the 2 cultural systems in different ways—each has a unique set of social institutions, daily practices, and explanations of the surrounding world (Kitayama 2002).

In adopting a systems view, we embrace the idea that values are goals that one learns and can articulate and are related to an array of behaviors. However, they are not stand-alone entities, readily vulnerable to change. Instead, they are deeply entangled in a web of material culture, collective behaviors, traditions, and social institutions. We explored the embedded nature of values and what is known about how and why they change. Specifically, we examined the multilevel, adaptive, and dynamic (although enduring) nature of values.

Values at Multiple Levels of Society

Just as ecosystems are composed of individuals, populations, communities, and biomes within a set of habitats, values exist within a multilevel social structure that includes individuals, groups, organizations, societies, and cultures. Of course, levels are not independent of one another. Their interlocking nature is explained in systems theory via the concept of emergence, a process wherein higher levels form from the organization and interaction of lower-level entities. This is fundamental in self-organization. The emergent groups and values that bind them have attributes and causal power that are distinct from the activities of lower-level entities (Hodgson 2000). That is, groups are more than the collection of individuals' attributes (Klein & Kozlowski 2000). Group values become idealized concepts that attract and maintain group membership and exert a downward influence known as immergence. When individuals associate their own identity with a group, they tend to adopt the group's attitudes and norms (Hogg 2006). Depending on their role in and attachment to the group, a person may act on the group's behalf even when that action might conflict with their own personal values and goals (Elder-Vass 2010). For example, Cramer et al. (1993) found that U.S. Forest Service (USFS) employees felt that the agency prioritized use of national forests for timber harvest over management for recreation and wildlife. Many of these employees, following organizational norms and in accordance with their job responsibilities at USFS, took action consistent with that prioritization even though it stood in contrast to their own personal beliefs about what the agency's priorities should be (i.e., managing forests for recreation and wildlife over timber).

The mutual construction and reinforcement of individual and group values in a multilevel system is evident when one considers a concrete conservation example such as bird watching. Peoples' individual values guide their actions (e.g., purchasing birdseed, taking birding trips, donating to nongovernmental organizations [NGOs], planting gardens to attract certain species); give them an identity in interpersonal dealings (e.g., being recognized as a bird expert or a strong environmentalist); and provide a motivational basis for group membership and socialization (e.g., belonging to a local birding group that shares mutualism values toward wildlife and groups like the Audubon Society, an international NGO focused on bird conservation). The Audubon Society, in turn, exerts influence on the individuals who act on its behalf, articulating and demonstrating what it considers appropriate behaviors and attitudes individuals should take. Audubon also exerts the power and influence that emanates from the collective by taking action at an organizational level (e.g., to advance policy that protects birds and their habitat). Individuals and groups are in dynamic interchange; as new issues arise (e.g., increases in raptor deaths from rodenticides), individuals respond (e.g., speaking out against the use of rodenticides), and group emergence shapes normative positions (e.g., new policies regarding the use of poisons) that immerge or flow down to the broader membership.

Of course, an individual is a member of many groups within a society. Individuals are embedded in groups, groups are embedded in other groups, and it is the within-level and cross-level influences that give shape to the overall value system. Societal values cascade down through multiple levels of organizations, institutions, and individuals and are reinforced and modified through reciprocal processes that emerge upward. Kasser et al. (2007) presented a hypothesis of the multilevel embeddedness of values, arguing that the corporate, capitalist economic system in the United States fosters values that lead to disregard for the well-being of the environment. Schwartz (2007) provided empirical confirmation of this in 20 countries. He found that, at the societal level, nations with more competitive forms of capitalism have cultural value orientations focused on self-assertiveness and mastery of human and natural resources as opposed to emphasizing living in harmony with those resources. At the individual level, people in competitive capitalist

societies attribute more importance to values negatively related to environmentalism (achievement, conformity, power) and less to values positively related to environmentalism (universalism, self-direction). Values associated with capitalism are evident at multiple levels and in the institutions and practices of a society's economic system.

In summary, the values one holds are reinforced at multiple levels of social organization. To evoke large-scale value change for the sake of conservation would not only require change among individuals but also among the groups, organizations, and societies in which those individuals are nested.

Values Adapt Humans to Their Surroundings

Values are the result of human adaptation to different social and environmental contexts. Schwartz and Bilsky (1990; Schwartz 1992) contend that individual values arise for the purpose of adaptation to one or more basic requirements of the human social being: biologically based needs, social interaction, and group welfare and survival. At the cultural level, Inglehart and Welzel (2005:23) argue that, within societies, "values change is an evolutionary process in which those values that are best suited to cope with life under given existential conditions have a selective advantage."

Empirical research illustrates this adaptive nature of values. For example, mode of livelihood is an important factor in shaping values. In a study of Chinese agricultural regions, Talhelm et al. (2014) found that values of interdependence and holistic thinking were stronger in rice-farming regions than in wheat-farming regions, where independence was emphasized. The prevailing values reflected the need for substantial group collaboration to be successful in rice farming but not in wheat farming. Similarly, Uskul et al. (2008) examined value differences among fishing, herding, and farming communities in eastern Turkey. Fishing and farming require cooperation among community members, but herding is highly solitary. Reflecting their mode of livelihood, farming and fishing communities emphasized interdependence values and holistic thinking, whereas herders were more independent and analytic.

Other research shows how values adapt in response to threats in the natural environment. Analyzing 98 regions across the world, Fincher et al. (2008) found a strong positive correlation between the historical prevalence of pathogens within a region and collectivism (versus individualism) values. The authors argued that collectivism values arose as a buffer against pathogen transmission and the introduction of new diseases by discouraging outgroup contact, reducing exposure risk, and encouraging conformity to traditions proven less likely to transmit diseases. In a similar manner, Gelfand et al. (2011) attributed the "tightness" versus "looseness" of cultures to ecological conditions; they defined tight cultures as those with strong norms and low tolerance for deviance. In a 33-nation study, they found an association between tightness and conditions of resource scarcity, disease, and environmental threats.

Current approaches also emphasize the coevolution of genes and culture (Richerson & Boyd 2005), and values are effected by that process. Studies comparing identical and nonidentical twins suggest that genetics explains approximately 50% of the variation in interests, attitudes, and values (e.g., Waller et al. 1990). Moreover, recent advances reveal the importance of epigenetics (genetic expression) to the acquisition of cultural traits (Cole 2009). To clarify, the proposed genetic effects are not deterministic; genes do not dictate values. Instead, heritability is believed to shape the development of traits like values by rendering people differentially receptive to aspects of their environment (Kitayama et al. 2014). Values and other psychological traits emerge within the individual through the interaction of the genetically prepared person and their environment.

In summary, humans adapt to their social-ecological surroundings in complex ways. It would appear that people's enduring cognitive structures, including values, are part of that adaptive process. The nature of values is rooted in their adaptive function, so the nature of value change is likely to reflect an adaptive function as well.

The Stability of Values and Time Scale of Change

The ability to accumulate and transmit a large body of knowledge across generations is what distinguishes humans from other species. The stability of culture and social values is a result of that process. Tomasello (2016:3) asserts that "cumulative cultural evolution is only possible because all individuals of a particular generation mostly learn the same thing from their elders, and so this is reliable and stable over time for all individuals." He proposes that this cross-generational accumulation of knowledge occurs due to a unique human psychology in which, very early in life, children learn through precise forms of social imitation. They quickly abide by and enforce norms associated with the cultural practices they learn, and their learning appears to be driven by the desire for acceptance within the group. From this foundation of learning, social values emerge early in life and are a critical part of the culture that is stable and sustained across generations.

Values at higher levels of social aggregation are also resistant to change. The concept of "system justification" explains that, even in the event of severe threats to one's life and social stability, people will cling to the prevailing ideology, associated norms, and institutions as appropriate and desirable (Jost et al. 2004). Reactions to Hurricane Katrina illustrate this. Despite delayed and inadequate

government response, phenomena such as victim blaming and stereotyping shifted responsibility and provided support for the current government system (Napier et al. 2006). A "threat-rigidity" hypothesis similarly explains resistance to change at the organizational level (Staw et al. 1981). Organizational responses to crises reveal a consistent pattern. During crisis, organizations reduce the complexity of their communication, emphasize conservation and efficient use of resources, and centralize organizational power and influence. This results in rigidity of action (Staw et al. 1981) and puts pressure on organizational members to conform (Olsen & Sexton 2009). Considering the complex nature of value formation, it is important that expectations or claims of value shift be examined in an appropriate time scale. Value change is an intergenerational process, and detection of even rapid value shift would require decades of observation. Moreover, values show elasticity. Value priorities may change in the short term and then revert to their previous state. For example, Ciuk (2015) found increased emphasis on social order and decreased emphasis on economic security values immediately following the 9/11 attacks in the United States. Four years later, however, these value priorities had returned to their pre-9/11 structure. In another example, Lönnqvist et al. (2013) found that the initial change in values of Ingrian Finnish migrants from Russia to Finland reverted to a premigration structure after 2 years.

In summary, the processes by which values are formed and sustained make them resistant to rapid change. That resistance can be seen not only in individuals but in higher levels of the social system such as organizations. Short-term attempts to shift values might show some degree of success, but their effects may not be lasting and determinations of enduring change would require long-term observation. Despite the stability of values, we know that in some cases values do change and, as we explore in the next section, this is largely due to considerable alterations in the social–ecological context.

Value Shift in Response to Substantial Social–Ecological Change

Where substantial value shifts have been documented, they are in response to large-scale social–ecological change. The type of change required to produce such a shift involves major reshaping of life circumstances, which could occur as a result of immigration, warfare, or ecological devastation.

Kitayama et al. (2010) illustrated the value-shift process in explaining the rise of independence values in the United States. Independence values emerged as people migrated to the western United States in the 18th and 19th centuries and confronted harsh social and ecological conditions. Given the low densities of settlement, these pioneers had to be self-sufficient. They changed behavioral practices and adapted their theories of how the world worked to fit their new surroundings. They adopted new technologies, modified social arrangements, and codified what they newly valued in stories and customs. The cultural practices and psychological tendencies that emerged as a result of these changes explicitly promoted independence values. Through this emergent process, parents transmitted new values vertically to children. In this way, independence values emerged, spread, persisted, and became a strong causal force within the social–ecological system.

Modernization is credited with being a significant driver of value-shift globally. Inglehart (1997) argues that a shift from materialist to postmaterialist values began after World War II in response to processes of modernization that included increasing wealth, education, and urbanization, and the spread of democracy and capitalism. These social–ecological changes systematically improved the availability of resources. Consequently, values concerned with subsistence needs lost importance and values concerned with social affiliation and self-actualization gained importance. As part of this fundamental value shift, proenvironmental values and associated laws and regulations gained increasing momentum.

The effect of this modernization-induced value shift is significant for conservation. In a positive vein, Franzen and Meyer (2010) found that individuals' postmaterialist values predicted proenvironmental attitudes across 26 countries. However, the post-World War II economy also yielded massive increases in the global production of materials from extractive resource industries (Krausmann et al. 2009) and their transfer from developing to developed countries (Wiedmann et al. 2015). Alongside its harmful ecological impacts, modernization has also eroded traditional knowledge and disrupted the cultural–biological balance of many small-scale societies (Gavin et al. 2015).

Value shift proceeds in an incremental, path-dependent manner. Complete replacement of one set of values by another does not occur. Inglehart and Baker (2000) studied value shift in 65 countries over 20 years to determine whether modernization is causing values to converge toward a homogenized global culture. They concluded that change is occurring, but it is occurring along paths that maintain preexisting differences among cultural groups. A study of conservation values among residents in the western United States revealed a similar path-dependent pattern of shift that reflects the enduring nature of values (Manfredo et al. 2016). Although a shift away from domination values toward wildlife is occurring, values identified among descendants of immigrants from various countries continue to reflect the cultural orientations in their countries of ancestry.

In summary, as the cases of emerging postmaterialist values and the rise of independence values illustrate,

value shift occurs gradually in response to changes in social–ecological surroundings. If these changes are substantial, they produce new adaptive values, behaviors, attitudes, and social affiliations.

Understanding Values in a Social–Ecological Context as a Path Forward

Taken together, our perspectives point to a complex picture in which values are ideas held in the minds of individuals, but they are also deeply embedded in the social–ecological context. Values exist at all levels of social structure, and there are cross-level influences and feedbacks among groups, organizations, and societies. They evolve over time, serve to adapt humans to their surroundings, and are shaped by genetic or epigenetic influences. Change is slow, path dependent, and occurs in response to other changes in the social–ecological surroundings. Behavior change contributes to the value-shift process, but feedbacks make that change mutually reinforcing. A values fix is an alluring and often-discussed proposal for achieving biodiversity conservation. However, we support the idea that enduring value change is very difficult to achieve (Heberlein 2012). We posit that the conservation social sciences will be far more effective in contributing to long-term solutions by focusing on attitude, norm, and behavior change in the context of specific behaviors and the situations in which they occur (McKenzie-Mohr 2013).

We are not, however, suggesting that research on social values in conservation be abandoned. Instead, we propose that new directions for values work be taken within a systems framework. Examples of key questions for the conservation social sciences include the following. What are the values of small-scale societies living close to critical biodiversity around the globe? What are the characteristics of their economies and social and political organizations, and how do these characteristics and values affect key conservation concerns such as rates of deforestation, wildlife species loss, etc.? What is the effect of modernization and acculturation on these relationships over time?

How do contrasting values among groups, organizations, and societies affect the ability to collaborate on conservation goals, initiatives, and actions? It will be particularly important to examine these factors systematically across cultures to enhance understanding of multilevel processes. How do values shape the ability of people to adapt to environmental disasters such as drought, climate-induced human migration, food shortages, and rapid loss of ecosystem services? What are the values of organizations (NGOs and governmental organizations) with conservation missions? What are their employees' values and those of affected stakeholders? What are the dynamics among these groups, and specifically, how does change in function and action occur as a result of value mismatches that may arise in this balance? Moreover, are such mismatches a precursor to organizational collapse, as suggested by the adaptive cycle (Light et al. 1995)? How do the values of groups and organizations affect the values, attitudes, and behaviors of individuals within those entities? Much of the current research on individual thought and behavior emerges from rational-actor models, which emphasize individual control and choice and diminish the role of social groups. This is particularly problematic given that so many societies are not individualistic and are instead highly group oriented. How does individual-level change lead to innovation and change at the group and societal levels? Whether conservation innovations involve new technology, new behaviors, or new ways of thinking, change begins at the individual level and moves up through the multiple layers of society (Geels 2002). Values are likely to play an important role in the adoption of innovation, yet this remains largely unexplored. Instead of attempting to change values, what innovative ways can we work within existing multilevel value structures to introduce changes that affect conservation?

An intervention to reduce lion killing among Maasai warriors illustrates this approach (Hazzah et al. 2014). At the individual level, Maasai warriors were enlisted in a program that substituted lion protection for lion killing. The program was built on sustaining the social standing and values of these warriors that were previously associated with lion killing. Simultaneously, the program worked with the broader community to assure recognition that group values were protected and that social prestige indeed followed this transition of warrior behavior. How can a multilevel understanding of values improve the utility of conservation action by linking strategies taken at all levels (what Hoare [2015] referred to as vertical integration of human-wildlife conflict strategies)? This would include coordinating conservation actions taken by societies (e.g., laws, policies, enforcement), organizations (e.g., projects, funding, collaborations), communities (e.g., empowerment, incentives), and individuals (e.g., education, compensation, onsite prevention). Although conservation professionals will struggle to inform deliberate value shift, they must pursue ways to induce change within society that will facilitate more-effective adaptation to social-ecological threats. Focusing on what is achievable is a critical step in meeting that challenge.

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