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Source: Journal of Ethnobiology, 36(1) : 66-84

Published By: Society of Ethnobiology

URL: <https://doi.org/10.2993/0278-0771-36.1.66>

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“USEFUL TO US IN UNKNOWN WAYS”: SEED CONSERVATION AND THE QUEST FOR NOVEL HUMAN-PLANT RELATIONSHIPS FOR THE 21ST CENTURY

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Contemporary environmental threats inspire the formation of new global communities and relationships: networks that both transcend nations and local environmental interactions and forge novel assemblages of human and non-human collaborations in a bid to “reset their modes of being” (Scott 2013:864). The Millennium Seed Bank Partnership (MSBP), for example, is the largest ex situ plant conservation project in the world and brings together partners from over 80 countries in an endeavor to conserve seeds from rare, wild plant species. As the potential use of the wild plant becomes increasingly central to the conservation relationship at the MSBP and implicated within a wider discourse on the neoliberalization of conservation, this paper explores how the term “use” may in fact encompass a nascent desire to reframe the human-plant relationship. By critically evaluating the values and intentions behind the quest for novel plant-uses by those who work within the MSBP, this paper examines the implications of seed-saving within a contemporary conservation institution. For those involved, rather than objectifying and creating a utilitarian relationship with nature, the concept of use is indicative of an aspiration to foster intimate, reciprocal relationships with their non-human counterparts, operating within an ontology in which humans and plants are interdependent. This paper argues that at a time when sustaining ontological diversity is key to ensuring cultural resilience and adaptation to environmental challenges, it is vital that ethnobiologists engage not only with traditional models, but also explore what innovative, intentional relationships with nature may be emerging from within conservation.

Keywords: conservation, use, commodification, multispecies, values

Introduction

Reflecting on Use

Scholars from throughout ethnobiology, environmental anthropology, and beyond have called for a shift in western perceptions of the relationship with the environment towards a more emotionally engaged worldview (Anderson 1996; Hunn 2014; Nabhan et al. 2011; Turner and Berkes 2006; Wolverton et al. 2014). Drawing from research on “other” (non-western) cultural relationships with the environment, many have argued that current global environmental degradation can be attributed to a western model of nature and “how the world is”—or ontology—that fosters distance and instrumentalist notions of nature’s value (Scott 2013; Sullivan 2009, 2013; Turner and Berkes 2006:497). Such important work, however, frequently fails to compare like-with-like, pitching in-depth ethnographic attention to the subtle ecologies of daily interactions and beliefs (Wyndham 2009) against an apparently internally homogenous western ontological

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framework frequently characterized by its dominant discourses and formal policy (see Brosius 1999a; Carrier 2003; Carrier and West 2009:12; Sandbrook et al. 2011). One example of this critical engagement with western perceptions of the environment can be found in the growing debate surrounding the contentious economization and “neoliberalization” of conservation, identified by increasingly market-oriented language, policy, and conservation planning models (Büscher et al. 2012; Minter and Miller 2011; Sullivan 2009). Scholars engaged in this critique of hegemonic models within western conservation have noted grave concern at the loss of diverse traditional ecological knowledge this approach may lead to and the impoverishment not only of people’s personal relationships with nature, but subsequently with a wider ability to protect it.

In light of this growing area of concern this paper explores the concept of “use” in the context of a global seed conservation network, the Millennium Seed Bank Partnership (MSBP). This research frames the utilitarian rhetoric employed by the MSBP within the context of ethnographic fieldwork and attention to the personal values of the conservation professionals that form the community of seed conservationists. By better understanding the worldviews within which the concept of use is enacted, and through exploring the intentions that people embed this term with through their daily interactions with the endangered plants and “lively” seeds with which they share their world, the data invite us to appreciate the inherent diversity, tensions, and, importantly, windows within which change can and is already happening within the (not-so-homogenous) western conservation context (Grove 1992; Nabhan et al. 2011; Rozzi 1999; Sandbrook et al. 2011). I argue in this paper that the development of uses by the scientists and conservationists at the MSBP can be interpreted as part of a cultural quest for novel ways of understanding the place of plants in the world and an intentional reimagining of the relationship between humans and the environment (see also Higgs 2003; Kuelartz 2012; Puig de la Bellacasa 2010). The daily work and practices at the MSBP invite a nuanced interpretation of the concept of use, which appears to form part of an ontological context in which botanical utility connotes a reciprocal, social relationship and the aspiration for a more harmonious future for both plants and for humans: one in which empathy and understanding are established through interactions somewhat coarsely encompassed by “use” (see also Ingold 2000; Proctor and Larson 2005; Strang 2009; Tsing 2012).

The data discussed here calls for reflection upon both how language and practice inform environmental relations and where more work can be done to facilitate better translations between the two in conservation institutions and in academic discussion (Bloch 1991; Brosius 1999a; Brosius and Hitchner 2010; Hunn 2014; Keulertz 2007). At a time when the protection and promotion of ontological diversity is seen as key to sustainable relationships with the environment (Bowker 2000; Nabhan et al. 2011; Sullivan 2009), this paper highlights the need to better understand where, when, and how ontological frameworks of holism, interdependency, and moral connectedness are already nascent within the western conservation context (Brosius 2006; Rozzi 1999; Taylor 2000). This observation serves to remind us that noticing and appreciating nuances enables both practitioners and academics to better support the ontological shifts they hope to see.

The Millennium Seed Bank Partnership

The Millennium Seed Bank's vault, containing the seeds of over 34,000 species of wild plants from around the world, lies beneath the state-of-the-art laboratory, offices, and visitor center at Wakehurst Place in the south of England (Kew Gardens). As some of the people working there note, in some respects this constitutes "the world's number one biodiversity hotspot for wild plant species" (Kew Gardens 2012). In 2000, the Royal Botanic Gardens, Kew launched the Millennium Seed Bank Partnership (MSBP) in order "to guarantee that we do not let slip through our fingers this most precious gift of living natural heritage" (Prof. S. Hopper, in Fry et al. 2011:190). By 2010, the MSBP achieved its initial target to collect and conserve ten percent of the world's wild plant species (Williams 2007) and it currently constitutes the largest ex situ plant conservation network in the world, with partners in over 80 countries (Kew Gardens).

Seed conservation, and ex situ germplasm conservation more generally, play a vital role in conservation practice today (Dierig et al. 2014; Li and Pritchard 2009) in part due to the Convention on Biological Diversity's Global Strategy for Plant Conservation which lists as its eighth target the aim to conserve at least 75 percent of threatened plant species in ex situ collections by 2020 (Convention on Biological Diversity). As Li and Pritchard (2009:614) outline, ex situ seed conservation acts "as an insurance policy against extinction [and] costs as little as one percent of in situ conservation." Furthermore, and as this article will explore in more depth, conserving a plant species in a seed bank enables access to a highly valuable resource for "restoration, re-introduction, sustainable use, and research options for generations to come" (internal MSBP project document). The act of collecting and storing these wild plant seeds while conserving them and protecting them from external threats simultaneously creates an accessible reservoir, which one team member at the MSBP described as "material for the benefit of mankind; [...] here to be used" (Field notes, May 7th 2013). This paper examines how plant conservation and perceptions of value come together in the MSBP's global network and, by critically engaging with debates concerning the increased influence of economics in conservation and the apparent neoliberalization of nature, argues that despite a growing emphasis on the utility of the plant species, we may in fact find a source of non-utilitarian values and hope emerging from within the attribution of use by the scientists and conservationists at the MSBP.

Ethnobotanical Relationships and Ontologies for the Future

In many respects it is possible to regard contemporary conservation practice as the manifestation of a—or many—modern ontologies. Michael Scott (2013:859) identifies ontology as "experiences and understandings of the nature of being itself" and it follows that an intrinsic part of such understandings involve the nature of the relationship between humans and the nonhuman world, something at the heart of ethnobotany and related disciplines that study how people relate to the world and their environment (see Descola 2005; Rappaport 1967; Reichel-Dolmatoff 1976). Since at least the middle of the twentieth century, and arguably much earlier (Grove 1992), a western, scientific conception of how *the world is*, based on developments in biology and ecology, has shaped both academic and

popular environmentalist perceptions about the relationships between humans and the environment (Carrier and West 2009; Grove 1992; Ingold 2000; Milton 1996). Anthropology has been engaged in the analysis of this environmentalist cultural framework for some time now—where it came from, how it is shared and distributed, and what impacts it has on people's behavior (e.g., Fairhead and Leach 1998; Milton 1996; Orlove and Brush 1996). As Argyrou (2009) explores, modern environmentalism functions within a particular vision of the world; one which he argues is formed around a sense of human unity. This sense of unity is linked to a growing understanding that, as Ingold (2000:209–218) has proposed, the “global environment” can be changed and acted upon by a *global* community. This ability to act upon the world at this scale, however, is a double-edged sword, implicating humanity in an environmental crisis while simultaneously proposing that through the correct adjustments to and management of the relationship, humanity as a collective may be able to save the global environment (Carrier and West 2009; Ingold 2000; Sawyer and Agrawal 2000). This “ontology,” or cultural logic, of how the world is, inspires what Macdonald (2014) has termed “trans-local ecologies,” or shared ecologies, that, through transnational partnerships and alliances formed beneath the umbrella of environmentalism rather than from a shared locality, inform people's experiences of and interactions with the environment (see Hathaway 2013; Kopnina 2012a).

Plant conservation, as a transnational, locally implemented environmental practice—based as it is upon such environmentalist views of the future—could therefore present us with a case study of a botanically engaged ontology. Indeed, one enthused botanist working within the MSBP described plant conservation as in many ways exactly that: “a new field of thinking about the relationship between humans and plants” (interview, May 29th 2013). As a practice it responds to a perception of how people have negatively affected the environment and what Choy (2011) refers to as the concept of “endangerment,” and seeks to reform the situation in order to meet the expectations of how the world *should* be: one filled with biodiversity and free from human threat (see Escobar 1998; Gustafsson 2013; Iggoe 2010).

In *The Last Great Plant Hunt* (Fry et al. 2011:190), a book published by the Royal Botanic Gardens, Kew, which introduces the work of the MSBP to a general audience, the project is described as “one of the greatest and most urgent conservation projects underway on earth, in a time of unprecedented global change” (Fry et al. 2011:190). Within this quote the perception of “unprecedented global change,” although on one hand connoting a sense of imminent environmental threat, endangerment, and “tenuousness” (Bankoff 2001; Choy 2011; Ives 2014), also hints at the power of humanity to create positive changes to counteract this (Barlow 2000; Maris 2011). This chimes with Sodikoff's (2012) collection on *The Anthropology of Extinction*, in which she highlights how experiences of environmental degradation and loss, while negative, can inspire creative advancements and positive social movements. The effect of ontological models of global threat and uncontrollable environmental change should be explored, therefore, as potentially culturally generative arenas (Kottak and Costa 1993; McDonald Pavelka 2002; Taylor 2000). In this context, the work of the MSBP and its proclamation as “one of the greatest and most urgent conservation projects” (Fry et al. 2011:190) provides an important

opportunity to critically explore Scott's (2013:864) assertion that environmentalism has made a call to humanity to "reset their mode of being." In response to this, both practical and emotional understandings of the world are being intentionally redesigned (Brosius 2006; Taylor 2000). This intent to "reset" echoes Williams' (1980:85) assertion that "we need different ideas because we need different relationships" (see also Anderson 1996; Higgs 2003; Onneweer 2009).

Converting Values

The MSBP, an expansive global network, places emphasis on the establishment and strength of its partnerships and the project's relevance and adherence to international biodiversity conservation policy, such as the International Union for the Conservation of Nature (IUCN) Red Lists and the Convention on Biological Diversity (see Filer 2009; Gustafsson and Lidskog 2013; Macdonald 2010; Monfreda 2010). Incorporating cultural breadth and local sensitivity and applicability into this globalized framework, however, inevitably presents many challenges with regards to translating and representing a guiding set of values (e.g., Fairhead and Leach 1998; Keller 2008). Fostering partnerships around the world that work together toward shared goals in diverse contexts demands the construction and implementation of metaphors and "portable representations" (Gatt 2013; Gustafsson and Lidskog 2013; Keulertz 2007; Yearly 1993). Conservation institutions, such as the MSBP, therefore become key sites for the conversion of practice, personal values, and motivations from local and potentially culturally distinct ontological contexts, into a standardized discourse (Brosius 1999b).

The challenge of bringing a disparate global community together to fulfill the ontological aspirations of environmentalism has demanded the distribution of a shared value system. Since the early history of western conservation, scientists and practitioners have recognized that a common denominator could be found within the discourse of utility (Grove 1992:47; Myers 1979; see also Büscher 2010). Costanza et al. (1997), in their quantification of the value of ecosystem services and natural capital, refer to the urgent need to render nature's importance clearly visible in order for the environmental demands of the era to be heard. They join others within conservation who believe that the recognition of nature's value is best rendered through an already recognized global discourse; that of economics (De Luca et al. 2012; Robbins and Daniels 2012). The sense that the criticality of conservation demands pragmatism, and that trade-offs between different demands can inspire creative and efficient dialogue, has since spread widely within conservation (Fisher et al. 2009; Hirsch et al. 2011; Robinson 2011). Although framing the value of biodiversity in such functional and economic terms may have potentially brought about a higher degree of political legitimacy and added weight to arguments for procuring funding, some within environmental conservation fear this emphasis has come at the cost of a more holistic and ethical engagement with nature (Büscher 2010; Monfreda 2010).

The increased emphasis on economic value has launched what Minter and Miller (2011:945) refer to as "the new conservation debate" and has led to a condemnation of what critics have interpreted as a "neoliberalization of conservation" (Büscher et al. 2012; Fletcher 2010). Such scholars argue that it is illogical to

subsume conservation within the capitalist system that has itself underwritten unsustainable interactions with the environment, thus legitimizing rather than challenging the status quo (Brockington and Duffy 2010; Brosius 1999b; McAfee 2012; McAfee and Shapiro 2010). They further argue that by emphasizing the utility and service value of nature, such economization portrays nature as a dispensable commodity, to be fetishized rather than engaged with (Igoe 2010; Sullivan 2009), and as something that can be replaced or lose value if its function may be sourced more efficiently (Kosoy and Corbera 2010; Redford and Adams 2009). Further to these pragmatic issues, critics fear that the homogenizing effect of promoting the value of nature in economic terms risks obscuring and disempowering other value systems (Jepson and Canney 2003; Monfreda 2010) by implying that self-interest and consumption are the universal and rational motivations in human-environment relations and by delegitimizing a sense of the intrinsic value of nature (Brosius 1999b; Ehrenfeld 2008; Kosoy and Corbera 2010). The effect of this commodifying process, which is thought by proponents to enable more effective communication and promote shared values and goals in conservation, may in effect limit the ontological diversity—the portfolio of ways of understanding, valuing, and being in the world—which others believe are essential building blocks for future solutions to living in harmony with the non-human world (Read 2007; Sullivan 2009; Turner and Berkes 2006).

Researching the “Field-view”

The New Conservation Debate (Minteer and Miller 2011) clearly presents ethnobiologists with an important avenue of research, forming an area of active and contentious discussion regarding the relationship between humans and their environment (Minteer and Miller 2011; Wolverson et al. 2014). However, alongside critical engagement with the policies, scientific assessments, and institutional conservation discourse, as Carrier and West (2009:12) highlight, it is vital also to engage with the “field-view”—the practice and execution of these intentions—and resist privileging the “book-view” by focusing only on the discourses and visions of conservation (Gustafsson 2013; Rozzi 1999).

Work such as that of Caroline Gatt (2013) on the international organization Friends of the Earth, in which she traces and explores the individual agency and experiences of those working within the organization, as well as that of Gustafsson and Lidskog (2013), in which they analyze how policy and assessment tools affect action on the ground, are examples of a growing body of work that is studying the dynamics between official, institutionalized narratives and environmental practice (e.g., Choy 2011; Hathaway 2013; Heatherington 2010; Mathews 2011). Sandbrook et al. (2011:285) note that the debates regarding the effects of the values that are promoted within conservation, including the critiques of an increased focus on markets “are rarely based on empirical analysis” of the conservation practitioners themselves and frequently rely upon an undefined but implicitly internally homogenous construction of “western conservation” (see for example Sandbrook et al. 2013:233; Turner and Berkes 2006:497). Surveying and profiling conservation practitioners’ values, Sandbrook and his colleagues found that conservation

professionals, far from consensus and support for the status quo, in fact present a complex value plurality, consisting of significant skepticism and cautious pragmatism towards the role of markets and economic valuation within conservation (Sandbrook et al. 2011, 2013).

In order to develop this important area of discussion, it is necessary that social science research contributes to both the theoretical critiques of the policies and discourse that conservation organizations promote while simultaneously providing qualitative empirical insight on how values and practice interact on the ground and come into effect through the actors involved and their experience of the world (Brosius 1999a; Carrier and West 2009; Grove 1992; Redford 2011; Taylor 2000). Aside from assuring symmetry in how cultural relations with the environment are studied (Latour 1993; Nabhan 2013; Wolverton et al. 2014:147), this approach acknowledges that, as highlighted by Bloch (1991), cultural cognition cannot be understood through linguistics and discourse alone and that the concepts and metaphors that frame understandings of the world need to be studied through attention to practice (see also Keulertz 2007; Proctor and Larson 2005). The research presented for discussion here, therefore, applies qualitative and ethnographic methods to the multi-sited field of the MSBP in an attempt to bring an ontological reflection to the debate surrounding the meaning of use in conservation.

Methods

This paper draws upon the accumulated data from multi-site institutional ethnographic fieldwork (Falzon 2009; Marcus 1995), semi-structured interviews and value ranking surveys (Sandbrook et al. 2011) at a sample of five Millennium Seed Bank Partner institutions between May 2013 and June 2015, in the United Kingdom, the Republic of Georgia, and the United States. The research focuses on the exploration of how the cultural value of the seed is experienced and generated by those working within these seed conservation contexts, sampling a range of field botanists, seed bank project managers, research biologists, propagators, and restoration ecologists (Gatt 2009; Macdonald 2010, 2014; Mathews 2011). The research started at the MSBP's central offices and laboratories at Wakehurst Place in the United Kingdom with an in-depth document review of a sample of six specific projects, using archived project folders, communications, and semi-structured interviews with project coordinating staff, as well as analysis of the MSBP's wider development, objectives, and structure (Gustaffson and Lidskog 2013; Macdonald 2014). The initial period was then developed through six months of ethnographic fieldwork with seed conservationists in the Republic of Georgia, followed by a further six months field work with three core seed conservation teams in the United States. In both contexts, project history, internal and external communications, documents, and the daily work of the team was studied, with participant observation covering all dimensions of the seed conservation team's work, including seed collection, processing, germination tests, and the development of propagation protocols. Additionally, three focus groups and interviews with over 50 people who work closely within various elements of the projects, exploring their

objectives and values in the context of seed conservation were carried out, with the assistance of a translator when necessary.

The following results and discussion are based upon a preliminary analysis of the data gathered to date as outlined in the methodology above (for institutional ethnographic research within international conservation see Choy 2011; Gatt 2009; Gustaffson and Lidskog 2013; Macdonald 2010, 2014; Mathews 2011; Monfreda 2010). Project documents, field notes, and interview transcriptions have been codified using ATLAS.ti software, and this paper is based upon the initial analysis regarding the theme of utility within the context of the research at the MSBP and the perception of the relationship with the plants to which it speaks. Pertinent and exemplary cases have been drawn from within the data to structure the discussion below in order to explore the potential interpretation and implications of this research.

Results

Researching the “field-view” of the conservationists at the MSBP indicated that within the context of utility there exists a perception and experience of entangled relationships with the species they conserve, which they find difficult to communicate in other terms. Through analysis of the conservationists’ engagements with the utility of a plant species—in scientific research, horticultural introduction, or as part of restoring ecosystem function—it becomes evident that these “uses” encompass wider, non-anthropocentric relationships and that working with, or *being-with*, these species within the context of “use” informs an empathy and a sense of mutuality. It is this non-utilitarian dynamic that demands wider reflection on what ontological framework the concept of “use” functions within (Cassidy and Mullin 2004; Mendum 2009; Rozzi 1999).

The range of research and uses of the collections within the MSBP is varied and often embodies implicit tensions between personal intentions and project objectives and design. To illustrate the types of uses and their interpretation by the conservationists at the MSBP, let us open with the example of a research project which was to measure the oil content of the seeds of a wild relative of a biofuel crop. As with all the research at the MSBP, this research was non-commercial. In an interview the researcher explained that their objective was that by recording the oil content of other species in the genus their research would help to promote the conservation of these species through highlighting the possible diversification of biofuel sources in the future, in turn avoiding mono-cropping and the associated biodiversity loss. Despite the utilitarian (and implicitly commercial) potential of this research, when discussing these types of conservation issues with the researcher she explained:

It shouldn't be because of people that you conserve [...] maybe a plant isn't useful for you, maybe you can't eat it, [but] maybe it's useful for larvae or something like that; it's useful for the ecosystem (interview, June 5th 2013).

Cases such as this invite reflection, as the ambiguous and multifaceted application of the concept of use is laid bare.

Empathy for the Seed

From the field through to the laboratory, a level of close attention and even empathy is demanded in order to use the seed to learn about the species and successfully conserve it. Seed conservation demands in depth research and knowledge of each plant species, from its life cycle and environmental adaptations, the population's health and fecundity, right down to the minute details of the x-ray samples and germination tests required to monitor the seed collection's ongoing viability. One senior research biologist and seed bank manager explained that:

when I teach I tell people to think like a plant, I tell them, I ask them to imagine having to live outside 24/7, 365, and that you are exposed to the elements—that you're cold, you're hot, you're dry, you're too wet... (interview, June 10th 2015).

Meanwhile, a seed biologist at a separate seed bank echoed this sentiment when she described how her research on seed storage requires her to "try to think like a seed" (field interview, February 13th 2015). In Mendum's research on subjectivity and plant domestication, she argues that plant breeders experience the process of crop breeding as an interaction between lively plant subjectivities and the breeders, which requires openness toward the interests of the plants (Mendum 2009:325). This empathic interaction with the plants and seeds was a common element of the interactions I observed—where the act of conservation, from the field through to the bank, commanded "a caring attentive regard" (Ingold 2000:76).

One way in which seed conservation teams have developed use for the wild plant species collected for conservation purposes is to explore the potential introduction of these species into commercial horticulture. While acutely aware of the potential conflict between conservation and horticultural interests, many of the conservationists involved revealed a sense of optimism behind the endeavor and a desire to enable public engagement with the species and its conservation in both theoretical and in tangible, personal terms. One conservationist recounted how she came to appreciate plants while growing up in an urban environment:

The more I interact with the organisms, the more I am in nature, the more I realize the importance and the value - and how critically important [the plants are]. [...] Most people when they first come to appreciate plants do that from a horticultural perspective (interview, May 2nd 2015).

Another botanist, who was cautious about the notion of horticulture as a conservation tool, still recognized that:

If people don't know nature they won't care to save it [...]. Given that [...] we often get people to know plants and animals by creating a use in their mind: useful to pollinators, useful to medicine, or that it's beautiful (interview, May 11th 2015).

Horticultural introduction and "use" therefore was not approached as a commercialization, nor as a purely aesthetic anthropocentric service—but rather as a way of fostering the kind of daily incremental interactions, knowledge, and care for the species within the wider public that the seed conservationists themselves value and experience. This tallies with what Turner and Berkes (2006:497) note, that it

is “humans living in close proximity to their environments” that are best able to develop an “ecological understanding” and what Hunn (2014:148) refers to as “an intensely respectful emotional engagement with nature.”

All Plants are Useful

Beyond use as a forum for fostering empathy, another way in which the concept of use played out in the conservationists’ interactions with the plants is captured by the sentiment of a ubiquitous botanical utility and the frequent recourse to unspecified ecosystem functions. For example, on a cold February morning, while showing me around the emerging spring ephemeral living collections associated with one of the MSBP partner’s seed banks, a member of the conservation team explained that “all plants are useful—even weeds” (field interview, February 13th 2014). Much of this ecosystem function rhetoric stems from contemporary ecological theory in which most conservation professionals are well versed, and which is emphasized further within conservation circles by promotion of the ecosystem services discourse in policy and communications, such as the Millennium Ecosystem Assessment (Folke 2006; Kosoy and Cobera 2010). The origin of a concept, however, does not always explain what it means to those who use it (Keurlertz 2007; Proctor and Larson 2005). Instead of the notion of performing a useful “service” leading to the implication that plants were functional and disposable as some scholars have speculated (e.g., Redford and Adams 2009; Sullivan 2009, 2012), the concept of use enabled individuals to express their personal, and sometimes vague, conviction that every species is critical. In this way, the references made to the function or utility of a plant hold a degree of ambiguity which resonates with Proctor and Larson’s (2005:1066) exploration of the metaphor of complexity in science, in which they suggest that it serves “essentially as a placeholder (in a variety of disciplines) for the unknown.”

One botanist expressed the diverse reasons conservation is important to him when describing his research on the local adaptations of seeds of a crop wild relative:

It is important because it is useful, it is important because of morality [...], it is important because we can understand what humans are as well [...] by protecting biodiversity and traditional ways, you know, and of course conservation, finally, [is about] if—whether—it is possible to develop a new society more coevolved with the planet (interview, May 29th 2013).

For him, research into the potential of the plant resources at the bank was not about exploitation or anthropocentric harnessing of nature’s services. It was about working towards a better understanding of how the world works; the role that everything performs within the interactions that shape the world and the potential creation of more sustainable relationships upon this new understanding of human-plant relations as a consequence.

This complexity of ideas was also illustrated by a project coordinator who, when describing what the concept of use meant for her project, confessed that it varied widely “depending on who you are speaking to” (interview, May 20th 2013). Keeping the term open and malleable in this way was a common occurrence,

and many conservationists with whom I worked were eager to explain why a wild plant was important by couching the value in terms of its potential, and as yet undetermined, uses. The attitude of the former MSBP director demonstrates this powerful ambiguity in his assertion that “plants may well be useful to us in unknown ways” (Fry et al. 2011:13). The examples above raise the question: if all plants are useful, and if this use can exist in unknown ways, what does it in fact mean to say that a plant is useful? In many regards it seems that the concept of “use” within the MSBP has taken on the role of a “placeholder” for an unknown, or as yet unidentified, but vital interaction (Proctor and Larson 2005).

Discussion

Bringing an ethnobiological perspective to the conservation programs at the MSBP challenges the assumption that the concept of “use” implies the portrayal of nature as a service provider (Sullivan 2009). The data suggest instead that use can imply—if perhaps unsatisfactorily—reciprocity, finding better ways to culturally engage with plants and recognition of the invaluable things that plants contribute to the world and our experience of it. Much like the concept of domestication and the growing appreciation of the mutual human and nonhuman interactions that it requires, interpreting “use” as an anthropocentric interaction may obscure more complex relationships and dynamics (Cassidy and Mullin 2004; Hartigan 2015). The perception that human contact corrupts nature and that technology and use are inherently exploitative is not one that resonates in the day-to-day experiences and intentions of the botanists and scientists working at the MSBP, who instead viewed humans as out of balance, but fundamentally part of an entangled and mutually dependent whole.

As Pfaffenberger (1988) outlines, technology marks the process by which humans make and use their worlds, but it is not intrinsically indicative of exploitation; instead it is a social activity and a daily creative process. In Tsing’s (2012:141) innovative research on the harvest of the Matsutake mushroom (*Tricholoma matsutake*) she is careful to remind us that “domination, domestication, and love are deeply entangled” and that the Matsutake constitute a “companion species” within a multispecies community, in which the lives of the harvesters, the consumers, and the forest plants and fungi are entangled. Ingold (2000:69) similarly highlights that there has been a tendency to create a false dichotomy between wildness and domestication, as though it were a choice between avoidance and exploitation. As Donna Haraway (2008:289) argues, knowledge and “use,” even between species, can be about curiosity, respect, and improving encounters, as demonstrated by the familiarity and empathy strived for by the MSBP scientists referred to here (see also Armstrong Oma 2010; Rindos 1984; Rival 2007).

Kopnina (2012b:127) argues that a growing anthropocentric bias in conservation undermines the ability to harness the wisdom of “traditional ontologies of the interdependency of human-nature relationships.” I would point out, however, that the scientists and conservationists with whom I worked at the MSBP are deeply aware of the interdependencies of the natural world in their own—nontraditional—way, and are actively seeking an intimacy and depth of knowledge with

the seeds and plants with which they work. Focusing analytically on linguistic and structural distance with nature in western contexts, in contrast to a more holistic ethnographic approach to non-western relationships with nature, therefore, is both methodologically asymmetrical and fails to do justice to a common human understanding and experience of nature (Bloch 1998; Carrier 2003; Nabhan et al. 2011). It would seem logical that for those who call for an ontological shift in western relations with the environment there is an implicit assumption that an underlying, interconnected human experience of nature can be tapped into and harnessed in order to foster more ecologically sustainable ways of life (e.g., Scott 2013:864; Sullivan 2009; Turner and Berkes 2006). If this is so and there is no distinct line to be drawn between traditional and non-traditional experiences of the environment, then our approach to studying the two must be comparable. As I have endeavored to demonstrate here, the sense of empathy and interdependence, the aspiration to learn from the plants, and the desire to share this knowledge with a wider public through encouraging closer relationships (via horticulture for example) at the MSBP resonates with many non-western environmental practices and a model of “managing relations rather than resources” (Wyndham 2009:280; see also Ingold 2000:61–76).

If the language of utility is detrimental or indicative of an impoverished relationship with nature, then the translation of conservation values into these terms does need to be seriously revised (Sullivan 2009). The long history of the conversion of valued relationships with nature into utilitarian and economic terms (Grove 1992), as many have argued, seems to fail to bring about the kind of radical change that global environmental care requires (Brockington and Duffy 2010; Büscher et al. 2012; Kopnina 2012b). Yet subsuming conservationists within the rhetorical framework they project without taking seriously their personal values, beliefs, and ontological frameworks overlooks an important arena in which arguably ethnobiology is best poised to help (Hunn 2014; Nabhan et al. 2011; Wolverton et al. 2014). Ethnobiological insight into shared human experience and access to empathic and holistic ontological frameworks may be a fundamental tool in devising a more effective translation of values and nurturing the alternative—yet still western—model of relationships desired.

New Relations and Novel Utility

The awareness among those working within the MSBP that many of the species they work with face the threat of extinction without their intervention creates a sense of what van Doreen (2014:loc.153) refers to as a need to “hold open space in the world for other living beings.” Scholars within the emerging school of multi-species ethnography argue that the loss of species in this age of extinctions is more than the loss of ecosystem functions, historical trajectories, and complex ecological interactions; it is a loss of ways-of-being, both human and non-human (Hartigan 2015; Kohn 2013; Lestel 2013; Smith 2013). This anxiety over the loss of ways-of-knowing and ways-of-being is a concern shared by many social science scholars involved in the study of conservation who have spoken out on the importance of hearing, celebrating, and incorporating diverse ways of knowing nature into conservation practice (Milton 1996; Nabhan et al. 2011; Wolverton et al.

2014). Critical engagement in this area has raised the concern that centralized and globalized conservation networks disseminate constructed hegemonic discourses that may lead to a homogenization of values. This, in turn, causes loss of the cultural diversity that is a vital part of ensuring the evolution and resilience of environmental relations through the imminent challenges the world faces (Brosius 2006; Sullivan 2009). This cycle of loss, as Bowker (2000:645) highlights, can only be broken if the knowledge that we gather and harness is “as rich ontologically as the social and natural worlds they map.”

In this paper, I have exhibited how embracing ontological diversity in this time of intentional and unintentional global change requires the appreciation not just of diverse, traditional ecological ontologies, but also of nascent ontologies such as of those involved in the forging of new botanical uses in contexts such as the MSBP. This paper has argued that the seed conservationists’ investment in the search for novel relations and new ways of interacting with the wild plants with which they work challenges the notion that use necessarily dictates a stark commodification or the impoverished translation of a rich entangled world into an objectified utilitarian one. Instead, use—as ethnobiologists can attest—can relate to deep and meaningful relationships, and enhancing knowledge can be about understanding the other for mutual benefit rather than for control. Remembering this is crucial at a time when we need to learn how to hold open space for the others with whom we share the world and maintain relationships with them that we may not even have realized we had.

Conclusion

The research presented here challenges the assumption that utility affiliated contact in conservation commands a distinct anthropocentric rationale thereby implying an exploitation of a pristine nature. The scientists at the MSBP demonstrated a view of the conservation of plants that conjured up a holistic community of users, in which the beneficiaries of the conservation were “not only human generation[s], but generations of all organisms including plants themselves” (email exchange with MSBP partner, June 20th 2013). By framing plant conservation within the remit of use it is possible that, as some scholars fear, everything that nature is, and does, is understood as valuable because of the service it provides for humanity, undermining a more ecocentric, altruistic relationship with nature deemed by some to be more ethically sound, diverse, and sustainable (Callicott 1989).

This is important to note because an unbounded concept of use may support fears of scholars, such as Sullivan (2009, 2012), who caution that nature is becoming portrayed and understood as a “service provider” (see also Richter and Redford 1999) in a context where “ontologies of ecology are being replaced by those of natural capital” (Fairhead et al. 2012:254). Use could be interpreted as the epitome of an anthropocentric model for conservation, and as Kopnina (2012b) outlines, as conservation advances the incentives and means to design solutions, framing this within an anthropocentric rationale increasingly means that these solutions will be steered only by humanity’s interest (and those of a specific western model of humanity), rather than embracing broader relationships and purposes within the world (Davidson-Hunt et al. 2012; Turner and Berkes 2006).

The concept of use within this debate, however, is often under evaluated. For example, although Richter and Redford's (1999) paper *Conservation of Biodiversity in a World of Use* discusses how different degrees and types of human use may relate to conservation, exactly what constitutes use itself remains unclear within their paper, apparently implying that all human interaction is akin to consumption and exploitation imposed upon a pristine nature. This interpretation of the term tallies with Castree's (2003:273) observation that often in critiques of the "commodification of nature," the concept of commodification is poorly defined and under-investigated. Use, when framed within a western context at least, automatically becomes a dirty word, implying an impoverished relationship with nature (see Lestel 2013). Conversely, as Anna Tsing's (2013:37) work on the trade of Matsutake mushrooms illustrates, the realm of commodities need not be deterministic, and in fact things may "wander in and out of capitalist commodity status," taking positions back in social, personal relationships at other points in time.

In the MSBP's book, *The Last Great Plant Hunt*, they quote Aldo Leopold's vision "that humans should view the natural world as a community to which we all belong" (Fry et al. 2011:179). This sentiment, of forming part of "the system," as several MSBP biologists referred to it, was a common thread within my fieldwork conversations and interviews with conservationists about why they believed humans needed to conserve wild plants (see Rozzi 1999; Taylor 2011). Holistic perceptions, such as these of a "community" and "system," chime with McAfee and Shapiro's (2010:580) assertion that the abstract ideal of commodification cannot, in fact, ever fully be realized on the ground because the separation between humans and the environment does not, and cannot, exist in practice. This sentiment—that it is not physically possible for humans to act as anything other than intrinsically integrated into the environment—was taken for granted by many of the scientists within the research presented here, and viewing the concept of use within this ontological context demands us to revise the assumption that use has inherently anthropocentric implications.

Fears that an emphasis on utility in conservation discourse may obscure other ways of knowing and valuing nature may fail to do justice to the plurality that the idea of use can, in fact, encompass. Veronica Strang (2009) argues that even within the concepts of resource and ownership there lie other potential interpretations of the relationships established: that of incorporation and imaginative extension for example. Within ethnobiology, it is not uncommon to view and interpret traditional uses in ecological relationships as socially, morally engaged and holistic interactions with the natural world, and that "conservation in indigenous thought and practice does not preclude use" (Turner and Berkes 2006:497; see also Kopnina 2012a; Rappaport 1967; Reichell-Dolmatoff 1976). In non-western contexts, these (simultaneously utilitarian) interactions are granted the status of social relationships because their ontological context positions them within "a single, continuous field of relationships" (Ingold 2000:87). Yet, as Ingold (2000:312–322) discusses, within the context of capitalism and western cultures use has come to be interpreted as synonymous with objectification and exploitation; perhaps it is time we broaden these analytical horizons.

Acknowledgements

The researcher would like to acknowledge, with thanks, the support and collaboration of the Royal Botanic Gardens, Kew and the Millennium Seed Bank Partnership, especially those based at Wakehurst Place and involved with the seed conservation projects at the National Botanical Gardens of Georgia and the Institute of Botany, Ilia State University, Tbilisi, the Seeds of Success network in the USA, the Mid-Atlantic Regional Seed Bank, and Rancho Santa Ana Botanical Garden.

This research is made possible by funding granted by the Economics and Social Research Council, UK. Studentship Award Number: ES/J500148/1 W86850C.

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