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CONSTRUCTING NATURE: ART, CONSERVATION, AND APPLIED ZOOARCHAEOLOGY

Megan Joyce

In order to fully understand the importance of responsible environmental management, it is necessary to understand the historical precedents for the visualization of nature and how that aesthetic impacts the way in which environmental policy decisions are made. There are established visual types that feed Western society's perception of what the natural world is, its 'inherent' meaning, and how we should interact with the physical space that is associated with the word 'nature.' This paper examines these cultural types and contrasts them with applied zooarchaeology. By examining the impact the visual aesthetic of the natural world has on socio-cultural interactions with nature, environmental policy makers can come to new understandings of how culturally prescribed definitions affect the way in which society interacts with the environment. Recent decisions concerning the management of wildlife in and around Yellowstone National Park provide an example of idealized cultural perception of the so-called natural world, the socio-political aesthetic that impacts how we treat and react to the environment. The effective application of paleozoological data in determining species composition for management of the YNP can provide an understanding of environment apart from its value system and change the way in which conservation is shaped and focused.

Key words: *visual aesthetics, nature, applied zooarchaeology, environmental management, Yellowstone National Park*

Pour bien saisir l'importance d'une gérance responsable de l'environnement, il faut comprendre les précédents historiques de la représentation visuelle de la nature, ainsi que l'impact que cette esthétique visuelle a sur la prise des décisions de politique environnementale. Il existe des types visuels bien établis qui sont à la base de la perception par la société occidentale du monde naturel, de son sens "inhérent," et de la manière dont nous devons interagir avec l'espace physique associé au terme "nature." Cet article examine ces types culturels et les met en contraste avec la zooarchéologie appliquée. En examinant l'impact que la vision esthétique du monde naturel a sur les interactions socioculturelles avec la nature, les responsables de la politique environnementale pourront arriver à une nouvelle compréhension de la façon dont les définitions prescrites par la culture influencent l'interaction d'une société avec son environnement. Les décisions récentes concernant la gérance de la faune dans le parc national de Yellowstone et ses environs nous apportent un exemple de la perception culturelle idéalisée du monde dit "naturel," ainsi que de l'esthétique sociopolitique qui influence notre façon de traiter et de réagir à l'environnement. Dans la gérance de ce parc, l'application efficace de données paléozoologiques servant à déterminer la composition des espèces peut apporter une compréhension de l'environnement distincte de son système de valeurs, et un changement dans l'élaboration et la mise au point des techniques de protection de l'environnement.

A child said, What is the grass?
Fetching it to me with full hands;
How could I answer the child?
I do not know what it is any more than he.

— Walt Whitman *Leaves of Grass*

Walt Whitman published the collection of poems *Leaves of Grass* in 1855 in the middle of the Romantic and Transcendental movements. This period marks the beginning of a cultural attitude towards nature that emphasized it as a place

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so different from the urbane experience of the city that one might transcend their present condition and find true enlightenment in a space that was 'separate' from the human experience (Mitchell 2002). This poem illustrates the notion, central to this paper, that we, society or humanity, cannot say with absolute certainty what the environment is because it is embedded in the development of our cultural constructions. This history feeds our understanding of the thing we term 'nature' or the 'environment.' The concept of environment and its definition are affected by the debate as to what constitutes the natural world and how that world should be managed. Conservation biology is an area of study and practice that promotes the preservation of biotic communities and ecological diversity: it is a "mission driven" discipline (Frankel and Soulé 1981; Meine et al. 2005). The methodology used by conservation biologists, scientists and environmental managers to evaluate ecological policies and practices is open for discussion: one must ask how the agency of each group determines policy decisions. Concepts such as nature, humanity and environment are laden with culturally prescribed meanings that affect human interaction with the so-called natural world (Frazier 2010; Rolston 1988), and more specifically government decisions regarding environmental management (Head et al. 2005; Sandbrook et al. 2010). Biologists, ecologists and other entities that have a vested interest in the preservation of biodiversity are becoming increasingly aware of the historical precedents and cultural meanings that shape environmental policy. The historical, visual representation of nature, illustrated in European landscape painting and photography, has established an aesthetic through which contemporary Western culture perceives the environment. The aesthetic, cultivated by the use of landscape in art, established a visual tool wherein landscape is utilized as an expression of personal, political and economic power. It is the socio-political ideology behind landscape art rather than its physical manifestation—the why and the how of its creation—that establishes a system of power and creates nature as other. This same aesthetic can be seen in other forms of cultural expression such as literature, theater, and folk stories. This aesthetic has colored our perception of the environment, what it is, how it is defined and how it should be managed in order to sustain a viable ecosystem.

We need a new framework for evaluating environmental decisions and to separate ecological practice from the aesthetic construction and perception of the environment because our vision of nature changes through time based on our system of values and these values may not be based on the best scientific evidence. This framework should recognize the impact cultural values have had on conservation and should distance environmental management from values that have informed concepts like nature, landscape, and pristine. The examination of change in biological communities and populations over deep temporal periods can reveal that conservation targets are embedded in contemporary value systems. Paleozoology, the study of both the zooarchaeological and paleontological records, examines faunal interactions from a deep temporal perspective, i.e. the use of data over long temporal periods to establish benchmarks that reflect biological change over time (Lyman 2006). Applied zooarchaeology can be useful for conservation biology and environmental

management (Lyman 1996; Wolverton and Lyman 2012) by providing both time depth and an emphasis on the diachronic evolution of ecosystems.

In this paper, I examine the visual and aesthetic construct of nature and its representation in landscape painting and photography—a lens through which the cultural, economic and political values embedded in nature are evaluated by society and conservation biology today. I utilize an example of the application of paleozoological data to conservation practices in an attempt to subvert the cultural idealization of nature. How society creates the visual aesthetics and values that shaped the history of landscape continues to express our perceptions of the environment. The cultural history of nature and how it affects conservation decisions can be seen in the modern Greater Yellowstone Ecosystem today. Yellowstone is a physical place and an idealized aesthetic; a case study that uses zooarchaeological data to explore the conservation decisions made regarding the gray wolf (*Canis lupus*) highlights both.

Environmental conservation is a hot button topic in today's political, academic, and private arenas. How the world should handle the issues surrounding conservation efforts and environmental changes elicits diverse responses from varying groups, ranging from passionate defense of the world's ecosystems, to political outrage over various levels of environmental neglect. None of these dialectics provides any real answers as to why society at large is facing these dilemmas, and why various entities cannot come to an agreement as to how the environment should be managed. An examination of the complex issues that contribute to our understanding of the environment is essential.

Creating Meaning: Nature as Cultural Construct

How conservationists and society at large understand and conceive of nature rests in its aesthetic value (Callicott 1989; Rolston 1988; Rozzi 1999). The process through which ecological judgments are made is one that has its basis not in scientific evidence or methodology, but in the cultural constructs that form nature's meaning (Head et al. 2005). For the purposes of this paper the terms landscape, wilderness, and nature can be used interchangeably because they refer to that larger ideological whole that constitutes the definition of the human/nature binary, and more specifically to Western cultural values of, and attitudes towards, the perceived natural world. The word landscape implies an aesthetic that is thought to be intrinsic, but through which ideas and qualities are projected onto nature. Another pervasive concept is that of a 'pristine' environment—the notion that there is an ideal untouched wilderness, not tainted by people. This notion is frequently used to suggest that a single ideal ecosystem existed at a particular point in time and that if we return the environment to its condition then, we will have achieved the 'right' or 'best' system. This ethnocentric Western notion is fraught with problems as it ignores the dynamic nature of the evolution of ecosystems and, in the New World, often the impact of indigenous people prior to the arrival of Europeans.

If terms such as nature and landscape could be removed from their culturally prescribed meanings, perhaps ecologists could step away from the value system that dictates their judgments. W.J.T. Mitchell most clearly articulates how

aesthetics and socio-political ideology impact the visual aspect of landscape. His work on landscape as an agent of cultural power can be used as a starting point for the reclassification of nature as a system of meaning rather than an entity containing any singular or essential quality. In *Landscape and Power*, Mitchell (2002:5) presents nine theses for considering, defining and viewing landscape; the six most prominent ideas that I examine within the context of this paper are as follows:

1. Landscape is not a genre of art but a medium.
2. Landscape is a medium of exchange between the human and the natural, the self and the other. As such, it is like money: good for nothing in itself, but expressive of a potentially limitless reserve of value.
3. Like money, landscape is a social hieroglyph that conceals the actual basis of its value. It does so by naturalizing its conventions and conventionalizing its nature.
4. Landscape is a natural scene mediated by culture. It is both a represented and a presented space, both a signifier and a signified, both a frame and what a frame contains, both a real place and its simulacrum, both a package and a commodity inside the package.
5. Landscape is a medium found in all cultures.
6. Landscape is a particular historical formation associated with European imperialism.

Landscape is a formed cultural ideal that operates within the parameters of Mitchell's theses. It is formed through modernity and conceptualized in terms of harsh categorizations through which culture has attempted to subordinate that which can be conceived of as other/foreign. The landscape concept is not an inherently Western ideology; for, as Mitchell outlines in his theses, landscape is found in all cultures. Yet it is through Western Imperialism and its relationship to capitalist consumerism that landscape and nature have been imbued with a meaning that constructs the *idea* of the natural world (Mitchell 2002). That is, 'nature,' as it is generally thought of, is established as something other than human (Grove 1995, Mitchell 2002); thereby insinuating that all human interaction with the environment is unnatural and destructive to the integrity of the ecosystem. Nature is presupposed as a separate entity that reflects nature/landscape in relation to its dual role as production/commodity (Halsey 2006). These strident categories and definitions establish nature as something that functions beyond the scope of the human existence. The linguistic frame works in tandem with the visual to establish nature and landscape as systems of representation (Halsey 2006). Nowhere is this more clearly seen than in landscape painting.

The landscape painting invites the viewer in and emphasizes the construction of landscape as the other—a non-human entity. This is the background of humanity's relationship with the world. It is a mistake to reduce the entire history and meaning of nature to a singular set of finite rules and definitions as the structure of modernity dictates. The idea of nature rests within the basis of modernity; an idea that is constructed through simplistic definitions that emphasize "tendentious suppositions" that reiterate landscape/nature as "visual" and that which is "distant" thereby distancing the human experience from the "natural" world (Berleant 1992:5).

Aesthetics and Nature through the Modern Lens

The first step to forging a new understanding of human impact on the environment, and bridging that distance, is to understand humanity's relationship with the environment by examining the foundation of modernity dating back to the Renaissance. Here, modernity does not refer to the Modernist movement of the early 20th century or the aesthetic style: it denotes the philosophical, scientific, and sociological processes through which humanity came to exist and function as a rational, conscious entity. It is a concept by which existence is dictated; modernity—insofar as it applies to the Westernized worldview—is a template in which all things, in particular humanity, are represented or *re*presented as universal, i.e., it is the attempt to make things known and quantifiable (Halsey 2006). Contemporary Western cultural attitudes towards nature have their roots in humanism and the emerging capitalism of 16th-century Italy.

Renaissance humanism marked an intellectual shift from a strictly religious modality to a renewed emphasis on science and the observation of natural phenomena—essentially a rebirth of the intellectual inquiry of classical antiquity. Because of this shift, society was no longer entirely dependent on religious doctrine to dictate its course. Instead, humanists developed ideologies of expression that were individualistic and rational (Cosgrove 1998). Such ideologies can be termed 'modern,' and to a great extent are the tenets underlying the thought processes of contemporary Western society. In short, this rebirth of classical antiquity forms the foundation of our modernity. Modernity has metamorphosed from a human-centric view during the Renaissance to incorporate the theories of Galileo (Man as peripheral force), transcendentalism, existentialism, the development of the sciences in the 19th century and the theory of evolution and the contributions of Charles Darwin. It is this transition of thought that cemented landscape and nature's role in modernity. The role of Humanism in the formation of ecology as a science is made evident through the portrayal of landscape in 16th-century Italian art and culture.

Modernity established a way of thinking that emphasized finite and immovable parameters for the way in which society and culture make sense of the world. Through the establishment of classificatory binaries, modernity created nature as separate and divergent from the human experience. The active superiority of modernity in the Euro-American sphere led to what Halsey (2006:250) has called the "rush to colonise, proselytise, and hypostatise earth." In effect modernity is the driving "urge to subdue and make Nature known through the scientific method and the structures of modernity more generally" (Halsey 2006:250). Thus it is the condition of society's modernity that has resulted in the distance between humanity and the environment—distance that is a product of an established cultural tradition that continuously creates nature's meaning. The process can be seen pictorially through the stylistic development of landscape painting and later, photography.

The development of poststructuralist and postmodern thought, 150 years later, attempts to counter the effects of binary dichotomies resulting from

modernity. Poststructuralism emerged in the 1960s from literary critics and theorists such as Jacques Lacan, Michel Foucault, Roland Barthes and Gilles Deleuze, to name a few (Best and Kellner 1991; Sarup 1993). As a philosophic ideology, poststructuralism subverts the set binary oppositions of modern discourse—the idea that signifiers such as man/woman, human/nature, material/discourse exist in direct opposition to one another. For example, Deleuze, using the concept of multiplicity, developed a lexical system that attempts to break free from binary thinking (Halsey 2006). He asserts that the meaning and definition of varying elements of existence are not inherently definable. That is, the definitions by which society operates in order to categorize and quantify existence are not set, and they change despite our unwillingness for them to do so. According to him, a multiplicity is “defined not by its elements, nor by a center of unification of comprehension. The ‘meaning’ of nature and how we look at it evolves as well, the step conservation should take is recognizing that meaning, nature, definitions—all of these things are in a state of constant evolution” (Deleuze and Guattari 1996:249). The concept of nature, for example, is neither inherently definable nor static in its meaning. It is capable of multiple levels of meaning and definition, and when applying Deleuze’s theories, does not exist solely as a result of its supposed opposite, humanity.

Defining nature as a separate entity that exists in opposition to humanity can only limit our relationship with it because it halts our ability to recognize that the environment operates in terms of change. To better relate to nature, especially from the perspective of environmental management, it is necessary to subvert this binary separation of humanity from nature (*sensu* Rozzi 1999; Rozzi et al. 2006). However, this is difficult. Rozzi argues that one can break the binary opposition via direct experience of the natural world, but, as discussed here, societal views regarding nature are deeply entrenched in the epistemological foundations of modernity. If ecology as a discipline is to break free of this worldview, a new definition of nature must be developed.

Art as Cultural Construct

Landscape is defined, objectified, commodified and co-opted by culture. Modernity endeavors to replace ignorance and irrationality with access to knowledge and certainty, which led to a corollary development in the way society and the individual perceived and interacted with the natural world. This is clearly seen in landscape painting. Landscape paintings invite the viewer in and emphasize the construction of landscape as the other—a non-human entity; the background of humanity’s relationship with the world.

Aesthetics affect how we perceive and treat nature, and consequently influence the methodology of conservation biology. The aesthetic of nature is a product of distance; in essence it is the “practice of creating an environment” that has made visible and formative the unattainable concept of nature (Morton 2007:24). You can start to see this reflected in visual art in early Italian renaissance painting. By the 16th century, Italy underwent a vast transformation from a feudal economy to capitalism. Land ownership began to play a significant role in social status as humanists came to believe in a division between humans and



Figure 1. Titian, (Tiziano Vecellio) (c. 1488–1575), (or Giorgione). *Concert in the Open Air*, Oil on canvas, 105 × 136.5 cm, Louvre, Paris, France. Photo by Erich Lessing / Art Resource, NY.

nature, and the city and the countryside (Cosgrove 1998). This division can be seen in the representation of landscape in Titian's painting *Concert in the Open Air* (or *The Pastoral Symphony*; Figure 1).

This painting represents nature as beautiful and ordered. The contrast between the foreground figures and the rolling countryside highlights the human/nature binary and the cultivation of wilderness as an ordered place where society's elite were free to pursue relaxation and pleasure apart from the structured arena of the cosmopolitan city state. In this painting we see society's separation from nature; as individual wealth grew, and as the social structure of rural cities such as Florence and Venice morphed into independent city-states, nature became a commodity reflective of social stature and something in opposition to civilization, to be controlled and dominated. Titian's painting portrays nature as a place where social meaning could be exercised via control of the environment. The landscape is a world unto itself, and a space onto which society places meaning and significance beyond any inherent qualities that it may or may not possess (Mitchell 2002). Titian's pastoral scene is one of many Renaissance paintings that portray a dichotomous relationship between humanity and nature. This dichotomy becomes more explicit in later European landscape painting, in particular British landscapes, but the example of Titian's work and the emerging cultural use of the countryside as a place to for the aristocracy to take refuge from the urban sphere begins to become apparent.



Figure 2. Thomas Gainsborough (1727–1788). *Mr. and Mrs. Andrews*, about 1750, Oil on canvas, 69.8 × 119.4 cm. Bought with contributions from the Pilgrim Trust, The Art Fund, Associated Television Ltd, and Mr. and Mrs. W. W. Spooner, 1960. National Gallery, London, England. © National Gallery, London, Great Britain / Art Resource, NY.

Take, for example, the painting *Mr. and Mrs. Andrews* (Figure 2) by Thomas Gainsborough, an 18th-century British landscape painter and portraitist. From a formal standpoint, it is compositionally unusual for the period. The standard configuration for portraiture situates the subject in the center of the picture plane. Here the subjects are placed off center, but their dress and stature depict a prominent social status suggestive of wealthy landowners—the English nobility. Here the social status and power of Mr. and Mrs. Andrews are communicated in part through their place within the ordered and pristine landscape they possess and inhabit (Berger et al. 1977). Nature is a commodity, and this portrayal of land under their control is used to establish their position within the British social hierarchy: vis-à-vis their place over the land that is subordinate to their control. This example shows how the subordination of nature to cultural meaning is transferable through images, and signs; and is indicative of a pictorial structure that sets the stage for the persistence of the human/nature binary of modern thought. Landscape, as a medium, constructs a relationship of power and subordination that distances society, culture, and humanity, intellectually from the natural world. This meaning of nature is derived from its history as a product of its status as socio-cultural commodity.

The 19th Century: Painting, Photography and Commodity

The impact of modernity on the conceptions of nature continues in 19th-century landscape painting and photography. Here, art shapes the discourse of the natural. The concept of the picturesque was developed in the context of the

autonomous individual and the theory of capitalism (Gibson 1989). The aesthetic of the picturesque presupposes the beauty of nature and places the viewer/voyeur in front of a “protective” frame that looks out onto the natural world. (Mitchell 2002). According to Mitchell, the viewer is placed in a refuge outside of the frame, through which he/she views the scene itself. The frame to which Mitchell refers, acts to structure the viewers’ field of vision. The frame structures the viewers’ field of vision and is there to “guarantee that it is only a picture, only *picturesque*, and the observer is safe in another place—outside the frame... in the dark refuge of the skull” (Mitchell 2002:16). In landscape painting the viewer exercises her/his power over the image, projecting onto it the idea of nature as a controlled space. The perception of landscape as a benign/controllable space promotes a neutral attitude towards nature; in a sense, it is that aesthetic perception that stops us from destroying nature, but only temporarily (Morton 2007:25).

If painting further separated humans from nature through the aesthetic of the picturesque, then photography was the proverbial tour de force of the human/nature dichotomy. Invented in 1839, photography is a scientific process that was at first seen only as a means for recording information, not as a method of expression. As photographers sought to elevate photography to the status of art, they required a methodology through which they could convey meaning through their photographs to their audiences. Photography allowed science and art to intersect in a medium that concealed the artifice of its method and the presence of its meaning through its pretense of truth (Rosenblum 1997). Because of this, photography and its process were ideally suited to landscape as both genre and medium. First, this was because early photography required a long exposure time in order to attain a clear image. Second, and perhaps more significantly, the concept of landscape was adapted to photography because it was an artistic genre that already had a visual language within which it could operate—the picturesque landscape aesthetic. In addition to the pictorial precedent of the picturesque and landscape that photography utilized, it assumed a significant role in the further commodification of nature.

Samuel Bourne’s photography illustrates this point. Bourne was an English photographer who traveled to India to attain “rarified spectacles” of the Indian landscape, people, and culture as he, an agent of British imperialism, saw it (Rosenblum 1997:122). He conceived of these spectacles through the visual language of the picturesque. Photography purports to reveal truth by nature of the photographic process’s indexicality—that the photograph as an object must be ‘accurate’ because it is an image of something that has a physical presence. Bourne, like many of his contemporaries, sold his photographs to tourists and Oriental enthusiasts back in England. By presenting photographs as ‘accurate’ representations and by offering these images up as commodities photography further removes civilization from the natural world because it reflects social value and reinforces the idea that nature is something that can be owned, parceled out. The landscape became something that could be easily bought or sold, and possessed; photograph in hand, a collector now owned a bonafide piece of nature. However, Bourne’s images are entirely constructed. In the photograph *The Village of Sungham, with the Hungoung Pass Above* (Figure 3), a mountain pass



Figure 3. Samuel Bourne, Untitled (Village of Sungnam, Hungrung Pass, Himachal Pradesh, India), Albumen silver print, 1866, Harvard Art Museums/Fogg Museum, Gift of Mrs. R. Minturn Sedgwick in memory of R. Minturn Sedgwick, Class of 1921, P1981.107. Photo: Imaging Department © President and Fellows of Harvard College.

curves and leads into a village precariously situated on the side of the mountain. Framing the image is an ideally placed tree, which upon further examination one can see has been cut to pieces in order to draw attention to the village, and the intersecting lines of the mountain. The important thing to note is the modification of the landscape to better capture in the photograph the situation of the village on the mountainside for compositional purposes, while still leading the viewer to see the scene as ‘natural,’ untouched, and without modification. The photograph is a constructed image, as is a painting, but photography’s indexical quality—that the photograph of the village/mountainside/tree exists because those things were there to be photographed—plays into the idea that visual aesthetics have, and continue, to play a role in how the environment is perceived. This intentional alteration of the landscape to obtain a visual effect exemplifies Bourne’s use of the picturesque aesthetic to achieve the desired result.

The reality/truth that is presupposed in photography can be related to the reality/truth that is presupposed in the natural world: it is a vessel into which culture pours immense significance and meaning, but is on its own potentially value-less (Mitchell 2002). Through its aesthetic construct as both a represented

and physical space, "landscape conceals its own artifice," as does photography, which has hidden the intent of the photographic image behind what the image conveys as some essential truth or reality—an artifice that is at times ignored with the utilization of photography in the name of science (Mitchell 2002:16). Landscape, reiterated in the gaze of the painting or photograph, continually repeats that process of image making and propagates a continual cycle of meaning, a simulacrum that continuously reinforces the idea that nature/landscape/environment is separate from the human condition and that we exist in contrast to it.

Science and the Visual

Photography's authority as a signifier of some essential truth or reality lent itself to the descriptive and evidentiary aspect of developing fields of science, and was used to support scientific inquiry. Photography was able to make visible that which could not be seen with the naked eye (Tucker 2005). It was capable of "mechanical objectivity" since photography was itself a scientific process of chemical interactions (Tucker 2005:7). Consequently, it was used as a virtual witness of scientific phenomena; geology, astronomy, and anthropology were a few of the fields that this process of representation helped to illustrate. Scientific photography established, between the scientist and the public, a transmission of emerging theory and ideology by illustrating, through visual language, supposedly objective renderings of empirical data (Tucker 2005). Photography would not have had as strong an influence over the ideology of the natural aesthetic without the support of text in scientific books and articles (Tucker 2005). The interpenetration of image and text further solidified photography's role in making visible that which could previously only be rendered via the artist's hand, but the relationship between image and text is not unique to photography. Throughout the history of art, images have been interpreted by text, but the frequent use of photography in the presentation of scientific information, precisely because it is assumed to give an objective reality, makes the combination of text and image particularly potent.

The use of photography as a method for scientific inquiry is highly suspect given the constructed quality of the photograph. In supposedly objective, scientific images photographers represent the natural world or more aptly, the appearance and idea of the natural world via its aesthetic and their own personal perceptions. This is not to say that all photographs taken in the name of creating scientific knowledge are invalid, but it is important to illuminate photography's own constructed visual language that operated through its status as Truth. The visual imagery used in science suppresses its own "aesthetic signs of 'style'" in the evaluation of the natural world from a supposed objective scientific point of view because although such drawings or photographs are visual representations of the natural world, they are still constructs presented from specific points of view (Mitchell 2002).

Nature is understood through a culturally appointed interpretation of meaning. It represents a cyclical system constructed first in an aesthetic form; the initial concept of differentiation between human and nature. Secondly, it is

constructed and reaffirmed through the perception of that aesthetic. Lastly, nature is realized via its physical reality, its representation and *representation* as a space/place that is imbued with cultural conventions and stereotypes (Mitchell 2002). This cultural model is what ecological philosophy terms the "circular interpretation" and conflation of culture and the natural (Rozzi 1999:915). If, as Rozzi asserts, scientists cannot depart from this worldview steeped in modernity, then ecological science will be "trapped in its forms of representation and, therefore in its forms of relationship" (Rozzi 1999:915). Humanity's relationship with the natural is mitigated by the cultural construction of nature; in order to effectively remove ourselves from its "representation," a new view point must be established.

Applied Zooarchaeology

What does the examination of the aesthetic formation of nature/landscape have to do with the study of the zooarchaeology and its cousin discipline, paleontology, in relation to conservation biology? The way in which humanity has historically constructed nature has deep implications for the ways in which the environment is handled by ecologists and conservationists today. Applied zooarchaeology has the potential to subvert the established human/nature binary construction that influences our perception of nature because the interpretation of zooarchaeological data looks at what has or has not been present in an ecosystem in the past, and can establish if action is needed on the part of a conservationist. According to Lyman and Cannon (2004:5), the concepts that influence the discussion of conservation are "value laden." This value was established through the aesthetic qualities that have been assigned to the discourse of ecology, long before it existed as a branch of science. By identifying these concepts —nature, human, wild, pristine, etc.— as tools that perpetuate the myth of "nature as other," conservation ecology can develop its own discourse to deal with the needs of environmental management separately from nature's social meaning. A shift in the paradigm will move conservation away from politically charged evaluations of nature, which are dependent on social values (Alvard 2002).

Applied zooarchaeology investigates the deep temporal implications of the zooarchaeological and paleontological records, and can help move discussions away from current conceptualizations of nature and pristine by providing long-term diachronic data. These studies allow for a closer inspection of the causes and processes of species extinctions and geological, environmental, and biotic change through an examination of deep time (Grayson 2001), but more importantly for conservation biology is paleozoology's emphasis on the malleability of the natural world. Biotic communities evolve, and wildlife managers should take that into account as they attempt to support biodiversity in the long term (Graham 1988; Landres 1992).

One of the primary goals of conservation is sustainable use (Frazier 2007; Halsey 2006; Lyman 1996; Morton 2007). Conservation biology, the preservation of ecological diversity for the future in perpetuity, is "taken to be a discrete field of knowledge whose foundations for observing, knowing and predicting events

is construed as ontologically consistent as opposed to *politically, historically and socially conditioned* [emphasis added]" (Halsey 2006:245). We often view conservation and the science behind it as something that is absolute and not impacted by its 'political,' 'historical,' and 'social' precedents and this is reflected in the consistent, visual perception of nature. Science, and the "science" behind ecological practice, is given a privileged position through which it asserts its exclusive ability to fully explicate and address the issue of conservation. However, the influence of the myth of nature, derived from its aesthetic/cultural construct prevents conservation from operating in terms of deep time. Instead, there is a tendency in conservation biology to base judgments on short-term information and short-term solutions to issues of environmental management (Frazier 2007, 2010).

That value judgments, which typically color conservation decisions, may be detrimental to an ethical and productive practice of ecology is a wholly valid concern. Applied zooarchaeology looks at what has happened to an ecosystem in the past in hope that such an understanding can provide better—at the very least, better informed—answers as to what should occur for the future of an ecosystem. The problems conservationists face are the result of centuries' worth of aesthetic and cultural values involved in the consideration of the natural world. It is in this manner that "zooarchaeology, as well as paleoethnobotany, clearly has a major role to play in the resolution of those problems" (Lyman 1996:111). The practical application of paleozoological data can be seen in the case of Yellowstone National Park, which I examine as an aesthetically constructed space, a holding tank for vast cultural meaning, and a testing ground for ecological management from a paleozoological perspective.

Yellowstone National Park

Yellowstone National Park (YNP) operates within the concept of landscape as medium according to Mitchell (2002). It is an entirely constructed sphere of social meaning that society instilled with the mythology of the American West, the American Dream, and the myth of landscape/nature. Created by an act of Congress in 1872 in the hopes of protecting the geothermal basins and wildlife of the region, Yellowstone is constantly dealing with the management of its wildlife (e.g., Cannon and Cannon 2004). Important concerns of management within the confines of the park include the reintroduction of locally extirpated species, the affect reintroduction will have on carrying capacity, and the negative impacts reintroduction may have on the park's overall biodiversity. The debate that surrounds these concerns is filled with value-laden judgments as to what constitutes the pristine composition of the YNP. In particular, and most recently, there is the issue of the reintroduction of the gray wolf (*Canis lupus*), which was extirpated in the late 19th century (Cannon and Cannon 2004).

Reintroduction of the gray wolf has faced significant problems in the YNP and the Greater Yellowstone Ecosystem (GYE). Policies supporting the idea of natural regulation sought to refit the park to its ecological state before the creation of its boundaries, including reintroducing the gray wolf (Schullery 2004; Sellars 1997). This proposal was initially met with a public outcry, as cattle ranchers in the GYE were concerned their livestock would be a target for wolf

predation outside of the confines of the park proper (Fischer 1995). Wolves are recorded as historically inhabiting the park; however this information was not enough to incite park management to reintroduce the species to its habitat. A report prepared in 1992 looked at the prehistoric record as evidence for wolf presence/absence in the region (Cannon 1992). Because gray wolf remains were found in 10 prehistoric deposits in the GYE that spanned the past 12,000 years, their presence was found to “[legitimate] the reintroduction of wolves because it indicates that wolves are what the National Park Service... defines as a ‘native species’” (Cannon and Cannon 2004:49). Paleozoological evidence established the continuous presence of wolves as an important predator species in the region since the Late Pleistocene. Paleozoological data provided a non-value laden evaluation of what species have, and could potentially continue to inhabit the geographic space of the GYE. Interestingly the most important argument, made by the opponents of wolf re-introduction, against considering wolves as a non-native species lies in their extirpation from the park and the evolution of the GYE in their absence. In 1995, 14 wolves were released in the park and since then the population has flourished (Cannon and Cannon 2004; Kay 1997; Smith et al. 2003). There are now up to 160 individuals distributed throughout the YNP and the GYE.

It is significant to note the impact the reintroduction of wolves has had on the park’s ecosystem. In particular, their reintroduction has reduced the formally overpopulated elk (*Cervus elaphus*) population, which in turn benefited certain riparian arboreal species, including aspen (*Populus tremuloides* Michx.), willow (*Salix* spp.) and cottonwood (*Populus* spp.) that had been decimated due to elk over-browsing (Beschta 2005). The issue of the park’s elk population is not new. Park management has been considering Yellowstone’s elk problem since at least 1890, when there was concern over the exponential growth of the population (Schullery 2004). In order to understand the effect wolves have had on the elk of YNP it is necessary to examine populations before reintroduction of the wolf, which can be accomplished through the zooarchaeological record. The argument against wolf reintroduction was built upon the historical record, which indicated the presence of wolves was the result of Euro-American expansion that allegedly drove them into the park —implying that wolves were not in fact native to YNP but were a displaced species. This has been disproven; but how does it play into the issue of elk and their numbers? Elk are often said to be overpopulated today due to the lack of Native American hunting traditions within park boundaries. It is argued that elk exploitation via hunting was responsible for the initial scarcity of elk when the first Euro-Americans observed the ecology of the region. According to Charles Kay (1994), if Native Americans hunted elk in proportion to their abundance, the zooarchaeological record should reflect that abundance in the representation of elk killed. However, though represented consistently in the prehistoric record, elk remains are not found in overwhelming numbers associated with archaeological remains. In actuality, sites containing elk remains found in the same period are more likely to be paleontological, lacking human artifacts (Cannon and Cannon 2004; Lyman 2004). While these prehistoric data are not conclusive as to the distribution of elk throughout the GYE, they highlight the usefulness of paleozoological research in conservation science.

The reintroduction of wolves has resulted in dynamic changes in the park ecosystem, and proponents of natural regulation herald reintroduction as a success. While the principles underlying natural regulation have yet to be agreed upon by all parties involved in the environmental management of the park, it is evident that the gray wolf has played a significant role in balancing the elk population of YNP (Bergstrom et al. 2009; Fisher 1995). Elk form the bulk of prey for wolves in the park on a year-round basis (Smith et al. 2003). Predation by wolves has also contributed to the spatial redistribution of elk population within the GYE. According to Mao et al. (2005), part of this redistribution and the change in habitat selection is also attributable to post-fire succession and other environmental factors. During the summer, elk favor relatively closed habitats, in particular burned forest areas where they are able to browse available forage and where wolf predation is inhibited by dense cover (Mao et al. 2005). Wolves avoid such areas because fallen timber is an obstacle for hunting. Changes can also be seen in winter habitat selection by elk. Following wolf reintroduction, elk selected more open habitats in the winter months. Herding strategies have also been observed more frequently among elk in the winter when they inhabit relatively open areas.

Studies demonstrate that composition of elk diet has not changed, but that their new home-range distributions have altered their browsing patterns (Mao et al. 2005). Improvements in aspen and willow biomass have been recorded since wolf reintroduction, which has limited repeated browsing by altering elk distribution patterns within the park (Kay 1997; Romme et al. 1995). Despite these improvements, some park officials are reluctant to link changes in plant communities to changes in the elk population due to wolf predation. This highlights the pervasive role the construct of nature plays in conservation decisions and is due in part to socially prescribed attitudes towards the gray wolf. Wildlife ecologists continually have to deal with the role that is generally prescribed to the wolf—that it is a villain—a result of centuries worth of fairy tales and folk lore that portray it as the antagonist. This is a significant issue especially when dealing with the conflict between ecology and the economic realities of cattle ranching. A recent New York Times article addresses the ongoing struggle between ranchers and environmental activists/organizations by discussing the past tensions that have existed between these two groups. Many of this generation's ranchers grew up in an era when the gray wolf had been extirpated from the regions in and around the YNP and GYE, but grew up hearing stories about the divisive, clever tactics of wolf predation on cattle populations (Kaufman 2011). Landscape aesthetics—photography, landscape painting, and folk stories that steep the perception of nature in cultural values and have little to do with the physical space/species that constructs environment—continue to influence conservation decisions and attitudes towards nature on multiple levels because they reinforce value systems that impact how we view nature.

It should be noted that the protection of the gray wolf by the Endangered Species Act (1973) continues to be controversial. In May of 2011 the U.S. Fish and Wildlife Services removed the gray wolf in the Northern Rocky Mountain Distinct Population Segment from the Federal List of Endangered and

Threatened Wildlife (Doremus and Pagel 2001). This segment encompasses Idaho, Montana, parts of Oregon, Washington and Utah although populations of gray wolves in Wyoming will remain under the protection of the ESA, for now. Montana and Idaho have begun planning public wolf hunts to commence in the fall of 2012, an indicator of the public attitude towards the gray wolf in the area.

Understanding societal attitudes towards the gray wolf is integral to understanding the lack of public concern over their removal from the Endangered and Threatened Species List (Federal Register 2011). The perception of the gray wolf exemplifies the aesthetic ideology that has fed cultural attitudes towards the species, and towards nature in general, imbuing it with social and cultural meaning that it does not inherently possess. It is unlikely that the decision to delist the wolf was undertaken simply because its population appears to have stabilized in recent years. While the numbers may show an increase in population size, the anthropogenic factors that influence their robustness must still be carefully monitored to prevent a new decline in species population (Doremus and Pagel 2001). Ecologists are connected to aesthetic constructions of nature. When they subscribe to nature as an essentialist construct with a fixed definition existing in stasis in an ambiguous moment in time and uncritically make decisions regarding environmental management based on this, their judgments are suspect. The cultural construction of nature will continue to influence our interaction with it if we do not attempt to comprehend it in relation to its cultivated place in our cultural psyche. The next step is to actively acknowledge the influence of aesthetics and the history of image making in regard to Western culture's relationship with its environment, and to utilize new methods, such as applied zooarchaeology, for determining the outcome of ecological practices.

Conclusion

Nature exists as a constructed and represented space into which humanity places its hopes and dreams, myths and legends. As a place that is at once a signifier and a signified, it is imbued with broad sociological meaning that holds a place in the collective psyche as an objectified and commodified 'other' (Mitchell 2002). It is within this context that conservation biology operates. Modernity has made this possible by creating an archetype for how we view, handle and interact with the world around us. The condition of modernity has stipulated that society is continually asserting itself in a position of power over that which it seeks to dominate, in this case the physical or 'natural' realm. As a result, ecologists may make judgments and decisions that attempt to create perpetual ecosystem stasis, a byproduct of the cultural values and issues surrounding the aesthetic concept of nature. We exist in a world that is in perpetual flux, and landscapes transform as our ecological standpoint oscillates between static and shifting boundaries (Graham 1988). Evolution occurs, and belief systems change. Modernity and its structures inhibit the ability for cultural perceptions of nature to evolve, as it demands that the world adhere to the conceptual ideology that things are inherently and absolutely definable. Nature/landscape, human/nature, perception/construction —each of these interwoven

concepts exemplifies the Deleuzian theory of multiplicity. The problem lies in the binary dualism produced by modern thought. Only when we can move past the supposed definition of what landscape is and how it does/should operate will we be able to challenge this dualistic approach to our world, and conceptualize nature apart from its related (constructed) value system. Applied zooarchaeological research represents a step in that direction, insofar as conservation biology is concerned. Through the examination of deep time and zooarchaeological data related to ecological processes, science and culture can move towards a reconciliation of reified ideologies. Zooarchaeology as a discipline offers a perspective that the potential to recognize the value system that restricts the human/nature relationship to one of dominance and control, while it is not the absolute answer to helping us move beyond the idea that nature possesses inherently defined values it is a step in the right direction. The use of zooarchaeological and paleontological data to aid conservation management may circumvent the binary opposition between the two and enable a view of human/nature interaction that takes change into account. We must attempt to subvert modern conceptions of the natural—as determined by the historical creation of landscape via its visual, aesthetic representation—in order to view the world from a perspective that is freed from its aesthetic framework. The value system that is inherent in ecology, what Lyman and others are weary of, can only be defined if the status of nature as construct, as a discourse dealing with cultural meaning, can be identified.

Yellowstone National Park is an excellent example of the use of zooarchaeological data to determine the most effective course of action for re-establishing a viable, sustainable ecosystem because it carries the aesthetically prescribed cultural values of American life. It is represented in art from Thomas Moran to photographers like William Henry Jackson and Ansel Adams, and idealized in the writing of Edward Abbey. It carries with it more than the sum of its parts—Yellowstone is a reservoir for the wide openness of ‘American’ possibility, built on the socio-political hyperbole reinforced by the visual representation of the environment. Conservationists in Yellowstone successfully utilized zooarchaeological data to move beyond cultural values and determine a course of the park’s ecosystem that would help improve biodiversity. As our knowledge of how the environment functions and how our interaction affects its stability zooarchaeology and its application is one factor in altering our value-laden perceptions of what nature is. By continuing to employ new methods to determine ecological/conservation decisions it is possible to move beyond the cultural values that inform the perception of the environment as evidenced in the visual representation of nature in art. The cultural influence over nature/environment will never be completely removed, nor should it as it is a central part of our history and identity, but we must recognize it for what it is and make the effort to develop new tools for conservation efforts.

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