

# Reconsidering Nature: The Dialectics of Fair Chase in the Practices of American Midwest Hunters

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## ABSTRACT

In this paper, we describe an ethnographic study consisting of 14 interviews with hunters and participant observations in the American Midwest. We find that the ethos of “fair chase” serves to unite an eclectic group of hunters under a single moral compass. Fair chase posits, for example, that hunters must not have an improper advantage over animals. The actual practices of hunters in different communities (e.g., communities revolving around different weapons or professions), however, reveals a series of opposing points of view among hunters at large on what actually constitutes fair chase. We suggest that an understanding of fair chase and its dialectics can constructively problematize nature for human-computer interaction.

## ACM Classification Keywords

H.5.m. Information Interfaces and Presentation (e.g. HCI): Miscellaneous

## Author Keywords

Hunting; hunters; fair chase; nature; rural; values; ethics; dialectics

## INTRODUCTION

It is difficult now to find a subculture in which technology is absent. Researchers have sought to investigate how both traditional and modern subcultures or milieux have had to contend with technology [1, 8, 40, 38, 13]. A central debate surrounding technology in such spaces [39] is whether it erodes our goals and values or whether such technologies can be leveraged to improve the good of humanity.

One popular strain of this rhetoric involves the need for modern society to better engage with *nature*. This rhetoric is not new and, in the United States, one of its strongest proponents was President Theodore Roosevelt who argued for a sort of self-reliance that could be best learned by toughing it out with

nature and, more precisely, by hunting [29]. Roosevelt presciently warned that “[t]he chase is the best of all national pastimes and...a mere source of weakness if carried on in an unhealthy manner, or to an excessive degree, or under over-artificial conditions.” Since then, Roosevelt’s concept of *fair chase* has become standard teaching material for all hunters. It is the moral compass with which all hunters are guided by.

This notion of “over-artificial conditions” has been expounded upon in hunting. The insidiousness of “gadgetry” in hunting was a problem identified as early as the 1940s by Aldo Leopold, a founder of the wildlife management discipline. Leopold warned of the influence of gadgeteers [24]:

He has draped the American outdoorsman with an infinity of contraptions, all offered as aids to self-reliance, hardihood, woodcraft, or marksmanship, but too often functioning as substitutes for them. Gadgets fill the pockets, they dangle from neck and belt...Each item of outdoor equipment grow slighter and often better, but the aggregate poundage becomes tonnage...But what of cultural values?

Leopold was not a Luddite; he believed technology could enhance the experience of hunting but also saw its potential as destroying the cultural value of hunting. He posited that hunting was “a contrast-value”: a contrast between the world of mechanization and nature.

The intersection of nature and HCI has recently gained traction [19]. For instance, a body of research on birding, archery, and, indeed, hunting have been subject to fieldwork and subsequent design interventions [18, 11, 43]. While these studies have elucidated the detailed practices and interactions of those engaged in nature, both human and non-human, they do not focus on the intertwining of values and ethics with our practices in nature that Leopold refers to. Certainly, hunting and its ethos are inseparable precisely because the stakes seem higher—it involves the taking of a life.

In this study, following calls from design approaches such as value sensitive design [16, 23] and designing for authenticity [39] that argue for deep examination of the values embedded in subcultures and their practices, we describe an ethnographic study over two years involving participant observations and interviews with 14 hunters in Midwest America. Drawing from the notion of the dialectic from Hegel, we show

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that hunters as a whole embrace the ethical code of fair chase, but when describing the practices they do to live out this ethos, they do it in terms of opposing forces. In other words, when hunters talk about how bows and arrows help them hunt ethically, they do it by describing how rifle hunters do not reach the same level of ethics. We argue that by identifying these tensions, we can reach a better understanding of how we might sensitively approach design for nature. Our approach takes a holistic approach to hunters, regarding them not as one single group, but consisting of multiple social worlds [37], each with their own practices and thereby anxieties with other hunters and actors.

This study makes the following contributions. First, we show that hunters embrace the normative ethos of fair chase that includes giving advantage to the animal, showing respect when harvesting animals, and communing with nature; however, this ethos is practiced in different ways by the diverse hunters in nature. Second, we draw from Hegel's dialectic analysis to describe opposing practices in the hunt and the land between stakeholders: different weapon users, non-hunters, hunters, state officials, scientists, long-time hunters, newcomers, and gadget users. We show how these tensions, or dialectics, often revolve around technological artifacts and that use of these artifacts reveal subtleties in interpreting fair chase. Third, we describe how these dialectics—different truths about fair chase—can elucidate design for HCI and nature. In sum, our work problematizes nature by questioning the notion of a uniform user-of-nature prevalent in HCI. Instead, HCI should consider opportunities to make bare the heterogeneity of value systems (and their practices) in nature.

## RELATED WORK

### Technologies for Communing with Nature

Recently, there has been growing attention in HCI to design technologies for enhancing our experiences with nature and supporting outdoor activities. A CHI 2016 workshop entitled *NatureCHI* [19] examined how technologies can promote our experience with nature by mediating interactions with plants or natural phenomenon (e.g., snowflakes), supporting diverse spaces of nature (e.g., zoos and graveyards), and facilitating outdoor recreational activities (e.g., skiing and climbing). The content of the workshop was organized around “the challenge of designing unobtrusive technology usage and user experiences in nature.” Similarly, over the years, educational mobile tools [34, 30, 46, 33, 44] have been developed for users to learn about and engage with the surrounding nature.

However, *NatureCHI* and similar work typically do not examine the values of their users. Rather, by treating nature as an environment for homogeneous users, they focus on technologies as solving problems [5] and challenges in nature. For example, *NatureCHI* features mobile applications to support outdoor activities like skiing, interfaces that address issues with technology use in harsh weather conditions, and discussion on how existing technologies have disrupted people's experience with nature—thus, it is argued, there is a need to make unobtrusive technologies for nature. As a workshop, *NatureCHI* is a laudatory start to thinking about nature and

HCI, and we hope to add nuance to the discussion by complicating users, values, and technology in nature. For instance, our findings show that technology, aside from sometimes being intrusive, is also purposefully utilized to increase both challenge and engagement with nature.

Hunting is a traditional activity that remains an avenue for humans to commune with nature and the wild. While a wide range of hunting technologies have been commercially developed to support hunting, there are relatively few HCI studies examining hunting practices and technologies. Deer hunting activities have been explored by Juhlin and Weilenmann to gain insight on designing online collaborative games [21, 7]. The authors studied a rifle hunting team by recording radio talk during the hunt, observing the actual hunt, and conducting informal interviews with the hunters. They found that seeking pleasure in hunting was as important a part of the activity as was bagging game for hunters. Radio allowed hunters not only to understand the progress of hunting but also to have fun by involving them in radio talk (e.g., sitting at the stand by themselves, but not being lonely because they could still collaborate with others remotely, which allowed them to relax between highly intense moments of the hunt).

Another focus of interest that studying hunting brings is human-animal interactions—for example, how technologies mediate interacting with dogs [2, 32, 43]. To understand the actual practices with existing technologies for communicating with dogs, Paldanius et al. [32] conducted interviews with hunters who use dog-tracking systems during their hunt. In these studies, current GPS-based systems were perceived by hunters as useful tools to monitor the real time processes of hunting and managing their dogs. Building on this 2011 study, Weilenmann and Juhlin [43] examined how dog holders in a hunting team used GPS and suggested that designing technologies for interaction with non-human beings goes beyond a dyadic framework (that of the animal and the computer) to address the complex contexts which lay in technologies, humans, and animals. Another study by Aspling and Juhlin [2] used an actor-network theory lens to understand how hunters and boars carried out different strategies in hunting sites where technologies, such as trail cameras, were involved. While this paper does not examine the use of hunting dogs, this work on human-animal interactions provides useful insight on going beyond examining a single kind of nature user.

Alongside these studies on hunting, traditional archery [18, 17] and birding [11, 10] have also been investigated in HCI for the purpose of developing technologies to make such outdoor activities available in virtual environments. Geiger and colleagues attended traditional archery classes to phenomenologically understand how the body engages with the bow (e.g., sequences of drawing and releasing bow) and developed an archery simulator to detect the motions of users. In the aforementioned studies on birding, participant observations of birding practices and bird walks informed the design of an online, crowdsourced system for annotating bird calls.

Our research finds inspiration from Bidwell and Brown-ing's [3] profound themes on designing for “natural places.” We follow their lead in considering the dichotomy between

ID	Occupation	Hunting Experience
P1	Wildlife biologist*	Since 12 years old
P2	Lecturer at university	30 years
P3	HCI student	Since 9 years old
P4	Deer research biologist*	Beginner
P5	Wildlife biologist*	3 years
P6	Restoration biologist*	4-5 years
P7	IT admin	5-6 years
P8	IT program director	50+ years
P9	Laborer at DNR*	30+ years
P10	Bowhunter magazine writer	35 years
P11	Auto business facilities director	Since junior high
P12	President of bow company	Since college
P13	Full-time firefighter, Part-time bow maker	Since childhood
P14	Production chemist	Since 12-13 years old

bold = avid bowhunter, \* = affiliated with the DNR

Figure 1. Informant Demographics

local and non-local as well as urban and rural. Their insights on, for example, public media portrayal of rural technology use, the apparent authority of technology mediated data, the “nitty-gritty of ordinary rural life,” technology’s potential to both recede and reveal nature, and the interplay of values and morality with technology in nature are salient to this paper’s findings.

### Hunting Ethics

While the scope of this paper limits our discussion, hunting ethics is an on-going discussion crossing many fields such as environmental ethics and sport philosophy. Each has its own interpretation and stance on the moral codes of hunting (e.g., whether hunting is justifiable, regardless of its benefits [26] to whether hunting ethics should belong to sport ethics [25]). We take to heart Fischer et al.’s [15] appeal to consider the perspectives of multiple stakeholders (e.g., non-hunters and critics of hunting) on the morality and legitimacy of hunting. Some consider hunter ethics as an individual obligation and thus self-governing (self-imposed) actions are necessary, while others put ethics in a broader context by emphasizing a variety of relevant agents alongside hunting. For example, according to Norton [28], ethical hunters are defined in terms of not merely exemplified practices but respectful attitudes towards a wide range of stakeholders (e.g., land, landowner, fellow, non-hunter, and the game they hunted). In particular, the virtue of “fairness” has been emphasized through the expectation that hunters abide by the principle of *fair chase* [41]. The basic idea of fair chase is to not put an animal’s natural ability to survive at a disadvantage (a detailed explanation will be discussed later). Another widely recognized hunting ethic called the “Sportsman’s Code” has also adapted the fair chase principle as one of their six codes [26]. Philosophically, in terms of judging what good hunting is, some hunters and environmental ethicists [35, 24] have suggested three standards: lowering hunters themselves to a community of nonhuman beings, following community virtues shaped by tradition and rituals, and respect for the biotic community (e.g., understanding the ecology of their community and being aware of land citizenship).

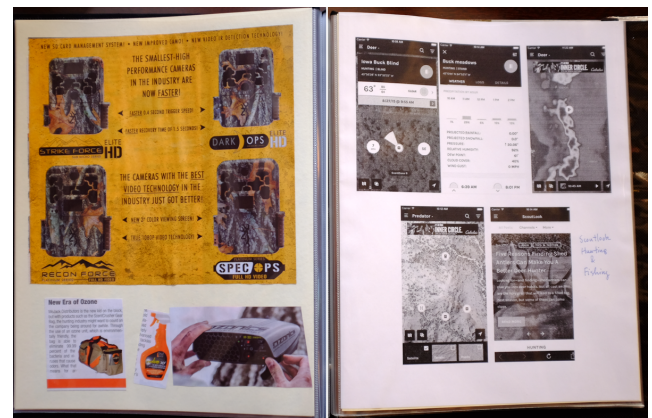


Figure 2. Hunter Equipment Scrapbook (L: equipment, R: hunting app)

### METHODS

Over two years, we conducted ethnographic fieldwork in an American Midwest state consisting of 14 semi-structured interviews (ranging 50 minutes to two hours) with hunters of various species and participant observations of workshops run by the Department of Natural Resources (DNR). The DNR is a forward facing state agency for the conservation of public lands, wildlife and fish. The DNR engages with the public by fielding questions, educating the public (e.g., workshops on hunting, fishing, and birding), and creating and enforcing regulations on proper use of the state’s resources. We interviewed hunter “citizens” to get a perspective into the everyday practices of hunters, many of whom were never formally taught hunting. In addition, we interviewed hunters who were also employed by the DNR to get a perspective of how hunting practices are formally discussed and regulated by institutions. All interviews were recorded and transcribed. Photos and field notes were taken during participant observations. Our study can be seen in light of a Value Sensitive Design approach that develops “a grounded analysis of values from the context” [23] for describing the value of “fairness” in nature and hunting.

Informants were recruited via snowball sampling. We had no prior relationship with the informants nor experience with hunting. Our informants were mostly experienced hunters with a variety of species and weapons. Figure 1 illustrates the detailed demographics of our informants. In interviews, semi-structured questions centered about themes of demographics, past experience hunting (e.g., first involvement with hunting), current practices, community and profession (e.g., membership in hunting organizations or clubs), and personal ethics or philosophy on hunting.

In addition to our interview protocol, we also created a hunting equipment scrapbook (Figure 2) containing image heavy advertisements and articles from popular magazines on hunting species prominent in Midwest America (American Waterfowler, Outdoor Life, Field & Stream, North American Whitetail, and Bowhunter) as well as screenshots of popular hunting apps. Scrapbooks have been shown to be effective in respecting the expertise of informants and stimulating rich stories about artifacts [45]. Images were chosen to convey a wide range of equipment such as weapons and their accessories

(e.g., scopes, arrows), scent removers, camouflage, all-terrain vehicles, trail cameras, and decoys. In interviews, we asked our informants to flip through our scrapbook and reflect on the use of such equipment in their and other hunters' practices. We also asked informants to think about the ethical dimensions of the equipment in our scrapbook. This study takes a broad interpretation of technology from duck decoys to trail cams. Don Ihde's [20] post-phenomenological lens into technology similarly examined how our use of technologies from eyeglasses to video games influences our perception of the world.

The first author took a hunter education course (lessons on firearms, safety, ethics, wilderness survival and conservation required for those under 17 years old to obtain a hunting license) and enrolled in wild turkey hunting, whitetail deer hunting, and mourning dove hunting classes run by the DNR. Archival material such as pamphlets, handbooks, and maps were collected in these classes. He also accompanied one hunter on a deer hunt (six hours) and another hunter on a mourning dove hunt (five hours). The lead author gained hands-on experience scouting, harvesting, tracking, and field dressing animals. He also visited a bow making company and several fish and wildlife areas in the state. Interviews were mostly conducted in the residences or workplaces of our informants. In these visits hunters were often eager to show us their hunting paraphernalia (e.g., hunting trophies, weapons, books, photos). These activities represent an ethnographic approach to "understand another life world using the self or as much of it as possible as the instrument of knowing" [36, p.42]. We stopped our interviews at 14 because we had reached data saturation regarding hunter concerns of fair chase.

We adopt a constructivist grounded theory approach of inquiry [9] in analyzing our qualitative data. By adopting a constructivist stance, we are interested in not only the practices of hunters, but how what they do is constructed as legitimate actions in their social worlds. This suggests that how hunters themselves interpret their own actions with respect to the values and philosophies they adhere to is important. Moreover, we pay careful attention to how these actions are situated in the context of larger social, cultural, and institutional structures. Both authors iteratively developed our coding scheme together as we found emergent and common themes. First, both authors proceeded to open code in a line-by-line manner to capture emergent themes. As we coded and discussed our codings, a shared codebook was generated from which we did focused coding [9, p.57] around themes of fair chase, hunting practices, and the tensions between different actors in reifying fair chase through practices. Data collection and analysis informed each other; the interview protocol and informant pool were adjusted based on our iterative analysis. Our codes and memos form the genesis of the findings of our paper.

### THE ETHOS OF FAIR CHASE

The ethos of "fair chase" was the moral compass upon which our hunters guided their practices. Fair chase was mentioned during all our interviews and observations. Hunter education classes teach its students to follow fair chase to be an ethical hunter. To set the stage, we will first discuss contemporary,

formal definitions of fair chase by two of the most popular organizations that were mentioned: The Boone and Crockett Club and The Pope & Young Club.

While there are many formal definitions of fair chase, most are similar to a definition [41] by The Boone and Crockett Club (B&C Club), the oldest wildlife conversation organization in North America: "the ethical, sportsmanlike, and lawful pursuit and taking of any free-ranging wild, native North American big game animal in a manner that does not give the hunter an improper advantage over such animals." While The B&C Club is remarkably nuanced in acknowledging that ethics is a complex and personal matter, it nonetheless advocates for fair chase *standards*; these standards include obeying state laws and giving the animal every opportunity to elude the hunter. The Pope & Young Club notes that the "fair chase concept does, however, extend beyond the hunt itself; it is an attitude and a way of life based in a deep-seated respect for wildlife, for the environment, and for other individuals who share the bounty of this vast continent's natural resources" [42].

In our fieldwork, we found hunters similarly described the proper pursuit of animals as important. The rhetoric of hunters was to level the playing field, as much as they could, between themselves and the animal. Importantly hunters "gave" this to animals; they had to make decisions in their own hunting practices to allow animals a fighting chance: "*Fair chase is essentially an ethical framework and if I were to describe it, you use the minimum amount of advantage possible to get success*" (P6).

This give and take of animals represents a need for the hunter to have a challenge, to not "cheat" (P8) the animal. It has been commented on [31] that fair chase is really about the hunter's interests, not the animal's welfare and conservation. Indeed, without a challenge the hunt is not enjoyable. The challenge comes from, for example, understanding and overcoming the innate skills of animal species—deer have relatively poor eyesight but an excellent sense of smell, whereas turkey have the opposite, excellent eyesight but a poor sense of smell. In the latter case, hunters rely on turkey decoys to get them within range precisely because approaching turkeys is difficult.

Fair chase also requires respecting the harvesting of animals. Simply put, harvesting describes the activities surrounding an attempt to kill an animal and the subsequent actions thereafter. These activities include shooting, tracking (following a wounded animal), field dressing (gutting the animal for consumption), and transporting an animal. For instance, our hunters reported practices that honor an animal's body after it has been harvested.

Last, but not least, fair chase also means being submerged within nature, what Ortega y Gasset calls "being *within* the countryside" [31, p.124, emphasis in original]. Here fair chase means experiencing nature both viscerally and spiritually. Our hunters described fair chase as a way to return back to nature. The practices of being within the countryside mean, for some hunters, a way to exercise their *country competence* [12]—skills that they have honed from growing up in the country. Desmond used the term in his ethnography of wildland

firefighters to motivate why firefighters chose their line of work and how they identified themselves in opposition to “city boys.”

Broadly spoken, our hunters all talked about the need to gain a challenge in hunting by giving some advantage to animals, respecting the harvesting of animals, and a needed communion with nature. While hunters agreed that these aspects were necessary to achieve fair chase, their discourse on fair chase was elicited, implicitly and explicitly, dialectically.

### THE DIALECTICS OF FAIR CHASE PRACTICE

The doctrine of fair chase unites hunters together but their practices to make fair chase happen differ. Our data shows that the continual attempt to reach a resolution of what constitutes fair chase by hunters can be best viewed as a series of oppositions. Hunters frame their practices in a *dialectic* manner. When hunters hunt on public land, they must do so with other actors: other hunters, state officials, animals, etc. Hunters frame their practices by setting them in opposition to the practices of other groups; such practices reveal contradictory points of views on fair chase that must be reconciled. Hegel’s notion of the dialectic is a triadic process in which unity (initial, naive harmony) gives way to disunity (conflict), but resolves to unity [27]. This relationship between oppositions and their resolution is highlighted in the dialectic. Hegel argues that morality is not ingrained in our conscience, devoid from everyday experience. Rather, our actions are guided by an external social ethic, or *Sittlichkeit*, in which laws and customs have been established [22, p.xxi].

Below, we will describe the practices of fair chase among our hunters. In broad swipes, we will separate our findings into *the hunt*—the pursuit, with the intent to harvest, of the animal—and *the land*—the management and surveying of species and land to ensure a fruitful pursuit. Fair chase is typically defined as the pursuit [41], separate from any “conservation ethic.” Yet, through our interviews, both the hunt and the land were mentioned in the same breath when speaking of fair chase. While we conceptually separate the two below, we emphasize that they are necessarily and messily intertwined. We show how these practices of fair chase are rhetorically framed by our hunters in terms of oppositional forces. Interviews have been anonymized and are identified by an ID number (Figure 1).

### THE HUNT

Key to the pursuit of animals are practices inscribed in the weapons a hunter chooses and the harvest of animals (scouting, killing, field dressing, and tracking). Each set of practices have a number of dialectical elements (some involving technology) which reflect opposing ways of realizing fair chase.

### Weapon Choice

In our Midwest State, shotguns, rifles with legal cartridges, muzzleloaders (modern re-creations of so-called primitive firearms such as flintlocks and percussion cap guns), cross-bows, archery equipment (long bows, recurve bows, compound bows) and handguns are allowed in particular hunting seasons determined by the DNR. Deer hunting is the most iconic and popular species hunted in the state and is divided

into weapon seasons—archery, firearms, and muzzleloader seasons. Our interviews revealed that the choice and use of a weapon signaled a particular brand of fair chase that sometimes was in opposition to those that chose other weapons.

### Muzzleloaders

Weapons are a way to ensure challenge when hunting. The muzzleloader for instance can only fire one shot at a time and is cumbersome to load, requiring the hunter to pour black powder and insert the bullet into barrel of the gun. For some, the limitations of the muzzleloader made it attractive. The muzzleloader typically works best in dry conditions because rain or snow can make the powder wet. There is also the increased chance of misfire. P1 described how, “...there’s a lot of days when you’re out there, and you’ll see the deer...and it misfires or it doesn’t fire.”

Muzzleloaders are set in opposition to rifles. Modern muzzleloaders are accurate like rifles, but help some hunters reinforce the fair chase ethic that the animal is harvested ethically. Fair chase dictates that the hunter should only make a shot that they are confident will kill the deer quickly and humanely. When compared with rifles that are semi-automatic and have magazines, muzzleloaders force hunters to make each shot count. P11 recounts an ethical pact he made with his friends regarding weapon choice:

A couple of us made the decision that one shot of higher velocity, higher effective range, was more important than multiple shots at a lower, closer range... If it’s a high percentage shot...it’s going to be a ethical, clean, fast kill...It’s just [a] little more pressure that you got one opportunity.

Crucially, P11 is describing how weapon choice makes the shot more *ethical*. Muzzleloaders present challenges in its operation and limited magazine capacity.

### Bow and Arrows

In opposition to muzzleloaders and rifles, which are long-range and accurate, the decreased *proximity* needed to hunt is what bowhunters argue sets them apart. By getting so close to the animal, hunters are deliberately exposing themselves to the animal’s natural defenses, possibly spooking the animal. Even if they are successful getting within distance, bowhunters need to comport their body to make an ethical shot. P8 explains, “I still have to draw that bow back. I still have to anchor and shoot, right? Eight out of ten times, this is where you’re going to lose the game. They’re going to see you” (P8). Bowhunters must be willing to not harvest any deer for the challenge. Here “they’ve taken a more fair chase attitude because they’re a lot more interested in the method than they are in the result.” Fair chase is more than the challenge of harvesting but also the challenge of simply learning to shoot a new (old) way.

Rifles allow hunters to “snipe” an animal from nearly 400 yards away. As P7 put it, you are “shooting an animal that doesn’t have a clue that you’re even in the same country versus getting close and being so close that, at any point in time, the slightest error is going to result in going home empty handed.” In contrast, the skill necessary to get close to an animal and make an ethical, accurate shot with an arrow is markedly



higher for bowhunters. Bowhunters need to put in “*much more of a commitment in terms of practice*” (P12). A gun allows the hunter to target the chest area, “*versus a bow you really need to hit the lungs*” (P14). They are “*choosing to limit*” (P8) themselves by shooting with a bow.

Certainly, many hunters take up bowhunting because there is a dedicated archery season for deer and turkeys; this allows people to continue hunting in some form as long as possible. One of the most contentious issues among bow and arrow (e.g., compound and recurve bows) hunters is the inclusion of crossbows in the archery season. Hunters disparagingly refer to crossbows as “crossguns.” Aesthetically crossbows looks like a gun; P7 and P11 note it has bolts, not arrows, has a trigger, and a stock. Functionally, P10 explains how it acts like a gun: “*With a crossbow, I see a deer coming. He crosses that creek. I put the telescopic sight on him. I’m holding this like a gun. He gets close, he walks up, he turns broadside...and I do this [draws and locks an imaginary crossbolt]. That’s the only movement*” (P10). Muscle power is not needed to draw the crossbow (P7). Crossbows are corrupting what should be a pure archery season. It provides a loophole (P11) for hunters to pretend they are adopting the archery ethic.

Within the bow and arrow community, there are “traditional” bowhunters. These bowhunters rely on recurve bows. Compound bows allow the hunter to easily draw back. Here, fair chase is about hunting by almost primitive means. P12 and P7 note that traditional equipment allows one to shoot instinctively, judging distance without lasers or sights and pins (mechanical aids on compound bows that allow bowhunters to accurately aim at varying distances). Traditional bowhunters argue that compound bows, similar to target archery, can be fixated on accuracy: “*I don’t want to say that accuracy’s not important to us, but pinpoint accuracy is not that big a deal...These guys with compounds, it’s like kicking in the dirt and wrap the bull around a tree because they miss that little tiny bulls eye in there. Ease up man*” (P13). This methodical approach to shooting with compound bows is not a purist, atavist notion of fair chase for traditional bowhunters. In the wild, we need to rely on our instincts.

The issue of mixing different weapon “communities” together is also an issue of mixing hunters with different notions of fair chase together. In general, bowhunters also feel safer when hunters around them are using the same weapons. Bowhunters are weary of gun users who “*don’t pay attention to what’s behind the thing they’re shooting [at]*” (P1). P11 sums up the ethereal experience of an ideal archery season as one with only real bowhunters where there are “*less people in the woods, less spooking of the game, less intrusiveness.*”

#### The Snapshot

If proximity is a key challenge provided by weapon choice, then why not simply take close pictures of wildlife? When asked how often he hunts, P10 answered, “*I hunt with a camera practically every day.*” P10 no longer feels the need to harvest many deer, and instead will take a picture of “*the one I passed up.*” However, P5 makes an opposing point that taking pictures and hunting involve a different level of commitment. In other words, taking pictures is ultimately a passive

action, while hunting gives you a connection to the natural world by “*participating in the lifecycle.*” The use of decoys, calls, camouflage, and blinds are in service to the pursuit of animals: “*These little song birds were two, three feet from me, because I’m just camo’d up and hunkered down in this little thicket...They’re just all around you. They don’t know you’re there...It’s participating in nature.*” For P5, this experience of being immersed in nature would not be possible via observational means.

#### The Harvest

Harvesting an animal involves preparing the shot, the actual ethical shot, tracking the animal (if necessary), and field dressing (gutting the animal for consumption). As referred to earlier, the “ethical hunter” aims for one shot, one kill, or as P10 put it, “*If you draw blood, your hunt is over.*” This ensures that the animal does not suffer. When asked if they ever violated their own hunting philosophy, by far the most common narrative was when they wounded an animal or, worst yet, failed to track a wounded animal. For hunters these moments weighed heavily on them. P1 recalls a deer he did not recover at the age of twelve:

I remember one back to when I was 12 years old when I wounded and didn’t recover. It’s just those one stick with you. Those are the aspects where you feel like you didn’t live up to the ethic of hunting when you lost that animal.

For these hunters, it was not necessarily the act of losing the animal (and thus, not being to harvest the animal). Rather, it was their moral responsibility as an ethical hunter to make sure that the animal did not suffer. By wounding and then losing the animal, this meant that first, it was an unethical shot (e.g., a shot that was beyond one’s skill level, a shot in the animal’s gut), second, the animal was most likely in pain, third, there was an added responsibility now for the hunter to track the animal and then end its suffering, and lastly, loss of meat (sustenance). When P7 told us how he wounded a deer and tracked it, he said, “*I owe it to him.*” Some hunters spend “weeks” tracking deer. *Resolution* of a wounded deer is personally important for hunters.

Just as scouting for deer, learning its habits and routes demonstrate a sense of country competence [12], tracking also demonstrated country competence. While at the same time describing a failure of ethics, P12 noted a positive side of practicing tracking, “*[I]t disappeared...but I think the more experience that we have, you learn how to be more effective in tracking animals in terms of what to look for and the habits of big game.*”

Fair chase in harvesting came in conflict with “other hunters.” When informants described other hunters they were often telling stories of strangers or people they did not know well. P2 describes his worst experiences hunting:

When we’re with other people and they don’t kill the deer right away and then you have to track the deer...One of my brothers brought a guest...They shot a deer and they didn’t hit it very well...we spent four hours at night trying to track the deer through the woods...Wherever they hit it, it must have been enough that blood came out but it was just bleeding. We’re sure the deer lived because after

about four hours...blood started slowly disappearing and the deer kept on going.

Here, the other hunter is following fair chase practices in tracking, but perhaps ethically should not have attempted the shot in the first place. More blatantly, some other hunters disregarded fair chase altogether. P10 described one encounter: *"There was a guy that had hit a deer and lost it. He just said no big deal...Some people just have this attitude, 'It's just a deer. There are plenty of deer. I'll get another one.' That just rubs me the wrong way."* P13 related a case when a bowhunter tried shooting a buck but was unwilling to traverse difficult terrain to track the deer—thus this other hunter violated fair chase because *"the opportunity to shoot it came up without any regard as to whether or not he could retrieve it or wanted to retrieve it."*

Once an animal is harvested—killed—hunters may treat the body respectfully. During participant observations of a mourning dove hunt, after we retrieved the body of a dove we shot, our mentor told us, *"Don't just throw the dove onto the dirt into a big pile of bodies like some hunters do. Gently place the body onto the dirt."* He explained later that this was to show respect for the sacrifice the birds made. Part of this respect also means properly field dressing animals for sustenance. P3 told us he no longer hunts with his cousins. After taking five geese on their land, *"we said, 'That's plenty of meat, we're good.' As we were leaving we saw them toss their geese in a ditch...there were probably a dozen geese. We were just appalled...We said, 'What are you doing?' And they said, 'Oh, our freezer's full, we don't have any room,' so they were shooting them for fun and we don't like that."* The killing of animals purely for fun did not fit P3's conception of fair chase.

This respect for animals is set in opposition to other hunters, but it is also done for the sake of the public perception of hunting, especially non-hunters. Photos and videos disseminated online may perpetuate practices that are not fair chase for hunters. P11 disparaged of a video posted online where a traditional bowhunter made a shot too far to be ethically sound. Hunter-related videos posted on Facebook that showed excessive guts, blood, kicking (spasms), etc. could offend non-hunters. P12 admonished photos of braggadocio: *"They're laying on top of the animal. They've got their feet up on its antlers, just like, 'I'm the man.'"* Our hunters carefully framed their photos to portray respect for animals by, for instance, cleaning the blood off and putting water in the eyes to prevent shrinking. Many of our informants were cognizant of the "red-neck" stereotype that some public had of hunters and sought to show their ethics—respect for animal and land—to counter these views. P14 told us about those that glorify killing instead of hunting: *"I don't think we need to flaunt it like put the dead animal on the hood of your car and drive down the road. We need to be courteous to people who don't care to see that."*

## THE LAND

Fair chase also involves practices that lead to some understanding of the interactions between species behavior and the land they reside and traverse in. The dialectical elements here reflect the nature of this understanding and how it is achieved.

What constitutes the normative ethic of being with nature in hunting is oppositionally understood by different groups.

## Decoys and Calls

While decoys and calls are thought in terms of pursuing animals, hunters spoke of this equipment in terms of understandings and misunderstandings of the land and its wildlife. With decoys, the challenge lies in the hunter's ability to fool the animal into believing the decoy or call is a real animal. P9 describes his satisfaction in outsmarting ducks:

You go through all this work. You plan your decoys. You get the set up that you want. You do a good job of calling...a flock of ducks or geese into you and you completely got them fooled to where they come...and set right in the decoys. That's your satisfaction right there.

P7 recalls jumping for joy the first time he called a turkey and brought him within range (despite not getting a good shot). Bird calling can be done via a number of different mechanisms—vocally, whistles/flutes, boxes, or slates—and is considered a different skill to master. There are a number of national turkey calling competition. P7 believes that calls improves one's understanding of animals: *"Not only do you have to learn how to use a call, but...when to use the call. You have to learn why the animals make certain sounds, so you're educating yourself."*

The user and non-use of decoys and calls also reflects opposition between non-scientist and scientist notions of fair chase. P5, an avid waterfowl hunter and biologist, uses not only country competence but *scientific knowledge* to successfully harvest ducks. He says, *"I use 24 [decoys] and I try to mimic the species composition that I see in the area [of the lake] at the time. Most people don't...but that's what I do."* He is disdainful of "robo-ducks," ducks which have motors and emulate wing movement. Robo-ducks are problematic for P5 because juvenile ducks are particularly susceptible to them; this may have unintended consequences from a biological point of view (discourages ducks from breeding).

Birds also get acclimated to the use of calls and decoys. P1 notes the effect of "over-calling," saying that birds get used to it and can determine what is really a bird call or not. As birds hear more and more calls in areas with many hunters, hunters are forced to use more elaborate call devices to fool birds. Ducks older than 1-year are wary of decoys (P9). Interestingly, P5 believes that when birds outsmart the decoy—outsmart the hunter—it deserves to get away: *"If a duck lands in decoys, most hunters will stand up, it'll jump up and they'll shoot it. Once it lands in my decoys I've said, 'That bird got by me. It's on base. It gets to go away. I'm not going to shoot at it.'...It seems fair to me. It beat me"* (P5). He does not believe in the second chance to harvest the duck that other hunters do.

Those who do not revel in the challenge of decoys cause a phenomena P9 called "pass shooting." In essence, hunters who do not strategically shoot through the careful use of decoys, camouflage, *"don't let the birds work in. They just stand and shoot at stuff flying around"* (P9). Waterfowl hunters are often in close vicinity of each other. As a result of the gun blast from neighboring shooters, hunters are forced to shoot birds

scared off by the sound of guns. The lack of fair chase with other hunters forces the hunter to adopt that same, less ethical, strategy if they want any hope of harvesting birds.

### The Lay of the Land

Part of fair chase involves being submerged within nature. Hunters who grew up around a tradition of hunting have gotten to know the land around them intimately. They have put the time in over the years to understand how animals interact with the land. P2 was taught wayfinding skills as a child so that he *“always had a visual concept of what the land looked like and where you’re at and things like that. It helped you understand where you were hunting.”* P3 below describes how he searches for deer paths and hunting locations by spending time to know the lay of the land:

[W]e...spend...time...looking for deer trails, looking for bedding or droppings...because often we’ll want to set up a stand...so we’ll scout and like, “These are some good trees and it’s overlooking this water, so that could be good.”...Let’s say there’s a trail that the deer normally walk and we find a way to avoid that and walk a different way.

When waterfowl hunting, P9’s knowledge of the land he grew up hunting in and now helps manages is almost “cheating.” Unlike other hunters that rely on gear like drapes (camo blinds), he knows where the natural vegetation is and can “brush it in” to camouflage himself. Hunters also share their land knowledge with each other and online; P14 relies on his uncle who has *“walked those hills and ravines since he was a kid”* to let him know the opportune time and place for hunting around his uncle’s area.

Ways to skip the work to get the lay of the land were disparaged. All but one hunter were highly against the use of drones to scout for animals. P3 thought the intimate process of knowing the area is lost with drones when you could easily spot a herd.

Long-time hunters contrasted themselves with newcomers. P4 surmised, *“[N]ewer hunters...want to...be able to just hike into the woods...hike in for a quarter of a mile, sit down, wait for a couple of hours and be able to get a deer.”* Putting her biologist cap on, she continued, *“The kind of population levels that deer managers are concerned with keeping the population at is usually lower than what a hunter who wants to be able to get a deer with very little effort is going to be able to be satisfied.”* Thus, while the experienced, “fair chase” hunters feels joy in knowing the land in which they would hunt, the modern, busy professional, the *“opening weekend hunters”* (P7) who hunts only when the season opens needs to maximize their time on such excursions. Hunters such as P12 acknowledge why technology is alluring, *“It’s about time management...I don’t have time to go sit in the tree and not know that there’s going to be an opportunity for a big deer, so I’m going to control the variables, isolate the location where my odds are better. That’s technology use to my advantage to get that deer.”*

Country competence with land also entails what we call *country toughness*, a willingness to tough it out to achieve fair

chase. Country toughness is not embraced by many hunters; this is particularly evident in the behavior of deer near public land parking lots. In workshops we attended and in interviews, we were told that deer were more skittish and scarce within a hundred yards of parking lots. P4 noted that during hunting season deer typically stick to areas where hunters do not go. The use of all-terrain vehicles is seen as violating country toughness. They allow hunters to easily access remote, difficult to reach locations that typical automobiles could not reach.

Interestingly, we saw oppositions between country competence and scientific knowledge. Put simply, those with country competence had self-confidence over the lay of the land. When the DNR institutes new regulations based on their own, scientifically-based (e.g., surveys) methods, they often collide with this self-confidence. P1 described the situation when someone questioned his reduction of the rabbit season:

He’s like, “Well, I’ve got rabbits everywhere. Why are you changing the season?” I said, “Overall in the state, we don’t.” I said, “You may have your little paradise, but if you look at the habitat as a whole, that’s not sustainable.”

Trail cams, mentioned later, help bolster hunters’ self-confidence on their lay of the land. For the DNR, many hunters have views that are fixed locally in time and place, while they—as scientists—have a global view informed by ecology and biology; they understand for instance how movement of populations of one species can effect other species in the state.

### Trail Cams

Trail cams are time and/or motion activated cameras deployed on land by hunters to collect data on movement and habits of various species. Some cams require hunters to manually return back to them to retrieve video, while newer models can wirelessly transmit photos or alert hunters of new data.

For some hunters, trail cams violate the spontaneous, fortuitous character of nature. Rather than relying on a deep knowledge of deer—for example, scouting and tracking—cameras allow hunters to be far removed from the country. P1 explained a new behavior exhibited by deer hunters relying on trail cams:

They’re seeing these big bucks come in at night on these cameras, and they’ll go the entire season and not shoot a deer because they’re waiting for that one animal now...They name the deer...[T]hey’re almost thinking that those are their animals. They see them every day on their camera. That they’re not moving off the property...Most of the time, these cameras are catching these animals at night. A lot of those bucks are nocturnal. You’re never going to shoot that buck.

There are a number of remarkable points made in this quote. First, trail cams are a means for hunters to survey public land. Second, they encourage hunters to target specific bucks (each season, hunters are limited in the number of deer they can harvest), those with large antlers (the belief is larger antlers means a wiser, more challenging deer to harvest). Hunters obsess over that “monster” buck (P5) or see bucks “develop all summer long” (P6) and begin to feel that they own particular



wildlife. Third, the bucks they most desire and see in the trail cams may be nearly impossible to kill. Some hunters refer to these deer as “ghost” deer (P10). Other hunters refer to the cam-sighted deers as their “hit list” (P11). Lastly, while conservation officers told us that the American ethos of fair chase dictates that no one can “own” wildlife, trail cams encourage the exact opposite.

Some of our hunters however believe that general knowledge of the wildlife inhabiting their local hunting grounds can make hunting more informed (which trails to go to, which animals are around) and enjoyable. For one, it can give hunters hope that there are deer in the area. Some hunters reported nearly giving up on hunting because the situation seemed hopeless with no recent sightings. P14 remarked that other hunters like to be able to watch deer grow and being able to recognize when their favorite deers are pregnant, have children, etc. to see that the deer population is healthy (ensuring more future hunts). Thus trail cams can help hunters enjoy hunting itself by informing them about future, exciting possibilities of the land they occupy. Many hunters remarked that those who simply lacked the time (e.g., those that live in the city) to actively scout and track deer found the trail cam useful to manage what little time they had in the country best.

At the same time, trail cams were also seen by some hunters as replacing country competence and corrupting nature. With cameras, traditional means of looking for deer are substituted. Without tracking skills—looking for scrapes, signs, and tracks—hunters are now *“tracking all the movement based on cameras. They’re not having to think about patterns and where the deer are at and doing a lot of pre-scouting. They just go set their cameras up, and that’s it.”* (P1). P11 related how the very maintenance of cameras also disturbs nature because the hunter is *“constantly going out in the woods to go check his cameras, which is leaving more scent, more disturbing the wildlife, and it can hurt you later on when you go to hunt.”*

## HCI & NATURE: WORLDS OF OPPOSITION

We have shown that hunters rhetorically describe their practices of the hunt and in the land dialectically—in terms of oppositional forces. Explaining why they do what they do for fair chase is rendered more evident when set against practices they do not approve. Crucially, this dialectic illustrates that hunters are not simply one group but rather composed of multiple social worlds [37]. For instance, though bowhunters can be thought of as inhabiting their own social world, they are nonetheless cognizant that in nature they will coincide with social worlds which encapsulate the values and practices of hunters skilled in other weapons. Each social world encompasses a set of particular practices that, when set in opposition of another social world’s practices, simultaneously unify and reify their notion of fair chase. Such dialectics reinforce the fact that the practices of hunters cannot be separated from their values. The potential outcome of their actions—the death of a living being—and the scrutiny they face from others make this community especially sensitive to their values.

We suggest that designing technologies for nature and its inhabitants must address the confluence of normative values

and the diverse practices that reflect a heterogeneity of values. Fair chase as a moral signpost can be readily explained by all hunters as proper challenge with game, respect of the harvest, and communion with nature; nevertheless, by doing fair chase, the social worlds of hunters interpret fair chase, and, by doing it differently, embody variegated beliefs. In the following subsections, we have labeled the various guises in which the dialectics of fair chase arose in our findings. These dialectics yield sensitizing concepts [4] for HCI practitioners and researchers to incorporate when designing technologies for subcultures of nature.

## Weapon Communities

Oppositional views on weapons (rifles vs. muzzleloaders, guns vs. bows, bows vs. crossbows, bows vs. traditional bows, DNR vs. bowhunters) centered about debates on the role of weapons in creating a proper challenge when hunting game. We saw how technologies are intertwined with differing views of engaging fairly with nature—encouraging development of skills (one shot, one kill) via handicaps, prioritizing proximity to nature, tying values with technology choice (crossbow vs. bows), and engaging passively vs. actively with nature. This dialectic suggests that design needs to consider how technologies can serve to purposefully limit the capabilities of the user, changing the power relationship between users and nature. Rather than technology acting as a mediator for nature—making it easier to engage or deal with nature—it may make it harder to be with nature. This brings into question the meaning of engagement. If engagement also means commitment and treating each encounter with nature as special, rather than mundane, then technologies that draw out the rarity and spontaneity of engagement with nature should be designed. This needs to be balanced with the desire to easily track and survey nature with technology [3]. Past HCI studies of hunting have argued that the challenge of hunting (e.g., tracking animals, shooting with low visibility at a stand) adds to the satisfaction of the hunting experience. Yet, we have shown that there is no single conception of what makes something a “challenge”—to what degree and when does technology need to handicap or make each interaction count to make something a challenge?

## Non-Hunter vs. Hunter

Oppositional views between non-hunters and hunters revolved around debates of respecting animals via hunting vs. observing wildlife (e.g., wildlife photography). Design opportunities exist to allow both parties to learn and experience the commitment choices each mode of animal interaction entails. Fair chase was also a symbol hunters needed to maintain for public (citizens and legislators), often non-hunter, perception that was disseminated online through photos and videos. Those who choose not to engage with nature may get a glimpse of those that do. As designers create technologies for those invested in nature, they may need to consider the forward-facing effects of their designs. For example, does the technology create nature lovers whose values are compatible with those of non-nature goers? Just as non-hunters expect a romanticized notion of hunting that hunters need to be aware of when taking photos posing with their harvest, designers need to consider how to properly glorify success in nature with technology.

### The “Other” Hunter

Oppositional views between ethical vs. “other,” non-ethical (or less ethical) hunters were brought out when discussing the harvesting of animals, especially with regards to ethical shooting and the wounding and tracking of animals. Hunters are always cognizant of the kind of environment created by “other” hunters. This dialectic suggests that interacting with nature, even if not done collaboratively, is always done in the presence of others. We saw that there is a desire for some hunters to commune indirectly with like-minded hunters (e.g., bowhunters with other bowhunters but not crossbow hunters); we might consider whether designs can somehow ensure an instantiation of nature that users desire to experience—one inhabited with actors of certain value. This dialectic also brings to the forefront whether technologies for nature should consider dealing with non-ethical behavior in nature and how designed technologies may eventually be appropriated for non-ethical behavior. For instance, our study found that hunters were sometimes forced to adopt practices they found unethical. Those ethical and more skillful hunters have learned how to immerse themselves in nature, emulating nature (e.g., with decoys and calls). Thus designers may need to think about avoiding a shallow engagement with nature that non-ethical users may have; designs should consider how users can gain a competence in understanding and even becoming an animal. Because what it means to violate fair chase is debatable, opportunities for design exist to bridge an understanding of why particular fair chase practices are frowned upon by some but deemed acceptable by other hunters. A particularly interesting application could teach hunters how other hunters create their own practices of “fairness” by giving a voice to animals (e.g., P5’s story about letting ducks who land live).

### Steeped in Country Competence

Oppositional views between those with vs. those without country competence often came up when talking about those who had grown up in a tradition of hunting in their local land vs. “weekend” hunters or newcomers. Country competence comes from years of communing with nature, for example, taking advantage of winds (P12) to identify the right spot for turkey hunting; such skill is tacit knowledge that technology may not offer. Often coupled with country competence, country toughness was set in opposition of those relying on technology, bypassing real immersion into nature. Designers may need to reveal the harshness of nature and the benefits of commitment (e.g., hunting farther away from parking lots can lead to better harvest). Country competence can possibly exclude early on-set adult hunters—how might technologies bridge old-timers and newcomers with nature? Many new hunters, those from the city or working professionals, will never have a lay of the land—what role can technologies play in enabling newcomers without altogether destroying country competence? This tension suggests that designs should consider how technologies may supplant traditional practices with nature. Designers need to also consider how country competence informs the side-effects that maintaining technology has on nature (e.g., humans leaving a scent). This sustainability issue requires systems that help us understand how animals themselves become aware and wary of both humans and technology. Lastly, we

saw that a different sort of country competence with animals arose with trail cams—people became intimately familiar with deer and grew up with them. Designs have potential to give users the “lay of the animals.”

### Scientific vs. Country Knowledge

Finally, the oppositional views between those with country competence vs. scientific knowledge frames those with handed-down, well-honed knowledge of the land and in hunting as problematic for those (e.g., the DNR) with scientific knowledge. This dialectic suggests that designs for nature need to reconcile scientific expertise with knowledgeable amateurs [14]. Technology that bridges the two perspectives should engage with varied perspectives into the ecology of nature—for instance the local vs. global views of nature. When building technologies to educate non-experts about nature, designs need to leverage the expertise of different parties (e.g., past work has involved biologists and landscape architects [34, 11, 10]). Country competence is usually done in rural areas—areas not often taken seriously in HCI as places for innovation and real crafting; future designs should not only take scientific knowledge seriously (which it already does so well) but rural or country knowledge as well. Opportunities may exist for designs to create greater empathy between these two social worlds.

These dialectics are not exhaustive nor are they clean-cut distinctions. Weapon communities have much to do with the tensions between hunters and “other” hunters *and* the tensions between those with and without country competence (e.g., bowhunters may say they have more country competence than rifle hunters). The reader is encouraged to develop their own dialectics and sensitizing concepts from our findings. We have emphasized that the dialectics yield design opportunities but opportunities that are always coupled with caveats. Hence, designing for nature will always be about acting between—balancing, bridging, converting, committing, and so on.

### CONCLUSION

Our approach seeks to strengthen “the voice of the participants” when writing about and conducting a VSD investigation [6]. We take seriously the rationale our hunters gave for the practices they do in the name of fair chase. The discourse of the hunters themselves, in a way, establishes a coexistence of what Borning and Muller [6] identify as universal and culturally-specific values. In the hunting subculture, fair chase embodies a set of canonical values, yet the details of how hunters accomplish these values reveals a set of opposing interpretations—and thus their *own* values—of what fair chase means. Therefore, canonical values serve a rhetorical function to unify social worlds but differing practices belie the variegated social worlds of hunters. We emphasize that our hunters, as they would readily acknowledge, are not paragons of virtue—they all have experience violating their (ever-changing) notion of fair chase. Nonetheless, they know their ideals and, significantly, what values *others*, in their oppositional social worlds, hold. In such dialectics, we presented sensitizing concepts that complicate the design for “users” of nature. As experts of nature, our informants not only inspire designs for hunting but allow us to reconsider nature in general.

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