Wildl. Biol. Pract., December 6(2): 127-143
DOI:10.2461/wbp.2010.6.10

DISCUSSION FORUM

How Hunting Strengthens Social awareness of Coupled Human-Natural Systems

M.N. Peterson[1,*], H.P. Hansen[2], M.J. Peterson[3] & T.R. Peterson[2,3]

[1] Fisheries, Wildlife, and Conservation Biology Program, Department of Forestry and Environmental Resources, North Carolina State University, Box 7646, Raleigh, U.S.A., Email: nils_peterson@ncsu.edu

[2] Department of Urban and Rural Development, Swedish University of Agricultural Sciences, Uppsala, Sweden, Email: hans.hansen@slu.se

[3] Department of Wildlife and Fisheries Sciences, Texas A&M University, College Station, U.S.A., Email: mjpeterson@ag.tamu.edu; tarlarai@gmail.com

* Corresponding author: Email: nils_peterson@ncsu.edu; Phone 919-515-7588, Fax 919-515-5110

Keywords
Durkheim;
food production;
hunting;
Marx;
nature;
sustainability.

Abstract

Hunting has the potential to remind modern societies of their reliance on natural systems. As a material and symbolic practice that motivates both hunters and non-hunters to certain actions relative to nature, hunting enables society to experience itself and nature differently than it could if humans no longer hunted. Although hunting may be anachronistic in modern society, certain dimensions of hunting culture may enable society to re-collect a sense of human integration with nature. In this essay, we develop a critical perspective grounded in neo-Marxist and Durkheimian theory to analyze how hunting may contribute to linking humans and nature by rendering the materiality of food production explicit, and how hunting culture strengthens the symbolic meaning of food in ways that are rooted in its materiality. We trace this potential through the practices of searching, killing, processing, and consuming food obtained via hunting. Along the way, we note how technology, both formal and informal social control, and commoditization may constrain hunting's potential to highlight linkages between human and natural systems.

Introduction

The growing alienation between humans and nature may be the most fundamental challenge to sustainability [1-3]. Human wellbeing depends on improving understanding of the connectedness between humans and natural systems and applying that understanding in the policy arena to meet social challenges [4]. The project of modernity, however, has relied on separating humans from nature, so that humans may control nature. Modern society has masked connections between humans and nature in a variety of ways [5]. Capitalism, one of the most important systems of organizing commodity production in the modern era, relies on alienating workers from the products of their own labor. As "one of the founding principles of capitalist modernism (p. 103)" [6], alienation requires separating sites of production from sites of consumption, thus hiding both the natural and human resources used to construct the face of modernity. As Harvey [6] notes, "We can take our daily breakfast without a thought for the myriad people who engaged in its production" (p. 101). As the

materiality of food becomes more invisible, connections with natural processes, such as life and death, fade.

The isolation between society and nature has accelerated in the last several decades with drivers including urbanization, technology [7, 8], and commoditization of nature [9, 10]. Urbanization places physical distance between humans and the material sources of their sustenance in nature. Technology provides artificial substitutes for the material and social relationships previously provided by nature [7, 11]. Finally, a late 20th century wave of privatization and commoditization of everything from land to ideas [12-14] has rendered the social and material relationships involved in producing food largely invisible [15].

Social movements including sustainable and just food [16], alternative trade [15], worker rights [17], animal welfare [18], and 'no child left inside' efforts [11] have attempted to pierce the veil that shrouds production of consumer goods ranging from meat to suburban homes. Despite these efforts, however, modern systems of food production and consumption continue to mask awareness of profound relationships between humans, and natural systems [15, 19].

In this essay, we explore how hunting, as a pre-modern anachronism, may contribute to making society aware of links between human and natural systems by rendering the materiality of food production explicit, and how hunting culture strengthens the symbolic meaning of food in ways that are rooted in natural systems. We begin with a brief summary to contextualize hunting as an anachronism in modern society, particularly as modernity is epitomized in North American (Canada and United States) and Western European contexts. We then explore ways hunting may contribute to linking modern society and food production. Our analysis tracks hunting through the practices of searching, killing, processing, and consuming food. Along the way, we highlight how tensions associated with technology, both formal and informal social control, and commoditization may constrain the potential hunting holds for making linkages between human and natural systems explicit.

Social and political context

As part of the social, cultural, and material transformation of society often referred to as modernity, nature has gradually become objectified and separated from humans. Institutional transformations accompanying industrialization, the scientific and technological revolution, and neoliberal economic systems have given us a nature that is presumed measurable and controllable [5, 20, 21]. According to Marx, the production within capitalist modernity conceals all social relations and re-presents them as relations between material things [9]. Marx labels this phenomenon commodity fetishism. Elling [20] argues that Marx's identification of commodities as the core element of the economy and the real product of labor denotes the central abstraction of modernity. The food we perceive as real, therefore, is that which magically appears before us—flavorful, colorful, nutritious, and devoid of connection with labor.

Hunting provides an opportunity to link modern humans with natural systems through their food, and is a global phenomenon to which nearly every human culture can trace its roots [22]. Here, we focus on Western European and North American contexts[1]. These regions include modern nations where hunting is a culturally

important activity associated with food production for millions of participants with diverse socio-economic backgrounds [23-25].

In 2007, Ireland topped the European nations in terms of hunting participation with 9% of the population participating [26]. In Nordic countries, about 4% of the total population hunts. France (2.1%), Spain (2.3%), Portugal (2.3%), and Greece (2.7%) also host large hunting populations. Less than 2% of the population hunts in most of the remaining European nations including Germany (0.4%). In the United States, there are approximately 12.5 million hunters, constituting ~4% of the total population [27], and 5.1% of Canadians hunt (1996 national survey Importance of Nature to Canadians; http://www.ec.gc.ca/nature). The significance of these numbers should be interpreted within the demographic profile of each nation. In Denmark, for example, although only 3.3% of the population hunts, that number translates into greater than 5% of the population that is eligible to hunt (older than 15 years). Although a decline in proportion of the population that hunts occurred in many nations during the last years of the 20th Century, hunting remains a widespread activity in many highly industrial and postindustrial regions of the world, and participation has remained more stable than for many other forms of nature-based recreation [8]. In these societies, hunting is shifting from a life supporting activity of rural communities to a leisure activity of increasingly urbanized populations [24, 28-30]. Indigenous peoples provide small, but notable exceptions to these trends [31].

Research on the social aspects of hunting typically examines hunting as a set of practices involved in (**1**) searching for game animals, (**2**) killing those animals, and (**3**) processing and consuming game [32-34]. Although many hunters are keenly interested in the political, legal, and technological ramifications of their avocation, this interest is not as fundamental as the search for game animals, and if the search is successful, killing, and then processing and consuming animals. Our analysis of hunting in this essay is limited to these practices. We rely on neo-Marxist and Durkheimian perspectives to critically analyze how hunting may render connections between human and natural systems explicitly visible, and then nurture a totemic meaning for food connected to natural systems.

The exploitation of nature and human laborers associated with food production has been widely critiqued within the sociology of agriculture [35]. Some scholars explore ways to awaken consumers to the intricacies of food production by studying and reproducing the material, economic, and production conditions hiding behind this commodity [15, 17, 36]. Others examine how the symbolic meaning of food interacts with consumption and consumers' attempts to shape society [37-39]. The first stream of research is grounded in Marx's critique of political economy [19], the second in Durkheim's theory of ritual [40].

From Marx, we draw on the claim that value inheres to commodities themselves, rather than being derived from the labor, raw materials, and instruments used to produce those commodities. From Durkheim, we draw the concept of totemism, or society's tendency to confer sacredness on certain objects, and then use those totems to imbue other objects (often commodities) with social significance. Most relevant for our analysis is the idea that totemic meaning often generates intense social cohesion at the same time it builds a sense of connectedness between the social group and those objects that have become totemic. Because human society cannot

help but employ totems in connection to basic needs, it generates totemic meaning for food. Hunting offers an increasingly rare means to connect that totemic meaning to natural systems.

Hunting presents an intriguing opportunity for linking modern society with natural systems because the symbolic meaning of food nurtured by hunting is rooted in pre-modern materiality instead of late (or post) modernity, as is the case with movements such as fair trade, slow food, and organic food. Hunting, however, faces the same threat of neo-liberal cooptation as other social activities [33]. The lively debate within hunting culture regarding whether privatized wildlife count as wild game, for example, suggests a collision between a pre-modern culture intensely connected to nature and a modern culture bent on privatization and commoditization [41, 42].

Our dual focus on North America and Western Europe facilitates an international comparison across cultures where food commoditization faces disparate consumer and producer actions (e.g., U.S. patenting and use of genetically modified organisms without labeling versus European rejection of many genetically modified foods and requiring those that are accepted to be labeled) and where hunting faces different political and social challenges. In both North America and Western Europe, wildlife generally is perceived as a public good that is held in trust by relevant governments [23, 41, 42]. Similarly, whether on state lands or on private property, hunting is subject to management and regulation by those same governments.

Other than migratory game birds, hunting regulations in Canada and the United States are developed and managed at the provincial/state/territorial, rather than the national, level. In regions of the United States and Canada where public land predominates, hunting opportunities are broadly available and relatively inexpensive for local residents, and can be purchased by visitors for additional licensing fees. In regions of the United States where private land predominates, however, people typically must also pay property owners for access to the land (or hunting lease) before they can hunt.

In Nordic countries including Sweden, Norway, and Finland the freedom to roam or "all man's right" gives the public rights to hike, camp, pick berries, and observe wildlife on private property. This generally also includes limited rights to small game hunting. Large game hunting occurs on both state and private lands subject to a variety of individual and community-level arrangements. These rights were recently formalized into law (e.g., Norway's Outdoor Recreation Act [1957]). Hunting on the European continent shares more similarities with private land regions of the United States, where the most significant costs for hunters are payments that must be made to private land owners. In sum, there is an array of ways that hunters can legally access hunting grounds within these modern societies, depending on state, provincial, national, and other regulations as well as societal norms.

Hunting as a means of linking modern society and natural systems

The Searching

The search for game animals traditionally involves hunters scouting areas for signs of feeding, bedding, and movements, and for landscape features typically favored by the species being pursued. Thus, hunters acquire considerable ecological knowledge

relevant to the ecosystems where they hunt. Searching is the most time consuming hunting practice, because many trips do not result in killing an animal and consequent processing and eating game. For example, only about 25% of deer hunters in the United States succeed in bagging a deer during a given year [43]. While small game hunters are more likely to bag small mammals or birds during a given hunting trip, searching still accounts for most time spent hunting. The search experience of a hunter differs from the search experience of those engaging in other outdoor recreation, such as bird watching. Finding and cataloguing the species of animal being searched for is not the ultimate goal for hunters. Instead, finding the animal is only the first step in a larger process, which has the potential to include killing and converting the animal to food. To succeed in this endeavor, hunters must intimately understand the natural life of game species in their habitats. Part of achieving that understanding includes observing game species engaging in multiple life supporting activities. Thus hunters often see, smell, touch, and otherwise sense intimate details from the lives of animals that have the potential to become food. Hunters search with no guarantee that they will bag their prey. They, and those with whom they hope to share their kill, give up the certainty and control available at the grocery store. As McGuane [44] wrote, "Mama wants two partridges for tonight's table and I will walk long miles hoping to get them" (p. W9). Although "Mama" may not hunt, she also gives up some of the control associated with modernity, relying on the vagaries of nature to determine her menu.

The totemic meaning of the search practice in hunting revolves around providing food and is firmly rooted in natural systems. The hunter interacts with nature directly and personally while searching for food. This totemic meaning grows out of the Judeo-Christian Garden of Eden myth where Adam and Eve were commanded to struggle and provide their food by the sweat of their brows [45]. Hunting stories and literature are rife with narratives about surviving the elements, epic hikes, trying to outwit game animals, fighting off grizzly bears (*Ursus arctos horribilis*), and completing grueling trips out of yawning canyons carrying 50 kg of elk (*Cervus canadensis*) meat on the hunter's back [46-49]. These tales tie into a mythic system clearly based on natural systems. We as humans compete with other species for food, or space to grow crops, and struggle against nature to feed ourselves. Essentially, the search embodies a struggle against entropy—we must work to stay organized, fed, and alive.

Today, tensions between the pre-modern aspects of hunting and the modern world that hunters inhabit can result in the search for game being much less closely tied to material nature than it was previously. Technology has made the search for game easier. All terrain vehicles take hunters much further per unit time than either human's or domestic animals' (e.g., horses) legs, spotting scopes can cover great swaths of landscape quickly, and radar can track waterfowl migrations and stopovers[2].

Social control of hunting is being attempted via various political regulative and administrative approaches [50-52]. Social control in the form of hunting bans can perversely reduce hunter search efforts via a feedback loop. Such bans often result in increased abundance of certain wild species and resultant threats to property or even human safety. Previously attractive wildlife become redefined as pests, and are labeled 'overabundant' [53]. If areas are subsequently opened for suburban hunting to reduce

animal density, understanding where and how these animals interact with ecosystems becomes less necessary; hunters simply harvest animals habituated to people at locations where they create a nuisance (e.g., golf courses, gardens, cemeteries). This reduces the local ecological knowledge required of hunters. The totemic meaning of the search changes because these hunters do not enter the primeval forest, savanna, or tundra and engage in epic struggles with nature to obtain food. Rather than studying and understanding nature, damage control hunters go where they are assigned to remove animals that have been redefined as pests.

Commoditizing wildlife—or access to lands where hunting occurs—leads to a cascade of events that diminishes linkages to natural systems in the searching step. Paying for hunting as a packaged commodity was a privilege of the European aristocracy and royal families for centuries, but was becoming a widespread commercial activity by the 1960s [54]. Numerous commercial establishments now rear northern bobwhites (*Colinus virginianus*), ring-necked pheasants (*Phasianus colchicus*), various waterfowl species, various deer species, and other game species in pens (or purchase them from growers), and then release these captive-reared animals for hunters to kill [54-56]. Private landowners, agencies, and even hunting education and outreach programs use these put-and-take versions of hunting[3]. Put-and-take operations greatly curtail any search effort by hunters or any need to understand how the animals are produced. If anything, the fact that game animals are produced like farm animals is hidden from participants. In other cases, hunters may be customers who pay for a seat in an elevated stand where game reliably appears to consume commercial feed dispensed from timed, automatic feeders. Some hunting customers pay for guides who already have done most of the required searching[4].

Commoditization also influences the totemic values of the search. As a commodity, hunting has been modified to generate the most profit for producers. The most valuable version of the hunting commodity is trophy hunting (customers frequently pay thousands [USD] to shoot a single trophy animal). In such conditions, the symbolic meaning of the search becomes analogous to that associated with athletes entering a playing field and loses linkages to natural systems. Objectives such as obtaining a record Boone and Crockett Club score for the a big game species (http://www.boone-crockett.org/bgRecords/records_overview.asp?area=bgRecords), or completing the "grand slam" of North American bighorn sheep (*Ovis canadensis* ssp., *O. dalli* ssp.), weaken the totemic significance of finding and procuring food in a natural system.

Killing

Whether or not it is the primary purpose, the possibility of a kill differentiates hunting from other forms of outdoor recreation [29, 43]. Symbols used by hunters confirm that killing is indeed an important component of the hunting experience. For example, a large regional hunters' organization in the United States uses a skull mount of a male white-tailed deer (*Odocoileus virginianus*) with a large, non-typical rack (antlers) as part of its official logo. Decals with this logo commonly decorate pickup trucks and clothing. Similarly, photographs of harvested game animals grace the pages of most hunting periodicals. The central role of killing renders the act of taking the life of the animal and converting it to food tangible; in this sense, hunters face their food [43].

Technology creates some distance between the hunter and the hunted. A modern high velocity rifle with telescopic sights, for example, enables a skilled marksperson to reliably take large cervids [i.e., red deer (*Cervus elaphus*), elk, moose (*Alces alces*)] at several hundred meters if the animal is in the open and standing still. Although modern technology has resulted in the killing of wildlife being less physically connected to natural systems than would be the case if hunters wrestled their prey to the ground, the killing remains as a solemn reminder that whatever becomes food was once a living part of an ecosystem. Hunting literature is full of stories describing hunters who have chosen to revert to primitive weapons in order to make the kill more intimate. A Swedish hunting guide, for example, advocated traveling to Texas (U.S.A.) to hunt wild boar, because there one is allowed to kill the boar with a knife and based on experiences from Australia, a retired Swedish professional hunter, raised a controversial proposal in 2010 by arguing that the only efficient way for the authorities to control the rapidly expanding wild boar populatio in Sweden, would be to introduce dog- and knife hunting [57]. From his perspective, taking on the personal risk associated with close contact during the kill immersed him in nature in a way that he lost with the use of more advanced technology.

Hunting bans may both increase and decrease the visibility of linkages between human and natural systems by concealing or highlighting killing of wildlife. The social protests typically associated with banning a particular hunting method renders death more visible to society through the public protest and associated media coverage. Often, the resulting overabundance of previously hunted species leads to politically mandated use of modern technologies for controlling abundance, including sterilization [58-60], contraception [58, 61, 62], and lethal control using methods such as sharpshooting or gassing [52, 63, 64]. In some suburban areas in the United States, for example, government sanctioned sharpshooters kill nuisance white-tailed deer with silenced rifles during the middle of the night. The dead animals are quickly loaded into enclosed vehicles, any sign of the killing washed away, and the carcasses processed elsewhere. Although sharpshooting programs have been fairly successful in concealing killing, gassing overabundant geese has had the opposite effect. In the Netherlands and United States, a combination of hunting bans and agricultural practices have led to an overabundance of geese. Because hunting is not a socially acceptable management alternative, particularly in more populated areas, officials have resorted to netting birds during the summer molt when they cannot fly and euthanizing (typically gassing) them [65]. After geese brought down US Airways flight 1549, which landed in the Hudson River, gassing plans were expanded in New York City [66]. In the Netherlands, juvenile geese are excluded from agricultural fields with netting, which generally results in starvation. Belgium and the United States both use gassing and egg addling extensively [67].

Although hunters experience the relationship between killing and food provision, they are taught to hide that relationship from the public. The understandable reaction to the modern aversion to death and extension of social control over hunting is to hide the kill. In fact, hunter education classes generally direct hunters to hide the signs of death from the public. The *North Carolina Hunter Education Manual* (p. 66) advises aspiring hunters to “cover game from sight when traveling home from hunting,” and “take tasteful photos of harvested game” [68]. The *Texas Hunter Education Instructor*

Manual (p. III-5) provides similar instructions and cautions hunters to "clean up before going to town" [69].

Commoditization of the kill threatens to further attenuate hunting's potential to link modern society with food production. Hunting operations where individual animals from a hunted species (e.g., pheasants, quail, ducks) are raised commercially, then placed into apparently natural settings for the kill may obfuscate the relationship between society and its food more than commercial livestock production systems, because put-and-take operations present commercial products as wildlife. In commercial operations, helpers often sanitize death. After photos are taken, the hunter turns the carcass over to paid employees. In some cases, the hunter does not see the animal again until it has been transformed into frozen packages of meat. In other cases, the cost for shooting the animal is separated from the price of the meat, and meat is used or sold by the guide. In these contexts, commodity fetishism creeps in as trophy hunting where hunters harvest trophies, rather than food. A century ago, trophy hunting was largely an avocation of the rich and powerful. Today, many far less affluent hunters perceive trophies to be the objective of hunting. Not surprisingly, numerous commercial enterprises exist primarily to ensure that such individuals will have an opportunity, for a price, to collect a trophy. Because the commercial success of hunting operations relies on the ability to deliver a product, the focus shifts from the hunting process to the hunting product, which also allows attention to slip away from the relationship between human and natural systems. Ongoing debates within the hunting community, such as whether wildlife killed behind high fences should be eligible for Boone and Crockett Club trophy scoring (currently, they are not), indicate the presence of internal tensions over the commoditization of hunting [33].

For most hunters, the totemic meaning of the kill relates to simultaneously inserting humans into their pre-modern lineage as hunters by trade, and into natural systems as top predators. Hunting literature depicts hunters as plunging into natural existence and living by its rules where every life persists at the expense of others and pain runs the world [34, 43, 70, 71]. Although this symbolism can be unpleasant and even gruesome at times, it is firmly rooted in material conditions of natural systems; animals survive by consuming other organisms. The pervasive totemic meaning of hunting as immersing oneself in natural systems by killing, has given rise to arguments that "naturalness" is not necessarily ethical if it leads to constructions of manhood that lead to gender domination and exploitation of animals [33, 72]. The fact that being natural does not make an act ethical, however, does not impugn the ability of hunting to create totemic meaning for food rooted in natural systems.

Processing and consuming

Natural systems exist at the fingertips of hunters processing a game animal. After killing a game animal, hunters typically eviscerate it in the field. For larger cervids (e.g., elk, moose), hunters usually skin the animal, remove the lower limbs and head, and quarter the carcass (placing each quarter in a clean cotton bag) so the meat can be carried to the nearest road (sometimes several kilometers away). Many European and North American hunters still chill, cut, wrap, and freeze the meat themselves for later consumption.

The totemic meaning of processing and consuming wild game animals creates social

ties where hunters are food providers. In a speech celebrating the opening of a moose research center, Lar Peder Brekk, Norwegian Minister of Agriculture and Food, noted the critical importance of maintaining a healthy moose population in Norway, because moose hunting provides opportunities to revitalize rural communities, and enables people to participate directly in food production, both increasingly rare in modern society [73]. Throughout Western Europe and North America, venison, quail, duck, goose, turkey, and other types of wild game meat are great sources of satisfaction for hunters and are fed with pride to special guests. These meals provide opportunities for hunters and non-hunters to share connections with nature via multiple senses such as taste, smell, and touch. This joint experiential base then opens the door to questions about the ecosystem the animal inhabited prior to appearing on the dinner table. As hunters answer those questions, the food's totemic status is firmly grounded in natural systems.

Such dinners typically include hunters' stories about one or more aspects of the hunting process (i.e., searching, killing, processing), which tend to reinforce connections to natural systems for guests. Family members understand that the hunter extracted the food from a natural system and tell stories about conditions of its production. Guests receive the same gift of food and participate in the same symbolism. They, in turn, often repeat these stories to others. This symbolism ties into struggle myths, such as stories about hauling elk quarters out of canyon depths and staying awake all night to prevent black bears (*Ursus americanus*) from eating them.

Social and political trends noted above, however, limit possibilities for highlighting linkages between human and natural systems by processing and consuming wild game. Hunting bans both directly and indirectly limit these opportunities. Indirect limitations occur when hunters are called upon to mitigate animal damage resulting after a hunting ban. In these cases, animals that had been prized and were potential food have become garbage. If hunters are not able to reduce the numbers sufficiently, pest control experts are called in, and the carcasses join other refuse in the sanitary landfill. The tightly controlled hunting used to mitigate the abundance of nuisance wildlife may make natural systems more visible when deer killed by government approved sharpshooters are donated to food banks with much media coverage. Most of the time, however, food donation does not occur. Nations in North America and Western Europe have strict regulatory frameworks intended to ensure a safe food supply. Because of difficulty negotiating the food safety bureaucracy, most game animals killed by government approved entities simply end up in the landfill or, more rarely, compost piles.

Similarly, the use of nonlethal technologies for controlling abundance of game species (e.g., chemical sterilization and contraception) limit opportunities for hunters to help society connect with nature, and in an insidious way render what would have been healthful, high protein food unavailable for public consumption. In the United States, the Food and Drug Administration (FDA) regulated substances used for chemical sterilization and contraception in free-roaming wildlife species until 2006, when regulatory authority was transferred to the Environmental Protection Agency (EPA). The EPA now regulates these chemicals as pesticides under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act [74]. The

transfer of regulatory authority from the FDA to the EPA indicates how hunted species (e.g., white-tailed deer) can become pests rather than potential sources of food. Where processing game is concerned, commoditization may severely attenuate hunting's ability to highlight linkages between human and natural systems. In many commercial hunting enterprises, for example, employees eviscerate the animal, haul it from the field, and transport the carcass to a processing plant. Moreover, it is not unusual for deer hunters to get back packages of sausages that are as much domestic pork as venison. Even where hunting's cultural importance is recognized, commercialization threatens to commoditize the hunt. By the conclusion of Brekk's [73] speech, for example, the value of hunting had been reduced to economics. He moved seamlessly from extolling the cultural importance of moose hunting to a discussion of how to capitalize hunting by increasing the sale of hunting associated products. Commoditization associated with trophies also weakens hunting's potential to highlight human-nature linkages, when the trophy, rather than food, becomes the totem. Photographs in modern hunting periodicals often show stern faced, camouflage-clad males hauling huge antlers on their backs rather than animal quarters. Similarly, stories provide do-it-yourself instructions for how to mount trophies rather than for how to butcher, cut, and wrap the carcass.

Discussion

This essay was motivated by the idea that alienation between humans and nature is one of the most basic obstacles to sustainability [4]. Food production and consumption provides one repetitive dynamic rooted in nature that can highlight linkages between human and natural systems. The sustainable food movement has struggled to unveil the material conditions of food production and help consumers recognize the role of nature in the food they eat. The organic food sector, however, has been criticized for attributing an artificially harmonious totemic significance to organic food that masks, rather than grows out of, the material conditions of organic farming. Critics cite incongruous practices such as abusive labor conditions, destruction of wildlife habitat, and excessive use of fossil fuels in production and transportation.

Food produced via hunting offers an alternative approach to linking humans with nature. Through the practices of searching, killing, processing and consuming wildlife, hunting has the potential to link humans with natural processes and objects imprecated in food production. As with other cultural practices, however, hunting remains susceptible to the modern tendency to position humans as separate and dominant over other beings in order to achieve the illusion of control. Significant modernistic incursions into hunting culture occur in the form of technology, social control, and commoditization. Realization of hunting's potential to highlight linkages between human and natural systems depends largely on the ability of hunting culture to balance on the edge of modernity and pre-modernity.

Hunting maintains and communicates the experience and associated knowledge of providing food in a practical way that also exceeds instrumental logic. One of its most valuable and unappreciated contributions is unmasking the hidden kill that modern society demands. It does this by making it difficult for people to completely ignore the ways life uses death to perpetuate itself. Realizing hunting's conciliatory

potential requires hunting culture to iteratively embrace its ambiguous relationship with modernity: it responds to the late modern desire for local and free range food, while simultaneously reversing the modern tendency to mask death from public view. Further, although they cannot completely reject those counter-potential elements we have identified as technology, social control, and commoditization, hunters must struggle to avoid the loss of hunting's pre-modern legacy. We see this as an explicitly political problem.

Hunting culture has begun the political task of recognizing and framing itself as a significant contributor to sustainability by explicitly highlighting its role in the production of local and free range food. Pressured by a significant and vocal public opposition to hunting in northern Europe, for example, hunting associations in Sweden, Norway, Finland, Denmark, and Iceland, have developed an ethical and social awareness of the broader social potential to link society with natural systems, as well as an awareness of the internal ambiguities existing within the hunting culture. This awareness is materialized in a text addressed primarily to transnational political institutions of Europe [75]. The text formulates an identity for Nordic hunting culture that describes hunting as an activity for everyone. It focuses on hunting's connection to food production and its contributions to sustainability, describing practices and experiences that allow hunters to share connections with nature with society. By emphasizing those elements, the text positions the Nordic Hunters' Cooperation as a counterweight to some of the modernistic incursions that threaten to undermine hunting's potential to reconnect humans with natural systems. However, communicating this social identity on a political level does not in itself prevent ongoing structural changes, such as privatization and commoditization, which constrain hunting's potential to make these connections.

Hunting has long been recognized as an adjunct to conservation and sustainability. In the United States, for example, the CP-33-Habitat Buffers for Upland Birds program within the Conservation Reserve Program involves paying landowners to manage their field borders for northern bobwhite (a highly prized game species among hunters). Collateral benefits of the program include reduction of soil erosion and runoff of agricultural chemicals and improved conditions for many songbird species that rely on early successional habitat. Modern hunting is arguably the most sustainable form of food production in the history of humanity. With few exceptions (e.g., food plots planted to attract game animals) producing food via hunting equates to protecting productive and threatened ecosystems (e.g., bottomland hardwoods, wetlands) [76], thus creating natural and free range food. Hunting may actually be more "cruelty free" than industrial agriculture where one pass (multiple passes typically occur) of agricultural machinery over a field kills more animals (e.g., field mice, ground nesting birds) per gram of vegetable protein produced than hunting [43, 77]. Further, all forms of agriculture (including organic and sustainable versions) kill some wild animals indirectly by dictating agricultural land uses in areas that could be habitat.

Despite its positive associations with conservation, hunting's cultural contributions may be even more valuable. Hunting offers a realistic means to highlight connections between humans and other living beings by linking modern society with natural

systems. Through engagement in the practices of searching, killing, processing, and consuming, hunters offer society opportunities to remember humanity's complex interdependence with other living creatures.

Notes

[1] Information on hunting philosophy and regulations can be found at national government sponsored web sites such as the following:

Ministry of the Environment Finland. http://www.ymparisto.fi/default.asp?node=9752&lan=en

State of the Environment Norway. http://www.miljostatus.no/en/Tema/Friluftsliv/Jakt/

Swedish Environmental Protection Agency. http://www.naturvardsverket.se/en/In-English/Menu/Nature-conservation_and_wildlife_management/

Danish Ministry of the Environment. http://www.mim.dk/eng/Topics/Nature_fauna_flora/

(Ireland) Environment, Heritage and Local Government. http://www.environ.ie/en/Heritage/NationalParksandWildlife/

Environment Canada. http://www.cws-scf.ec.gc.ca/theme.cfm?lang=e&category=6

U.S. fish & Wildlife Service. http://www.fws.gov/offices/statelinks.html

(U.K.) Department for Environment Food and Rural Affairs. http://www.defra.gov.uk/wildlifemanage/index.htm

(France) Office National de la Chasse et de la Faune Sauvage. http://www.oncfs.gouv.fr/

(Germany) Bundesministerium fur Umwelt, Naturschutz und Reaktorsicherheit. http://www.bmu.de/allgemein/aktuell/160.php

[2] Some technology savvy hunters use NEXRAD radar (available on popular web pages including www.wunderground.com) to track waterfowl migrations and even identify where waterfowl stop to rest or feed.

[3] The "Conservation Leaders for Tomorrow" program was started in 2005 to promote hunting awareness among students in Wildlife & Fisheries programs at U.S. Universities. The program includes a guided put-and-take hunt in a shooting preserve for all participants.

[4] A Google search for "hunting outfitters" returned more than 150,000 hits (21 August 2009). Some of the outfitters offer unguided hunts, but almost all offer guided hunts where local guides lead hunters to prime locations based on previous scouting by the guide or other employees of the outfitter. Several websites list numerous outfitters, typically by region, for customer convenience. Browsing these sites offers a quick perspective regarding what services are offered by hunting outfitters across the world. A few examples include:

United States: http://www.outfittersandguides.com/

North America: http://www.huntingoutfitters.net/search.php

Global: http://www.google.com/Top/Recreation/Outdoors/Hunting/Guides_and_Outfitters/

Global: http://www.globalhunting.com/index.php3?lang=en&go=travel-continent-main

References

Five "key references", selected by the authors, are marked below (*Three recommended* (●) *and two highly recommended* (●●) *papers*).

1. Busch, L. 1996. Bringing nature back in: Principles for a new social science of nature. Centennial Review **40**: 491-501.
2. Leopold, A. 1949. A sand county almanac and sketches here and there. Oxford University Press, London, United Kingdom.
3. World Commission on Environment and Development. 1987. Our common future. Oxford University Press, New York, USA.
4. ●● Liu, J.G., Dietz, T., Carpenter, S.R., Folke, C., Alberti, M., Redman, C.L., Schneider, S.H., Ostrom, E., Pell, A.N., Lubchenco, J., Taylor, W.W., Ouyang, Z.Y., Deadman, P., Kratz, T., & Provencher, W. 2007. Coupled human and natural systems. Ambio **36**: 639-649. DOI:10.1579/0044-7447(2007)36[639:CHANS]2.0.CO;2
5. Latour, B. 2004. Politics of nature: How to bring the sciences into democracy. Harvard University Press, Cambridge, Massachusetts, USA.
6. Harvey, D. 1989. The condition of postmodernity: An enquiry into the origins of cultural change: Blackwell Publishers, Malden, Massachusetts, USA.
7. Pergams, O.R.W. & Zaradic P.A. 2006. Is love of nature in the US becoming love of electronic media? 16-year downtrend in national park visits explained by watching movies, playing video games, internet use, and oil prices. Journal of Environmental Management **80**: 387-393. DOI:10.1016/j.jenvman.2006.02.001
8. Pergams, O.R.W. & Zaradic P.A. 2008. Evidence for a fundamental and pervasive shift away from nature-based recreation. Proceedings of the National Academy of Sciences of the United States of America **105**: 2295-2300. DOI:10.1073/pnas.0709893105
9. ●● Peterson, M.J., Hall, D.M., Feldpausch-Parker, A.M., & Peterson, T.R. 2010. Obscuring ecosystem function with application of the ecosystem services concept. Conservation Biology **24**:113-119. DOI:10.1111/j.1523-1739.2009.01305.x
10. Schnaiberg, A. 1980. The environment. Oxford University Press, New York, USA.
11. Louv, R. 2005. Last child in the woods: Saving our children from nature deficit disorder. Algonquin Books, Chapel Hill, North Carolina, USA.
12. Andrews, L. 2000. Weird science. Chicago Magazine August 2000, pp. 22–24.
13. Hann, C. 2007. A new double movement? Anthropological perspectives on property in the age of neolibleralism. Socio-Economic Review **5**: 287-318. DOI:10.1093/ser/mwl027
14. Reichhardt, T. 2000. Will souped up salmon sink or swim? Nature **406**: 10-12. DOI:10.1038/35017657
15. Hudson, I. & Hudson, M. 2003. Removing the veil? Commodity fetishism, fair trade, and the environment. Organization & Environment **16**: 413-430. DOI:10.1177/1086026603258926
16. Shiva, V. 1999. Stolen harvest: The hijacking of the global food supply. South End Press, Cambridge, Massachusetts, USA.
17. ● Gouveia, L. & Juska, A. 2002. Taming nature, taming workers: Constructing the separation between meat consumption and meat production in the U.S. Sociologia Ruralis **42**: 370-390. DOI:10.1111/1467-9523.00222

18. Regan, T. 1983. The case for animal rights. University of California Press, Berkeley, USA.
19. Marx, K. 1976. Capital vol. 1. Random House, New York, USA.
20. Elling, B. 2008. Rationality and the environment: Decision-making in environmental politics and assessment. Earthscan, Sterling, Virginia, USA.
21. Giddens, A. 1998. Conversations with Anthony Giddens: Making sense of modernity. Stanford University Press, Stanford, California, USA.
22. Megarry, T. 1995. Society in prehistory: The origins of human culture. University Press, New York.
23. Geist, V., Mahoney, S.P., & Organ, J.F. 2001. Why hunting has defined the North American model of wildlife conservation. Transactions of the North American Wildlife and Natural Resources Conference **66**: 175–185.
24. Heberlein, T.A. & Ericsson, G. 2005. Ties to the countryside: Accounting for urbanites attitudes toward hunting, wolves, and wildlife. Human Dimensions of Wildlife **10**: 213-227. DOI:10.1080/10871200591003454
25. Heberlein, T.A. & Willebrand, T. 1998. Les attitudes envers la chasse: Une comparaison entre la Suede et les Etats-Unis. [Attitudes toward hunting across time and continents: The United States and Sweden]. Gibier Faune Sauvage, **15**: 1071-1080.
26. FACE. 2007-2008. Annual Report. Federation of Associations for Hunting and Conservation of the EU. Available: http://www.face-europe.org/Documents/Annual%20Report,%2007-08.FIN.pdf
27. U.S. Department of the Interior and U.S. Department of Commerce. 2007. 2006 national survey of fishing, hunting, and wildlife-associated recreation. United States Government Printing Office, Washington, D.C., USA.
28. Decker, D.J., Provencher, R.W., & Brown, T.L. 1984. Antecedents to hunting participation: An exploratory study of the social-psychological determinants of initiation, continuation, and desertion in hunting. Department of Natural Resources, Outdoor Recreation Research Unit Cornell University, Ithaca, New York, USA.
29. Hansen, H.P. 2001. “Jagt i Danmark år 2000 – Analyserapport” (“Hunting in Denmark year 2000, Analysis”): Department of Environment, Technology and Social Studies, Roskilde University, Denmark.
30. Hansen, H.P. 2008. Jagtforskning [Hunting research]. Jæger [Hunter]: Jagt, Vildt & Natur. 30-33.
31. Peterson, T.R. 1997. Sharing the Earth: The rhetoric of sustainable development. University of South Carolina Press, Columbia, South Carolina, USA.
32. Dizard, J.E. 2003. Mortal stakes: Hunters and hunting in contemporary America. University of Massachusetts Press Boston, USA.
33. ● Peterson, M. N. 2004. An approach for demonstrating the social legitimacy of hunting. Wildlife Society Bulletin **32**: 310-321. DOI:10.2193/0091-7648(2004)32[310:AAFDTS]2.0.CO;2
34. Swan, J.A. 1995. In defense of hunting. Harper, San Francisco, California, USA.
35. Goodman, D. & DuPuis, E. M. 2002. Knowing food and growing food: Beyond the production-consumption debate in the sociology of agriculture. Sociologia Ruralis **42**: 5-22. DOI:10.1111/1467-9523.00199
36. Ateljevic, I. & Doorne, S. 2003. Culture, economy and tourism commodities: Social relations of production and consumption. Tourist Studies **3**: 123-141. DOI:10.1177/1468797603041629

37. Pilcher, J.M. 1998. Que vivan los tamales!: Food and the making of Mexican identity. University of New Mexico Press, Albuquerque, USA.
38. Raynolds, L.T. 2000. Re-embedding global agriculture: The international organic and fair trade movements. Agriculture and Human Values **17**: 297. DOI:10.1023/A:1007608805843
39. Watson, J. L. 1997. Golden arches east: McDonald's in East Asia. Stanford University Press, Stanford, California, USA.
40. Durkheim, E. 1995. The elementary forms of religious life. Simon & Schuster, New York, USA.
41. Posewitz, J. 2004. Rifle in hand: How wild America was saved. Riverbend, Helena, Montana, USA.
42. Posewitz, J. 1999. Inherit the hunt: A journey into the heart of American hunting. Falcon, Helena, Montana, USA.
43. ● Cahoone, L. 2009. Hunting as a moral good. Environmental Values **18**: 67-89. DOI:10.3197/096327109X404771
44. McGuane, T. 2009. "A novelist takes aim", in Wall Street Journal - Eastern Edition vol. Vol. **253** Issue 72, p. W9.
45. Merchant, C. 2003. Reinventing Eden: The fate of nature in western culture. Routledge, New York, USA.
46. Cassel, J. Ed., 2008. The gigantic book of hunting stories. Skyhorse Publishing, New York, USA.
47. Petersen, O. & Perto, J. 2003. Pas på lapperne [Watch out for the paws]. Jæger - Jagt, Vildt & Natur [Hunter- Hunting, wildlife & Nature] **12**: 94-101.
48. Rosenkrantz, N.I. 2003. Et plettet lyn [The spotted lightning]. Jæger - Jagt, Vildt & Natur [Hunter- Hunting, wildlife & Nature] **12**: 104-109.
49. Wegner, T. 2003. Storoksen fra Wulik River [The big ox from Wulik River]. Jæger - Jagt, Vildt & Natur [Hunter- Hunting, wildlife & Nature] **12**: 100-104.
50. Bischof, R., Fujita, R., Zedrosser, A., Söderberg, A., & Swenson, J.E. 2008. Hunting patterns, ban on baiting, and harvest demographics of brown bears in Sweden. Journal of Wildlife Management **72**: 79-88. DOI:10.2193/2007-149
51. Minnis, D.L. 1998. Wildlife policy-making by the electorate: An overview of citizen-sponsored ballot measures on hunting and trapping. Wildlife Society Bulletin **26**: 75-83.
52. White, P.C.L., Newton-Cross, G.A., Moberly, R.L., Smart, J.C.R., Baker, P.J., & Harris, S. 2003. The current and future management of wild mammals hunted with dogs in England and Wales. Journal of Environmental Management: **67**: 187-197. DOI:10.1016/S0301-4797(02)00225-6
53. Conover, M.R. 2002. Resolving human-wildlife conflicts: The science of wildlife damage management. Lewis Publishers, Boca Raton, Florida, USA.
54. Kozicky, E.L. & Madson, J. 1966. Shooting preserve management: The Nilo system. Winchester Western Press, East Alton, Illinois, USA.
55. Hedegaard F. & Hansen, H.P. 1997. Hjorte, hegn & holdninger [Deer, fences & attitudes]. Roskilde, Denmark: Rapportserien, TEK-SAM Forlaget.
56. Murray, D. 2002. Why wildlife management departments don't like game farms. Available: http://www.wapiti.net/news/default2.cfm?articleID=96
57. Östgötatidningen. 2010. Jaktmoralen maste fa andra former. Available: http://ostgota.lokaltidningen.se/jaktmoralen-maste-fa-andra-former-/20100519/artikler/705199743

58. Cooper, D.W. & Herbert, C.W. 2001. Genetics, biotechnology and population management of over-abundant mammalian wildlife in Australasia. Reproduction Fertility and Development **13**: 451-458.
DOI:10.1071/RD01072

59. MacLean, R.A., Mathews, N.E., Grove, D,M., Frank, E.S., & Paul-Murphy, J. 2006. Surgical technique for tubal ligation in white-tailed deer (*Odocoileus virginianus*). Journal of Zoo and Wildlife Medicine **37**: 354-360.
DOI:10.1638/05-091.1

60. Ramsey, D. 2007. Effects of fertility control on behavior and disease transmission in brushtail possums. Journal of Wildlife Management **71**: 109-116.
DOI:10.2193/2005-699

61. Fraker, M.A., Brown, R.G., Gaunt, G.E., Kerr, J.A., & Pohajdak, B. 2002. Long-lasting, single-dose immunocontraception of feral fallow deer in British Columbia. Journal of Wildlife Management **66**: 1141-1147.
DOI:10.2307/3802946

62. Perdok, A.A., deBoer, W.F., & Stout, T.A.E. 2007. Prospects for managing African elephant population growth by immunocontraception: A review. Pachyderm **42**: 97-107.

63. Schwartz, J.A., Warren, R.J., Henderson, D.W., Osborn, D.A., & Kesler, D.J. 1997. Captive and field tests of a method for immobilization and euthanasia of urban deer. Wildlife Society Bulletin **25**: 532-541.

64. Williams, S.C., DeNicola, A.J., & Ortega, I.M. 2008. Behavioral responses of white-tailed deer subjected to lethal management. Canadian Journal of Zoology-Revue Canadienne De Zoologie **86**: 1358-1366.
DOI:10.1139/Z08-126

65. Swedish Hunters Association. 2009. Hellre giftgas än jakt I Holland [Rather gassing than hunting in Holland]. Svensk Jakt Nyheter 10.

66. Colangelo, L.L. 2009. Their goose is cooked! City to kill at least 2,000 geese near LaGuardia, JFK over bird strike fears. New York Daily News, New York, USA.

67. Verburg, G. 2007. Letter of 8 August to De Voorzitter van de Tweede Kamer, der Staten-Generaal, Postbus 20018, 2500 EA 's-GRAVENHAGE from Ministerie van Landbouw, Natuur en Voedselkwaliteit, Holland, 11 August 2008.

68. North Carolina Wildlife Resources Commission. 2007. North Carolina Hunter Education Manual. Kalkomey Enterprises, Dallas, Texas, USA.

69. Texas Parks & Wildlife Department. 2006. Hunter education program: Instructor manual vol. III. Texas Parks & Wildlife Department, Austin, USA.

70. Ortega y Gasset, J. 1985. Meditations on hunting. Scribner, New York, USA.

71. Shepard, P. 1973. The tender carnivore and the sacred game. Scribner, New York, USA.

72. Luke, B. 2007. Brutal: Manhood and the exploitation of animals. University of Illinois Press, Urbana, Illinois, USA.

73. Brekk, L.P. 2009. August 21. Åpning av Nasjonalt Elgsenter Gravberget Gård. Landbruks- Og Matdepartmenten (Ministry of Agriculture and Food). Available: <http://www.regjeringen.no/nb/dep/lmd/aktuelt/taler_artikler/ministeren/landbruks--og-matminister-lars-peder-bre/2009/apningen-av-nasjonalt-elgsenter-gravberg.html?id=573237>

74. Eisemann, J.D., Fagerstone, K.A., & O'Hare, J.R. 2006. Wildlife contraceptives: A regulatory hot potato. Vertebrate Pest Conference **22**: 63-66.

75. Nordic Hunter's Cooperation. 2009. Nordic hunting: Securing nature and wildlife for coming generations. Retrieved August 27, 2009, from http://www.nordichunters.org/page374.aspx.

76. Dickson, J.G. 2001. Wildlife of southern forests: Habitat & management. Blaine, WA: Hancock House, 2001.

77. Davis, S.L. 2003. The least harm principle may require that humans consume a diet containing large herbivores, not a vegan diet. Journal of Agricultural & Environmental Ethics **16**: 387-394.
DOI:10.1023/A:1025638030686