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Boundless, Wild, and Free: Investigating Human-Animal Ecologies in Greater Yellowstone

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BOUNDLESS, WILD, AND FREE: INVESTIGATING HUMAN-ANIMAL ECOLOGIES IN
GREATER YELLOWSTONE

by

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A dissertation submitted to the
Faculty of the Graduate School of the
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of the requirement for the degree of
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This dissertation entitled:
Boundless, Wild, and Free: Investigating Human-Animal Ecologies in Greater Yellowstone
written by Mason Auger
has been approved for the Department of Geography

Joe Bryan

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Date_____

The final copy of this thesis has been examined by the signatories, and we
find that both the content and the form meet acceptable presentation standards
of scholarly work in the above mentioned discipline.

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Abstract

Auger, Mason (Ph.D., Department of Geography)

Boundless, Wild, and Free: Investigating Human-Animal Ecologies in Greater Yellowstone

Thesis directed by Assistant Professor Joe Bryan

This dissertation is composed of three case studies on the management, conservation, and politics of grizzlies, wolves, and bison in Yellowstone National Park and the Greater Yellowstone region. Watching, looking, observing, studying, and researching name the primary practices which give life to the relationship between people and wildlife in Yellowstone. This, however, is mitigated by practices on the boundaries of the Park which, sometimes, constitute very different relations with Yellowstone wildlife. How this occurs and what it means is different for each species. In the case of grizzlies, the managerial shift to the principle of natural regulation and the research of the Craighead study team in the 1960's were instrumental in redefining relationships between wildlife, people, Yellowstone. These two factors coupled to then emerging knowledge of Yellowstone's grizzly population softened the political boundaries that distinguished the (preservationist) space of the Park with the public and private lands that surrounded it. This in turn led to the eventual realization of the Greater Yellowstone Ecosystem (GYE). However, the realization of that vast ecosystem with the Park at its core was a response to perceived administrative-management need, one that blurred boundaries in the name of grizzly conservation. The reintroduction of wolves to Yellowstone in 1995, and their subsequent expansion onto the wider landscape, is best understood as a release of forces that went well beyond the delimited nature of the Park or the more expansive ecology of the GYE. These forces found expression in the intensity of discourse that emerged in the wake of reintroduction and continues to the present moment. This is evident in how interlocutors talk of wolves which

often entails them describing an explicitly socio-political world of agents, powers, forces, and dynamics that only indirectly, if at all, relate to wolves as flesh and blood animals. Bison and bison management has been a primary site of efforts to re-inscribe particular historical and social claims onto the “ecology” and “habitat” of the GYE. Though each articulates very different interests and concerns, Montana ranchers and Native American tribes have made the most substantial claims in this regard.

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Picture the GYE 211

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List of Acronyms and Abbreviations

APHIS—Animal and Plant Health and Inspection Service

BLM—Bureau of Land Management

CSKT—Confederated Salish/Kootenai Tribes

GYE—Greater Yellowstone Ecosystem

IBMP—Interagency Bison Management Plan

IGBC—Interagency Grizzly Bear Committee

ITBC—Inter-Tribal Buffalo Council

MDOL—Montana Department of Livestock

MFWP—Montana Fish, Wildlife, and Parks

NFS—National Forest Service

NPS—National Park Service

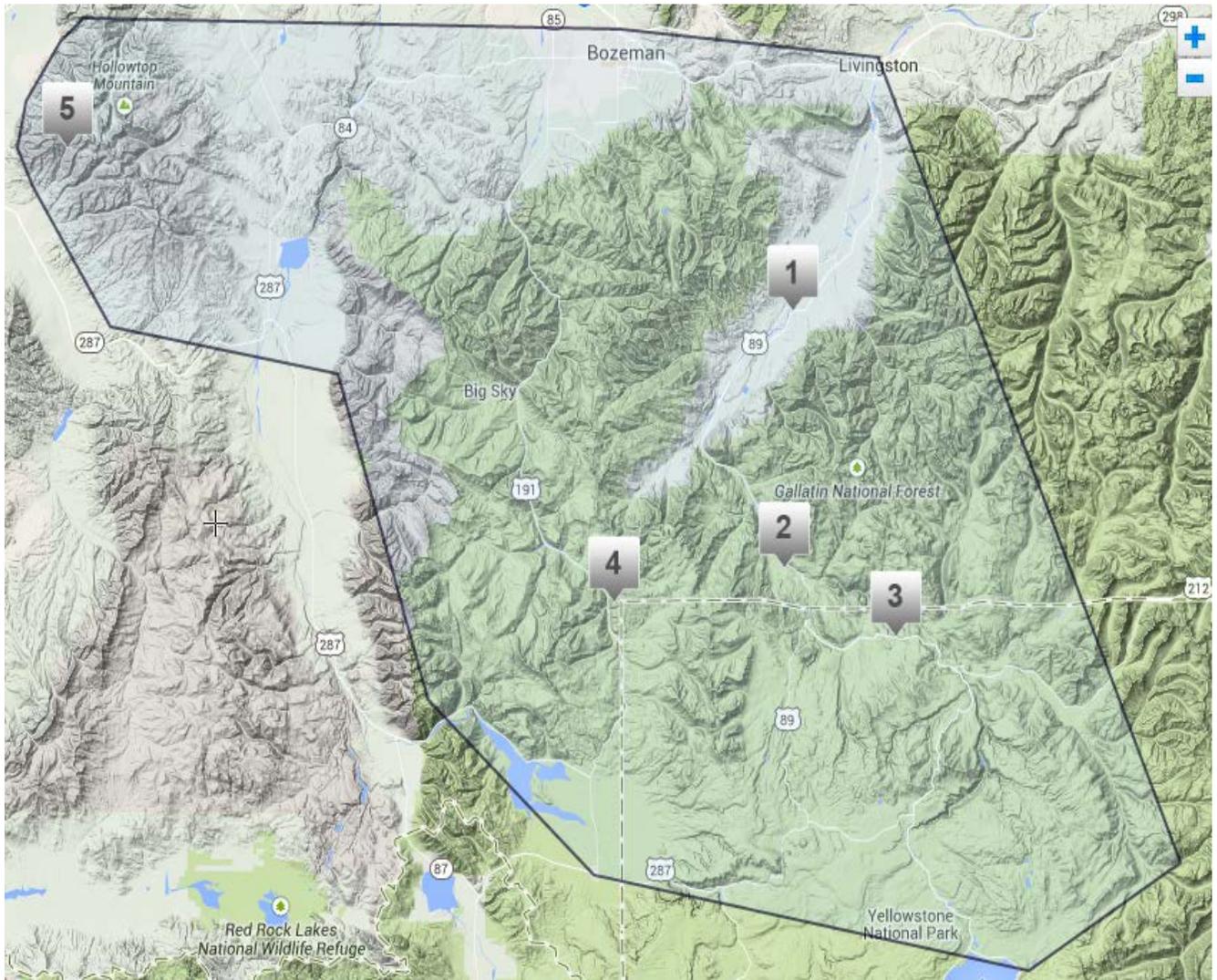
NRCS—Natural Resources Conservation Service

USFWS—United States Fish and Wildlife Service

WMU—Wildlife Management Unit

Study Area

1. Paradise Valley, MT
2. Gardiner Basin, MT
3. Northern Range of Yellowstone National Park, WY
4. Taylor's Fork, MT
5. Branham Lake, Tobacco Root Mountains, MT



Introduction

“A vignette of primitive America”

It is the last week of May on the Yellowstone plateau, but the air is cold and the sky overcast as I drive through the Park. A mix of precipitation that transitions back and forth between misty rain and big, damp snowflakes falls intermittently. At Norris Junction I make a left turn, east toward the developed area at Canyon. The seventeen miles of paved road between Canyon and the Norris Geysir Basin rises un-dramatically. There are few awe-inspiring vistas driving east through the center of the Yellowstone. At over 8000 feet elevation, this area of the Park is one of higher points on the plateau, but views are obscured by thick stands of lodgepole pine. The species is common throughout much of Yellowstone, but is especially prevalent in this area of the Park. Whereas other species find it difficult, the lodgepole is able thrive in the nutrient-poor, volcanic soils that cover this area of the plateau. The forest to the north and south of the roadway is no stately old-growth forest either. The trees are thickly bunched, in places seemingly impenetrable, appearing to grow in successive cohorts that are relatively the same height. Every so often I see the taller, charred remnants of lodgepoles cutting into the sky; vestiges of the massive 1988 fires that burned large swathes of the Park. Those fires, or rather the decision not to fight them in the war-like siege fashion which had characterized wildland fire management for most of the century, was highly controversial. The crown jewel of the national park system engulfed in a sea of flames because the Park Service decided fire was a “natural” part of the ecosystem. The decision did not sit well with many people, especially in the years immediately following the fires when some areas of the Park looked like a devastated wasteland of black and grey. The intensity and scope of the fires, however, was in part a historical result of the wildfire suppression in the American West. The century-long intervention upon fire regimes in western forests led to an overabundance of combustible material in places such as Yellowstone.

And while in the summer of 1988 some land agency managers, foresters, fire ecologists, and wildland firefighters were sensitized to evidence that fire was a constitutive element in the natural history of forests, questioning the assumption that every fire was one worth fighting, the general public had not yet internalized this new way of seeing the interactions of fire and forest. Thus when Yellowstone managers decided to let the lightning-induced fires burn more or less without interference, much of the public could neither contextualize nor rationalize the decision.

The ensuing controversy was flamed by powerful images in national media outlets and fears that the Park had been damaged irreparably. It recapitulated another controversy that had begun twenty years prior, and had not yet completely settled by 1988. That controversy centered on the management of Yellowstone's seemingly fragile grizzly bear population, in particular the Park Service's decision to swiftly close the Park's open-pit dumps. Long a seasonably reliable source of food for grizzlies, many people, including two biologist brothers responsible for the first long-term biological study of the Park's grizzlies, feared an abrupt closure would create severely adverse conditions for animals accustomed to feeding on the refuse generated by the hundreds of thousands of summer visitors to the Park. An abrupt closure, critics argued, would cause the animals to roam more widely in search of forage, intensify potentially dangerous interactions between humans and grizzlies, and unnecessarily increase grizzly mortality as a result. Park Service managers surmised that the Park's bears would adjust to the new conditions, especially as those bears never habituated to easy access of garbage came of age. More fundamentally, managers argued that the bears' reliance on human refuse was in no way indicative of the natural conditions that ought to prevail in Yellowstone. The dumps were an unnecessary and unsightly intervention in the natural life of grizzlies, and the natural scene of the Park. In short, management was intent upon naturalizing the animals by erasing the sites where they had

become most attached to the effects of the human activity around them. Critics countered that management was effectively missing the forest (viability of the Park's grizzly population) for the trees (unnaturalness of grizzlies foraging at the dumps). The Park Service reiterated that the naturalness of the trees (grizzlies) was essential to the long-term viability of the forest (grizzly population) and ought to be managed with that in mind. Moreover, management argued, a prolonged and drawn-out closure of the dumps, or any other similar mitigation, like supplemental feeding, would only habituate more bears and extend the duration of the population's adjustment to the new conditions. Critics retorted the Park was hardly a pristine ecosystem, untouched by human hands. If particular practices that ensured the conservation of grizzlies were deemed "unnatural," so be it.

It may sound as though Park management was advocating a nature free from human interference while critics were advocating a nature that included the effects of human activity, but neither the problem nor the respective positions were quite so neat. Human intervention in the form of management and visitor practices was a given no interested party denied when it came to grizzlies and the Park. The issue came down to the nature of the intervention. Was it appropriate? What rationale or empirical circumstance guided or dictated it? Where did it occur and why? The debate was not about whether humans and grizzlies would, or should, interact in the space of the Park. Though they could be altered, revised, and reordered, the links connecting bears and people, making their interactions possible, were a product of the conditions of the Park itself. That was not up for debate. Rather the debate was about regulating the circumstances and conditions under which interactions would take place.

The controversy over grizzly management, beginning with the decision to close the dumps, mirrors the controversy over the fires twenty years later. Each marked a point at which the

question of how best to manage the boundary between humans and nature was an open one in Yellowstone. The term boundary may evoke a sense that what was under consideration was how to keep human activities and natural processes discreet, distinguishable, and safely apart. That sense of boundaries did, and still does, describe their purpose and effect in many situations. But just as often, what the boundary between the “natural” and the “cultural” denotes in Yellowstone is sites, events, and dynamics where the two meet, interact, and blur into something more difficult to distinguish and thus regulate. In these situations, the very proximity of humans and animals, cultural dynamics and natural processes, renders many of the categorical distinctions the Park embodies fuzzy and indistinct. The problems of regulating this border area generate debate and controversy precisely because it is so difficult to keep the actors, dynamics, and processes of each category safely in place when interaction, both historically and in the present, is the norm.

But that is not all. If the conventional categorical divisions pertaining to nature/culture do not always hold and are subject to dispute and disagreement, another problem can emerge which complicate matters immensely. The question of (re)defining and (re)determining the (ontological) identities of the properly natural and the properly cultural becomes no less fraught than regulating the interactions between them. This dynamic, where just what is or is not “natural” becomes a matter of dispute, is most evident in the debates over bison management. However, the tension is integral to the Park itself. And beyond its privileged status as the world’s first national park, this explains, at least in part, the intensity of the debates that surround the management of Park wildlife as well as its national and international significance as a site of conservation. Yellowstone is an implicitly experimental site; one where defining and regulating the boundaries between humans and nature is continually negotiated and revised in the material space of the Park and surrounding lands.

I turn south at the four-way intersection at Canyon, driving past a few tourists standing in the cool drizzle off the side of the road with cups of ice cream in their hands. I have no research goal in mind today and begin to wonder whether I should have stayed home. I feel like I have seen it all before in a hundred different ways: visitors milling about the pull-outs, taking pictures of this scene or that view, inevitably getting too close to the ubiquitous bison, slowing or stopping their vehicles in the middle of the road to try and see what others that have already stopped are trying to see. The juxtaposition of tourist behaviors and the wilderness landscape of the Park is always striking. But today, despite the way the inclement weather mutes visitor exuberance, the juxtaposition is particularly stark.

I am on my way to Le Hardy Rapids, a developed overlook on the Yellowstone River situated between Hayden Valley to the south and the falls of the Grand Canyon of the Yellowstone just to the north. Two days ago I heard the ducks were at Le Hardy. For just a few days each spring harlequin ducks linger in Yellowstone on their migration across half the continent. Beautiful, brightly plumaged little ducks (the males anyway, the color of the females is far less ostentatious) and unlike their much more familiar cousin, the Mallard, they prefer swift water. At Le Hardy Rapids the harlequins play in the riffles and torrent of the Yellowstone River, intermittently resting on the river rock, then diving back into the current again. I have never been able to catch them in the brief time they take up residence in the Park and hope to today, but after I park in the empty parking area (not a good sign) and follow the boardwalk into the forest to the overlook just above the rapids, I see they are already gone. I consider driving back home, but because I am so close to Hayden Valley I admit to myself that it would be foolish to not drive through. After all, it is late May and Hayden is home to many grizzlies that are active now, on the move in search of forage and carrion. Several miles after entering the rolling wide-open

valley I see a crowd of people, scopes, binoculars and cameras, perhaps thirty-five or more standing just off the road facing west. A month later and the number could easily be double or triple that with vehicles choking the roadway and harried Park Rangers trying to get traffic between the developed areas at Canyon and Lake flowing again.

After I find a reasonable place to pull off and park, I approach the scene, binoculars in hand. Because the viewing location is spacious, not always the case when there is something to be seen in the Park, people are comfortably spread out along the edge of the road, ten to fifteen feet into the still young, spring grass. I briefly consider my placement in the line, sidle up next to a man with an expensive spotting scope, and scan the small hillside directly to the west. I immediately spy two wolves on top of a knoll at least a half a mile away. The wolves are just standing there, but their posture, the slight panting and the classic “wolfish grin” indicates something is happening that I am not yet aware of. Then I hear the unmistakable yip of a coyote. I scan for the animal but cannot find it. One of the wolves, the black one, appears to stick its head into a hole and dig. Again the yip, but I cannot locate the animal. The black wolf continues to dig while the other, greyish in color, stands by panting gently, seemingly pleased with the situation. Why I cannot tell.

After several minutes I give up trying to read the scene without assistance and ask the man with the scope what is happening. He tells me the wolves have found a coyote den and are trying to dig it out. He points out the yipping coyote pacing approximately seventy-five yards below the wolves. There are two others as well. One is approximately a hundred yards below the first, lying down, perhaps dozing, acting as if nothing much was happening. The other, also resting, is a significant distance to the north along the same rise as the wolves and the den. The man offers me the use of his scope and I accept. Every feature of the wolves becomes visible through the

small circle of the much more powerful scope. The black wolf, again taking a break from the dig, stands beside the greyish one panting heavily. I notice the greyish one's facial expression change slightly. It stops panting and its eyes narrow, but it continues to "grin" as it moves off into the sporadically spaced sage brush just below the crest of the knoll. I lift my head from the scope to track the wolf with my binoculars. In moving down the knoll the wolf has moved outside the scope's small circle and it would be impolite to adjust the scope of a stranger. I notice the coyote slinking its way up to the den while the greyish wolf moves down the hillside to meet it. The coyote allows the wolf to get remarkably close, enticing the wolf to chase it. The wolf clearly finds the proximity of the coyote irresistible and for a couple of seconds commits to a full run, but it pulls up abruptly seemingly realizing the ploy of the coyote. The wolf turns and trots back to the top of the knoll where the black wolf has resumed the dig. Over the next hour and a half the scene remains consistent. The black wolf furiously digs while the greyish wolf stands by and chases the coyote away when it approaches too closely. The other coyotes intermittently observe the action, but do not participate. I presume the persistent and bothersome coyote is female and the mother, but neither I nor anyone else can verify this.

A Park Service staff member arrives on the scene to ensure the road remains clear and no one approaches the animals, but for the most part he is an interested observer like everyone else. People ask questions and he answers the best he can. Several ask why the wolves are doing this and what the wolves will do if they get to the coyote pups. He offers that wolves are "territorial" and will not abide other canids in their territory. If they can, they will kill the pups. A woman asks if the wolves will eat the pups. He tells her no, wolves do not eat other canids, they will just kill them. I am a bit surprised at the firmness of this declaration. An older couple near me had been arguing just this point before the Park Service staff member arrived. The woman had asked

the same question to me and I replied I did not know, but saw no reason why they would not if they were hungry and given the chance. Her husband, however, had told her under no circumstances would the wolves eat the pups. It just would not happen. After the staff member had spoken the man gave his a wife a look of satisfaction. She smirked and resumed her observation.

Well over two hours after I arrived on the scene, the wolves had been at it for over four hours according to the man with the scope, the presumably female coyote's behavior became more insistent and urgent. She drew nearer and nearer to the wolves, but could not lead them away until finally the black wolf, by this point almost invisible as it dug deep into the earth, emerged with a coyote pup in its mouth. It held the pup in its mouth for a long moment, doing nothing. Then it shook its head violently from side to side, and ate the pup in three bites. Over the next hour at a leisurely pace, the black wolf pulled the pups from the den one by one and consumed them—nine pups in all—while the subordinate greyish wolf stood by panting in excitement. The gathering along the road, stunned that the wolf was eating the pups, was almost as stunned by the number of pups in the den. Following the fourth, almost like a chorus, I could hear voices up and down the line saying “well, that's got to be that last one.” But the wolf would dive back in and emerge with another one. Coyotes are known to be fecund, but no one, including myself, believed there would be nine in the den. Immediately after consuming the last pup the black wolf started the long trot toward the known den site of the Canyon pack, several miles north and east across the Yellowstone River. For whatever reason, the subordinate greyish wolf went another direction. Following a moment or two of recapitulating what we had just witnessed, I, along with a few other observers who did the same, got into my vehicle and drove north hoping to see the wolf cross the road on its way back to the den. No more than a mile, sure enough, the black wolf

crossed the road at a steady trot heading east toward the river. And just behind, right on the wolf's tail was the coyote. Yet the wolf acted as if it were completely unaware of this fact. It was a strange sight, one that I could not read. It felt as though I was momentarily privy to some esoteric aspect of intra-canid politics on the Yellowstone plateau. I watched them crossing the open ground, the wolf never acknowledging the coyote only ten feet behind it, until the two animals dropped behind a slight rise and were lost from view.

Setting the scene

Witnessing the wolves at the coyote den was classic Yellowstone, exemplary of a dynamic natural scene for which the Park is famous. Equally exemplary was the line of people with spotting scopes, binoculars, and cameras watching those natural processes unfold as a social event. The totality of the scene is definitive of Yellowstone. It is a place where nature structures conditions of social possibility and specific social practices establish the parameters through which natural processes are seen, known, and understood. Each necessarily implies the other. Wolves are particularly indicative of this shifting dialectic. Extirpated from the Park in the 1920's when the dominant social consensus asserted they were little more than livestock killing vermin, the reintroduction of wolves in 1995 restored a key actor to the natural scene of Yellowstone. Their presence quickly led to the appearance of wolf-watchers, a new category of Yellowstone visitor. Wolf-watchers devote considerable amounts of time, days, weeks, months, even years, to locating, observing, and recording wolf behavior, activity, sociality, as well as inter-pack and intra-pack dynamics. Especially in winter when wolves are more visible on the landscape and there are a fraction of visitors in the Park, wolf-watchers are easily found in one or more of the dozens of pull-outs along the road in the Park's northern tier. The presence of wolf-watchers often provides a concrete link for other visitors to the Park's wolves. Just as I

stopped along the road in Hayden Valley to see what was happening, many other visitors also stop at sites occupied by wolf-watchers. Wolf-watchers often, though not always, offer the use of their spotting scopes and provide some information about the present, observational situation to visitors who happen upon the scene. But the gatherings of wolf-watchers and other Park visitors do not just constitute a new kind of social phenomenon in Yellowstone. Indeed, whether it is a new phenomenon is debatable. Park visitors were setting up spotting scopes at pullouts in the Lamar and Hayden Valleys to observe grizzlies and other wildlife before wolves were reintroduced. In that sense wolf-watching is perhaps just an intensification of the sociality long associated with wildlife observation in the Park.

However, many wolf-watchers are also embedded and active in the local and regional politics of wolf management, where the issue of regulating the relationship between people and wolves is openly contested. Like ranchers and hunters, wolf-watchers are actors who claim a stake in the management decisions which effectively forge links and inscribe boundaries between human and animal in the Yellowstone region. While some ranchers and hunters argue that Yellowstone wolves violate specific social boundaries by disrupting human relations with livestock or prized game animals like elk, some wolf-watchers argue that hunting wolves transgresses the natural boundaries and specific social relations that obtain between wolves and people in the Park. That relationship between wolves and people remains politically contested in the Yellowstone region twenty years after reintroduction indicates how the links connecting human and nonhuman are never quite settled, nor the boundaries which separate them ever really permanent.

Like the decisions to let the fires burn or reintroduce wolves, determinations of what is natural and thus allowable, permitted, or encouraged get revised and rearticulated in the material space of the Park. This, in turn, forces rearrangements of social relations that are connected

directly and indirectly with the nature of Yellowstone. The debates concerning the regulation of human interactions with the natural world remain essentially open because the boundaries separating them are historically determined, not ontologically given in the Park. Yellowstone may be founded upon and continuously informed by the basic division of nature and culture so central to modernity, but just where and how the boundaries which materialize that basic division are drawn, shifts and changes. Depending on the issue, and what is at stake, questions of how best to regulate the border between human and nonhuman cannot always safely be understood in terms of political identity. As if environmentalists and Park managers inevitably come down on the side of “nature” or the animal and livestock producers and conservative politicians invariably come down on the side of “society” or the human. In practice, concerned actors in the Yellowstone region, regardless of political identity or affiliation, may reinforce the division at one site while weakening it at another. The work necessary for maintaining or rearticulating the division in Yellowstone and beyond is carried out by agriculturists, private property advocates, livestock producers, and conservative state legislators no less than Park managers, wolf-watchers, environmentalists, and conservation biologists.

The tensions and forces that define the “natural” and the “social” in a place like Yellowstone are mobile, contingent, and often amorphous. Various forms of observation, maintenance, and regulation are necessary to keep the distinction operative and in place. But if how and where the distinction is drawn is often a matter of political debate, the necessity of such practices is debated less often. This is perhaps nowhere more evident than in the relations that obtain between humans and wildlife. In the case of wolves it is visible in the helicopters, dart guns, and telemetry equipment deployed by the Park Service to study and manage the animals, in the spotting scopes and telephoto camera lenses deployed by wolf-watchers and other wildlife

enthusiasts to see the animals, and in the high-powered rifles and leg traps deployed by wolf-hunters on the boundaries of the Park to kill the animals. Despite very real differences between these actors (political or otherwise) and their specific relations to the animal, a basic epistemological structure shapes the nature of these interactions. Each frames the wolf as an (natural) object to be captured and redefined by the chain of representations it is linked to—as data, pictures, or trophies. Thus, political debate has more to do with questions of regulating which practices are predominant within an already accepted division that binds wildlife to humans in a particular way, rather than arguments about what practices actually constitute a relationship between them. While such practices are shaped by a Cartesian mapping of the phenomena, with (active, human) subjects located to one side and (passive, natural) objects confined to the other, this does not mean those engaged in these practices are attempting to reproduce that division any more than they are actively trying to overcome it. The ontological conditions which give rise to Yellowstone and the practices associated with it necessarily describe the outer limits of epistemological possibility. Stated in different terms, if these practices do not seek to overcome the essential duality embodied in Yellowstone as the world's first wilderness park, if they rely on it and take it as given, this only means that such practices are “native” both to the Park and to the larger historical currents which give rise to it.

If such practices go hand-in-hand with the Park, even, yes, hunting which is disallowed in Yellowstone proper, then they are integral to the maintenance and reproduction of the conditions which define Yellowstone. Those conditions emerge within and from colonial expansion, dispossession, and exploitation. The rationale which enacted, through imperial expansion, the enclosure and reservation of a unique natural landscape—Yellowstone—was not *sui generis*, even if it did constitute a new way of organizing and enforcing a nation-state's claim upon

“territory.”¹ To offer a modicum of historical perspective, the Park is four years old when Lakota and Cheyenne warriors defeat the U.S. Army at the Battle of the Greasy Grass (Little Bighorn) in eastern Montana Territory, five years old when the Nez Perce flee across the Park trying to escape confinement to a reservation in Idaho, and eighteen years old when the U.S. Army massacres Lakota men, women, and children at Wounded Knee, South Dakota in the winter of 1890. During the era of colonial expansion, the bounding of Yellowstone as a *park* for the “people” was one method, among many, of structuring territorial claims and organizing the flux of nascent socio-economic relations in the American West. What made Yellowstone potentially unique as a territorial claim was the explicit and extreme clarification of the natural environment it embodied. The Park gave form to a relationship in which many of the usual interventions on the colonial landscape were proscribed in order to more fully realize the basic division of human and nature on which the practices of colonialism were based.

At the time of its founding in 1872, it perhaps would have been difficult to picture the status and influence Yellowstone has today, both as place of exemplary natural conditions and as a mobile concept instantiated around the globe—the national park. But the Park now stands as one of the more significant and monumental artifacts of modernity and colonialism. This is because it materializes a fixed, bounded vision of what was transformed or destroyed by the processes of colonial capture and exploitation. In turn, the Park re-presents modernity’s conceptual division of the world. It preserves mute, bio-physical nature for present and future observation by the socio-cultural agencies that are taken to be outside it. Stated simply, Yellowstone is a model of nature as nature that is conceivable only within the historical conditions which gave rise to it. But to call

¹ It is worth noting that Yellowstone National Park was established on land in Wyoming, Montana, and Idaho that was legally defined as territory of the United States. Seventeen years after the founding of the Park, Montana officially became a state. One year later Wyoming and Idaho were admitted as states.

the Park a model of nature as nature also indicates what is seminal about the construct of Yellowstone historically and in the present. Yellowstone reveals how the whole of nature can be seen as an unitary object, one that is completely extrinsic to human subjectivity yet defined by its relationship with it. This dissertation explores that relationship as it is constituted between humans and wildlife in Yellowstone. It explores the essential “fiction” of the division between human and nonhuman. Yet it also explores how generative the boundaries which emerge from that fundamental division can be, the work that is necessary to maintain them, and the debates that arise around efforts to regulate the boundaries that define humans, wildlife, and the nature of their interactions in the Yellowstone region. Consisting of three case studies on the management of grizzlies, wolves, and bison, each case study focuses on particular human relations with the species in question. The investigation is animated by the following questions. What is the nature of the relationship (and interactions) between humans and wildlife in Yellowstone? How and where does it occur? What are the forces which shape and constrain the relationship and interactions between people and wildlife? Stated briefly, watching, looking, observing, studying, and researching name the practices which give life to the relationship between people and wildlife in Yellowstone. This, however, is mitigated by actors and practices on the boundaries of the Park which, sometimes, constitute very different relations with Yellowstone wildlife. Broadly speaking, practices associated with tourism and science define the relationship of humans and wildlife in the Park, but how this occurs and what it means is different for each species.

In the case of grizzlies, the managerial shift to the principle of natural regulation and the near decade-long research of the Craighead study team in the 1960’s were instrumental in redefining relationships between wildlife, people, Yellowstone, and the wider landscape. These two factors coupled to Yellowstone’s grizzly population, almost per force, softened the hard political

boundaries that served to distinguish the (preservationist) space of the Park with the public and private lands that surrounded it. This in turn led to the eventual realization of the Greater Yellowstone Ecosystem (GYE), an area nine times as extensive as Yellowstone itself. However, the realization of that vast ecosystem with the Park at its core was a response to a perceived administrative-management need, one that blurred jurisdictional and political boundaries in the name of grizzly conservation. Management need, coupled to the nascent population biology of Yellowstone grizzlies, made the ecosystem legible—not the reverse. As a result of their efforts to generate biological data and establish a scientific basis for the management of Yellowstone's grizzlies, the Craighead study team offered an essentially ecological perspective of grizzlies, one in which neither grizzlies nor their habitat were contained by the boundaries of the Park. This necessarily widened the concerns of grizzly conservation management to include private and public lands outside the Park's borders. Despite this, the Craigheads argued for active management interventions to keep grizzlies anchored to the safety of the Park. This argument ran counter to the Park's adoption of natural regulation which entailed forgoing practices such as culling, supplemental feeding, or any action that appeared to intervene in putatively natural dynamics and outcomes. Thus, the management, research, and conservation of grizzlies, beginning in the 1960's, became a prime site of debate on how and where the boundary lines that define the natural and the social should be drawn, both inside and outside the Park.

The reintroduction of wolves, along with intensive Park Service research and visitor observation of these animals, constitutes a high-water mark of the shift that began in the 1960's with natural regulation and the Craighead study team. Despite the ecological-restorative frame given to their return, the release of wolves into Yellowstone and their subsequent expansion onto the wider landscape is best understood as a release of forces that went well beyond the delimited

nature of the Park or the more expansive ecology of the GYE. These forces found expression in the intensity of discourse that emerged in the wake of reintroduction and continues to the present moment. This is evident in how people talk about wolves. Rather, it is most evident in how talk of wolves usually entails interlocutors describing an explicitly socio-political world of agents, powers, forces, and dynamics that only indirectly, if at all, relate to wolves as flesh and blood animals. Understood this way, Yellowstone wolves are certainly transgressive in that their perceived effects in the Yellowstone region are represented as social and political as much as natural. Yet the kinds and types of (human) subjectivity that seem to coalesce in the discourse on wolves is indicative of a persistent anthropocentrism that is not confined to just one social or political grouping. Further, the various means by which people know, understand, and interact with Yellowstone wolves are, in varying degrees, informed by this anthropocentrism which determines in advance what the animal is, how it is seen, and what it is for. The argument could be made in relation to grizzlies or bison, but the problem alluded to here is most apparent and acute in the case of wolves.

The entanglements of humans and wildlife in Yellowstone are fundamental. It is indisputable that neither bison nor wolves would persist in the Park today without historic, human interventions—though less cut and dry, a similar case could be made for grizzlies as well. The history of each species in the Park offers firm evidence for the claim that social practices are constitutive of the natural space that is Yellowstone. Important as it is, recognition of this hybridity should not foreclose consideration of the consequences resulting from the dominant modes of relation with wildlife, wolves in particular, and what that means for the autonomy of these animals and human knowledge of them.

Boundaries, how they define space both materially and conceptually, are paramount when considering human relations with bison. Because of their size, nomadic tendencies, aggregating behavior, and relative tolerance of human proximity, bison have thoroughly troubled the borders between public and private, national and local, wild and domestic on the edges of the Park. Management of grizzlies and wolves over the last forty years has tended to extend if not the actual boundaries of the Park, then its ecological and biological reach and influence. Conversely, bison management has been a primary site of efforts to re-inscribe particular historical and social claims onto the “ecology” and “habitat” of the GYE. Though each articulates very different interests and concerns, Montana ranchers and Native American tribes have made the most prominent claims in this regard. Wary of Yellowstone bison encroaching and becoming established on public and private lands outside the Park that for over a century now have been occupied by cattle and other livestock, local and state ranching interests have diligently fought to keep bison confined to Yellowstone. By and large, the issue has revolved around the fact that bison are carriers of the disease brucellosis and are a potential vector of transmission to livestock. Certainly some individual cattle operations in Paradise Valley, for example, face a limited risk of potential disease transmission from bison to cattle, but livestock interests have for twenty years utilized concerns over brucellosis for political advantage in debates on managing bison distribution and population. In the last ten years Native American tribes and inter-tribal entities have reestablished material ties to Yellowstone’s bison population both through hunting and by gaining a seat at the table of a multi-agency committee that coordinates bison management in a trans-boundary context. Native American representatives have generally been allies in Park Service and conservationist efforts to create space and social tolerance for bison beyond the boundaries of the Park. However, tribal interests by no means align perfectly with the

Park, other management agencies, or conservation NGO's. No other dynamic brings Yellowstone's colonial history into sharper focus than tribal critiques of the presuppositions which guide contemporary bison management and conservation efforts in Yellowstone, especially the Park's reliance on natural regulation as a guiding management principle. The recently instituted tribal hunt, on public land just outside the Park, highlights Yellowstone's colonial present. Tribal relations with bison have been channeled through the bureaucratic mechanisms of the state to help deal with thorny problems of bison and boundaries which were created by the state in the first place. Further complicating the above factors, the nature of the bison has become a site of contestation and debate as part of (very local) attempts to define and regulate permissible, day-to-day human/bison interactions in communities on the Park's boundaries.

Field research for this project began in July 2012 and ended approximately in January 2014. I say approximately because research was interrupted at different times for over four months due to factors unrelated to the project. I also conducted intermittent research from January 2014 to June 2014. Initially, I considered the whole of Yellowstone as the field site, but this quickly proved unfeasible due to the size of the Park. The field site was in the main reduced to what is called the Park's northern range. The northern range can be roughly described as the area from Mammoth Hot Springs, Wyoming east to the entrance at Silver Gate, Montana. The Park Service's main headquarters are at Mammoth and, crucially, the only Park road open in winter bisects the northern range to the entrance at Silver Gate providing access for observation and study year round. The majority of research in the Park was conducted along the northern range of the Park, but not exclusively. Research occurred in the central interior of the Park as well, including Hayden Valley, Lake developed area, the Swan Lake area, Canyon developed area, the

Madison River Valley, and Old Faithful developed area. Outside the Park research was mainly confined to Gardiner, Montana at the Park's northern entrance north through Gardiner Basin into Paradise Valley ending at Livingston, Montana some fifty miles north of Gardiner. Research was also conducted in Bozeman, Montana south through the Gallatin River Valley to the Park's northwest boundary and into West Yellowstone, Montana at the Park's west entrance. Research methods for this project were qualitative. They included semi-structured and unstructured interviews, observation, participant observation, attendance at public meetings and forums on wildlife related issues, and archival research at the Yellowstone Research Library. I utilized a snowball method to gain access to potential informants. Just as important however was being on the ground in the area over an extended period of time which enabled me to develop contacts and establish relationships in multiple communities in and around the Park.

A common theme I encountered during research that was particularly evident in interactions with the Park Service, but also with wildlife advocates, ranchers, and others, was how could or would this research advance the goals or address the questions of these institutions and actors. Such questions shine a light on the responsibilities and ethical implications of asking people to participate in one's research. I do not know that I ever developed an adequate or satisfying response. In part because in some instances the project simply would not do anything for their goals, in others because I could not allow the project to be coopted for purposes I had not intended, and in still other cases because the results of this project do not lend themselves to being operationalized as an utility for this or that end. Not unlike the relationship between wildlife and people in Yellowstone, this fact placed me into a position where proximity between me and others was often "close," but an unspoken distance obtained such that I always seemed to be in the middle of the action, yet outside of it as well. This was not always comfortable for

people, or for me. I am grateful to all of those who freely gave of their time, knowledge, experience, care, and concern, often generously. This project would not have been possible without their contributions, but just as significant was how the depth and force of those contributions continually convinced me of the importance of Yellowstone and the potential of the research I was conducting—oftentimes when I needed it most. My world has been enriched immensely by their generosity.

Orientation and bearing

To grasp the significance of Yellowstone it is helpful to conceive of it as a space that continually comes to be through an array of practices, conceptions, and processes (Lefebvre 1991). To be sure the Park is a particular kind of space, a privileged but idiosyncratic one that enacts the power of the nation-state spatially through the deliberate management and preservation of wilderness, underwritten economically by tourism (Cronon 1995; Neumann 2004). As a space of nation-state identity, the Park's history and formation is intimately bound up with global currents of 19th century colonization, both as a form of territorial capture and dispossession (Loendorff and Nabokov 2003; Spence 1999). Yellowstone has not only served as the dominant model for spatial conservation of nature and wildlife globally, its history reflects many of the same dynamics found in seemingly very different geographical and socio-political contexts (Goldman 2003a; Neumann 1997; Peluso 1993; Thompson 2002; West 2006). Located primarily in northwest Wyoming, but with borders extending into Montana and Idaho, Yellowstone is relatively remote from major U.S. population centers. Nevertheless, its status as the preeminent spatial representation of North American nature draws visitation from around the world. In addition to its international status, the Park as a site of federal power in the form of the Park Service and the Department of the Interior means that it is constituted by economic, social,

and political forces that are localized, but rarely ever just local (McCarthy 2002; Peet and Watts 2003; West 2006). The cosmopolitan sensibility that pervades Yellowstone contrasts strongly with the rural character of many of the communities on the Park's boundaries.

In broad terms Yellowstone is a space of tourism and science. The practices that comprise these activities come together in Yellowstone through the act of observation, seeing, and looking (Berger 1980; Watts 2005). A place where vision is valued above all else, Yellowstone reflects a material duality common to the representations and transformations of landscapes as aesthetic objects (Cosgrove 1984; Mitchell 2003; Williams 1973). Yellowstone embodies a bounded, pure nature ostensibly preserved against the radical transformations of modern capitalism and technology, but the boundary is not given. It requires continual monitoring, reinforcement, adjustments, and negotiations to make it hold (Mitchell 2002). Neil Smith argues that this kind of nature is a socially produced artifact (Braun 2002; Castree 2001; Demeritt 2001; Glacken 1967) the roots of which he traces to Kant (Smith 1990, 1996). Certainly the fundamental dualism that characterizes modernity is refined in Kant's philosophy (1950, 1999). However what Kant argues in the most formidable, recondite, and circuitous way possible, Descartes had already said in a much more direct, plain, and comprehensible way (1956, 1960; see Heidegger on the relationship between the works of Descartes and Kant, 1982). The world consists of subjects and objects. Subjects and objects are totally (ontologically) discreet. Subjects know, think, and represent and in doing so have the capacity to change the condition of objects for the benefit of subjects. Objects do not know, think, or represent, but occupy space and are a pure exteriority. The defining characteristic of subjects is their interiority. Objects are susceptible to force, but subjects have the capacity to control forces through representations. This standard relationship of subject to object and the binaries that proliferate in its wake defines modernity. Cartesianism and

what follows from it is not just a question of or for epistemology. Dualism as metaphysics is a program for altering, manipulating, and controlling the empirical world (Goldman and Turner 2011; Latour 1993; Mitchell 2002; Watts 2005). The structures of Cartesian thinking and representation persist because they are effective. Considered from this perspective, their truth-value (epistemological coherence) is wholly secondary to their value as an instrument of power (Heidegger 1982; Nietzsche 1967).

Descartes publishes the *Discourse on Method* in 1637, almost a century and a half after Columbus. Extraction of wealth and the colonization of the Western hemisphere and Africa are already well underway as a historical development. Scientific experimentation (Shapin and Schaffer 2011) and the quickening pace of technological advancements that enable the capture, control, and direction of natural forces define the European intellectual milieu at this time. Descartes, a skilled geometer, observes advanced dam construction techniques while living in Holland. The issue is not to offer yet one more refutation, in a long history of them, of Descartes' "philosophy," Cartesianism, or dualism, but to indicate two points. Descartes is merely emblematic, the clearest articulation of the complex, interdigitating efforts to capture and exploit "resources" on a global scale: i.e., colonialism as modernity. The second point, also clearly articulated by Descartes, is the power attributed to and invested in the subject has a corollary: the subject is the initial and primary site of colonization. Colonization occurs within no less than without.

Analyses that highlight hybridity, linkages of human and nonhuman, and the relational co-substantiation of nature-culture effectively give the lie to dualist, Cartesian mappings of the world, but the problem of the colonization of the subject remains relatively untouched, perhaps excepting Haraway's work (Haraway 1991; Latour 1999a; Whatmore 2002; Sundberg 2011).

Scholarship in science studies over the last two decades also reveals how mixed and impure the materials of modern scientific and technological constructions can be (Callon 1986; Latour 1993, 2004a; Mitchell 2002; Star and Griesemer 1989). But beyond its analyses, science studies most significant contribution has perhaps been the insistence upon methodological humility in examining empirical reality (Callon 1995; Forsyth 2003; Latour 1987, 1999b, 2004b; Law 1999). The stricture that theoretical constructs must be kept in abeyance in order to better follow the production of events, activities, processes, or objects has provided social science practice with a helpful corrective, but it does create a problem for analysis. How can distributions of power and the deployments of force be accounted for? Work in science studies certainly maps distributions of power, but it is not often named as such (Star 1991; Jasanoff 1996, 2003; Law and Hazard 1999; Law and Mol 2002). The question is why.² My tentative hypothesis is two-fold. First, power as an analytical concept can easily become overdetermined and all encompassing. This of course militates against the methodological restraint crucial to empirical science studies. Second, analyses of power following upon Foucault have tended to emphasize the negative effects of power; the banally pessimistic conclusion that if “power is everywhere” there is no escaping it and, *ergo*, there is no hope for emancipatory projects.

This negative valence of power while by no means inaccurate in any given analysis of, say, institutional practices is nevertheless woefully inadequate in consideration of the full import of the concept, in Foucault’s work but certainly others as well.³ Granting this premise, it becomes

² John Law in his introduction to the edited volume *Actor-network theory and after* (1999) does explicitly link ANT to Foucault by characterizing ANT as a “semiotics of materiality.” One could also consider Haraway (1991) in this context. Her work is not part of ANT, but her analysis shares some similarities with it and is more overt in its political commitments.

³ Nietzsche’s articulations of power and relations of power have frequently been misconstrued and misused as well.

clear how the concept could be viewed as an impediment to analyses in ANT and other areas of science studies where practices that by definition imply power-relations—science, technology, medicine, markets—are not meant to be critiqued or deconstructed but traced in terms of how said practices organize, fix and coordinate all manner of relations, objects and actors. Put simply, ANT and science studies clarify the positive valence of distributions of power in modern knowledge practices and in this way bear some relation to the traditionally positivist program of scientific production. It is also clear how politically ambiguous and ambivalent it might be to explicitly claim a positive valence for power. Here one must return to the empirical restraint insisted upon Latour and others and ask whether this restraint is itself a politics or even a kind of anti-politics. The question is worth debating, but methodological humility has made it possible to anthropologize and *other* some highly privileged actors and practices of modernity from the inside out (De Vries 2007, 2014; Latour 2007).

The linkages of science studies and political ecology offer one means of addressing distributions of power and force within the methodological framework of science studies (Forsyth 2003; Goldman and Turner 2011). Work with a strong feminist orientation, such as Donna Haraway's, provides another avenue for explicit considerations of power relations vis-à-vis science studies, as well paying attention to the problem of subject formations (1988, 1989, 1991, 2003, 2008).

But the specific problem of the modern subject as colonizer and colonized comes more readily into view in post-humanist geography (Braun 2004; Braun and Whatmore 2010; Buller 2008; Lukla 2004; Sundberg 2011, 2013; Whatmore 2002, 2004). Drawing on currents from science studies, post-structuralist theory, and political ecology, one significant source of inspiration for post-humanist thought has been the work of Gilles Deleuze. Deleuzian concepts like the

assemblage do similar analytical work to hybridity and networks which emphasize the heterogeneity of relations that compose structures, entities, objects, and beings (Deleuze and Guattari 1980). Interpreting the work of early 20th century biologist Jacob Von Uexkull and the early modern philosopher Baruch Spinoza, Deleuze's formulation of affect as a mode of relation among bodies has also provided fruitful ground for thinking through the ontological possibilities of human/animal and human/nonhuman relations (Deleuze 1988, 1990; Deleuze and Guattari 1980; Von Uexkull 2010). Yet an aspect of Deleuze's work that has received much less attention in post-humanist geography is his elucidations of forces. Deleuze elaborates force as an operative concept most clearly in a monograph on Nietzsche where he argues Nietzsche's chief insight was the delineation of "active" and "reactive" forces across a wide spectrum of phenomena, from moralities to institutions to artistic objects (1983). This is pertinent because the Deleuzian articulations of assemblages and affects are at best partially intelligible without considering the role "forces" play in these analytical concepts. It is notably relevant for post-humanist analysis because the effort to decenter the privileged, universal modern subject—the Human or Man—needs material purchase as well as conceptual-analytical frameworks. Considerations of force specify how the subject/object duality (and all the binaries that follow from it) does not hold empirically, particularly with regard to the subject. More importantly, force denotes the contingency of identity and its porous boundaries while also being able to account for the persistence and proliferation of modern subjectivities (Agamben 1998; Foucault 1973, 1977, 2007). The composition, arrangement, and control of forces and their effects shape the "interior" of the subjectivity no less than the "exterior" of the objective world.

Granted, this conception of force is not novel to Deleuze. As stated above, Nietzsche and Spinoza inform Deleuze's thinking on the concept. One can also point to aspects of Marx's

corpus and analysis as a clear precedent as well (1970, 1972). For post-humanist geography though, a consideration of force potentially offers a clear material basis to address the ontological and epistemological quandaries which befuddle it by examining how the modern subject and subjectivity stands as a playground of competing forces—a primary site of colonization.

Taking affect as a kind of force, as well as the outcome of interactions with other forces, clarifies its utility for post-humanist and animal/human geographies. As a mode of relation between humans and animals, affect potentially levels the (hierarchical) field because the point of differentiation cannot be located in (the capacity of) human thought and (the incapacity of) animal non-thought (Agamben 2004; Derrida 2008). An affective mode of relation does not simply collapse all difference however. If anything it heightens senses of difference. Engagement based on modern dualist precepts in which humans “think” and animals do not, in which only the subject has effective capacity, can produce knowledge that is ideological and naively anthropocentric (Haraway 1989; Latour 1999c). Yet because changes that result from an affective relation are registered “within,” the fundamental basis of difference is clarified rather than blurred. What then closes the gap between humans and animals, highlighting potential similarities, is the conceptualized relation of forces/affects to which both are subject.

Kohn touching upon these same issues, argues against conceptualizing human/nonhuman relations on the basis of affect (2012). He bases this claim on the reduction of thinking and representation to a pure capacity of language (see Derrida, 2008 on this problem). This, he argues, distorts what representation and thinking are, thereby distorting nonhuman capacities for thought and representation. This framing goes to the crux of the problem. Yet precisely because thinking and representation in modernity is so entangled in the capacity for language extreme

caution is called for when attributing such thoroughly colonized concepts to animals or “forests.” To comprehend how an animal or species thinks may require total redefinition of what thinking means. Conversely, what representation currently means may have to be thoroughly reworked in order to understand how a tree might “represent.” More problematic, Kohn does not acknowledge the ways in which affect can constitute if not knowledge, then knowing. As a matter of decolonizing the modern subject—the privileged locus of thought and representation—and its relations with nonhumans I would argue that concepts so intimately tied to the valorization of language are likely to confuse rather than clarify what is at stake in engagements with a more than human world.

An intimately related problem involves discerning the potential politics of specific modes human/nonhuman relations. Kohn, rightly I believe, argues that a basis for political action and orientation cannot be located or grounded in the “nonhuman living world” (2012, 19). However this does not mean that politics is irrelevant to or disconnected from these particular modes of relation. It just means political consequences, much less political programs, are not readily discernable from ways of relating to wildlife, for example, which subvert the primacy and uniqueness of the human subject. Such relations occur on and apply to an ethical plane. Broadly construed, ethics is a matter of “individual” engagement while politics refers to communal norms however differentially those norms are imposed or applied in practice. Again, these planes interact, but deriving conclusions from one plane to apply to the other is problematic.

Temple Grandin, the well-known, autistic professor of animal science is exemplary on this point. Grandin has noted that according to the pervasive definition of thinking as strictly a mode of language capacity, she does not “think” at all (2005; 2006; see also, Wolfe 2010). She claims to think almost exclusively in “pictures,” and because of her autism she also claims to be

particularly sensitive to (seemingly) minor visual alterations in the environment as well. She associates these capacities with animal thought and perception (particularly cattle and other prey species). According to Grandin, this “disability” or nonconformity explains her empathic ability to understand the behavioral patterns and affective states of domestic livestock. Now, depending on one’s political orientation to the treatment of animals on issues ranging from the industrial production of animal protein for human consumption to the use of animals in medical research for human benefit it might be surprising to hear that one of Grandin’s early claims to fame was her design of slaughter houses. Her capacity to cross the boundary between human and animal, often associating and identifying more closely with animals than humans, did not automatically translate into a politics that accorded animals equal value (or “rights”) with humans. It did, however, compel her to redesign how slaughter houses are constructed so as to minimize the stress, anxiety, and suffering livestock experienced in their last moments of existence. It also compelled her to lobby and advocate for the redesigns to be implemented as a matter of federal regulation. The upshot here is not normative, nor is it a comment on what sort of politics is appropriate with regard to animals or the nonhuman world. Rather, Grandin’s example indicates the material, embodied, and “subjective” basis on which a post-humanist rethinking of human/nonhuman relations actually takes place while revealing the difficulties of linking ontologies and politics in a simplified, one to one fashion.

This, in part, explains why I have drawn attention to the modern subject as both a primary site of colonization and a colonizing agent. Placing the modern subject squarely within the material history of colonization highlights where and how the political ramifications of a post-humanist engagement with modern subjectivity and relations with the nonhuman world unfold. On this point Sundberg’s recent critique of post-humanist geography gains the most purchase (2013).

The acts and implications of “decolonizing” the subject’s relations with nature or wildlife still demand that boundaries, limits, and difference be recognized, even if they are located in very different ontological “places” than those which have obtained hitherto. “Indigenous theorizing” about a more than human world does offer a wealth of models depicting alternate boundaries, limits, and categories of difference (Sundberg 2013; but see also, Descola 2014; Kohn 2012). But as a matter of decolonizing modern subjectivity, recognition of and engagement with these models, important as it is, does not go far enough. The place to begin is on the plane of material, experiential interactions; opened to encounters that carry fundamental ethical implications, defined by the exchange and transformation of real forces that are not delimited by identity. On this basis, recognizing the pervasive colonization of the subject and its colonizing practices, post-humanist ontologies might begin to rework the structures and theories that define the unthinking anthropocentrism of the political present.

Grizzlies

I. Seeing grizzlies in the GYE

Boundaries matter. They mark differences, establish definition, and provide orientation. They protect, exclude, enclose, withhold, assert, claim, and denote. Further, they connote an exercise of power and embody the potentiality of force. They can be material but are often imagined. They are never simply given. While boundaries are most readily recognized as lines on a map, their demarcation is frequently more subtle, fuzzy, indistinct, and undecided than a map can accurately represent. Indeed a map, despite being an abstract and often highly stylized representation of a territorial set of relations is arguably more concrete, accessible, and “real” than naïve, on-the-ground perception (Latour 2004a). Political and administrative boundaries, markers of state power, may be like the nation-state itself ultimately an imagined construct (Anderson 1984), but they produce material consequences, instantiate particular sets of conditions and are recognized as such. Their abstraction to cartographic representation conveys their actual materiality in an immediate way.

On the other hand, an embodied, physical, or materially obvious boundary may be difficult and in some instances impossible to discern. The signs, markers, or indicators might be illegible, incomprehensible, unregistered, or simply unknown as such. One need only think of varying individual and cultural definitions of “personal space.” Sense of personal space actually gets at the problem here quite well for what is in question is how grizzly bears could extend the formal political-legal boundaries of Yellowstone as well as the informal, but more scientific and certainly more socially contested boundaries of the “Greater Yellowstone Ecosystem.” These two chapters explore how Yellowstone grizzlies, their management, and the production of knowledge derived from them have contributed to the creation of the GYE—a landscape of

public and private lands that covers an estimated 28,000 to 31,000 square miles, an area seven times more extensive than Yellowstone.

Well known to anyone who has spent more than an afternoon in Yellowstone are the signs, pamphlets, and brochures found in many places around the Park which require visitors to maintain a distance of one hundred yards from bears. It is a precautionary measure, meant to protect both bears and people, I have seen ignored numerous times by visitors. I have ignored it on more than one occasion. Despite being violated regularly, it is often enforced verbally by Park personnel, if any are in the vicinity, visitors, and locals who spend time regularly in the Park. It is a boundary based primarily on scientific observation and study of grizzly behavior and their tolerance to human proximity. In reality it is only enforceable along roadways, in campgrounds, and developed areas within the Park. The rule may be a tool of bureaucratic management whose goal is to reduce the potential danger or conflict of human/bear encounters, but it is informed by a scientific viewpoint that has contributed greatly to the development and acceptance of the Greater Yellowstone Ecosystem concept over the last forty years, restructured boundaries between grizzlies and humans, and reoriented perceptions of grizzlies and their place on the wider landscape.

This simple stricture which regulates the physical proximity of bears and people may sound like nothing more than a bit of good old-fashioned, innate common sense. Repeated observation of visitor behavior in the proximity of bears suggests otherwise. First, for “common sense” to be operative the sense or sensibility would need to be learned, observed, taught or transmitted. Furthermore, it is only common if it is shared, that is, socially reproduced through some method of social instruction, discipline or correction. The vast majority of visitors to Yellowstone have no experience of being near to bears, especially grizzlies. And the Park Service’s efforts to

“educate” are not adequate simply because most visitors are not in the Park long enough for such a rule to be inculcated and become active in the breach as it were. Park visitors are mostly tourists and behave as such. They have travelled, often great distances, to Yellowstone to “sight-see.” *See*, of course, is not just the operative but the dominant term here. For the subjective tourist everything is there to be objectively seen. There is a continuous and unthinking symmetry between the inanimate view of Swan Lake and the peaks of the Gallatin Range that shadow it, Old Faithful geyser erupting into the clear air, and a grizzly nervously attempting to make its way across a road haphazardly choked by stalled vehicles and people crowding in an attempt to see it. Affectively, each scenario is a tableau for the tourist. That which is seen, is there only to be seen, even a sentient, dynamic, powerful omnivore that is nervously on the move.

This relationship of subject to object, seer to seen, looker and thing-looked-at, is structural in a classically anthropological way, affectively embedded in the behavior of the tourist. In other words, this is the “common sense” of most, if not all, visitors to Yellowstone. Of course it would be callous not to recognize the excitement, wonder, and even joy that many visitors feel and are acting upon in the brief moment of seeing a grizzly in close proximity. It is an all too common occurrence to hear Park Service personnel, Park concessionaire employees, locals who live near or work in the Park, and visitors who have spent extensive time in Yellowstone mutter among themselves about the outlandish behavior of the “tourons” at a bear-jam. This is also indicative of the social and political economic structuring of heavily visited tourist areas throughout the American West. The “gapers”—a derisive term for tourists used in ski towns, resort areas, and national parks across the West—with their disposable income come to see, and in their seeing display their ignorance of a whole range of community norms.

Yellowstone's importance can be parsed in any number of ways, but primary is the Park's centrality in the enactment of modernity's explicit, still developing relationship with nature *qua* nature. The management of grizzlies (and people) is a vital part of the story. As for the one hundred yard rule, it does not represent a rupture or discontinuity with the inclinations of common visitor/tourist behavior, now or historically. If anything, it merely rationalizes, perhaps ensures, this most basic of modern, bourgeois activities—seeing objects, looking at things, viewing scenes (Berger 1980; Williams 1973). Seen from this perspective, it simply reinforces what visitors already know about the value and purpose of nature preserved.

I highlight the above to show that *proper* behavior, action, and even thought in proximity to grizzlies—and other wildlife— whether expressed through explicit Park Service regulations or through more subtle communal norms, is by no means obvious or given in Yellowstone. In fact, prior to the last half of the 1960's the proximity of bears and people, especially black bears but also grizzlies, was hardly regulated at all when viewed from today's perspective. This, now taken for granted, if often still ignored, regulated distance between bears and people coincides with other significant changes in the management and science of grizzlies, the Park itself, and the wider regional landscape. All these changes amount to an ecologizing of Yellowstone and beyond with the resident grizzly population playing a pointed and historic role in this still ongoing process. A process that continues to erase, blur, inscribe, and re-inscribe boundaries between humans and wildlife, culture and nature. The boundedness of the GYE, as much a managerial concept as an ecological or scientific one, necessarily subsumes social and political dimensions. Attention to grizzlies opens up these differing facets of the reality of the Greater Yellowstone Ecosystem.

New boundaries

Difficult as it may be to believe now with a population estimate between 650-800 animals for the whole ecosystem, the question of whether Yellowstone grizzlies would or should survive was very much a live one forty years ago. A decade long study of Yellowstone's grizzly population by a pair of brother biologists, Frank and John Craighead, offered agency managers and the public more data on Yellowstone bears than they ever had before. Yet the knowledge produced by the Craighead study team intensified anxieties about short and long-term grizzly survival rather than lessening them. The concerns were not simply a function of the novel information generated by the new field of grizzly population biology. Population numbers and their apparent trajectory were worrying, but this tied directly into the thorny questions about the proper management of grizzlies which in turn generated a rolling set of debates. These debates continued and intensified through the 1970's and into the 1980's.

In the early years of the 1980's the GYE became an administrative-scientific reality through the development of the IGBC (Interagency Grizzly Bear Committee) to manage the population across jurisdictional boundaries. The GYE also became a socio-political reality at this time through the advocacy work of local and regional environmental NGO's. Yet these achievements did not lessen anxieties about grizzly survival either. Pessimism was the order of the day because research data consistently indicated (Craighead and Craighead 1967; Cole 1974; Knight 1986) that grizzly mortality increased outside the sanctuary of the Park boundaries. Grizzlies were crucial to the discursive coming to be of the Greater Yellowstone Ecosystem, but the data showed the animals were finding it difficult to make a living beyond the shelter and safety of the Park boundary.

Concern about their long-term survival had been the primary motivator for the Craigheads' recommendation in 1967, reiterated many times in over the ensuing years, to "concentrate" grizzlies in the geographical center of the Park, through management interventions if necessary. Park managers chose a different strategy however. They decided to actively delink grizzlies from human connections wherever possible, save management necessity and scientific research, and allow nature to regulate grizzly behavior, distribution, and population. The core of this strategy, and the decision that caused more controversy and acrimony than any other, was the relatively abrupt closure of the Park's open-pit dumps. Grizzlies had relied on the dumps as a stable, consistent food source for decades. Sows brought cubs to feed and thus the practice was passed from one generation to the next. Park Service managers, staff, the Craigheads, and many others knew this. Debated intensely at the time and for years afterward, there is no doubt the decision led to a very difficult management situation in the early 1970's. The Craigheads' prediction that abrupt closure would be unnecessarily hazardous to the health and abundance of Yellowstone grizzlies appeared to be prescient as the decade progressed. The population immediately declined as bears dispersed across the landscape in search of food. Conflicts between grizzlies and humans rose both inside and outside the Park which led to bear deaths; by 1975 grizzly bears were listed as a threatened species and given federal protection under the newly enacted Endangered Species Act.

One could interpret the listing as simply a response to the perceived crisis of a long historical population decline, but this overlooks how the Yellowstone grizzly population had become a central site in the ecological rationalization of wildlife management at the federal level. The protection of grizzlies, as well as other species, activated a new form of federal power which sought to regulate, and certainly reframed, on-the-ground relations between humans and wildlife.

Federal protection instituted a new boundary, one that enclosed the species as well as every individual bear. Once protected, grizzlies became akin to mobile instantiations of the harder, preservationist boundary of the Park and representatives of the changing boundaries of private land in the GYE.

The realization that grizzlies could take this form and index the differential protection of both public and private lands came to me in a chance conversation. On a grey and relentlessly windy fall afternoon I happened to stop by a shop in Livingston, MT. The man behind the counter, bored by the lack of activity in the shop, struck up a conversation with me. I quickly learned that his wife owned the shop, he was just helping out, and that he shod horses for a living. I asked he if grew up around Livingston and he said no, he had grown up near Island Park, Idaho working a large ranch that bordered Montana, only twenty miles or so from West Yellowstone, MT. My interest piqued, I asked whether he had seen grizzlies while growing up and working on the ranch.

Oh, sure, all the time; I'd say from [ages] 10-14 especially. We saw them all the time, used to get in the cattle. You ever hear of the three S's?

I replied that I had. The three S's refer to an allegedly common method of handling predator problems in ranching and agricultural operations throughout the American West. They are *Shoot, Shovel, and Shut-up*.

Well, that's how we handled it back then, can't really do that today.

I asked about the years in which he had seen so many. He thought for a moment, calculating his age and said:

That would have been about '63 or '64 up until '67 or so. Then in the '70's we didn't see too many bears. They started making a comeback in the '80's it seemed like. You know, back then [in the 1960's] Fish and Game didn't really care too much. If you had a bear problem you just dealt with it and that was that.

I then queried him about sheep ranchers in the area. I knew from archival research that in the first years of the Interagency Grizzly Bear Committee (1983-84) the committee had been very concerned with sheep allotments on Forest Service land in Idaho and so I mentioned this to him.

Yeah, I'd say most of it had given out by about '77 or '78, weren't too many left after that.

But what about, say, a little east and maybe a little south of Island Park, weren't some folks still running sheep over that way into the '80's?

Ah, over toward Tetonia? Probably, yeah, we didn't know too many folks over that way. You know, people would have bear barbecues. If a bear got in your sheep or cattle and you had to kill it, well you'd invite the neighbors over and have a barbecue.

He paused for a moment and considered what he was saying.

It wasn't like people were out to kill grizzlies or anything like that. It's just if they got into your cattle or sheep you'd have to deal with it. We lost 15 head one year to this old boar.

Really, 15?

Oh yeah.

But he couldn't have eaten all that. What was he doing? Did he just get a taste for taking them [cattle] out?

Oh, well I guess. He would just drag them off into the brush and kinda bury them, you know, save them for later I guess. Fish and Game brought him out there and dropped him off. I don't know what they were thinking. I guess he had already gotten into trouble so he didn't have much of a chance. We had to take him out.

When was that?

Oh, that was in the early '80's I'd say. You can't really do that anymore.

Besides confirming the known historical record of a sharp decline in the grizzly population beginning in the 1970's, the man's remembrances are indicative of a moral economy (Neumann 1997; Thompson 1963) which included grizzly bears as part of the local, human-economic landscape. Admittedly, this inclusion was often adversarial and bears along with livestock died as a result, but his testimony reflected that of other people who had or still did ranch in the Yellowstone region. Grizzlies were accepted as a constituent element on the landscape and viewed antagonistically only when there was a perceived threat to livestock. Indeed, I remain puzzled at the ready, even casual, acceptance of grizzly bears expressed by the ranchers and agriculturists I interviewed and spoke to, especially those in the Gardiner Basin and Paradise

Valley areas. People who would readily admit to seeing wolves, and even bison, antagonistically, but never indicated the same for grizzlies.

The man in the shop came of age during a pivotal transition. During the 1970's and early 1980's scientific expertise, the rationalization of state and federal wildlife management, and an increase in the power afforded to such agencies reorganized relations between wildlife and people. This transition involved not just increased managerial control of human/grizzly interactions, but a redefinition of the landscape. The central concern of the IGBC in 1983/84 *vis-à-vis* sheep allotments had as much to do with habitat as potential conflicts between sheep ranchers and grizzlies. The fundamental problem was sheep grazing on public land that had become, in a decade or less, *grizzly habitat*. Coinciding with this redefinition by way of grizzly conservation were shifts in the political economy that reshaped the landscape in turn. The man's remembrances touched upon this as well. When I mentioned to him how nice the area around Island Park is where he grew up riding horses, running cattle, and on occasion shooting grizzlies he smiled a little and said:

Yeah, it is. But it's changed a lot. There are so many houses out there now. All the big ranches are divided up. I remember you could ride for 30 miles and not see a soul, not even a house. It's not like that anymore.

When he said this I felt the tingling presence of historical irony. The concern for Yellowstone grizzlies as a population unit, heightened legal protection, continuous monitoring and study, and redefinition of Yellowstone borderlands as "habitat" within a unified ecological system all correlate temporally with the changing political economy of the "New West." Service-oriented and amenity-laden, these new economic relations inscribe many more boundaries on the landscape, primarily in the form of gridded tracts of private property development—the "ranchette" lifestyle (Best 2012; Haggerty and Travis 2006). Just at the time public lands around

Yellowstone were redefined as spaces devoted to conservation and recreation—contra spaces of work, resource, and extraction (White 1995)—private lands were being divided and subdivided to extract value from and heighten the value of real estate. It is not that the value once derived from public lands simply hopped onto private lands as a result of real-estate style development (Ferguson 2006). Public lands retained their value, it could be argued that their value actually intensified, but in much less directly material way. The “scene,” the “view,” the “vista,” the glow and aura of a wild, pristine wilderness replete with large carnivores right next door gave private lands in the Yellowstone region and other sites across the American West their value—nature as bourgeois amenity (Benjamin 1933).⁴

A few months after I arrived in Montana for field work I met a representative of a nationally well-known and influential environmental NGO while observing the Park County lawsuit against the state of Montana. I asked him for an interview and he agreed. Most of the interview focused on bison management issues, he had been intimately involved with a citizens’ working group that formulated a set of recommendations for state bison management, but my last question caused him to reflect on what most concerned him about the future of the Yellowstone region. He paused for a long while thinking about his response. Finally he said:

What I’m most worried about is growth and development. I love it out here. And every time I talk to my friends back [home] I tell them how great it is. More and more people are moving here every day and they are going to keep coming. So, it’s not so much the people, I mean it is, but it’s the development that worries me. You know, a little parcel here and a little parcel there and before you know it the valley floor is covered and there’s nowhere for animals to go.

⁴ The historical course of conservation and environmentalism is shot through with socio-economic and class dynamics, a fact which work in political ecology has revealed time and again (Robbins 2006, 2007). And there is frequently a racial dynamic at play as well, though the present racial homogeneity of the Yellowstone region more or less precludes it. See Kosek (2006) for a pointed discussion of how racial and class dynamics are articulated through discourse on and relations with nature.

Of course, he recognized the irony that hung over his concern and readily admitted that what he feared was himself or those like him who want to live in Greater Yellowstone. Nor was he expressing a particularly novel concern. Wildlife and land management agency staff, NGO's, and other actors are acutely aware of the problems associated with "development." Habitat fragmentation is a primary concern, but the problem with this formulation is that it lends itself all too easily to the technocratic imagination. As if better planning, more uniform, wildlife friendly county regulations, and more easements will fix the problem of expanding private development on the borders of the Park. Significantly, what goes unsaid in these discussions is anything having to do with the relationship between conservation and wider socio-economic structures of class.

To be fair, it is not immediately obvious how the two can be or are related in the Yellowstone region. Political ecology in the developing world tends to offer a stark contrast between local, often indigenous, socio-economic relations tied to land and resource usage and the disruptive forces unleashed by global, capital-derived development. The issue is also clouded by the political dominance of the two-party system at local, regional, and national scales and embodied in the putative left/right split in U.S. politics. The common frame of U.S. environmental politics is left equals environmental protection and right equals "wise use" or something similar (McCarthy 2002). And at first glance it does appear that conservation emanating from Yellowstone worked directly against the intensive exploitation of natural resources associated with capitalist extraction so common to the contemporary developing world and to colonial histories. Indeed, when I queried a person directly involved in the founding of a prominent regional NGO, as well as others who were active in the conservation politics of Yellowstone in the early 1980's, about the centrality of grizzly management in the dissemination of the Greater

Yellowstone Ecosystem concept, they all declined to agree with my hypothesis. That included one person who has been in the middle of the politics of Yellowstone grizzly conservation for over thirty years! Everyone pointed to extractive threats, logging on the west boundary of the Park and mining on the northern boundary, as providing the impetus that made the GYE realizable and forceful during those years. That these well-educated, middle-class people who devoted a significant amount of their life working to promote and protect the GYE cited threats from the domain of primary production is understandable. It is also indicative of a class bias. The GYE was not a thing produced through their activist work or through the intensive study of Yellowstone grizzlies which informed management decisions across institutional and jurisdictional boundaries in the region. For them, the GYE already existed. It was the “habitat” of grizzlies along with other wildlife and a place for humans so long their activities posed no threat to wildlife or the wider ecosystem. Scientific research and political activism were simply means to protect the integrity of a landscape that was always synonymous with their definition of it.

The question of applying “political ecology” to North America, or other developed nation-state contexts, may well be passé at this point (McCarthy 2002, 2005; Robbins 2002), but Wainwright (2005) rightly notes the problem with the question is not whether a political ecology of the developed world is possible or worthwhile. The problem is the metaphysics that underwrites the perceived necessity of posing the question in first place. He argues “that we should dwell on the ontological presuppositions of the act of specifying our objects of study” and that “political ecologists should reject a realist approach that assumes regions and spaces exist in a Cartesian world and are simply there for us to examine” (2005, 1034). Wainwright cautiously asserts that imperialism, capitalism, and colonialism are constitutive of the present world as a whole. Thus, effects of these forces bear at least “minimally” on first world spaces—North

America, for example—and the conceptual production of “here” and “there.” I agree, but would push the claim beyond the minimal position Wainwright stakes out. In the section on wolves I sketch out a link between post-humanist (ontological) anxieties and colonialism, but for this link to be coherent colonialism has to be understood as analogous to a state of being, a basic condition that defines modern subjectivity. In short, the Cartesian subject would be the initial and still primary “site” of colonization; its best instrument, if you will.

What links political ecology across disparate geographies, apropos of Wainwright, is fundamental to modernity’s long development as a colonial enterprise (Escobar 1998, 2008). Those practices which redefine a landscape and the myriad relations that compose seem to rely on attributing a singular or homogenizing purpose to the landscape; one that renders the landscape uniform according to the *telos* that determines its possibility. This is a quintessential act of modernity (Cosgrove 1984; Lefebvre 1991; Scott 1998), of colonialism (Fairhead and Leach 1996; Hughes 2006; Kosek 2006; Neumann 1997; Peluso 1993; West 2006), of capitalism (Goldman 2005; D. Mitchell 1996; T. Mitchell 2002) and one that is consistently revelatory of class and racial politics.

Lands adjacent to Yellowstone were redefined according to an ecological model and grizzlies were central to the conception and application of that model. But the socio-economic corollary to this would become visible in the steady, often exponential, increase in private land value in places like Jackson Hole, Big Sky, Bozeman, Paradise Valley and the Madison Valley—all squarely within the GYE. These changes reverberated across the bio-physical and social landscape. The man in the shop’s story is not unique. His family did not own the ranch he worked on. His father worked on it and thus he did as well. When the family who owned it sold

out to new owners who then subdivided it to further increase the land's value, the man's ranching days came to an end.

The ballooning of private land values in the region is intertwined with the effort to render public land more purely ecological. The intense growth of Bozeman and Gallatin County offers one example. The median home price in Gallatin County has nearly quadrupled since 1990, growing from \$70,000 to \$277, 000 today. There is a social cost to be paid for this which was articulated to me in a number of ways. A woman who co-owns and operates a ranch with her husband and son wondered aloud to me:

What do they [environmentalists] think we do to the land? Do they think we want to destroy it? We live off of it. We have to take care of it. We love it just as much as they do. Where would we go if they had their way?

She offered this within the larger context of a question I had asked; how many families did she know in the valley who had sold their land and quit ranching or moved on to ranch somewhere less daunting. She counted on her fingers for a few moments and answered there were at least nine families she knew of. A man I interviewed in Gardiner Basin, ostensibly about issues related to bison, spent a half-hour of our time together remembering the jobs the mine in Jardine just above the town of Gardiner had provided in the 1970's.

People in town had money back then. Kids didn't have to move away to find decent work. Once the mine shut down, that was that. A lot of people had to leave.

In part what these people speak of is the precariousness of making a living in rural areas throughout the American West where one is subject the vagaries of natural forces as well as economic boom and bust cycles that are tied national and international commodity markets. On a trip to track and find evidence of grizzlies on the western edge of the GYE (discussed below) I got into a campfire discussion about these issues with a woman who grew up in Bozeman. Her father had been director of a NGO that works to put private lands into conservation trusts and

establish easements on private lands. Needless to say, she grew up immersed in the conservation issues of Yellowstone region. During our discussion she said that the presumption that conservation was somehow politically “liberal” was misguided. When I pressed her a little on this claim she qualified her statement by stating that it was “maybe true with species conservation, but not with land conservation; many of the people involved are not liberal.” Her assessment may well be accurate. If so it serves to demonstrate how the left/right boundary so sacrosanct in American politics obfuscates how class structure operates in privileged, naturalized landscapes such as this one. If people in the Gallatin and Madison Valleys can overcome their “left” and “right” biases and work together to conserve private lands, it is not just ecological and biological integrity they are seeking to protect. They are acting as property owners, protecting and most likely enhancing the valuation of the collective real estate market. Clean air and water, mountain views, and wildlife visible in the distance means high market values and a very good return on investment—a win/win for those who can afford it.

Searching the Edges

In early September 2012 I joined with a group of volunteers, “citizen scientists,” on a weekend trip to search for evidence of grizzlies in the Tobacco Root Mountains. The trip was organized by a Bozeman NGO whose stated mission is to link “adventurers” with the needs of scientific research. This particular trip was sponsored and wholly paid for by a nationally well-known environmental organization that pitched the outing as means of giving back to the troops. Military veterans (and their families) were invited to partake in the “grizzly tracking workshop” along with the general public.

I was interested in the trip for a number of reasons, but primary among them was curiosity about the actuality of grizzlies on the western boundary of the GYE. Just about any discussion on

the genetic viability and general future of Yellowstone grizzlies involves their linkage to the gene pool in the Northern Divide Ecosystem, whose heart is Glacier National Park in northwest Montana. On most maps of the GYE the Tobacco Root Range defines the ecosystem's western boundary. Knowing there are grizzlies in the Madison Range which angles in from the northwest and terminates near the Park's southwestern border, biologists, agency managers, and wildlife advocates presume that grizzlies have already or will in the future cross the Madison Valley at its much narrower southern end and make their way into the habitat of the Tobacco Roots. From there, so the connectivity narrative goes, grizzlies will push to the terminus of the Tobacco Root Range where, admittedly, they face a formidable barrier in their inevitable march north:

Interstate 90. But, it is hoped, if some bears are able cross the interstate they will then be very close to the continental divide which runs just to the east of Butte, Montana. Once bears have crossed the interstate and gained the high divide there are very few obstacles to stop their progress and prevent breeding with grizzlies spreading southward from the Northern Divide Ecosystem. This is the dream of many conservation biologists, environmentalists, and wildlife advocates: link Yellowstone's grizzly population to one that is already linked to those in the Canadian Rockies. Once that happens the continent will (again) have a single, continuous population of grizzlies from central Wyoming to Alaska, and true "continental conservation" (Goldman 2009; Soule and Terbough 1996) will have its first great victory. But before that dream becomes reality, grizzlies have to repopulate the Tobacco Root Mountains.

On a hot Friday afternoon we met in the parking lot of supermarket on the south end of Bozeman. After several minutes of awkward socializing the head of the local NGO organizing the weekend event asked everyone to make a circle so the participants could introduce themselves. Most of the thirteen participants, seven men and six women, are early to late middle-

aged residents of Bozeman. There are also two young German women attending Montana State University, a reporter from the Billings Gazette, and a documentary filmmaker shooting footage on the head of the local NGO, a woman who drove in from Vancouver, B.C. to attend, and me. There is only one veteran in the group, a man retired from the Air Force. The head of the NGO mentions that 7 veterans had signed up, but all had to “drop out at the last minute.” After introductions everyone piled into vehicles for the 2.5 hour drive to the camping area and field site. Our access point into the Tobacco Roots is near Sheridan, MT on the range’s southern end. The area is distinctly rural, off the tourist radar, and feels removed from the GYE core. It takes the caravan over an hour to drive the 12 miles up the bumpy, unimproved dirt road to Branham Lake at 8,800 feet. Before dinner people take turns spying a herd of mountain goats high on a ridge to the west through a spotting scope provided by the NGO. After dinner the group leader offers a brief lesson on the stars and constellations visible in the moonless sky.

At 8 am, after breakfast the next morning, we listen to a representative with the Beaverhead-Deerlodge National Forest who has driven in to speak with us. She tells us that grizzlies are legally defined as a threatened species, and just on the other side of the mountain (to the east) lies the Yellowstone ecosystem grizzly population. If clear evidence of grizzly habitation can be documented then the Forest Service will have to change how it manages access to resources in the Tobacco Roots. She notes that “people say they are here,” but that the Forest Service has no evidence. This is, of course, the reason for our trip. The claim that grizzlies have already arrived in the range is often bandied about. Without a doubt the claim is rumor and hearsay. It seems everyone knows someone or has heard of someone who has seen one or evidence of one. A quite well-known environmentalist and writer plainly told me, echoing the connectivity narrative, “we know they are in the Tobacco Roots looking down on I-90.” When I interviewed the NGO head

several weeks before the weekend trip into the Tobacco Roots, he claimed a wildlife biologist told him he had seen a grizzly in the Branham Lake basin where our group was camped. Be that as it may, there is little concrete evidence to substantiate these claims.

The Forest Service representative passed around a satellite image showing the movements of a collared sow with two cubs as she traversed back and forth across the Madison Valley coming quite close to the eastern foothills of the Tobacco Roots. She tells us that the Yellowstone population is isolated but bears are moving north and south out of the core area and that there is evidence of one boar and two sows in the southern Gravelly Range close to the Idaho border. When someone asks her opinion why grizzlies are apparently not yet in the Tobacco Roots she replies simply, “time.” The NGO head chimes in cheerfully and hopefully that the Tobacco Range is a “great linkage area,” but instead of referencing a hypothetical movement northward he references movement west into the vast Frank Church River of No Return Wilderness—a rugged and undeveloped area in central Idaho where grizzlies once thrived, but have long since been extirpated.⁵

The Forest Service representative finished her presentation and we were instructed in the basics of animal tracking, sample collecting, and how to use a GPS unit. We study a map of the areas we are to cover and then divide into three groups with a tracker/naturalist leading each group. I volunteer for the group that will be going up and over the high pass to the northwest. Before we set out our lead tracker points out a white bark pine near our campsite. He notes that white bark pine nuts are a good source of autumn food for grizzlies as they enter hyperphagia (a period of intensive feeding and foraging as bears prepare for winter hibernation), but that white

⁵ See the short documentary film *Connecting the Gems* about the potential linkage via wildlife movement between Yellowstone and the Frank Church wilderness.

bark does not produce every year. This year, however, the trees are producing seeds in the Tobacco Roots and we each taste several of them. We then track to the east of the lake from the campground. Our plan is to track off-trail around the north end of the lake and circle back to the trail as it climbs out of the basin to the pass northwest of the lake. We cross a little stream on the northeast side of the lake and the naturalist stops to ask if we know the little wildflowers growing near the stream. I guess, correctly, that they are bluebells and he informs us that the leaves are edible while popping several into his mouth. Not long after we find a bear track, but the naturalist quickly identifies it black bear. We dutifully record it in our field notebooks and I mark it with a GPS plot point.

As we spread out again to search for more sign, the naturalist points out some old glacier lilies; an important spring bear food that follows the receding snowline in spring/summer. The next 30-40 minutes the group is scattered, some in the tree-line some nearer the shore of the lake, slowly scanning for bear sign, especially on the bark of trees. As some of the group begins to reassemble near the northwest edge of the lake I notice the naturalist on his knees near a patch of spruce trees carefully running his hands through the soft, subalpine vegetation covering the ground. As I stand over him watching several others join me and finally someone asks, "Do you got something? What are you looking for?" He does not answer, but after a few moments he pulls something very small out from under the low vegetation, holds it up to his eye for a moment and then eats it. "Bog cranberry," he finally says. Several of us go to our knees and begin searching. When we find them they are delicious, much sweeter than those common to Thanksgiving dinners. After a few minutes he locates a patch of whortleberry nearby and says both kinds of berries are excellent bear food. As we walk around the bend of the lake, heading toward the trail, someone finds a large track. Our naturalist waits, seeing if anyone can identify

it. When no is able to he says flatly, “Moose, big one, moving at a slow speed. See the under step in the trackway?”

We take a break before tackling the climb to the pass. As people snack and chat the naturalist begins to study my face as carefully as he has been studying the ground. Finally he walks up to me and gently removes something from my beard that looks like a long thin hair. He holds it and says to everyone, “Porcupine hair.” A woman finds a pile of scat nearby and the naturalist calls out, “any hair?” She pokes it with a stick and finds none. He walks over, examines it, and says, “spring elk scat, probably. It was likely cold so that’s why it didn’t pellet.” A man in our group asks about the long tubular forms of dirt that are a common sight in high mountain meadows. The naturalist explains that pocket gophers create them under the snow in winter and that estimates are that one pocket gopher moves 1.3 tons of dirt per month. Before we move on someone asks him how he is able to track so well and notice so much. He says practice and being in the field. He pauses a moment and says:

Science doesn’t really accept it, but pretending to be these animals helps. You should train your brain to think like them.

He then invokes the success and antiquity of Indigenous tracking and hunting practices and how “Native people really try to be like these animals.” This will come up again in a later situation, this time in the Park, when a woman and I are trying to understand the how the different gaits of a wolf affect the track pattern on the ground and how to “read” it. In that situation our tracker-instructor will make us get on our hands and knees to imitate as closely as possible the movement of the wolf. It is difficult and surprisingly awkward, our bodies seem to resist it, and he makes us repeat the movements until they come more naturally and we can perform them without thinking about the mechanics.

Our group follows the trail until we access a wide hanging valley just below the pass where we spread out and search for sign. A woman and I begin to carefully scan the banks of a small stream when she calls out that she has found a track. It is definitely canine and when the naturalist comes to see it he notes that could be a wolf, a smaller one, but it is difficult to say with any certainty because this area sees lots of pet dogs. A little farther up the stream I spy a small frog in the water. The naturalist is interested and asks me where it is. When I point it out he cannot find it, so with our backs to the sun he holds up his bent left arm and directs me to move his arm until its shadow has fallen across the frog in the stream. Having located it he picks up and asks me to hold it so he can photograph it. He cannot name the species and says that frogs “are a good indicator of stream quality” and general environmental change. He also notes that amphibians are often ignored in scientific surveys and species can vanish without anyone paying attention.

Our group stops for lunch at the pass. As we eat and rest, a steady wind blows from the west, and everyone dons another layer to ward off the chill despite the radiant heat of this cloudless day. We see the peaks of the Tobacco Roots stretching to the north. The naturalist points out a small herd of mountain goats barely visible on a ridge to east. We then discuss our plan of action for the rest of the day. We will drop down off the pass into a westerly valley where will circle a small reservoir. The group spreads out as we descend but no one finds any bear sign on the way down. At the lake we split up with three of us walking the north side and three others taking the south route. We find a great deal of moose, elk, and deer tracks in the mudflats that skirt the reservoir and perhaps a few black bear tracks, but nothing definitive. When we meet up at the west end of lake a group member takes a diatom sample out of the muck of the lake bottom for a scientist not on the trip. As we observe the diatom sampling another member wanders above the

reservoir into the trees and finds a large pile of scat near a flat boulder with excellent views to the west. Everyone goes up to have a look and what we see looks very much like compressed-wood fire starter in scat form. It is large, dry, and woody as if the animal had eaten sawdust. Someone mentions that this looks just what they saw on the east end of the lake, so after documenting and collecting this sample we return to collect and document that one as well. We take our time ascending back toward the pass, carefully searching through the trees when someone happens upon a heavily excavated squirrel midden in a stand of white bark. A little more searching by the group reveals several large, scat piles and several hair samples caught on the bark of two trees. The group is excited by this find and we carefully document every piece of evidence. A few people wax enthusiastically about the size of the scat speculating that surely it must have been a grizzly. Our naturalist declines to confirm the enthusiasm noting that “black bears can get pretty big too.” We continue to search as we hike back to the pass and over, but it is clear everyone is satisfied with the data we have collected and our group straggles back into camp in one’s and two’s close to 8 pm, the last group to arrive.

After dinner everyone gathers around the fire. The head of the NGO offers a more in-depth perspective on his organization than the previous night. He explains the organization operates on seven continents uniting adventure athletes with the collection of scientific data. When they learn of a trip to particular location they read the relevant scientific literature and then reach out to scientists who might want data from the location. Sometimes scientists approach them. Their stated goal is to change the way everybody spends time outside. They want people to “slow down and really look at things; create [an] army of people willing to collect data.” He claims this trip is a little more advanced than the guided trips they usually do and “we hope that you don’t see things the same way [after this trip].” I ask in linking science and adventure is his

organization hoping to affect some kind of social or political change? He replies that many people utilize the outdoors and his organization wants to reach them. He also notes that there are people who want to deregulate land management which his organization opposes.

We hope through science we can affect policy. You heard from the horse's mouth that the Forest Service will have to change how they manage this area. They will have to do more [Environmental Impact Statements],” and reduce or stop logging and mining in the Tobacco Roots. I hope you guys feel awesome about what you did today.

The last day is shorter. We drive back down the canyon and hike a drainage at an elevation of approximately 6,000 feet. People are tired and the air is hot. The group I am with searches along a barbed-wire fence. We inspect numerous douglas fir trees for hair samples as we slowly hike up the drainage, but all we find is evidence of elk. We spend much of the afternoon looking for berries. At 4 pm the groups meet one last time and everyone climbs into the vans, trucks, and cars for the drive back to Bozeman. The next week the Billings Gazette publishes an article about the trip. Three months later the NGO sends a group email to participants. Unfortunately, DNA results from the samples collected and analyzed come back negative. The tests indicate black bear. We are unable to document evidence of grizzlies at the western edge of the GYE.

Recreation, science, advocacy, wildlife and land management brought thirteen people (plus three naturalist/trackers) together for that weekend trip in early September 2012. The people who participated would have been happy to know their efforts provided evidence for grizzlies on the western boundary of the GYE, but the ones I queried were there to “be outside.” Every one said they were most satisfied with learning the rudiments of how to track and carefully look for evidence and sign of wildlife. Most admitted to being surprised at how “little” they saw on their usual hikes. This echoes the claim at the beginning of this chapter that what visitors “see” in Yellowstone are objects or tableaux whose primary function is to be seen. The gaze of the tourist

as well as the hiker enacts a specific kind of relationship to (a specific kind of) nature. It is functionally one that is tied to seeing a middle or far distance, even in those instances where what is seen, as is often the case in Yellowstone, is very close to hand. This kind of seeing, a seeing that values itself over and above even what is seen, is indicative of modernity's peculiar relationship to nature (Berger 1980; Haraway 1988). It not only enacts a specific relationship to nature, but represents the conceptual dichotomy separating environment from society that finds material expression in thousands of ways. Thus it is not nothing that people on the trip would say they saw more by seeing less; that is, by carefully attending to what was close at hand by tasting, touching, smelling and feeling for indications of lives that are far from human.

But what brought these people together for a very short time, what organized the whole event, was the possibility of "Yellowstone" grizzlies far from the boundaries of the Park. Indeed, it was not just "people" who came together on that weekend, but a range of institutions (the Forest Service, one small and one very large environmental NGO, the local press which advertised and covered the event), practices (conservation biology, animal tracking, genetic analysis, hiking/recreation), and actors (a naturalist, an environmental advocate, a filmmaker, a retired builder, undergraduate students, a researcher, an accountant and so on) that coalesced briefly with the goal of establishing a basis for the claim that grizzlies are located at a particular spot on the map. All of this is evidence for how modernity creates attachments to grizzly bears. Another indication is that not one person who participated lived within less than 2.5 hours of the field site. Some lived much farther afield than that. And yet it is the people who live, work, and play in the Tobacco Roots who will likely see grizzlies first and have to face the effects of living with them if a population ever does establish itself. Where were they? Where *are* they in relation to

grizzlies? What changes to their communities might follow in the wake of a foraging grizzly bear? These questions were never broached during the weekend by anyone.

II. Seeing grizzly ecology: birth of the GYE

Yellowstone pre-Leopold

Management of bears, visitor expectations, and human/bear interactions in Yellowstone prior to shifts which began in the 1960's was radically different than what is visible today in the Park. A number of historiographical treatments describe, among other historical curiosities, the evening feeding shows of bears complete with a stage and bleachers from which visitors could watch bears in leisure—a practice not ended until the 1940's (Haines 1977; Schullery 1992, 1997; Wondrak Biel 2006). Beginning in the 1930's with the advent of widespread motor vehicle ownership and lasting through the midpoint of the 1960's feeding, viewing, and quite often touching bears, mostly black bears, from inside and outside vehicles was a routine and even expected occurrence in the Park. A woman who visited Yellowstone in the 1950's with her family and later came to work in the Park the late 1960's, ultimately settling in a nearby community reminisced, "I remember sitting the backseat looking out the window and my dad saying to us kids, 'Don't you dare put your hand outside the window!' He thought all those people were crazy getting so close to the bears." I do not wish to rehash a history which has been described elsewhere, but it is instructive to take note of a few things (Haines 1977; Pritchard 1999; Schullery 1992, 1997; Wondrak Biel 2006).

First, what these historical accounts describe without ever explicitly saying so is that in the four or five decades prior to the shift to natural regulation as the guiding management principle of the Park, visitors and bears interacted in a much more intimate way than can be imagined today. However, this intimacy was predicated on bears being viewed as something akin to performers working for the amusement of visitors. If not exactly clowns, then animals which

occupied a place similar to those performing in circuses, held captive in menageries or the menagerie's later incarnation, the zoo (Philo and Wilbert 2000). Certainly Yellowstone bears are no longer performers, "lovable buffoons" or "bums" looking for a handout, but Yellowstone and its wildlife still retain a strong sense of the zoo insofar as visitors still very much want to see and thus enact the relationship of "looking" that is common to the zoo (Berger 1980). Moreover, because management of grizzlies in particular had not been rationalized with the variety of control mechanisms that are now taken for granted, interactions between bears and humans took place in ways and with a regularity that is no longer possible today; along roadways, at the doors of kitchen facilities, and at open pit dumps both inside and immediately adjacent to the Park.

Second, the advent of natural regulation coincided with growing anxiety over the sometimes close proximity of bears and people (Herrero 1970; Moment 1968, 1970; Olsen 1969). Natural regulation assumes that the myriad elements, organisms, and processes which compose a delimited chunk of nature, a national park for example, are best managed and most representationally natural through a policy that hews toward non-intervention. This is, admittedly, more an ideal or philosophical guidepost than operative management policy or action. Park management "intervenes" with Park wildlife often, either through management actions such as hazing a grizzly from a developed area or, perhaps more regularly, through the scientific research programs conducted by Park staff on wildlife. Clear issues having to do with power, authority, and knowledge emerge on this point. Non-intervention does not apply just to the management of Park "resources." It applies with equal or greater vigor to Park visitors and their relations with said resources. It applies to the resources themselves insofar as bears, for example, are expected to behave "naturally," and not seek out humanized spaces. And it applies to spaces beyond the Park's border insofar as they are considered vital to the health of the grizzly

population. But the sight of a bear in its natural habitat, beyond or away from human environments, becomes a sign of effective management.

Ideal though it may be, natural regulation was and is consequential. It redraws the boundary between people and bears such that decades of close proximity of bears and people come to a relatively abrupt end in the 1960's. Even more substantial, natural regulation traced a new iteration of the border between humans and animals, one that was potently realized in the management of Yellowstone's grizzly population. Bears that fed at dumps, bears that "begged" for food along the Grand Loop, and bears that foraged in areas set aside specifically for human use were not behaving naturally. They were corrupted by the association with humans and their food—"habituated" is the proper term. Under this regime, such bears occupied a physical and conceptual liminal space that is still operative today. Neither wild (natural) enough nor tame (social) enough, alternately skulking on the borders of developed areas and retreating into undeveloped wilderness again, these animals are subject to management actions such as hazing, capture, relocation, and death—"a fed bear is a dead bear." To prevent or at least curtail the reproduction of bears too willing to cross boundaries, animals that ultimately belong nowhere, both they and humans can be disciplined to maintain the distance appropriate to a regulation that accords with nature.

These regulative borders, however, are not simply a matter of proximity and the policing of potential physical interaction. Larger, more encompassing boundaries aligned with new definitions, values, and purposes are being drawn at this time which will affect the management of Yellowstone grizzlies for years to come. In short, none of the above is necessarily or inherently natural, given, or indicative of a more pure, less humanly influenced nature. These sets and subsets of relations, given shape and definition by a host of formal and informal

boundaries, are produced by an array of actors interpreting and acting upon the world in divergent ways. Rarely, if at all, were these actors cognizant of or concerned with the most significant and elusive boundary in Yellowstone, the one that demarcates social from natural.

The Leopold Report

Published in 1963 by a committee of five members and officially entitled “Wildlife Management in the National Parks,” the document would come to take the name of its chief author A. Starker Leopold, son of Aldo Leopold and a professor of ecology at the University of California Berkeley. Written at the prompting of Interior Secretary Stewart Udall, the report sought to outline a unified approach for Park Service management of wildlife populations. At that moment in Yellowstone’s history the management of grizzly bears did not loom particularly large. Much more controversial was the management of Yellowstone’s large elk population. Two years prior to the publication of the Leopold Report, Park management, concerned with the possibility of increasing degradation of grazing conditions on the Park’s northern range, culled over four thousand elk which sparked public outcry (Simpson 1982; Smith 2011).

The Leopold Report is significant for several reasons. Primary among them is the force with which it argues for a management perspective informed by an ecological/restorative agenda and guided by scientific practice. Of the five authors who signed off on the final report, only Starker Leopold and Stanley Cain were practicing scientists affiliated with a university. The other three, Ira Gabrielson, Clarence Cottam, and Thomas Kimball, were experienced wildlife management figures that came from the older tradition of conservation management; a tradition which presumes human intervention primarily in the form of public hunting and is still very much active in contemporary state fish and game management regimes, otherwise known as the North American Model of Wildlife Conservation. The Leopold Report represents something very

different however. Addressing national parks, where hunting had been disallowed from inception, the report conceives a very different relationship to wildlife and the bounded natural space which they occupy. In the case of Yellowstone elk, very much a live issue at the time, the report plainly asserts, “Reducing the numbers of elk in Yellowstone...is part of an overall scheme to preserve or restore a natural biotic scene. We cannot endorse the view that responsibility of removing excess game animals be shared with state fish and game departments...Such a proposal imputes a multiple use concept of park management which was never intended [and] is not legally permitted... [U]nilateral administration directed to a single objective is obviously superior to divided responsibilities in which secondary goals, such as recreational hunting, are introduced” (Policies).⁶

A few things bear highlighting. Management intervention, in this case culling, is perfectly acceptable so long as the goal is to “preserve” or “restore” a natural-historical “scene;” non-expert, public involvement in such management-control measures is verboten; centralized, authoritative control of management actions and objectives is desirable, achievable, and enforceable within the federal boundaries of the national park.⁷ The elk problem in Yellowstone would seem to have carried the possibility of softening the Park’s borders insofar as there was strong advocacy to have hunters address the range-land anxieties of an over-abundant elk population. The Leopold Report quashed this possibility and reaffirmed the firm boundaries of

⁶ Worth noting here that the Leopold Report endorses the culling of elk in 1961 as consonant with the overall goal of recreating vignettes of primitive America and restoring ecological balance. However, culling of wildlife which the Park stopped for good by the close of the 1960’s militates against the practice of natural regulation. On this point at least, Yellowstone has followed natural regulation and not the recommendations of the Leopold Report. This example also gives some indication how natural regulation may be as much a tool of political management as it is of ecological management.

⁷ In 1961 when controversy erupted over the Park’s culling of 4,000 elk the most vociferous complaint against the action was the perceived waste of it. Local hunters, it was argued, could reduce the population and make good use of elk meat in the bargain. Leopold et al are arguing directly against this viewpoint.

the Park by warning off any suggestion that management actions or decisions involve any entity other than the federal authority of the Park Service.

But according to the Report, the bureaucratic power of the Park Service was by no means absolute. There was another form of authority and expertise to which Park management ought to accede and assimilate, if not exactly submit. Before that aspect is discussed it bears mentioning that if the Leopold Report is known at all outside conservation and policy circles it is due to its now famous rendering of what the goal of national parks should be.

As a primary goal, we would recommend that the biotic associations within each park be maintained, or where necessary recreated, as nearly as possible in the condition that prevailed when the area was first visited by the white man. A national park should represent a vignette of primitive America (Goals).

A “primitive vignette,” sans the Native American peoples that had once populated the vignette, of course (Burnam 2005; Cronon 2003, 1995; Nabakov and Loendorff 2003; Spence 1999; Solnitt 1996): nothing better describes the aesthetic *cum* ecological framing of the bounded and ideal wilderness environment. The report’s authors admitted the difficulties of managing toward such a goal, but asserted, “All these limitations we fully realize. Yet, if the goal cannot be fully achieved it can be approached. A reasonable illusion of primitive America could be recreated, using the utmost in skill, judgment, and ecologic sensitivity. This in our opinion should be the objective of every national park and monument” (Goals).

Geographers (Braun 2002; Castree and Braun 2001; Glacken 1967), environmental historians and others (Cronon 1995; Raffles 2002; White 1995, 1996) have addressed this desire to mark a pure nature based on historical memory against what is perceived as a much less pure contemporary nature of utility, expedience, and economic value. Braun in particular (2002) interprets this logic as based on a sense of perpetual loss that accompanies the progressive unfolding of modernity like a shadow. It is, in short, a palpable sense of Marx and Engel’s truism

that “all that is solid melts into the air” materialized in the discontinuity of pre-Columbian North American ecology and the 20th century capitalist ecology of Cold-War America. Leopold et al were not naive about the meaning of such a goal and what it entailed. They recognized and named as such what was to be “recreated:” an *illusion* of primitive America. I use the term *illusion* advisedly. But it is significant that the Leopold Report employs the term, if for no other reason than its authors recognized and promoted the artifice, the semblance, the sense of artistry necessary to recreate a nature that could represent America prior to its national existence. The Leopold Report’s forthrightness on this point is telling. Ecological restoration as a practice of wildlife management and preservation in the national parks is intimately entangled with, at times almost indistinguishable from, a landscape aesthetic.

To ensure the viability of recreating “primitive” conditions the Leopold Report advised the Park Service to institute a sweeping scientific program.

Management without knowledge would be dangerous policy indeed. We urge the expansion of the research activity in the [Park] Service to prepare for future management and restoration programs...In consonance with the above policy statements, it follows logically that every phase of management itself be under the full jurisdiction of biologically trained personnel of the Park Service. This applies not only to habitat manipulation but to all facets of regulating animal populations (Policies).

Thus the report authors called for a scientific professionalization of Park Service management and staff to achieve the goals they prescribed. Like all great projects of modernity, the contradictions were apparent right on the surface. A genuine recreation of primitive America necessitated the deployment of expert intervention based upon a suite of advanced and sophisticated research programs under the jurisdiction of the National Park Service with the goal of preserving a produced landscape that appears untouched by humanity. Considered in a strict spatial sense, not in any abstruse or fuzzily abstracted way, but materially and concretely, there

was only one kind of historico-spatial formation that could accommodate the prescriptions of the Leopold Report, and that was the wilderness national park.⁸ Large tracts of undeveloped, naturalized land given over to the representation of North American natural history, underwritten by the sovereignty of the American state, and administered by cadres of technocratic and scientifically competent managers: this at least approaches a definition of modern Yellowstone over the last forty years.

Though explicitly ecological and restorative in its reasoning, the Leopold Report showed little awareness of the approaching managerial and scientifically informed concept of the Greater Yellowstone Ecosystem. In fact, it tacitly relied on the hard, federal borders inscribed by the national park model to achieve its ecological goals. On the other hand, a 2012 report ordered by Interior Secretary John Jarvis and directly inspired by the Leopold Report's approaching 50th anniversary situates national parks as core areas whose boundaries are almost meaningless from an ecological perspective. The 2012 report also clearly articulates the rationalization, specialization, and professionalization to which the Leopold Report was pointing in 1963.

While individual parks can be considered distinct units, they are—regardless of size—embedded in larger regional and continental landscapes influenced by adjacent land and water uses and regional cultures. Connectivity across these broader land- and seascapes is essential for system resilience over time to support animal movements, gene flow, and response to cycles of natural disturbance...In contemporary and future resource management, the functional qualities of biodiversity, evolutionary potential, and system resilience matter as much as observable features of iconic species and grand land- and seascapes. Iconic species (from wolves to whales) and grand land- and seascapes (from coral reefs to mountains) depend on the much more difficult to observe but essential characteristics and processes of healthy ecosystems, from decomposition by microorganisms to fixation and flow of nitrogen...Consequently, broad disciplinary and interdisciplinary scientific knowledge and scholarship are

⁸ I am not concerned here with primarily historico-cultural sites such as battlefields or national landmarks that are also managed and preserved by the National Park Service.

necessary to manage for change while confronting uncertainty. New and emerging scientific disciplines—including conservation biology, global change science, and genomics—along with new technological tools like high-resolution remote sensing can provide significant information for constructing contemporary tactics for NPS stewardship. This knowledge is essential to a National Park Service that is science-informed at all organizational levels and able to respond with contemporary strategies for resource management and ultimately park stewardship. (U.S National Park Service Advisory Board, 2012, 8-9).

Starker Leopold and his co-authors would undoubtedly approve of the depth and complexity with which ecological relationships, their study, and management are rendered in the contemporary report. There is perhaps too much that can be said about the quotation, but for the present the first twenty words of the first sentence stand out immediately. In particular, use of the passive tense “can be” in describing the spatial nature of national parks—they can be taken as individual, bounded “units”, but (in reality? more accurately? truthfully?) they are simply parts of less bounded wholes. National parks can be understood as “distinct units” but everything in the preceding quotation—habitat connectivity, genetic drift, evolutionary mutation, bio-chemical feedback loops, climate change, and broad societal dynamics— argues against it. Some fifty years after the Leopold Report are Park boundaries being blurred, downplayed, redefined or simply taken for granted in this discourse? Do they no longer matter or are they more important than ever? Have these lines of knowledge production colonized the meaning and function of the Park or has the Park in its bounded essence enabled these knowledges to take root, grow, and flourish as the dominant ecological and environmental perspectives of our time? Interesting

questions that are probably unanswerable in the short run, but they should be kept in mind as the ties between grizzly bears, humans, and boundaries are untangled going forward.⁹

Grizzly bears, their attachments to modernity

In 1959, my brother John and I and a number of colleagues began a long-range study of the grizzly bear in Yellowstone National Park and parts of four adjacent national forests. This area comprises some 5 million acres, and in terms of its natural character and the life forms (specifically the grizzly) it supports can be considered the greater Yellowstone ecosystem—Frank Craighead, 1979.

Notice again the passive construction “can be considered.” Exactly the same as the 2012 report, but there is an inversion in the value of the terms that surround the verb. The more recent bit of text alludes to the fact that Yellowstone and other national parks are discretely bounded units even if there is no scientific basis for conceptualizing them this way. The proper frame is much wider—a regional, continental, or even global ecological scale is in order. But for Frank Craighead in 1979 “the greater Yellowstone ecosystem” is the more doubtful term, the more uncertain concept. Not because Frank Craighead necessarily doubted or was uncertain about the veracity or accuracy of the attribution. A decade of research on the population of Yellowstone grizzlies led the Craigheads to the concept. There is no evidence to suggest either of the Craigheads were closeted constructivists about nature or ecosystems (Braun and Castree 2001; Soule and Lease 1995). What makes the concept doubtful and uncertain is that the Craighead study team had worked their way to it through the study of grizzlies, animals whose existence clearly depended upon the real and certain boundaries of Yellowstone National Park; of this fact

⁹ One indication of the semiotics that animate the report’s discourse is the unmistakable echo of conservation biology literature, in particular the work of Michael Soule (Soule et al 2008, Soule and Terbough 1996). See also Takacs (1996).

Frank Craighead was acutely aware. So of the Park there are no doubts, but the ecosystem? It is inferred, certainly less distinct and reliably given than the Park, and is known primarily through the individuals of a population that “leave” the Park. If the ecosystem is there it is because grizzlies reveal it.

The bleeding-edge research conducted by the Craighead brothers on Yellowstone’s grizzly population, the first of its kind anywhere, lasted until 1970. It ended when the controversy swirling around the Park Service’s decision to close the Park dumps—long a reliable source of food for grizzlies—made the relationship between the Craighead study team and Park management untenable. Anyone familiar with Yellowstone’s history knows how momentous and charged the debate over Park management became in the late 1960’s, extending right up through the middle of the 1980’s (Chase 1986; Pritchard 1999; Schullery 1997; Wondrak Biel 2006). The debates were multi-faceted and argued on multiple fronts, but at the center dominating all other questions were those which had to do with the management of grizzlies.

Within the span of a decade, a sea-change occurred in the Park. The effects are readily visible today if one knows what to look for. See a wolf (indeed, just see a wolf in the Park full stop) with a radio collar roaming the Lamar Valley and know that phenomenon owes its existence to this historical period. Read the abundant signage and literatures that guides human behavior and action in “grizzly country”, follow (or not) the rules on food storage in any of the Park campgrounds and know it is due to the tumult of this period. Listen to a Park Ranger from the interpretive division explain to visitors in some detail the seasonal ecology of grizzly foraging patterns and know that derives from this period. If you are lucky and so inclined, talk to anyone of two dozen full-time or (mostly) seasonal biologists conducting research on wildlife for the Park Service and know their work owes its existence to this period. In each of these cases, the

work done by the Craighead study team, especially their development of radio telemetry for monitoring grizzlies, led to a new linkage of humans and wildlife in Yellowstone defined by scientific practice. And very much like Haraway's cyborg, Park wildlife now carries signs of the technological interventions that mediate the relationship between humans and animals, a relationship based primarily on knowledge and control (Haraway 1991, 2008).

Perhaps this is a good time to point out that the primary function of our biotelemetry or big game tracking system is to extend the range of man's observational powers—Frank and John Craighead, 1965

The goal was relatively simple even if achieving it was not. The Craigheads wanted to see what had never been seen before (Haraway 1988; 2008). Or if that is overstating the case, they wanted an enhanced capacity to record, document, aggregate, measure, and compare. To do this the Craigheads needed data, but grizzlies were not pliant, willing experimental subjects. They were potentially quite dangerous. And direct field observation after the manner of old-time natural historians, while useful, was at best sporadic and unreliable, especially when the goal was to observe Yellowstone grizzlies at scales beyond this or that individual in this or that context, situation or environment. To see them and thus *know* them at the abstracted scale of population, for example, to be able to make statistical claims about them required a link or attachment; really a series of them that could reliably associate the Craigheads with the bears and enable their team to make observations of what had been previously unobservable.

It is important not to go too fast, to permanently jump scales with the Craigheads as scientists and see only their results and findings. Despite solving the problem of how to see and thus observe grizzlies beyond the range of common observation, the Craighead study team was confronted with another problem—a problem that emerged directly from the success of

overcoming the limited observational power of human beings. How should their proximity to bears be managed? Unlike most visitors to the Park, though certainly not all, the Craigheads were forced to confront the fact that in their seeing, they were also seen. They were not, as a tourist might, merely looking on a scene from a subjectively defined outside when in proximity to grizzlies in the field. In some situations it was not obvious just who was occupying the subject/object positions; the field was open and all manner of reciprocity was possible.

When the receiver gave no indication that this family of bears had moved, I shouted, but only after we had positioned ourselves at the base of large climbable lodgepoles. While each of us stood close to his selected tree, the sow gave a terrifying roar (F. Craighead, 1979, 87).

A description of an image is helpful here. I had an appointment to speak with the leader of the Park's grizzly bear study team. As I walked into his office and we exchanged stilted pleasantries I noticed a prominently displayed 8x11 printout of a photograph on the wall. His phone rang just then and while he spoke I sat down and studied the image. The photograph was of a substantial looking grizzly caught in mid-stride; all four paws appeared to be off the ground with the bear coming around the front left corner of a culvert trap, the kind used by the Craigheads forty years ago and still in use today. There is of course no fool-proof way of imputing an affective state to this grizzly captured in hundreds of a second by the camera, but my best guess would be to say it was agitated. The context of the situation was difficult to discern. Was the bear accidentally released from the trap? Was the gate lifted prematurely in the belief that the bear was still sedated? Did the gate malfunction? Did this bear appear unexpectedly on the scene? None of this is clear from the image; however the capacities, sentience, and power of the bear are very clear. Written above the image in black marker were the words: *Don't screw around with grizzlies. Bad thing can happen fast.*

When the Craighead team began its work in 1959 they had two tools that enabled them to cross the boundary and become intimate with grizzlies, culvert traps and propulsive dart gun injections of the drug succinylcholine chloride. Using food as bait, the team would leave an open culvert trap at a particular location to trap a grizzly. Once they had a bear in the trap, they would dart it while it was still safely in the trap and remove it after it was immobilized. They marked each bear with colored ear tags, tattooed it, and took multiple biological measurements. The procedure was necessarily experimental and potentially dangerous with every bear captured and sedated. The team tried for a short period of time to simply approach bears on foot with a dart gun, but the procedure quickly proved too risky.

At first the door of the trap was raised with trepidation but as we gained confidence in the drug the procedure of hauling a large grizzly out of the culvert became routine” [and] “to shoot a free-roaming grizzly it was necessary to approach within 50 feet as the dart gun was unreliable at greater distances (J. Craighead, M. Hornocker, W. Woodgerd, F. Craighead 1960, 353).

The most uncertain factor was the administering of the drug. The risk of giving too much or too little was always present and the team intensively analyzed their dosage data. Three bears in the first year of the study died while captured. The use of drugs to immobilize grizzlies, thus enabling their handling and collection of scientific data, carried the potential of unsettling the public. There is no evidence that the Craigheads had to defend the use of tranquilizers while their research was active, though it became a problem for later research on grizzlies (Chase 1986).

Five months after the progress report cited above, the Craigheads published a feature in National Geographic, replete with 13 color photos, entitled “Knocking Out Grizzlies for their Own Good.” The rationale given for the study and the tranquilization of bears is to “save the grizzly” and “ensure [its] survival.” The attention and publicity the spread in National Geographic afforded the Craigheads is significant. A decade later this would become a factor in

the social and political contentiousness of debates on grizzly management. The status, reputation, and notoriety the Craigheads acquired through their relationships with media and journalistic outlets seemed to turn the public against the Park Service in those debates (Brockington 2009).

Mastery over the procedures that put the Craighead team in close proximity to grizzlies was necessary, but not sufficient for their study. They needed to be able to retain the potential of proximity, more or less at will.

Although 77 grizzlies had been color marked, and over 700 observations made of the marked bears in 1960, no hibernating dens or areas were located, and there was a paucity of information on diurnal and nocturnal activities and movements (F. Craig, J. Craig, R. Davies 1963, 135).

In early fall of 1961 the team successfully fitted two bears with radio collars and for the first time grizzlies were rendered visible beyond the normal range of human observational capability. From that point on the team was no longer be limited to proximal observations only. Their vision became progressively wider and encompassing and they were on their way to realizing a greater Yellowstone ecosystem. Sixteen years later Frank Craighead would offer “thanks to the technology of the space age,” (1979, 10) for providing the capacity to jump scales, track and locate grizzlies at 5, 10, 15, and 20 miles distance. But the hazardous intimacy involved in trapping and sedating every bear was still necessary—a radio collar had to be attached to the bear for it to become susceptible to location.

“Space age technology” enlarged the scale at which grizzlies could be known, but it also enabled the study team to close the distance between humans and grizzlies in other ways. In September 1963 Frank Craighead presented a paper reporting on the team’s progress in a Bio-Telemetry session at the 18th Annual Instrument Society of America. He noted that the team located the compass bearing of a collared bear through the use of a triangulated signal. This had enabled them to approach within 40 feet of the bear. Moreover, they learned that one bear, # 40

the famous bear Marian in Frank Craighead's 1979 narrative, limited her activity to few square miles and slept most of the day; another bear roamed extensively, often coming very close to developed areas and concentrations of people, apparently without ever being seen or noticed. The team discovered to their surprise many day-bed sites in heavy timber often quite close together. On one approach utilizing a radio signal through a thick stand of lodgepole pine they heard a "woof" at 125 feet and the sound of bears fleeing.

Copious saliva around the edge of [the] bed revealed that she had been as nervous at our near presence as we had been at hers. Possibly a decision to attack or flee had hung precariously in the balance (F. Craighead, 1963, 6).

They located many excavations of field mice nests and tunnels and marveled that these large animals would expend the energy for such a small caloric reward. They noted clear differences in the behavior, foraging, and travel patterns of boars, sows with cubs, and sows without cubs, data that could be further stratified by age structure.

One young adult boar has been radio-tracked in a circular trek of fifty or more airline miles (F. Craighead 1963, 8).

In 1966 the Craigheads published another article in National Geographic, their third since undertaking the research in 1959.

"The Problem of Managing Bears"

However, in Yellowstone, a special type of migration has evolved in response to the "artificial" food at refuse dumps. These sites concentrate the bears during the four-month period from June through September—John and Frank Craighead, 1967

In July 1967 the Craigheads submitted an extensive 113 page report to the Park Service detailing their findings and offering recommendations for future management. Two issues, among many others, addressed by the report carry implications that are still felt today in the Park and around the Yellowstone region. First, by 1967 the question regarding the Park's open-pit

dumps was an active point of debate (Craighead, J. and F. Craighead 1967; Pritchard 1999; Schullery 1992; Wondrak Biel 2006). The perceived “artificiality” of Yellowstone bears feeding at dumps was the primary issue. The Craigheads recognized this concern when they began their study. They addressed the potential criticism in a 1960 presentation at the North American Wildlife Conference.

The situation in Yellowstone where grizzlies concentrate to feed on garbage is not as artificial as it first appears. It is the grizzlies’ nature to scavenge and to congregate wherever food is available...in fact, the behavior of Yellowstone grizzlies is so reminiscent of the early accounts of the California grizzly as they came into contact with settlers (Storer and Trevis 1955) that we suspect ‘historic’ bear and man relationships have been preserved rather than altered in Yellowstone National Park (25th North American Wildlife Conference, 1960, 350).

Much later, the Craigheads would come to call these sites of concentrated feeding “ecocenters” (J. Craighead 1991, 1995), linking the dumps analogously to salmon runs and other sites where grizzlies congregate to forage, hunt, or scavenge an abundant and readily available source of food.

The debate over grizzlies utilizing the dumps, apropos of its management implications, appears in hindsight to have been reduced to a kind of natural functionalism that hinged on the (managerial) premises of natural regulation. Put simply, human food scavenged at the dumps was an (unnecessary) intervention in the biological life of grizzlies. Once again, the boundary question of what is natural and what is not (that is, human, social, artificial) appears. It is very likely that the debate over the procedural steps of closing the dumps became as heated as it did because the assemblage of grizzlies-plus-human-excess/waste instantiated this conceptual quandary at a site of such gross materiality. There were no subtleties about grizzlies eating garbage. For their part, the Craigheads remained consistent in their arguments. Humans were emphatically part of the ecosystem occupied by grizzlies, thus management (and intervention)

was necessary and inevitable. Conceptually hard borders that separated human and grizzly activity were simply unrealistic, especially from a management perspective (F. Craighead 1967, 1979; Craighead, J. and M. Hornocker, W. Woodgerd, F. Craighead 1960; J. Craighead 1991, 1995). The dumps concentrated grizzlies in a few known sites for months at a time, significantly reduced potential grizzly/human conflict, and helped preserve the population (Craighead, J. and F. Craighead 1967, 1971, F. Craighead 1979; J. Craighead 1995). The Craigheads argued for bounding grizzlies as much as possible to known locations within the Park precisely because humans were an inextricable part of ecosystem. It is well documented that the Craigheads were not opposed to the dump closures outright (Chase 1986; Pritchard 1999; Schullery 1992, 1997; Wondrak Biel 2006). They were opposed to abrupt and immediate closures—“a cautious phasing-out program” was recommended (Craighead 1967).¹⁰ But according to the Craigheads, the dumps were only the most obvious and readily available means of keeping grizzlies safely away from people.

They were adamant that “congregating of grizzly bears within the geographic heart of the park should be encouraged by specific management practices” (Craighead 1967, 93). If the dumps were to be closed then grizzly feeding ought to be supplemented with “surplus elk and bison” at strategic locations in the core of the park which would prevent bears weaning off easily available garbage from roaming across the wider landscape in search of food. And, in any case, the Craigheads believed that culling an overabundant species, elk, for use by a threatened species made good management sense. Finally, they argued that concentrating grizzlies in the core of the Park through active management interventions would ensure the necessary boundaries between

¹⁰ Nor were the Craigheads opposed to retaining the dumps in perpetuity with modifications made to their locations and the kinds of refuse that would be made available to bears (Craighead, J. and F. Craighead 1967).

humans and bears were neither arbitrary nor contingent, but controlled, managed, and informed by scientific expertise.

Park management, however, disagreed. Grizzlies concentrated in certain locations whether because of management decisions or contingent human activities was not indicative of a natural boundary or natural behavior. In truth, Park management chose to follow the recommendations of the Leopold Report in a very concrete way. John Craighead would argue years later (1991, 29) that the Park Service had done no such thing, but he was mistaken on an essential interpretation of what the Leopold Report had called for. An *illusion* of primitive America could not countenance sites of excavated earth, where the coming and going of garbage trucks mingled with cohorts of grizzlies sifting through the waste and excesses of modernity for their next meal. Nor is it likely that a public rapidly becoming conditioned by environmental discourse in the 1960's and 70's would have accepted the culling of elk and bison as a means to keep grizzlies anchored to the geographic safety of the central Park. In this respect Park Service management became the collective artist Starker Leopold had hoped they could be. Thus Yellowstone grizzlies were rendered in the purer tones of an ecological realism that washed away the shades of grey highlighting grizzly bears' attachment to modernity. One should not underestimate how unsightly was the "scene" of grizzlies rummaging through trash in the world's first national park by the end of the 1960's.

The second significant issue addressed by the Craigheads' 1967 report was another question involving "the problem of managing bears." The study team's findings led them to the realization that Yellowstone grizzlies were not Yellowstone's only.

No integrated plan exists for managing the grizzly throughout Yellowstone National Park and adjacent forest areas... Yellowstone is not a self-regulatory ecological unit. Together with adjacent national-forest land, however, it does

represent a near complete unit. This vast, relatively unmodified land area lying Wyoming, Idaho, and Montana should be cooperatively managed for the perpetuation of the grizzly. Although the grizzly can be managed and preserved strictly within the 3,412 square miles of the park, the margin of safety for the population and the latitude for population manipulation would be greatly enhanced in the larger area, which includes Yellowstone Park and contiguous portions of the Gallatin, Shoshone, Teton, and Targhee National Forests. A cooperative state and federal effort to manage the grizzly [is needed]... Yellowstone Park may now be supporting a near-stabilized population of grizzlies, but on the basis of the biological information obtained in our investigation, we believe that a higher population could be maintained, and probably should be in order to afford maximum population security (1967, 80, 84, 85).

This is the first clear intimation of what would become the GYE—the Greater Yellowstone Ecosystem. Two points immediately jump out. The genesis and *modus operandi* of the GYE is a linking of state and federal administrative-management across jurisdictional boundaries necessarily informed by scientific (in this case biological) expertise. In this sense the GYE is a classic boundary object (Guston 2001; Star and Griesemer 1989) around which disparate, even adversarial actors and institutions can approach a problem (survival and flourishing of Yellowstone grizzly population). It is not, first and foremost, an ecological concept to which actors and institutions respond. Rather it is a managerial concept which outlines how a particular species could be managed for. This is evident today in the biannual Yellowstone science conference where agency managers, researchers, and staff join with university affiliated and independent researchers to offer and discuss findings on a wide array of bio-physical and social issues in the Yellowstone region. It is also plainly evident in the cross-border, interagency management regimes now in place to manage grizzlies and bison.

The next point articulates at what scale the GYE would become operative. “Population security” is the key term. As Foucault (1978, 2003, 2007) argued, when in the 18th and 19th century nation-states became concerned with developing reliable, empirical, statistical

knowledge of territory and resources the question of securing the population through rationalized administration immediately arose as well. Bio-power, managing the biological potential of a given population across a wide spectrum of gradients, gave structure and focus to administrative bureaucracies and many modes of scientific expertise. The research and management conclusions of the Craighead study on Yellowstone grizzlies indexes the moment at which the management of Yellowstone becomes a fully rationalized mode of administering state power through biological science. The GYE is artifact of state managerial concern made operative by scientific research and data. It is not the ecosystem *per se* that makes the need for management legible rather it is the need for management which renders the ecosystem legible. The biological, species-coherence of a grizzly population that does not recognize the boundaries of the Park puts the whole affair in motion, animates it, and gives it life.

That the Park Service took to heart most, if perhaps not all, of the recommendations of the Leopold Report in 1963 and the Craigheads' in 1967 is attested to by the controversy and acrimony with which the relationship between the Park and the Craighead study team ended. The abrupt closure of the remaining park dumps in 1971 was one thing. More causative was the rapid development of the Park's own scientific team in the late 1960's. Given the charge of managing bears and developing the scientific data that would inform said management, the Craigheads' privileged position as sole experts on Yellowstone grizzlies was immediately threatened and challenged. From 1970 through 1974 Glen Cole, hired as supervisory biologist for Yellowstone in 1967, published and presented several reports and findings on Yellowstone grizzlies which often countered the Craigheads' assessment. While the Craigheads pushed open the boundaries that had once limited understanding of Yellowstone's grizzlies, they found themselves confronted by a bureaucratic boundary which they could not cross. Institutional outsiders, they

were never affiliated with the National Park Service though they had worked closely with Park Service for over a decade, the Craigheads balked at the perceived infringement on the control and direction of their research on Yellowstone grizzlies by Yellowstone management (F. Craighead 1979). As Park managers began to formalize and institute a management regime based on scientific practice, the relatively informal arrangement which had placed the Craigheads at the center of Yellowstone grizzly research and day-to-day grizzly management actions broke down. The Craighead study team was no longer a vital mediator between the grizzly population and Park managers because the Park was hiring and developing its own mediators.

The severity of the ensuing debate over grizzly management is partly attributable to the success of the Craigheads' public outreach through National Geographic and other forums. As the debate grew more public over the course of the 1970's and gained ever wider circles of interest and concern, sentiment seemed to consistently approve of the Craigheads and disapprove of Park Management. The disapproval reached its apotheosis in the 1986 publication of Alston Chase's *Playing God in Yellowstone*, a scathing book length polemic on the alleged mismanagement of America's first national park. During the 1970's and even into the 1980's the Park Service never developed a sophisticated or coordinated defense of management decisions, a fact which managers paid dearly for over two decades. Indeed, two years after Chase's book massive fires swept through vast swathes of Yellowstone and the Park Service was ridiculed for "letting" the crown jewel of the Park system burn. Park management learned from the acrimony and contention that hung over the grizzly debates for so long. It was evident in the caution, if not distrust, managers displayed toward this research project and the questions I asked.

Boundary and scale

There are magnitudes of difference between the scales of population, of regional and continental conservation, and the intimacy of on-the-ground encounters and considerations. The disjunctions are difficult to reconcile. They go to the beating, socio-political heart of wildlife management debates that emerged from Yellowstone over the last forty years. Nearly half a century after the Craigheads cautiously proposed it, the Greater Yellowstone Ecosystem is still a reality in the making. The coherence of the term may no longer be dependent on Yellowstone's grizzly population, in part due to the population rebounding so splendidly in the intervening years, but grizzlies still remain integral to defining the boundaries of the GYE. The uncertainty (and hope) of grizzlies at the GYE's edges, in the Tobacco Roots, in the Centennial Mountains, in the Wyoming Range and elsewhere, signifies the uncertainty of the GYE itself. It is not an object that is given so much as continually proposed; actively stitched together at multiple scales by actors, institutions, and processes that are often perfectly unaware of each and the other. It lacks the solidity, definition, and singularity of the Park. Indeed, the Park provides the core condition of its very possibility across categorical domains: political, social, economic, and ecological. The hard boundaries of the Yellowstone National Park define the much more extensive, fuzzy, and uncertain boundaries of the Greater Yellowstone Ecosystem. The authors of the 2012 report on management in the national parks emphasize that ecosystems are larger, more pervasive and primary than the bounded spatial units of bygone socio-political design. But these delimited units of naturalized space, historical artifacts of colonial expansion and capture, constitute a fundamental means through which the connective elements of ecosystems have been imagined, known, and studied in North America and around the world (Braun 2002; Goldman 2003; Hughes 2006; Neumann 2004; West 2006). Where the lines are drawn may be contested

and should be open to dispute. That they have the power ascribed to them in these chapters should not.

The Craighead study team and the telemetry technology the team developed in order to bring recalcitrant grizzlies within the purview of knowledge helped to redefine these boundaries. Grizzly telemetry widened the scope of Yellowstone's ecology, solidified the species-coherence of the region's grizzlies, and forged an inextricable link between the two. Yet, paradoxically, this widening of boundaries, both conceptually and on the landscape, was entirely dependent on a novel and unprecedented intimacy between the Craigheads and their subject bears. And as the Craigheads were developing techniques for associating intimately with the bears they studied, Park visitors and local residents would come to be instructed on the techniques and behaviors that were necessary for maintaining an appropriate distance between them and wildlife. This tacking back and forth between the material and the abstract, the intimate and the distant, and the immanent and the transcendent defines the dynamics that maintain and rework the boundaries between humans and animals, nature and culture, in Yellowstone.

Wolves

III. Wolf subjects

Yellowstone's wolves are known for showing up in unexpected places. On February 14, 2014, for instance, I came across them on a website called Naked Capitalism (<http://www.nakedcapitalism.com/2014/09/links-92214.html> [accessed September 9, 2014]). The site, updated with links and commentary twice daily, covers a range of issues that in the main have to do with the U.S. and global political economy. But before discussing the significance of the wolves' appearance there is another facet of the website that is relevant to this discussion. Each day, following the list of daily links the host posts a single image that is referred to as the *antidote du jour*. Frequently cute, sometimes strange, and occasionally beautiful, the images are photographs of domestic and wild animals that stand alone without commentary.

A single image of an animal or animals juxtaposed against a formidable array of discourse and counter-discourse on the machinations of global capitalism, institutional power/knowledge, and social politics. The juxtaposition always struck me as provocative, though it was never clear how or in what way it provoked. No doubt part of the provocation is the phrase—*antidote du jour*—that names the daily images of animals, as if engagement with the ramifications of the political economy was not merely poisonous, but uniquely and ultimately a human disease. It is tempting to read it as logically binary: the animal as embodiment of what is properly nonhuman. But there is nothing provocative about this. Besides, to seek a “meaning” in the juxtaposition I would argue is to miss the point. It creates an effect, which is what must be accounted for.

In essence, the effect derives from the juxtaposition of the mute image of the animal and the over-abundance of unconsciously anthropocentric discourse that precedes it. It provokes because it seems to uphold the sharp division between human and nonhuman based implicitly on the

capacity for language while nullifying it at the same time (Derrida 2008). Of course, the sense in which it nullifies this division depends precisely upon the muteness of the animal. Every day on the website, following thousands and thousands of words which never cease to doubt the supreme importance of all human sociality, there waits the silent image of an animal, seemingly bearing witness to that which is outside discursive capacity. Per force, one's initial and immediate relation to the image is affective. That affectivity potentially places the viewer in relation to the *outside* in a real and definite way (Deleuze 1988, 1990). The fleeting, affective relation momentarily opens up a space where the viewer is potentially both more and less human because he or she is exposed to a "force" that comes from outside the anthropocentrism of modernity. Ever so briefly, it is possible to see how and in what way human and animal are similarly composed and related to one another.

As noted above, there is rarely commentary accompanying the image of the animal. This lack of information if one can call it that, when counter-posed with the abundance of information that precedes the images, seems to actually intensify the effect. I had not noticed this until one morning I saw that in addition to the usual antidote du jour image there was a video positioned below it entitled "How Wolves Change Rivers." I knew immediately what it was about, though I had not heard of it. As suspected, the short four minute video was about Yellowstone's wolves. The video is appealingly cinematic, narrated by noted environmental journalist George Monbiot. The narration expounds upon the purported effects wolves have had on the ecology of Yellowstone National Park since their reintroduction in 1995. The video's central claim has to do with a notoriously difficult to measure ecological process ecologists refer to as a trophic cascade. The term denotes the multiple, not necessarily linear, effects on an ecosystem generated top-down by an apex predator like the wolf. Simply put, the claim in the case of Yellowstone is that

upon reintroduction wolves began to alter the behavior of the (overabundant) elk herds populating the Park's northern range. With their primary predator back on the scene, elk could no longer linger at will in riparian environments or in massive herds along the valley bottoms for fear of predation. This enabled varieties of vegetation, previously overgrazed, to regrow, which in turn created conditions whereby a wide range of birds, rodents, fish, insects and other animals could repopulate habitat from which they had been missing or steadily disappearing since the extirpation of wolves in the 1920's. Beyond this, as the title of the video makes clear, wolves actually changed rivers because regenerating riparian vegetation created more stable banks, and less meandering, as well slowing soil erosion because of increasing tree and vegetation growth in the valleys. Thus, the larger claim of the video is not just that wolves changed the ecosystem of Yellowstone, "but the physical geography" of the Park as well.

To give some indication of its circulation and cultural impact, now, nearly a year after I first watched it, the youtube.com channel Sustainable Human records over 14 million hits for the video (<https://www.youtube.com/sustainablehuman> [accessed 12/02/14]). It certainly got around. Over the next several weeks after I initially watched the video, email links from friends and family trickled into my inbox. Random people hearing about my research would mention that they had seen it and ask if I was familiar with it. From my limited vantage point the video appeared to make an impact and understandably so. Utilizing and relying on a commonly shared discursive visual aesthetic, it articulates with admirable simplicity an inviting claim: allowed its proper place and the freedom to exert its power, a singular force can effect change across and down a web of complex, multi-scaled relationships for the benefit of all. It is, as critics argue, a kind of hero trope. Another iteration of the narrative in which wolves have become, as I heard a

former Park historian characterize it at the 2012 GYE science conference, “little Luke Skywalker bringing balance back to the force.”

Of course, the case for a wolf-induced trophic cascade in the Yellowstone ecosystem is decidedly less settled than the video indicates (Kaufmann, M. J. Brodie and E. Jules 2010; R. Peterson, J. Vucetich, and J. Bump, D. Smith 2014; L. Painter, R. Bescheta, E. Larsen, and W. Ripple 2015). It did not take long for criticisms to emerge. An op-ed in the New York Times took the claims made in the video to task (Middleton 2014). The author of op-ed piece, a postdoctoral fellow at Yale, argued that the video and the valorization of wolves in the trophic cascade narrative did more harm than good. It distracted from much more pressing issues in the Yellowstone region (bison management, climate change, insect and fungal infestations, non-native lake trout, and natural gas drilling).

However, the attention given to Yellowstone wolf ecology has more to do with the wolf as a discursive object than as an ecological one. What the public and the op-ed are responding to in the video’s representation is the wolf as an ideal, socio-economic catalyst. A kind of prodigal son whose return distributes benefits down the hierarchy and increases productivity across the community; it releases the untapped potential of the ecosystem. The visual aesthetic of the video also determines its outsized social valuation. There is a clear material landscape aesthetic embodied in Yellowstone wolves that is undeniably political and informs Yellowstone ecology as a shared social construct. When I participated in an animal tracking class conducted in the Park I asked the instructor his opinion on the common sentiment that wolf reintroduction had been motivated by an ecological rationale and whether he had supported reintroduction as a means for achieving an ecological goal. The instructor is a highly trained and deeply experienced naturalist, biologist, and ecologist who stays current on the relevant literature and knows the

Park's research programs and management activities very well. His was emphatic, the claim that wolves could "balance[e] the ecosystem [was] not true" because Yellowstone was an island in the ecosystem. He freely admitted to supporting reintroduction for aesthetic reasons which amounted to having the opportunity to see wolves operating on Yellowstone's landscape. The instructor would hardly deny that wolves create ecological effects, but measuring those effects and determining their values according to precise criteria is another matter altogether. The point is that Yellowstone wolves embody a wide range of socio-political desires and anxieties about human interactions with the putatively natural world; so much so that it is difficult to demarcate where the wolf begins and the human ends.

Apropos of this dynamic, the critical New York Times op-ed concludes with an attempt to represent not necessarily a division between wolf and human, but a demarcation that recognizes the autonomy of the animal, independent of human interventions. Middleton recalls a fleeting scene, three wolves socializing in the isolating depth of February and snow just outside the eastern boundary of the Park. He writes, "That may have been the only time I truly saw the wolf, during three long winters of field work. Yet in that moment, it was clear that this animal doesn't need our stories. It just needs us to see it, someday, for what it really is." It would be easy to overlook in the analysis of practices, claims, and counter-claims on Yellowstone's wolves what Middleton's is trying to get at: recognition that the lives of other living beings are immediate, whole, and their own. The recognition is not just a salutary reminder of what blessedly remains outside the human world. As a matter of empirical fact, very little remains outside or beyond the reach of the "human world" in this the epoch of the so-called Anthropocene. This is especially so in the case of the Yellowstone wolf. The recognition takes place affectively, within the human, but its potential redounds to the nonhuman; its significance and force derives from this.

One of the fundamental insights of science studies generally and ANT specifically renders this insight conversely: what is most distinctly human is expressed through a bewildering array of nonhuman things like airport terminals, hydroelectric dams, and electrical grids. By no means is this confined to the inanimate. Dog breeds, varieties of cattle, and the monstrosity that is the industrially bred chicken are all indicative of specific human desires, needs, and relations made manifest in the material bodies of animals (Haraway 2003, 2008; Lukla 2007; Watts 2005). Such frames are helpful, providing a needed counter-perspective to the pervasive and mostly unquestioned anthropocentrism of modernity. And while delineating hybridities of human and nonhuman does act as an empirical corrective to the reifications that would keep them separate, there is a risk in these analytical frames of the human yet again colonizing and overrunning the autonomy, independence, and difference of the nonhuman, especially animals and wildlife.

Wolves are indeed colonized by multiple discourses. When I argue below that in talking about wolves people seem to talk about everything but wolves, it indicates how closely linked they are to humans in the Yellowstone region. Yet, it is also indicative of the presumption that wolves, positively or negatively, are mostly there and available for human cooptation and use of one kind or another. In briefly highlighting the potential of an affective relation between human and animal, implicitly contrasting it with the discourse of the trophic cascade video, my goal is to evoke how it is possible to sense a (ontological) dialectical alternation that acknowledges the fundamental relatedness of human and nonhuman without effacing the real differences that obtain between them. The questions that touch upon the nativity and naturalness of Yellowstone wolves and their potential as economic agents in the rest of this chapter are important for understanding how people take wolves into their social worlds, but it also points toward how wildlife can be colonized by very human subjectivities.

Nativity, nationality, and other ecological considerations

What is the difference between a “Canadian wolf,” an “illegal, nonnative wolf,” a “giant, super-wolf” and Yellowstone’s wolf population? According to many people that disapproved of wolf restoration in Yellowstone and the population’s subsequent expansion onto the wider landscape over the last twenty years, nothing whatsoever. I did not know what to make of the appellations when I began to hear them in the field. Sure, the “Canadian wolf” reference was relatively legible. Wolves released into the Park in 1995 and 96 were trapped in British Columbia and transported to Yellowstone, but that did not really explain the sense of the reference. There was usually something in the tone of voice that implied far more than geography, especially because “Canadian wolf” was often followed by a reference to “Montana wolves” or “native wolves” or even “Rocky Mountain wolves.” Relatively quickly I learned that Yellowstone wolves were not only Canadians, but “illegal” as well. This was confusing. When I queried a Gardiner Basin resident about their alleged illegality I was told

The federal government got a bunch of Canadian wolves and dumped them in the Park illegally. We had native wolves already, but the government didn’t care about those. They wanted these big Canadian wolves. They’re way bigger and more aggressive than the native one and we’re the ones that have got to deal with them.

Then, in early September 2012 I attended a meeting of several MFWP region 3 officials and county commissioners from Madison, Jefferson, Powell, and Gallatin counties. I was the only member of the “public” attending. A law passed in the recent state legislative session ordered MFWP to consult and coordinate with counties and tribal governments on predator management in their jurisdictions. A meeting agenda, a memo from MFWP interpreting the application of the new law, and emails from two of the commissioners to MFWP staff and others were available for review before the meeting began.

The first email read (I have edited both for length but have not altered the meaning or intent of either):

Dear Ms. _____

I just received a copy of your newsletter about the State Wildlife Action Plan. I do have some concerns about how FWP is proceeding with the update for 2013. It appears that the Steering Committee and FWP Technical Advisory Team are all employees of FWP. The External Advisory Team is made up of Federal and State Government Agencies and Non-Governmental Organizations (NGO). My concern lies with the fact that these NGO's are focused on their agendas for drastically limiting enterprise on public lands, such as agriculture, mining, and logging. I believe it is imperative that you restructure the External Technical Advisory Team. Whatever other changes are made, there must be representation from Local Governments on the Team. Local Governments are the closest to the people and are in a much better position to know what is best for a local area than staff from Federal or State agencies. I would ask that you enact one of the following changes:

1) Remove the three NGO's from the Team and replace them with three representatives from Local Governments.

2) Leave the three NGO's on the Team, but add two representatives from Local Governments, one representative from a hunting/trapping organization, one from an off-road/recreation group, one from a logging/mining group, and two from [an] agriculture/landowner group.

The days of NGO's sitting at the table making decisions that affect Montana's number one industry, agriculture, without that industry having an equal voice must come to an end. A statement from one of your documents states, "State Wildlife Grant funds are intended...for the development and implementation of programs for the benefit of wildlife and their habitat." I'm sure you understand that much of that "habitat" is on private property. So how in the world do you expect any type of management for wildlife without meaningful input from those landowners and those people who also utilize those lands for their livelihood and recreation?

Sincerely,

_____, Jefferson County Commissioner

Another commissioner replying to everyone in the above email wrote:

_____,

*You are right on the money. Why should we continue to have unelected bureaucrats, private foundations and U.N. sponsored NGO's set the agenda for our entire country, and more specifically, our State? If FWP wants input, why not appoint local government elected officials that are directly accountable to their constituencies, or the constituencies themselves. We know what is needed to provide effective leadership on local, State, and Federal issues in a **constitutional republic**. The policies that have been pursued on a national and state level for the past 40 years have little to do with the protection of the citizens, livelihoods, and industries that have created the prosperity that pay our salaries. In a*

representative government, reasonable policies cannot be achieved without the participation of local elected officials. Thanks for speaking out!

_____/Madison County Commissioner

To give some context, the emails refer to the then proposed State Wildlife Action Plan (SWAP). The plan, required by U.S. Fish and Wildlife Services to be updated every ten years, documents the State's critical wildlife and habitat funding needs. To apply for a federal funding program enacted by Congress in 2000 called the State Wildlife Grant (SWG) every state or U.S territory must produce a SWAP. The plan is not binding management document which FWP must follow, but a 10-year guide for state conservation. The external technical advisory team consisted of a representative from four federal agencies (BLM, NFS, NRCS, USFWS), one from another state agency (Natural Heritage Program) and the three NGO's.

This was the first meeting in which FWP was to consult with county commissioners on predator policies, but it did not begin that way. The commissioner from Jefferson County (a rural, sparsely populated area on the western edge of the GYE) had taken the opportunity to decry federal and NGO involvement in guiding conservation policy in Montana. The SWAP was yet another example and the commissioner quickly reiterated his complaint. A FWP official tried to redirect the conversation noting:

We have to have one on the shelf. It provides guidance on key habitats and key species...The reason why these people are on it is because this is a technical document and these people have technical expertise. In my opinion, this is not that influential of document. Landowners, ranchers, and these other people you refer to don't have this expertise.

The commissioner retorted:

I disagree. Landowners and ranchers have as much expertise as some biologist from New York.

The parties continued back and forth for several minutes with other complaints brought forward. Then, seemingly trying to close the distance that was rapidly opening up between the two sides another commissioner from Jefferson County said:

We're here to do the same thing: serve the citizens. But in 96 it became serving the environment. It's become an adversarial thing. The only way to solve this is to have citizens' input on this. We need to have an equal seat at the table.

The reference to 1996 caught my attention and I waited expectantly for the commissioner to contextualize it, but the conversation kept moving. Two significant events occurred in southwestern Montana during this period. A second round of wolves was released in the Park following the first release a year prior. And during the winter of 1996/97 the state killed over 1,100 bison that had crossed the Park boundary into Montana. The first event sparked bitter resentment among rural constituencies in Montana, Wyoming, and Idaho. The latter roiled local communities around the Park while attracting national and international coverage of the “slaughter” of the iconic American buffalo. Whether the commissioner was referring to one or both of these events I do not know, but “1996” is immediately evocative and affective for those who were involved in, in the vicinity of, or familiar with the events that were unfolding in and around the Park at that time. More than likely he had wolves on his mind. The reintroduction of wolves seemed to embody a show of force and represented distinct inequality of power for local people like the commissioners in the room. That power, embodied in the approximately 625 wolves that now roamed Montana, came from far away, outside the community, from “New York” or “federal agencies,” or “Washington.” This despite the fact that the federal agencies, the NGO’s, and the biologists from New York were on the ground and concrete members of local communities and had not, except perhaps in Gallatin County, insinuated themselves deeply into the local governing structures, composed of men like these representing “agricultural” interests.

The FWP official would not bite. Without hesitation he reminded everyone of the agency's "local" bona fides.

I'm certain that FWP has more meetings than any other agencies. We are committed to working with the public. We've made changes based on public opinion. We do a lot so I just want you guys to note that. If counties want to assert more of a role then that's your right, but maybe qualify how you characterize this.

A different commissioner redirected the assertion and reiterated the perceived problem of NGO influence on policy, but the FWP official rejected that claim outright. The commissioner responded, almost as concession, that such influence happened "farther up the chain" and that would be the place to get involved and "eliminate some of these outside interests." The meeting continued in this vein for some time, a meeting that was an opportunity for county representatives to weigh in on predator management, wolves in particular. Yet before wolves were ever mentioned the discussion included: bison (nobody wants them), sage grouse (ravens and "unrestricted predators" are causing the population decline—not human activity), a wilderness designation in Madison County twelve years earlier (forced on the community), and the socio-political orientation of the contemporary FWP to which two officials responded:

I can think of one biologist who doesn't hunt. We do have a lot more women in the department, but they all hunt. Some are learning, but they are not what you might stereotype them as.

A second official offered his interpretation:

There has been somewhat of a change, but it's not as radical as some might think. It has changed a little, but not over the edge.

It took approximately an hour before the topic of wolves was broached. The first issue raised was the use of breeding pairs as the measure for a viable population. The commissioner from Gallatin County asked if FWP trapped and collared wolves.

An FWP official responded yes, but:

_____ is one of the best wolf trappers in the state and he doesn't get one every time. We're just not very good at it.

Another official added:

The best opportunity is on a carcass. But then, those are the offending animals, so what do you do? ...It's really tough to find the wolves and collar them.

The Gallatin and Jefferson County commissioners both asked essentially the same question.

With over a “thousand wolves” in Montana why is FWP bothering to trap and collar them?

Before anyone from FWP could respond the Madison County Commissioner said he wanted to FWP to produce a maximum number count of wolves in the state rather than a minimum count because “that’s what we’re concerned about, the max number.” An FWP official noted that “those [minimum] numbers are wolves counted.” He went on to describe another method they were using to gather more data—a survey of 100,000 hunters asking if, where, and when a hunter saw a wolf. This information would be fed into a baseline of already existing telemetry data. Then the Madison Commissioner asked the question of the day:

Why in the world can we target one guy in Saudi Arabia and take him out, but we can't find wolves here in our own backyard?

The FWP official dryly offered:

Well, the DoD has unbelievable amounts of money; if you can design a system that we could use—please do.

After a Jefferson County commissioner asked FWP officials what they thought of Wyoming’s new wolf management plan—*It’s going to be short-lived, they didn’t make any substantial changes so they will be in court shortly* (this prediction was accurate and Wyoming was ordered to alter its management plan)—another commissioner said the federal government had introduced a different “species” of wolf in 1995, one that was not endemic to Montana. The commissioner from Madison followed that claim with another, though he provided a rationale for the claim which until then I had yet to hear. The federal reintroduction was illegal because it violated the terms of the Endangered Species Act. The wolf endemic to Montana was a “timber wolf” and the wolf introduced from Canada was, apparently, an altogether different species of

“gray wolf.” FWP officials, unfortunately, chose not address these claims and the meeting petered out shortly thereafter.

The claim that Yellowstone’s wolves were somehow altogether a different animal and, what is more, that there were wolves actually roaming the Yellowstone region prior to reintroduction continued to puzzle me. I poured over blogs and hunter message boards that expressed negative sentiments about wolves and asked anyone I thought might be knowledgeable about it. The narrative started to become clearer. There had been, prior to reintroduction, a remnant subpopulation of wolves that held out in the more remote regions of the intermountain West, particularly in the Yellowstone region. This subpopulation was a smaller, more retiring species that had adapted to the unfavorable socio-ecological conditions which prevailed through colonization and settlement. In practice that meant this subpopulation hunted smaller game (rabbits, rodents, and the like), stealthily avoided contact with humans, howled much less or not at all, and did not organize into large packs, but rather moved singly or in pairs across the landscape so as to avoid detection. By contrast, the “Canadian” or “nonnative” wolf was much larger, far more capable of taking large prey species, more aggressive, and organized into large pack structures that constituted virtual killing machines.

I have not been able to determine the source or sources of this narrative; whether it begins contemporaneously with reintroduction, or extends further back in time and if so how far. However, the most cogent exposition of it is a book written by a local journalist and sheep rancher from central Wyoming (Urbigkit 2008). Relying on taxonomic distinctions of subspecies, she makes the case that *Canis lupus irremotus*, the “native” wolf, persisted in isolated areas and small pockets around the Yellowstone region and that this wolf was distinctly different in behavior, sociality, and size than *Canis lupus occidentalis*, the wolf introduced from

Canada. Wolves were reintroduced “illegally” because the Endangered Species Act would mandate the protection and restoration of this remnant population, not introduction of a different subspecies. The author does provide some evidence that there were wolves in the Yellowstone region in the years prior to reintroduction.¹¹ However, no evidence for a viable population of wolves in the region was substantiated in the book. The charge of illegality on the part of the federal government’s reintroduction depends on the claim that agencies such as the Park Service, U.S. Fish and Wildlife, and others “knew” of this remnant population, but in their environmentalist political zeal maneuvered around the ESA by designating the reintroduced wolves as an *experimental population*. This last argument seems to ignore the fact that in designating the wolves reintroduced to Yellowstone and to a wilderness in Idaho an experimental population it gave federal agencies far more flexibility in “managing” the species. In short, the designation allowed the Park Service and the U.S. Fish and Wildlife Service latitude to remove depredating or habituated wolves from the population while creating a pathway for reinstating state management of wolves once the population had recovered. Had reintroduced wolves been listed under the ESA (an unlikely scenario) or had “native” wolves been granted protection under the ESA the situation would have probably unfolded like the management of grizzly bears. Grizzly bears remain a legally threaten species, are not hunted, and their management still falls under federal jurisdiction.

The veracity of these claims interest me less than their significance as political discourse. No biologist or researcher has claimed to find significant genetic differences in subspecies of wolves. Nor does biological research bear out the claim that descendants of reintroduced wolves

¹¹ I was told a story by a Gardiner Basin resident that in the early 1970’s two wolves had been killed just outside the Park. What was curious about the story, she thought, was the assertion that the wolves had code-like numbers tattooed inside the animals’ mouths.

are demonstrably larger or more aggressive than other populations. Though the irony of the claim that a specialized, remnant subspecies of wolf with highly adapted behavioral characteristics was essentially eradicated through conservationist zeal is worth noting in relation to the purified, essentialist discourse that frequently attends genetic rationales for conserving and protecting animal species and habitat (Goldman, M.J. 2009; Hennesy 2015). Seen in this light, “native” Montana and Wyoming wolf discourse is another instance of the phenomenon—appropriation of critical approaches to question or destabilize consensus and scientific interpretations of complex, large scale issues for reactionary ends—which caused Latour (2004b) to wonder pensively if “critique has run out of steam.”

It goes without saying that claims about “native” wolves are highly essentialist in their own right, but they also express political anxiety and frustration. The anxiety and frustration is not simply “imagined.” It has an empirical basis. Wolves do take livestock animals, though as a percentage of Montana’s total population the numbers are vanishingly small and continue to drop every year (Brown L., J. Gude, N. Lance et al 2013; Brown L., J. Gude, N. Lance et al 2014).¹² However as ranchers and others sympathetic to their plight were quick to tell me, the numbers do not give a complete picture. Livestock surveilled, approached or harassed by wolves are nervous, flighty, quick to run and do not eat which means they do not gain weight which in turn means producers who are paid by the pound earn less income. Also, wolves are frequently suspected in incidents where livestock goes missing. Another point made to me by ranchers and others is that looking at the percentage of livestock depredation in Montana can be misleading. The risk from wolf depredation is geographically uneven. Livestock producers in the GYE, parts of western

¹² 74 cattle and 37 sheep were reported as confirmed wolf kills in 2011. 67 cattle and 37 sheep were confirmed kills in 2012. In 2013 50 cattle and 24 sheep were confirmed wolf kills.

Montana, and northwest Montana bear the brunt of troubles associated with wolves on the landscape. And then there is the issue of the declining elk population in the Yellowstone region which has diminished by anywhere from 60-70% since reintroduction 1995. Those who dislike wolves see a one-to-one relationship between elk decline and wolf expansion, though research on wolf-elk dynamics has yet to conclusively determine wolves as the primary much less the sole factor in decline (Creel 2010). Additionally, many Montana hunters are still angry about FWP abolishing the late season elk hunt in the Gardiner area in 2008.

What then is the significance of the nativist rhetoric concerning wolves? Is the circulation of these stories a kind of discursive political apparatus (Agamben 2009) that is generative of a certain subjectivity or identity? Or is a certain kind of socio-political subjectivity utilizing this representation to define a shared communal identity? The answer is probably both. Yet, as the meeting between FWP and county commissioners reveals, to speak about wolves and other wildlife frequently entails displacing the animals from the conversation and replacing them with other political actors, objects, and dynamics in order to define them. This tactic, if you will, is not simply a matter of association (or guilt by association). It is a way of locating agencies, effective forces, and active powers. It “contextualizes” the situation by exposing the key linkages and webs of relations which constitute wolves as such. FWP officials noted that it can be difficult to locate wolves in the world, but the commissioners demonstrated it is not too difficult to locate the “world” in wolves.

Haraway (2003) argues that much more could and should have been done to coordinate the reintroduction with local communities and local interests, specifically ranchers. “[The Department of the] Interior and [The Department of] Agriculture are worlds apart in technoscientific culture. The wolves spilled out of park boundaries. Wolves, livestock, and dogs

all got killed, maybe needlessly. Wildlife officials have killed over 125 errant wolves; ranchers have illegally shot at least dozens more. Wildlife conservationists, tourists, ranchers, bureaucrats, and communities got polarized, maybe needlessly. Better companion species relations needed to be formed all around, from the start, among humans and nonhumans” (78-9). It is hard to argue with the sentiment, but it is even harder to imagine how and under what conditions such widespread coordination could have occurred. To be fair, Haraway’s point is that breeds of shepherding dogs, if used effectively and in numbers that constituted a real deterrent to wolves, might have provided both a link to and boundary for Yellowstone’s wolf population as it rapidly expanded beyond the Park. Perhaps, but this scenario seems to misinterpret just what “polarized” these actors and communities. It is instructive that when Haraway introduces the subject she writes “fourteen Canadian wolves were released...” instead of “fourteen wolves from Canada.” Unwittingly or not, this syntax modifies the wolves’ status by imputing a subjective valence to their condition as wolves (77).

The discursive move that dubs wolves “Canadian” signifies the degree of social force and the long networks of political power necessary to bring wolves from far away to the Yellowstone region despite a significant percentage of the local population being adamantly opposed. It identifies and represents a mostly inchoate sense of a distant series of interventions that is immediate and “local” nonetheless. One might say wolves are proxies that index socio-political debates and disputes that are not necessarily about wolves. Such a frame is not wrong so much as it gives an incomplete sense of the concentrated emotional force that swirls within the discourse on wolves. It is more like wolves are, affectively speaking, such condensed points of intensity that they can only be observed or known by shifting focus to the space perceived around them.

Does the polarization have an empirical and material basis? Certainly. When a Gardiner Basin resident who for years voiced intense opposition to wolves as well as bison put a small herd of domestic sheep on his property, word spread quickly; along with the intimation that it was a deliberate provocation.¹³ And after losing more than a dozen sheep over a two week period the resident obtained a shoot on sight permit from FWP and shot collared wolf, # 831. A female, she hailed from the distant Canyon pack whose den was located on the northeastern edge of the Hayden Valley. Yellowstone officials claimed 831 could not have been the predating wolf as the Park's wolf study team had data indicating 831 was not in the vicinity during the period of predations. The dispersing wolf had smelled sheep carcasses, which the resident had not yet disposed of, was drawn in and caught in the wrong place at the wrong time, according to the Park. When I interviewed a wildlife advocate from Bozeman very shortly after the incident, the advocate called the Gardiner Basin resident a "bio-terrorist." The advocate believed the resident had installed a domestic sheep herd to attract and shoot wolves, but also to pass disease from domestic sheep to highly susceptible wild bighorn sheep that frequently forage in the valley bottom on private lands. This was a polarizing incident, but one in which the sides were already determined well in advance. In the end, it simply reconfirmed confirmations that had occurred long before.

Polarization around wolves is determined by material interactions, but not exclusively or even primarily. That a better coordinated and more functionally effective reintroduction would have produced some real material benefits and empirical successes in quite specific locations for

¹³ A prior incident which occurred in the late autumn of 2012 should be noted as well. Local wildlife advocates became aware of a horse carcass they suspected was left purposely just inside the Forest Service boundary, but still within the Gardiner Basin. Advocates suspected they knew the identity of the individual and that the carcass was an attempt to illegally bait wolves, and perhaps other predators. One advocate contacted the Forest Service in case the agency was unaware of the carcass, but also to let the agency and other parties know that "we are watching."

wolves, livestock, and humans is likely. However, polarization over wolf reintroduction has never been and will never be a strict matter of empirical wolf/human dynamics. That may be where some arguments begin or the place where others end up, but wolves and their restoration to Yellowstone conjures up far too much of the rest of the “world,” of history and the future, of selves and other selves, for the divisions to have been erased by better planning. Being that it was an explicit intervention, restoration was always going to eliminate some boundaries and harden others. Wolf reintroduction was a release of forces. Those forces were never confined to wolves or the direct interactions of wolves and agricultural operations alone.

Just like the county commissioners, this dynamic is no less evident in the speech of wolf-watchers and advocates. All of this became clear to me when I interviewed a couple—wolf-watchers—at their home in Paradise Valley. They were thoughtful and kind, inviting me into their home and giving me lunch as I pushed record and started to ask questions. After some small talk I asked in their estimation how long they had been wolf-watchers. The idea was to ask something simple and concrete, like dates, to get them talking and then eventually turn the conversation toward what specifically compelled them to spend so much time searching out, scoping, and photographing wolves. I had not intended to talk of land-use politics or even wolf politics. Of course, I was open to hearing their thoughts on those issues, but I wanted to learn about their interest in and knowledge of Yellowstone’s wolves. The conversation did not follow the direction I had envisioned however. The husband noted that he had been visiting the Park since 1985 and that they began visiting regularly, both Spring and Fall, in 2000, eventually moving to the area several years after that. Then, rather than discussing wolves the husband said:

We have a different perspective than a lot of folks. We’ve done a lot of travelling and seen a lot of [environmental] change, either because of development or land use policies. We’ve travelled in Africa, all over North and South America—lots

of places. And then you come here and you say, 'what's going on?' People take it for granted here. They don't see the long term effects of having cattle or domestic animals on public land. Like _____ says, 'the welfare ranchers know this and they utilize the land without providing any kind of mitigation.' [Wife] and her friend were hiking behind Emigrant Peak a while back, and up high the meadow and the creek are just trashed.

Oh my god, if you go up Six-Mile there's a trail that goes up there. It's a good place to climb Emigrant [Peak], people use it for that mostly. It takes a while, but you get up to these high meadows and it's just trashed, just cows everywhere. Just like here [near their home in Paradise Valley], you can go up the dirt road and when you get to highest meadow there's a water tank and cattle everywhere. It's completely disturbed; invasive [plants] everywhere. Nothing's been done and its public land. Anyway, that's what gets you so depressed.

After the couple spent five or six minutes discussing the types and numbers of wildlife they routinely see around their home (because I asked) the husband returned to the point he iterated above.

You know, you look at the environment; this is the twelfth year of the drought and you take a look at some of the legislation that is designed to keep bison off the land; and now they're talking about reducing the elk population. This is kind of like; it's kind of like heresy. On the one hand, the ranchers want to have it both ways. They want to have the public land available to run their sheep and cattle on, but on the other hand they don't want to take any responsibility for the other side of the equation.

He then segued way into the history of their recently built home:

When we built this house we told the contractor, 'you can't go out 5 feet from the foundation.' We didn't want to disturb any of the land. We got this idea from a guy down in the Everglades. We actually went down and visited him. We thought it was fabulous. If you look at the crust of this earth around here it's almost a semipermeable layer. In the end, the cost of doing it our way is probably about the same if you refurbish and reclaim all the land you have disturbed in the building process. You know, we counted 22 different varieties of grass just around the house. I was in Livingston one day and I saw the Extension agent's office. I thought maybe they could help us, give us some expertise. I didn't know (laughing), I didn't know what an Extension agent was! Anyway, I got to talking to her and she said she wanted to come down and look at what we were doing. She wanted to know what we were doing because she hadn't really seen it before. Like I said before, change comes slowly to Paradise Valley—one death at a time. She was saying that people around here inherit a chunk of land then sell off a parcel to send a kid to school or whatever. The people who buy it aren't interested

in running cattle. They put in a conservation easement but what happens is, she said, ‘you get these 20 acre parcels and a lot of disturbed land and invasives coming in that can’t be managed.’ So she wanted to see what we were doing. We ended up putting a power point together...

The whole matter of political subjectivity seems to converge upon the wolf: questions of sovereignty, land use, the environment, regulation of public and private, gender issues, class dynamics, access to commonly held resources. The list could go on. Locating the significance of wolves seems to entail removing them from the discussion and establishing a world of empirico-theoretical conditions that might only indirectly touch upon wolves. It is as if the subject and subjectivity of wolves is a preferred and reliable method for knowing many, many things about the world. Wolves seem to offer a particularly rich “affordance” for people, but not in the biological or environmental sense of the term. Rather, wolves afford people a constellation of social, cultural, political, and economic possibilities for organizing their interpretations of the world.

Canis lupus economicus

Darkness is approaching from the east, but a pink and orange hued alpenglow still illuminates the terraced, rising and falling ridgelines to the west. Within minutes, deepening shades of purple will overtake the orange and pink until there will be no more color to be seen. Then the whole sky will momentarily become a deep royal blue with only a few points of light dotting it. After this, in a transformation that is hard to discern, the sky will become black and dots of light will suddenly appear from horizon to horizon. Night will have come; it will be 10:30 pm early in the month of July. With no moon, one will have to listen more closely, be more attentive to sound, and move much more slowly to be outside.

Before this transformation occurs, I am standing in a wide gravel space on the historic Buffalo Ranch which is located on the northern edge of the flat, sweeping, glaciated Lamar

Valley in the northeast corner of the Park. The Ranch is now the home of the Yellowstone Institute where one can stay and participate in a range of naturalist courses, which is what I am here for. Prior to this, the Ranch was the location where Yellowstone's famed wild bison herd was corralled, fed, and nursed back from the brink of extinction by the U.S. Calvary and then by employees of the Park Service. Elderly residents in Gardiner call still recall when the Ranch was an active working ranch that husbanded wild bison. It is but one example of the ways in which people and wildlife, culture and nature have been thoroughly entangled in one another from the beginning in Yellowstone. For the moment, I am standing in the graveled space trying to catch the minute changes in the color of the alpenglow. Only a moment before, I had been utilizing the last bit of light to spy a large herd of bison across the valley to southwest. From that distance (hard to estimate, perhaps a half mile or more) the random movements of individual bison seemed more indicative of a singular organism, not unlike the perspective of one might have observing an ant colony. Earlier in the day I had made some observation of herd movements across the Lamar to a volunteer who lived and worked at the Ranch. She claimed that after long observation she and others had decided the herd movements were not random, there appeared to be a pattern, though she admitted she had not discerned a "meaning" for it. Herds, she said, typically zig-zagged, foraging across the valley, up the northern hillsides, then worked their way back down toward the river before spending time near the roadway and crossing back up to the hillside again.

As the light faded I began to notice the strong fragrance of sage and running water that intensified during the gloaming and the sounds of insects becoming active as the day cooled into night. It was when I shifted my attention to the alpenglow to the west that I saw a large pickup truck pull onto the gravel road that leads to the Ranch. It rolled to a stop not far from where I was

standing. A man in his mid-thirties exited the driver's seat and approached me in determined manner. He was clearly agitated.

Sir, I am sorry to bother you, but the road is all jammed up back there. We've been sitting there over an hour with no movement whatsoever.

He gestured behind him, pointing east down the Lamar toward Soda Butte Valley. How far down, I ask.

About two or three miles.

I ask if he can see what is causing the jam. Perhaps it is an accident or maybe a large herd of bison is occupying the road which can make it difficult for cars to pass. He says he does know not for sure, the road is so backed up he cannot get a good visual, but he believes people have just stopped to look at some animals. I do not say anything for a moment, there is nothing I can do for him, but it seems thoughtless to flatly tell him so. He eyes the Park Ranger Law Enforcement vehicle sitting in the parking lot. A ranger lives in a house on the Ranch, but if he is at home he is clearly off-duty. I tell the man I am only a student and start walking him to the bunkhouse where I can pass him off to one of the volunteers or employees of the Institute. He is tense, charged with frustration, but he remains polite, apologizing again and saying:

It's really just frustrating because I'm in law enforcement, but I have no jurisdiction here.

I smile and say, "ah, I see. You would like to regulate the situation, if you could." He does not reply and so I ask if it is possible for him to exit the Park in another direction. This is a silly question. If one has planned or simply needs to exit the Park at the northeast entrance going to the north or east entrance will add a minimum of four to six hours to one's drive, at a minimum. It is already near 10:00 pm. He tells me no and I pass him off to one of the Institute people

reading in the bunkhouse. I find out shortly what has caused the jam. A pack of wolves on a carcass very near the road; for a moment I think about jumping in the truck and going down to observe the situation. Then I think better of it. If the back-up is as bad as the man has indicated, and it likely is since no vehicles proceeded east or west in the time he was waiting, then I will never get near the scene and just add one more vehicle to a colossal Yellowstone wildlife traffic jam.

Prior to reintroduction the Lamar Valley was the sleepy, largely unvisited and remote area of the Park, especially when compared to major visitor sites like Old Faithful or the Grand Canyon of the Yellowstone. And while the Lamar still does not see the kind of visitation associated with those sites it is no longer so sleepy or unvisited. In 1995, my first season in the Park and the year wolves were released, there were some wildlife watchers with high-powered scopes and expensive photo lenses in the Lamar, mostly watching for grizzlies as they patrolled the southern edge of the valley where lodgepole pine and conifers descend from the hillsides to meet the grassy plain of the valley floor. In five months I never heard the word “safari” used in or about Yellowstone. And in the three months I was there again in 1997 I never heard the word used. But by 2000 or 2001 I started seeing and hearing references to going on safari in Yellowstone. This threw me a little. Safaris were something people did in African parks. I did not understand what change had occurred that now one could go on safari in Yellowstone. The change I came to understand was a result of the wolves that were now roaming the Lamar in large numbers. In 1997 the wolf population was estimated to be 74 in the Park. By 2002 the population was 174 wolves, the highest total to date; this was the heyday of the famous, highly visible Druid Peak Pack which numbered over twenty wolves for a couple of seasons. The Druids, at the very least certain members of the pack, were as close to being stars as genuinely wild animals could be.

Watchers who were there in those days still talk of them in conversations along the roadway. Park staff point out descendants of the Druids to visitors catching a glimpse of a wolf or wolf pack for the first time. In the heady period when the Druids, the Crystal Creek Pack, and the Rose Creek Pack, all numbering between 10-20 wolves per pack, claimed territory in or near the Lamar Valley, visitors and wolf-watchers were seeing something that had literally never been seen before. Wildlife, of course, has always been a draw to the Park. Herbivores, bison and elk especially, can usually be observed any time of the year. However, the reintroduction and rapid growth of Yellowstone's wolf population created a novel situation in the Park, particularly in that period from 1998-2002. Unlike bears, the wolves were easily accessible and visible from the roadway in the vast open spaces of the northern range. Moreover, because wolves hunt in packs predator/prey interactions also became more accessible and visible in the Park. One could now go on safari in Yellowstone and more and more visitors began adding the out of the way Lamar Valley to their Yellowstone itinerary.

Are more people coming to the Park because of wolves? No one, including the Park Service, really knows. Yellowstone's visitor numbers continue to climb every year, but it is doubtful that fact can be attributed to wolves alone. Visitor numbers have steadily increased since the end of the Second World War, thus the continuous rise constitutes a long pattern. Certainly aggregate numbers do not indicate an exponential increase in visitor numbers in the years after reintroduction. Yet as I became acquainted with some local wolf-watchers and wildlife advocates I started hearing economic claims made of behalf of wolves. Not that anyone was saying overall visitor numbers had increased because of wolves. The claims were more targeted, precise, and well-coordinated.

By 2011 and into early 2012 wolf-watchers and advocates were increasingly concerned that Montana's and Wyoming's wolf hunts were taking a toll on the Park's wolf population, especially among the packs that roamed the northern range. Because of their accessibility and visibility, the road between Mammoth and Silver Gate is the only Park road open during winter, these packs are observed far more than packs in the interior or at the southern end of the Park. Northern range wolves wear the vast majority of telemetry/data collars as well. The Park's wolf study team utilizes a spotter plane and a helicopter for collaring operations, but the expense and time it takes to track, locate, and immobilize wolves in the interior is high. The road also enables the study team, along with wolf-watchers, to spot along the road, helping the aircraft zero in on potential collaring opportunities more efficiently. The weather is also consistently milder along the lower-elevation northern range, enabling more flying days, while winter weather effects in the interior are much harsher. The upshot of these contingencies is that northern range wolves are studied and known by an exponential factor relative to interior wolves. Indeed, it is probably no exaggeration to say the degree to which northern range wolves are studied and known is on the order of magnitudes relative to wolf populations around the world. So when some these collared wolves were removed from the landscape due to a recently instituted hunting season in Montana and Wyoming in 2011 and 2012 people started getting anxious.

Through an introduction, I got to know a watcher and advocate who lived in the Gardiner area. A writer, she moved to the area in the early 2000's. Like many people in the area she worked multiple, often seasonal, mostly part-time jobs to make ends meet. She spent as much time as she could in the Park observing the packs. At this point in the fall of 2012 I was becoming aware of the economic claims being made vis-à-vis wolves, but no one had articulated them as clearly or with as much force as she did. When I interviewed her later in the spring she

noted she had formulated the claims in discussions with a couple that owned a wildlife watching/guiding business in Gardiner are also active in wolf advocacy.

We have kind of a three-pronged argument. You have all this science in Yellowstone that is happening, especially with the wolf project. It's important and valuable to the world, and one of a kind. Here is one of the longest running studies of wolves in the world. It's constantly providing lots of new data. This is essential to the state economy in terms of tourism because so many people come to see the wolves and wildlife generally. The last point is we value wolves as native wildlife in the ecosystem. It just started to dawn on me that science and tourism are linked. It was so obvious but it never occurred to me before.

But how, I wanted to know, was tourism and science specifically linked in her formulation?

Well, _____ [Park Service staff member who monitors wolf packs daily and interacts with visitors at wolf sightings. I refer this staff member as the wolf interpreter going forward.] being there at all, you know. Set aside regular wolf-watchers, you have the wolf study with telemetry data and the wolf interpreter interprets this for tourists...and it goes further; where a tourist bumbles along and says they saw three wolves down the road. The wolf interpreter asks what color, color is important to rule out coyotes, and maybe they are ones he hasn't seen, or part of pack that's split off, or interloping wolves, or he just doesn't know so he goes to investigate. Now you've tipped him off, and he's [often] dependent on a random tourist sighting. And further, if a regular wolf -watcher says they saw seven wolves and the wolf interpreter knows and trusts them then that goes in the record and up the chain to [the wolf study team] and becomes data for the project. We are talking massive amounts of information and the wolf interpreter relies on them. It's complex and flips the other way too. I get info from them that they usually wouldn't share. Also, you know, people donate to the Yellowstone

Foundation and if it's tagged for the wolf project some wolf-watcher can say, 'that's my wolf, I paid for that collar.'

The quotation requires some unpacking. First, the Park Service staff member referred to is on the road along the northern range every day of the year. The staff member's status is complicated in that part of the salary is paid by the Park Service, but part is also paid from private monies through the Yellowstone Institute. There is certainly a feedback loop between the wolf interpreter and Park visitors in terms of information exchange. I mentioned observations to him a few times which he investigated (e.g. while stopping to use the primitive toilet on the Black Tail Plateau I heard a long, soft howl nearby. When I mentioned this he queried me precisely to rule out coyotes and to get an estimated number of possible wolves, he followed up to see if any wolves could be located in the vicinity). Having said that, there is no question that visitors get far more information from him than he gets in return. With wolf-watchers, the situation is different. Long-term, regular wolf-watchers and the wolf interpreter do seem to freely share information about the status, location, and activities of wolves. The situation is not without its critics, some of whom I spoke with and interviewed. The Park Service, or at least the wolf study team, is aware of this. The leader of the study team said during an orientation for team members prior to the beginning of the winter 2013 study period:

There's some prickly people out there. Some people don't like the wolf project or the government. _____ doesn't like the wolf project or collaring; he hands out pamphlets denouncing the project. People listen in to our radio transmissions and scan us. _____ [another individual] is pretty harmless, but he shows up. He complains that we have access that he or the public doesn't have.

Of note is the way in which the public and private is blurred in the study of wolves. In terms of observation, many wolf-watchers, including the watcher quoted above, would characterize the information exchange as participatory, along the lines of “citizen science.” However, watchers are aware that study team members make a firm distinction between what they do (science) and what watchers do (observation and some collecting of “data”). More to the point, however, is how this blurring of public/private reflects in relatively minor fashion neoliberal trends documented in conservation practices and science (Lave 2012; Robbins 2005). Certainly the wolf-watcher’s observation that (wolf) science and tourism in the Park are linked is an astute one. And while the link is more explicit in the study of wolves and thus more obvious, there are implicit links between science and tourism everywhere in the Park. Not the least of which is that Yellowstone as a vast, naturalized space, reserved specifically for tourism and recreation, also provides ideal conditions for biophysical research and experimentation which began with the Craigheads’ intensive study of grizzlies in the 1960’s. The reintroduction of wolves was an ecological experiment conducted on a grand scale; an intervention which has yielded twenty years of intensive research on wolf biology, predator/prey ecology, plant ecology, and other ecological research. Still, wolf-watchers and advocates were not articulating the link between science and tourism from an impulse of Kantian disinterest. It was and is a political argument; one that derives its forcefulness from an explicitly neoliberal articulation and rationale.

In May 2013 I drove with the wolf-watcher quoted above to Helena, the state capital of Montana. She was going to listen and speak at a meeting of the state’s Wildlife Commission. I was going to observe the proceedings. The Commission was to discuss the setting of hunting zones known as Wildlife Management Units (WMU) and the allowable quota for wolves “harvested” in each WMU (Nadasday 2011). A statewide expanded “take” of wolves was on the

table as well. Wolf advocates in the Gardiner area were very concerned about the number of collared wolves killed in the management zones that bordered the Park in the previous two years. Advocates were pleased that FWP had proposed to expand zone 316, which bordered the Park's northern boundary. The expansion of 316 would reduce the total, allowable number of wolves taken, but FWP had not proposed to lower the take-quotas in each zone. Advocates were pushing to have the quota numbers reduced in the all zones that bordered Yellowstone. Advocates were also pushing for a larger, long-range political goal and the FWP Commission meeting was an ideal forum to in which to advance it.

The wolf-watcher was excited as we drove to Helena. She had heard the leader of the Park Service wolf study team and the superintendent of the Park might attend and speak during the public comment portion of the meeting. She said it would be unprecedented. She had never heard of a Park superintendent speaking at a state wildlife commissioner meeting. Neither had I for that matter. She felt that advocates like her had been making the Park's case at the local and state level for some time and was buoyed at the thought that the Park might make its own case in an open forum. The meeting was well underway by the time we arrived, but discussion on the upcoming wolf season had not begun. There were approximately forty people in the room, several of whom I recognized from the Gardiner area. Many of the rest were advocates from various hunting, trapping, and recreation organizations across the state. No more than fifteen minutes after we sat down a break was called. Wolves were next on the agenda. I went out to get some water and use the phone. When I came back into the room I saw, frankly to my surprise, the advocates from Gardiner gathered around the wolf study team leader and the superintendent at the back of the room. So they had come. Their presence offered at least a hint of Park Service

frustration over collared “Park” wolves being taken by hunters just across the boundary in Montana.

Following the meeting being called to order, an FWP official gave a presentation on the agency’s wolf management plan. There was nothing of interest in the presentation. It mostly rehashed the plan which was already publicly available. But toward the end the official with a detectable note of peevishness in his voice said that FWP used collars for “data,” to understand the population. The focus in Yellowstone tended to be on individual “celebrity” wolves. He also asserted that many of complaints on the current proposed plan came from “wolf tourist guides” who were upset about not being able to find wolves for clients, because collared wolves were being “harvested” in the state. After the jabs the floor was opened for public comment, but the first comments came by video from the offices of different FWP management regions around the state. When it came to Region 3, the region responsible for managing state wildlife bordering Yellowstone, the political coordination of the comments was quickly apparent. One person after another, seven in total, asserted variations of the same argument.

We know federal funding is waning for wolf management. We want to help, but killing the collared wolf this week has not been good for fund-raising with people who would otherwise want to help.

[The proposed changes] seem different than a “learn as you go” approach: These changes will give FWP and Montana a black eye nationally. Change the quotas back to 2012/13 levels.

We should protect Park wolves as much as possible despite what the legislature has done. Restore the old quota, a bag limit of 5 wolves is too high; Objective 3 should include wildlife tourism and wolf-watching; people are asking why the state is allowing [hunters] to kill these animals.

I want to save wolves’ lives. There’s lots of money that could be channeled to [FWP], but no one is working on it. We want real science, biological science, instead of political science. We should be talking about max number of wolves instead of a minimum number.

I own a business that watches wolves and wildlife. We bring in a lot of money through hotels and restaurants, and add much more value than livestock value. The quota of 7 wolves is excessive. There has been lots of outcry and threats of

boycotts. Wolves bring in 35 million dollars according to University of Montana study. Reduce the quota to 3.

I make my money from tourism. A Duke study shows each wolf is worth 37,000 dollars in renewable resources. The hunting and the high quota hurts Montana's reputation. Baiting [trapping] goes against fair chase and will attract other species. It's time to recognize wildlife tourism along with hunting and livestock. High quotas negatively affect our business. Many people come back year after year and follow these wolves and killing [wolves] affects them and us. 316 is a different unit and should be managed differently. Bag limit is too high...

After comments were made by video it was time to take comments in the room. The wolf-watcher I had driven was one of the first to speak. She was well-prepared with a two page statement that is too long to recite here, but the strategy of linking tourism, science, and wolves and rearticulating it as a political claim was clear. I quote portions of it.

Tourism and science are intertwined in Yellowstone. For 18 years, data coming out of the Yellowstone Wolf Project has been one of Montana's great exports to the world. Science creates radio collared wolves, which can be located, drawing millions of tourists to Montana each year. This sort of tourism encompasses wolf biology, creating citizen scientists who learn about wolf behavior and collect and share data with biologists. ...Of the 3.8 million visitors to Montana each year, 89% of them visit Yellowstone or Glacier Park and 3% are hunters. In that light, wolf tourism should drive FWP policies! But, we are not asking for that—we're just asking you to set quotas in expanded WMU 316 at 3 wolves...Objective #3 [of FWP's management plan] reads: 'Maintain positive and effective working relationships with livestock producers, hunters, and other stakeholders.' Revise it to add 'wolf tourism, research, and other stakeholders.'

Wolves were not just valuable, they were economically valuable. Science and research was not just valuable, it had economic value. "Wolf tourist guides" did not just watch wolves, they brought tourist monies to the state. Wolf-watchers and advocates were not just conservationists, they were entrepreneurs. Perhaps most importantly, given this was a FWP Commission meeting, wolf-watchers were not just wolf-watchers. They were "stakeholders" with as much investment (economic and otherwise) in FWP policy as hunters, certainly more than "livestock producers."

The wolf advocates took their (affective) attachment to Yellowstone's wolf population and displaced it to another discursive register; one they surely took to be true, but it was also much

more politically useful than, “science and wolves have intrinsic value.” The argument may or may not been persuasive to the Commissioners, it may or may not have been persuasive to FWP officials, it certainly was not persuasive to the people in the room who were in favor of the proposed plan, but as I wrote in my notes the day after the meeting:

Politically, there are interests around FWP that likely would be persuaded. And in any case, the [economic] argument is simply taken to be effective in political discourse generally. It will require opposing interests to react on trickier terrain.

Over the last year and a half, wolf advocates in the Gardiner area, and perhaps elsewhere in the state, have been suggesting privately and in public FWP meetings that the state should begin selling non-consumptive wolf tags. The idea would be to put tagged wolves off-limits to hunting. As of yet, the notion is embryonic with little in the way of details. It would require stupendous effort, along with cooperation from FWP and state governing bodies. The pushback, presumably, would be severe. It is possible to imagine Yellowstone wolves becoming productive if still partial neoliberal subjects, able to pay their way and demonstrate their value through the funds they could generate. For the time being though it is only a suggestion, one possibility for reinstating the protection Yellowstone wolves enjoyed for thirteen years following reintroduction. The argument that wolves-research-tourism constitutes an uncounted or unrecognized economic boon is yet another way discourse on wolves seems to continually displace itself, but the strategy of insinuating wolf-watchers into the purview of stake-holders by means of economic rationality seems politically cogent. It gathers Park wolves and Park science under the protective umbrella of economic value that national and international tourists bring to the state. Like the county commissioners wolf advocates also mark agencies, forces and power associated with wolves as coming from elsewhere, from far away. While certainly not proof, the

symmetry of these opposing claims indicates how colonization and its aftereffects could pertain to an ostensibly privileged place like the Yellowstone region (Kosek 2006; McCarthy 2002; Wainwright 2005). It might indicate ways in which colonization's long progress continues apace.

On the one hand, it is perfectly understandable that people would deploy very human frames to describe how wolves partake in their social worlds. It indicates how porous the boundary between the social and natural world is. Yet, claims that Yellowstone's wolves are alien and do not belong in Montana or that they are economically and scientifically productive and therefore do belong are resolutely anthropocentric in the kinds of subjectivity they ascribe to wolves. Again, this is understandable insofar as wolves are taken up as discursive objects, but it demonstrates that wolves have perhaps been assimilated too readily and easily into the culture's socio-political imagination. Not unlike other culturally "privileged" subjects caught up in the coloniality of America—Native Americans and bison—representations of the wolf appear more realized and well-known than the actual being. This is a problem for post-humanist geographies. It highlights how colonialism is a pervasive condition of modernity that continues to shape human/nonhuman relations through human subjectivities.

IV. Wolf studies

Post-humanist geography has what I take to be a central aim, the dislocation of the unquestioned supremacy of the Human as both a stable category of identity and a political structure of hierarchy. Conceptual *and* material possibilities available for that work have to be uncovered. The italicized “and” reflects a recent criticism of the post-humanist “turn” levied by David Demeritt in a panel at the 2014 AAG conference, namely that it tends to the overly theoretical, airy, and philosophical, and thus glides right past the material relations of the world in an effort to overcome conceptual bugaboos of interest to only a very small subset of academics. The criticism has merit, though it underplays the epistemological anxiety post-humanist thinking expresses; how the parameters which delimit knowledge production have real political, social, and ecological consequences.

Sundberg (2013) criticizes recent efforts of post-humanist geography along somewhat different lines. An interested party, Sundberg locates her work within the post-humanist field, she questions the ostensibly uncritical reliance on an intellectual tradition (European/Western/Modern) from which post-humanist thinking is presumably trying to extricate itself while taking no account of Indigenous knowledge and practices in that process. This, according to Sundberg, effectively reproduces “colonial ways of knowing.” Her goal is to decolonize post-humanist geography. The criticisms of Demeritt and Sundberg represent two claims that post-humanist geography should contend with. It is not empirical enough and despite its philosophical orientation, it is ontologically provincial. These critiques come from different angles and are animated by different motivations, but they both point toward the problem that post-humanist critiques and analyses seem to lack material force or consequence. In the case of

Demeritt this is relatively straightforward, but with Sundberg the issue is more oblique.

Ultimately I am not persuaded by Sundberg's thesis. I would argue post-humanist thought is potentially if not yet effectively decolonizing. But highlighting Indigenous thought and practice does helpfully indicate how post-humanist thought lacks grounding in practice. On the one hand post-humanist geography is too abstract, perhaps too rationalist in the classic sense of the term, and on the other it is not yet grounded in definite material relations.

What follows is a tentative exploration that addresses why post-humanist geography may appear dematerialized, overly theoretical, and Eurocentric. It also attempts show how post-humanist thinking could be decolonizing through analysis of a primary site of colonization.

The initial problem is to grasp how the materialization of "epistemology" in the modern era increasingly displaces the possibility of an ontological perspective. Above all, Heidegger is the thinker who explores this problem to its depths. Most of the analysis that follows is consonant with his arguments on the peculiar rupture that denotes modernity's relationship to knowledge and the centrality of the subject. But despite the "historicity" of Heidegger's analyses there are persistent historical lacunae running through them. Not that Heidegger is unaware of or simply refuses to acknowledge this historical fact or that historical development, but in pursuing modernity's ontological consequences in the way that he does, Heidegger's analysis and exposition of the material effects of modern ontology remains underdeveloped.

Attempting to locate the effect of Heidegger's influence on Foucault, Deleuze claims Foucault's major achievement is the "conversion of phenomenology into epistemology" (1988b, 109). Yet this seems like a reversal of the importance of his work. Foucault's analyses reveal how the epistemic takes hold of the phenomenal, materially determining it, so that ontological conditions and limits are refracted, but still apparent in the unfolding of contingent, historical

developments. Either way one chooses to interpret that point, the issue here is to locate what is significant about Foucault's ontological considerations vis-à-vis the subject and modernity with Heidegger as a guide. Doing so provides a way of reckoning with the criticisms of post-humanist thought discussed above.

It is helpful to go back to Descartes to see in clear terms how knowledge, or more precisely thinking or representation, comes to be such a determinate force in modernity. *Cogito ergo sum* is less a proposition than an expression of metaphysical certitude. By this I mean Descartes' formulation embodies a historical development in which the subject gains a supreme value. The subject, with its capacity to think and represent, not only guarantees knowledge as such, but also defines an ontological boundary. Heidegger writes, "What it is to be is for the first time defined as the objectiveness of representing, and truth defined as the certainty of representing, in the metaphysics of Descartes" (Heidegger 1977, 142). It is crucial to recall where and on what basis Descartes advances this dictum—the *Discourse on Method*. Now, the issue for Descartes is not about having an adequate theory of knowledge, but having reasonable certainty that knowledge is empirically effective. The subject's capacity for representation expresses an ontological value, but in effect this only reveals *what is*—thought and extension, a subject in a world of objects. A necessary but insufficient condition because what Descartes is working toward goes well beyond the concern for an adequate basis for knowledge. The subject is already established as that basis. The "truth" or validity of the subject's representations is one thing, its capacity or effectiveness for acting in and upon the world is quite another. The latter is Descartes' primary goal. "For they [basic physical concepts] have satisfied me that it is possible to reach knowledge that will be of much utility in this life; and that instead of the speculative philosophy now taught in schools we can find a practical one, by which, knowing the nature and behavior of fire, water, air, stars, and

the heavens, and all the other bodies which surround us...we can employ these entities for all the purposes for which they are suited, and so make ourselves masters and possessors of nature” (Descartes 1950, 40).

Epistemology, or the adequacy of knowledge, is not a matter of representations fitting the phenomena. Phenomena need to fit the representations. It is a phenomenon’s fit-ness to representation that determines the latter’s truth-value, not the representation’s fit-ness to the phenomenon. The problem is that the subject, “whose realities are representations” (Heidegger 1982, 126), needs a way to ensure that any given phenomenon will conform to a representation of it. Method is the answer to the problem. According to Heidegger, method is a “procedure, how in general we are to pursue things, [which] decides in advance what truth we shall seek out in things. Method is not one piece of equipment...but the primary component out of which is first determined what can become object and how it becomes object” (Heidegger 1977, 300). Method, then, is less a means for disciplining the subject, a representation, or the way to knowledge than a means for disciplining objects according to the determinations of the subject. There are two key points here. According to Descartes’ formulation, the truth and objectivity of representations are measured by efficacy; the capacity to make the world conform to a given representation is what method ensures. The subject is not simply the ground of knowledge, though it is that, the subject is the ground around which the world conforms.

This brief analysis of Descartes sketches out a basis for seeing the ontological depth and centrality of the subject to modern metaphysics as well as offering a glimpse of what is at stake for post-humanist thinking—and what it is actually up against. There is much more that could be explored here. For instance, how the status of the subject becomes a political question, already explicit in Hobbes’ *Leviathan* and Locke’s *Second Treatise*, which recurs with increasingly

fraught and terrible consequences through the modern era (Agamben 1998, 2005), or that the subject's capacities *qua* subject increasingly comes under the management, supervision, and control of various forms of state and corporate power (Foucault 1977, 1978, 2004) or how from the perspective of philosophical science the subject becomes the sole locus of inquiry, with what had once been known as "natural philosophy" falling into the strict purview of the "hard" sciences. (Heidegger 1977).

Yet the issue here is to highlight how the subject becomes the site, really a (Cartesian) space, through which reality is tested, modified, and reordered by the subject's representations of it. The crux is the subject's capacity to represent, but again this capacity is effective only to the degree that a method disciplines in advance what will be represented; the latter operation determines truth-values and legitimates epistemology as such. I take this development, only clarified by Descartes not initiated by him, to be definitive of modernity and a fundamental alteration in the historical "order of things."

Foucault argues in his work *The Order of Things* that (classical) representation as truth gives way to the study of "man" in the 19th and 20th centuries. The "void" he locates in his analysis of Velasquez's *Las Meninas* that opens the book is none other than the representing subject, Man or Human, which had not yet become an object for itself. Yet whether this, as Foucault claims, embodies a discontinuity or rupture in the movement from the classical age to the properly modern is debatable (Foucault 1970; Rayner 2007). A kind of epistemic "doubt" with regard to correspondence is already evident in Descartes and Bacon before him. To be sure, this doubt is the reverse of what one might first presume, especially for Descartes. The subject's representations are not doubtful. In a Cartesian world the subject's thoughts and representations are the only thing one can take as reliably real after all. What is doubtful is the willingness of the

world to conform. The need for method to guarantee knowledge's efficacy indicates that the dislocation Foucault traces in the movement from the classical episteme to the modern—where the multiplicity of the human subjectivity becomes a problem in need of inquiry—is in play from the start. “Man” as subject acquires a properly universal determination through the development of the human sciences in the 19th and 20th centuries, but according to Heidegger, “with the interpretation of man as *subjectum*, Descartes create[d] the metaphysical presupposition for future anthropology of every kind and tendency” (1977, 140).

The subject, then, is the ground of modernity's difference. If it is a void in the classical age, per the analysis of *Las Meninas*, this only because its endless and protean productive capacity has not yet been fully realized. In a sense, one might say the Foucault of *TOT* is still too “epistemological.” But whether one follows Foucault in seeing this shift as a “rupture” or Heidegger who sees as it as a further development of the embryonic modernity found in Descartes, Foucault is specifying an important historical shift. The subject and its capacity for representation still matters, but with the advent of the human sciences subjectivity itself has now taken the stage.

“A theory of knowledge had to be erected before a theory of the world,” Heidegger claims (2008, 297). A representation of the world is not enough. Essentially, a representation of how the world is to be represented must come first. The latter ensures that the world will indeed conform to a given representation of it. But to say this seems to also say that that subject is not so central after all. Is not the theory or the method the essential thing, to which the subject must conform? No, because the subject is the ground of possibility. The subject or its capacity for knowledge is never in question, only the efficacy of the representation as it acts upon the world. I take Heidegger to be articulating a fundamentally Nietzschean insight which clarifies Nietzsche's

insistence that the real significance of the “will to knowledge” had yet to be problematized. “It is not the victory of science that distinguishes our nineteenth century, but the victory of the scientific method over science” (1967, 261). And: “the entire apparatus of knowledge is an apparatus for abstraction and simplification—directed not at knowledge but at taking possession of things...” (1968, 274; see also, Agamben 2000, 2009). Seen in this light the anxious, post-humanist engagement with epistemological and ontological quandaries is perhaps less puzzling as there appears to be no real possibility of trading one theory of the world (ex: Modern) for another (ex: Indigenous). Every theory has to elaborate the world and confirm its validity according to a procedure that already determines the validity, value, and meaning of both. What’s more, and this is directly relevant to Foucault’s work from *TOT* on, every subject (meaning: its effective capacity as a subject) has to confirm or express or represent its validity according to a procedure that determines its validity, value, and meaning. Latour’s assertion that “we have never been modern” is worth considering here because this exposition seems to rearticulate the paradoxical double-capture of the “modern constitution” (1993). Latour’s arguments on the moderns retain heuristic value, but they fail to address the site where modernity in all its forms has operated most consistently and with the greatest force: the subject. If anything distinguishes modernity as a genuine historical rupture it is the myriad uses to which the subject and subjectivity has been put.

Yet if this is correct or only partially correct the bind which Latour wants to cut through by claiming we have never been modern seems more constricting than ever. Moreover, it aptly demonstrates the potential aversion to ontological thought insofar as getting to the bottom of things seems to leave one at the bottom of things, with no way out. Returning to Deleuze’s formulation of Foucault’s significance supplies a hint for a way forward however. He argues that

Foucault overcomes, or simply maneuvers around, this impasse by “discovering” the element of “force.” (Deleuze 1988b) That, in effect, Foucault becomes a Nietzschean reader of Heidegger (Deleuze 1988b; Rayner 2008). What does this accomplish? In order for this claim to be legible one must concede to Deleuze less a particular meaning of force than a particular mapping of it. Force (and power) always arrives from the “outside” even when, perhaps especially when, it appears to be a matter of interiority (or psychology). Thus, in *Discipline and Punish* one sees how the panoply of techniques borrowed from the military, the work-house, the factory, and the monastery are meant to affect the “soul” rather than the body of the criminal. A kind of subjectivity is meant to be altered, corrected, instilled, rearranged, or redistributed.

It could be argued this confirms the rupture Foucault delineates in *TOT*, particularly in the contrast of the ordeal of the regicide which opens *D&P* with the penal schedule that follows. Do not the grotesque marks of suffering on the regicide’s body attest to the classical mode of representation while the schedule indicates something very different? Yes of course, if it is only an operation or mode of power under consideration. However, this still does not touch upon the ontological significance of the subject’s capacity to represent—to think—or its relationship to power. Indeed, the torture of the regicide indicates no recognition of the interiority that defines modern subjectivity at all and in that way speaks of something pre-modern. As Foucault makes clear, the schedule, the regulations, the surveillance, the panopticon itself are all indicative of the interest in and concern for the subject’s (albeit abnormal or maladapted) interiority. What is more, the techniques pulled from other domains and applied to the criminal are already constitutive of other subjectivities. In this way the criminal subject is located in advance, placed within a set of prior coordinates, and “known” through other schemas. “Today, criminal justice functions and justifies itself only by this perpetual reference to something other than itself, by

this unceasing reinscription in non-juridical systems. Its fate is to be redefined by knowledge” (1977, 22).

Already visible in Descartes, what modernity continually refines and develops is the productive capacity of knowledge and power linked together at the locus that is the subject. If the primacy of the subject’s capacity to represent disappears from view in later modernity this is because the productivity of subjective capacity is operationalized and redistributed everywhere in countless ways. Operationalized and redistributed into the nonhuman and the inanimate most especially (Callon 1999b; Haraway 1991; Latour 1999; Mitchell 2002)

The “discovery” of force then, enables Foucault to delineate historically what Heidegger can only point toward. Disciplinary power, biopower, governmentality, each denotes the passages where knowledge practices are able to capture, articulate, and rearticulate forces by dislocating them in small and large ways from prior conditions, giving them a new meaning and purpose; power/knowledge—epistemology converted to phenomenology. Still, this does not explain how in Deleuze’s formulation force or power necessarily comes from the outside. On this point I leave Deleuze’s interpretation to the side and hazard an attempt at my own. Foucault’s delineation of subjectivities, of the ways in which power/knowledge articulates sets and relations of forces as subjectivities, indicates an ontological limit. But it is paradoxical. The seemingly totalizing effects of subjectivity are nullified by the contingent, partial, and temporary arrangements of forces that constitute them. Seen this way, there is no depth or interiority to the subject; its ontological value is a historical construction—a “fiction” in the Foucaultian sense. The Human, the privileged subject with its unique capacity, the ground of subjectivities and the basis for knowledge and action upon the world is itself composed of nothing other than the forces it seeks to capture. Force comes from the outside only because an imaginary boundary

encloses the subject. But this boundary was always a technique, never an actual border. The subject is less an identity than a method or instrument (Agamben 2000, 2009).

In *The Question Concerning Technology* Heidegger tries to grasp what is essential about modernity's apparent mastery of technical means, its capacity to instrumentalize physical forces and transform the whole of nature into "standing-reserve;" ordered, calculable resources awaiting deployment for human utility (Braun 2002; Demeritt 2001; Kosek 2006; Peluso 1993). The subject does not come up for explicit analysis in the essay, only its capacities as they have been applied in the methods of "physical science." He does note that the danger of this pervasively technological orientation toward the world puts "Man" in danger most of all. Physical destruction, death, is certainly one aspect of the danger, but the threat appears in another way. In the subservience to technical mastery and control, the "moderns" threaten to turn themselves and the rest of humanity into pure resources. The effect of this is "man, precisely as the one so threatened, exalts himself and postures as the lord of the earth. In this way the illusion comes to prevail that everything man encounters exists only insofar as it is his construct. This illusion gives rise in turn to one final delusion: it seems as though man everywhere and always only encounters himself" (2008, 332). It is an apt description of the narcissism of the privileged modern subject and its pretensions to universality. Two consequences derive from this. The modern subject, as a technological being, defines, orders, and determines in advance every object under consideration, hence the subject only "encounters" itself in the things it meets. As a matter of political ontology, or as a way of indicating how ontology pertains to the political, this is nothing less than colonization. But if as I argued above, the subject and subjectivities are little more than instruments and techniques for the utility of still other forces or powers then they too

are colonized. Seen from this perspective post-humanist preoccupations are clearly related to decolonizing struggles and one of the primary sites of engagement is modern subjectivity itself.

The foregoing is an attempt to clarify what is at stake in post-humanist efforts to decenter the (Human) subject as a singular, unified reference point of stable identity. What this analysis has tried to show is how the modern subject is both a condition and an effect of colonizing processes. At a minimum, directly linking post-humanist geography to decolonization helps reveal the material and political implications of “distant” epistemological and ontological considerations and conditions. In the previous chapter I discussed how the writer of the New York Times op-ed represented his encounter with three wolves as a “seeing” that nullified the significance of wolf discourse. I also indicated how even a banal image of an animal, set off against discourse on political economy, can effectively dislocate the viewer through an affective change. Both of these are relatively minor events, just moments really. The point is the examples, insignificant as they may be, are emblematic of relations or encounters that briefly exceed or outrun the forces of subjectivity and potentially have decolonizing effects.

It is not a coincidence that each is dependent upon some relation to an animal (Agamben 2004; Derrida 2008; Ingold 1988; Von Uexkull 2010), thus their relevance to post-humanist geography and the present work. Ironically, what complicates the matter is the lack of a formula, or a method, to guarantee and make available such encounters. Middleton, the op-ed writer, claims to have “truly seen” the wolves once in three years of field work. Going back to Heidegger’s meditation on technology, a further complication arises in the realization that modern subjectivity and techno-scientific dominance in no way constitute a total negation of other possibilities. When Heidegger claims the “essence” of technology is nothing technological he is indicating how technologies, techniques, and methods of generating knowledge pertain to

the basic creativity of human beings. That tension is apparent throughout the rest of this chapter, which explores the primary ways wolves are known in Yellowstone—science and tourism. Both of these practices generate a kind of intimacy with wolves, especially the practices of scientific research which recapitulate the closeness of researcher and subject seen previously with the Craigheads and grizzlies. Yet, because wolves are so visible and accessible, comparatively speaking, visitors and wolf-watchers are also able to experience a rare intimacy with them as well. In these practices of seeing and knowing wolves in the Park, it also becomes clear how closely related the subjectivities of science and tourism can be.

Ways of knowing a wolf

Out of deference to the office, the Wildlife Commission allowed the superintendent of the Park to comment last and take more time than the usual three minutes. Speaking from the back of the room the superintendent read from prepared notes:

The Park Service has reviewed the new regulations that have been proposed and we have some comments. First, we are available to collaborate with the state and FWP on wolf management. As a national park, we are mandated with preserving natural relations and conditions. Wolf numbers in the Park have declined since 2002 from 174 to [approximately 80-89 wolves]. 25 wolves [that reside primarily in the Park] have been affected by hunting in Montana [since 2009]. In Yellowstone we strive to maintain intact, natural ecosystems. We know hunting is a part Montana's history and culture and we respect that. However, the current proposal increases risks to wolves that spend the vast majority of their time in the Park. We are concerned about the increased quota and bag limits....we believe

that the wolf harvest in Gardiner Basin does little to achieve the state's management objectives as these wolves spend most of their time in the Park. Again, our mandate is to maintain natural ecosystem processes. We respect the hunt and are available for collaboration on these issues.

There was nothing surprising or revelatory in the comments, other than the fact that the superintendent, with wolf study team leader at his side, had chosen to make them. As noted above, the Park Service speaking in person and publicly about Montana's wolf management indicated some degree of frustration. While the FWP official's peevish comments [whether he knew Yellowstone officials were in the room is an open question] were indicative of some level of individual or collective frustration at FWP. My impression (and it is only that) from talking with wolf advocates and a few FWP personnel is the jabs were directed more at advocate efforts for greater recognition from FWP than the Park Service or the wolf study team. In any case, the meeting gave the sense of a possible bureaucratic border skirmish (by no means yet a war) brewing between the state and federal agencies. Park Service staff maintained a professional wall of non-communication on the subject when I later probed for more detail. Though a member of the wolf study team did express a palpable degree of frustration, not in words but in tone, body language, and general affect.

One could not help but get the sense that the Park Service felt something approaching proprietary about the collared "Park" wolves killed by hunters just across the boundary, not at all unlike the sense one got from the wolf-watchers. The study team leader later told the study team that the location where wolves den/live more than fifty percent of the time determines what agency has management jurisdiction and which wolves are "Park" wolves or not. However, on the northern boundary wolves frequently cross back and forth. In theory and practice, any wolf,

collared or not, that is on Montana land is subject to the jurisdiction and management authority of FWP. The study team leader said that “we want an area outside the Park where we can compromise.” Though undefined, the compromise would seem to be something like a buffer zone around the Park that would provide greater protection for wolves than currently in place. FWP has shown no inclination to entertain this idea. Politically speaking, FWP would likely have a difficult time agreeing to a buffer zone of any sort. Special pleading for wolves or just the perception that the federal boundaries of the Park might enclose individual wolves on land that borders the Park would encounter immediate resistance in the state legislature and elsewhere. But setting aside local and state political forces, FWP as an institution and a form of institutional power appears unlikely to concede any authority or control in a “compromise” without being forced to do so.

Like so many others I listened to on the subject of wolves, the superintendent’s comments seemed to refer to things other than the ostensible matter at hand. The repeated invocation of the mandate, maintenance of natural ecosystems, was telling. On the one hand, it constitutes fairly strong evidence that top managers in Yellowstone view their duty as fundamentally ecological in nature. Tourism, visitation, and recreation are of course central to the Yellowstone experience and require vast amounts of attention, labor, and resources, but all of this is oriented toward and defined by an ecological frame. On the other hand, I interpret the superintendent’s invocations as a way of referencing a dynamic that could not be broached directly by the Park Service. Though, of course, wolf advocates had actually done so just moments before. If maintaining (read: managing) natural conditions and ecological processes is the Park Service mandate, the agency requires practices that both ensure and reflect that it is doing that. In addition, measures, data, and information are needed to stabilize and correct those practices at multiple temporal scales

and for disseminating in limited or extensive ways the results of the practices. This is nothing other than the biophysical, scientific research the Park Service began in earnest to conduct in the early 1970's.

The wolf project is the most intensive and well known of all the Park's research endeavors. In many ways it is the real heir of what the Craighead team began in 1959 with grizzlies, the fullest and most comprehensive realization of biological study and ecological management in a national park. So when the superintendent shows up for the wolf management portion of a Montana Wildlife Commission meeting and talks about the Park's mandate, he seems to be saying, "Your management scheme is fouling up our management scheme and, perhaps more importantly, hampering data collection and the viability of our long-term project." It shows how deeply the scientific professionalization of Yellowstone's management now runs and indicates that the Park as a preserve for the production of wolves is equally a preserve for the production of knowledge.

Now, it should be noted that it is no mean feat to collar a wolf. The resources, time, and effort required are considerable. And to actually witness a collaring operation in action is to behold a strange, almost hallucinatory confluence of forces. The wolf study team has two study periods consisting of a month each every year. The winter study period begins approximately in mid-November and the spring study period begins around the first of March. Many visitors that come to the Park are unaware that winter is the fat season, the time of plenty, for wolves. Forage for prey species, primarily elk, is minimal to virtually nonexistent during the winter and the animals must rely on stores of fat accumulated in the spring and summer to survive. Thus, they are weaker. The snowy conditions slow prey down so it is less costly energetically for wolves to hunt as well. But for the study team, winter conditions are also optimal for hunting wolves. Winter conditions make wolves more visible on the landscape, but the study team leader noted

that prey conditions determined the timing of the study periods; it was not obvious in the early years when the best time for the study was.

The wolf study team itself is composed of an ever-changing cast of characters. Only four people on the team are full-time Park Service staff. The rest of the team, fifteen in total during the period I observed the team's activities, are either seasonal Park Service staff, temporary and hired only for the duration of the study period, or unpaid volunteers. The low number of full-time staff on the study team is one indication of the limited funding the agency must contend with in its research efforts. This is not specific to the wolf management and research. Grizzly and bison research/management face the same or greater funding shortfalls. Outside of the four permanent staff, all of the researchers were in their early to mid-twenties; ten women and five men. Most had not completed any graduate studies, but several mentioned to me or discussed in my presence their acceptance to graduate programs, or their intention to apply soon. At a lunch break during a day-long orientation I asked several of the team members whether they viewed this more as a career opportunity or an opportunity to work and be in the Park. With no hesitation, all except one responded that working for the study team was a career opportunity offering research experience and a good line on the CV. The lone dissident, a woman, seemed much more ambivalent before indicating that for her it was more about "being in the Park." She noted she lived in Gardiner as proof. The rest of the team lived in temporary housing in Mammoth Hot Springs.

I witnessed a similar ambivalence with another team member almost a month later toward the end of the study period. After a day of observation I gave this team member, a man, a lift back to Mammoth; his partners had inadvertently left the area without him. We spoke in a general and friendly way and after ten or fifteen minutes he began to query me about my research, what had

led me to it, and then my personal history. I gave a sense of the contingencies that put me with him in the truck on that frigid evening. Apparently what I said struck a chord. He began to talk of his future, both in immediate and more distant terms, and compared his potential choices with those of his colleagues. He noted that his colleagues all seemed to be pursuing a linear (professional/career) path while he, at twenty-seven years old and maybe the oldest of the non-permanent team members, was going travelling outside the country for two months after the study period. He wondered whether he should not be applying to graduate school now, have already applied, or even have already completed a Master's degree.

After dropping him off, I recalled an interaction between him and another team member in the office weeks before. The other team member had asked about the process of getting unemployment benefits. He wanted to work on a research project in northern Michigan, but the pay was minimal. When asked whether he really wanted to, he replied, "Yeah! I get to work with and capture three different carnivores." He then mentioned that a friend was "creating" a project in Patagonia which he needed to save up for as well. He was told by the team member I later gave a lift back to Mammoth that unemployment came in part from one's last employer—in this case the federal government. This fact, which he suspected, apparently troubled him. He wanted "to do right" by the leader of the study team because he and "everybody" had helped him out so much. "I've always worked hard [for wages]," he said. I questioned whether his unemployment benefits would come directly from the pockets of the wolf study team, but no one knew. The team member I had taken to Mammoth smiled and needled the other team member about his dilemma, that these were indeed difficult, "white man" problems. He sighed, "Yeah, I know, I know, first-world problems and all that."

The transience of the study team members is not unusual in Yellowstone. It is the norm. The Park Service, the corporate concessionaires operating in the Park, the restaurants, hotels, rafting businesses, guiding outfits, and tourist shops in the communities that border the Park all depend on mobile, seasonal labor. Besides Park visitors who also come from around the country and world, this dynamic imbues the Yellowstone region with an oddly cosmopolitan sensibility for what is a predominantly rural and provincial area of the United States. The cosmopolitan nature of laborers and consumers drawn to Yellowstone, coming and going by the millions annually, stands in constant tension with the more rooted interests that often self-identify as “agricultural,” such as the county commissioners discussed in the previous chapter. This tension is not always manifest, but when, for example, wildlife advocates argue that wolves are tied up in the transient economy of tourism it highlights one of the ways socio-economic anxieties localize in wildlife management and research. The precariousness of cosmopolitan, transient labor and local, agricultural life ways come to mirror and distort one another through the prism of wildlife and environmental politics.

The wolf study team was divided into crews of three. Each crew was assigned a pack for the length of the study period. From just after sunrise to just before sundown each day the individual crews were responsible for locating by telemetry or observation their pack and documenting the pack’s movements, behaviors, and interactions across the landscape. Another crew, called the cluster crew, was responsible for documenting and collecting data from carcasses and kill sites which often involved skiing, snowshoeing or hiking several miles or more. Crews assigned to packs mostly utilized vehicles and the road to stay in telemetry or visual contact with their wolves, though when necessary they would trek anywhere from hundreds of feet to miles off the road to make contact with their packs. Connected by radio, all crews communicated to advise

each other of pack movements and helped coordinate aircraft for collaring operations. If a particular crew's pack made a kill that was accessible by foot or adjacent to the road that crew would document a necropsy report on the carcass if and when it was abandoned by the pack. The ability, or rather the likelihood, of a crew maintaining some form of contact with their pack on a daily basis varied wildly and was primarily dependent on pack movements and location within the Park.

One crew I observed were able to make contact with their wolves for approximately seventy percent of the study period while another only had contact for approximately ten to fifteen percent of the period. In some instances crews were only able to make contact with one or several pack members for days at a time, if at all. In others, crews were able to document the whole pack for several days in a row. Some packs and/or individual wolves travelled significant distances over limited periods of time. One crew member told me during a lull of observation that her pack travelled from an area three to four miles east of Tower Junction west across the Black Tail Deer Plateau, then south of Bunsen Peak to access the drainages that spill out of the high Gallatin Range near the Swan Lake Flats area, before returning to their home-range in less than two days. She estimated the pack had traversed in a kind of circular pattern approximately forty to fifty miles across extremely rugged terrain in that two-day period. Yet other packs remained in relatively confined, known locations but mostly out of visual range of the particular crew assigned to them. During an orientation meeting, the crew assigned to a pack that roamed across the northern boundary of the Park was advised that they would likely need to exit the Park by vehicle on occasion to make contact. The crew was not operating outside Park Service jurisdiction or Park boundaries, but through quirks of geography the Yellowstone boundary does curve around state land to the west of Gardiner. This meant that in order to access some areas of

the Park by vehicle it was necessary to exit the Park into the town of Gardiner in a Park Service vehicle. The study team leader warned the crew that these areas were “questionable” for observation because their presence could “tip” people off that wolves were potentially out of the Park and susceptible to hunting.

What follows are field notes from observations made of wolf study team research activity.

They have been edited lightly.

8:16 A.M., 12/13/13, 4 degrees F.

Wolves spotted just south and west of the Petrified Tree trailhead. A carcass is definitely nearby, but its exact location is not known. Five study team members are scoping the wolves along a pullout roughly four hundred yards to the east along with one wolf-watcher. By 9 A.M. the wolves are no longer in sight nor can the study team get a signal from the collars. A discussion ensues about whether to walk down the road and find the carcass or wait so as not to potentially disturb the wolves. The team is relatively sure the carcass is near the road and will need to be moved, but the team must wait for Park law enforcement rangers to arrive as only they have the authority to actually move a carcass.

9:15 am—Rangers are on the scene and the group confers about moving the carcass. The central question, is the carcass visible from the road? As of yet no one knows. While one team member tries to regain a signal, the rangers decide to hike down the road and locate the carcass. Once they have located it they will retrieve the crew and move the carcass together so the crew can collect data. Several minutes later wolves are seen trotting over the hillside to south and west. This convinces the crew the pack is no longer in the area and they can access the carcass without disturbing the wolves.

10:09 am—Three members of the crew hike down the road to the carcass, but by the time they arrive the rangers have already loaded it into the back of the truck along with another crew member. The carcass, likely a cow elk, appears picked clean, though the hide is in very good condition. When I note this, a crew member disagrees saying, “there is quite a bit of meat left there.” We drop off the north side of the road into the trees and a pungent, sour smell permeates the air. We follow the smell for several feet before we find the rumen pile just a few feet from the kill site. The kill is fresh, “maybe last night or this morning,” according to a crew member. It appears the elk in fleeing got caught in a patch of thick brush and deadfall which slowed long it enough for the wolves to take it down. I mention that it would be helpful to see exactly where the carcass was found and the lead crew member says, “yeah, I’m a little torqued about [the rangers] moving it.”

10: 34 am—The crew has hiked across the road to the Petrified Tree trailhead. The rangers have moved the carcass approximately an eighth of a mile from the road, around a small rise so that it is not visible to passing cars. The leader of this particular crew notes that their pack, the ones that made this kill, is well beyond its “territory” and may be attempting to encroach on the territories of two packs that are known to be active in the area. She notes that they “maybe killed” a male wolf that had recently “joined” one of these other packs. The rangers smile at this information and one says, “as the wolf pack turns.” The rangers pack up their gear and head back toward the road while the crew begins to document the carcass.

10:42 am—The crew leader documents wounds to the nose of elk, indicating it was bitten there likely in an effort to bring it down. She then notes “hemorrhaging” on the rear hide and says, “there’s probably fifteen pounds of meat on this thing.” I am surprised by this estimation, but say nothing. The three crew members then begin to determine just how much and what of the

animal has been consumed. They go back and forth for several minutes. The crew leader is relatively firm in her estimation that good portion of the animal remains, while another crew member acts as something of a devil's advocate; not really arguing for a lower estimation from conviction, but seemingly from a sense of scientific propriety. Finally the other crew member relents, acceding to the leader's estimation. But when the third crew member, as a means of clarifying the parameters of the debate, starts to ask questions taken directly from the necropsy report the crew will fill out, doubt creeps in. Now they are unsure and the question is open again. After discussing the necropsy questions for several minutes they all agree that a more conservative estimate is appropriate and revise downward accordingly.

11:00 am—The crew stops collecting data when the radio crackles to life. A study team member is trying to contact them, but the signal is choppy and nothing intelligible comes across. A moment later another study team member, obviously in better range, contacts the crew to say “their” wolves are in sight and sleeping. The crew continues to analyze the carcass. Using a small bone saw two members cut open the jaw to age the animal. They estimate two years old. After a brief negotiation, the third crew member, a woman and the member who consulted the necropsy report to settle the previous debate, decides to perform the tooth extraction. She has not done this before and wants to have the “experience.” She assumes that she will have to do it many more times in her “career” so she may as well “start now.” Using a pair of pliers, she tries to pull the tooth from the jaw, to no avail. The tooth and jaw are frozen solid so she uses the saw to cut through the mandible, making the extraction easier. While she is doing this the other crew members hike back to the kill site to document any scavengers. The crew leader counts eleven magpies and the other crew member counts thirty-eight ravens. The crew leader also documents coyote and fox tracks at the site. These smaller canids approaching the site with the

pack having still been in the area “surprises” her a little. Once they return to the carcass they begin the process of removing the hide from the skull. After the hide is removed the crew leader runs her fingers gently across the skull and says, “pretty smooth; no pedestals.” This confirms that the animal was female.

11:35 am—Another study team member arrives on the scene. He informs the crew that their pack is “bedded down” on the ridge above us. Despite the data they have collected and the observations they have already made, the crew is unsure about interpreting the age of the carcass so they bring the newly arrived team member into the discussion. He has more experience and has been with the study team far longer than anyone on their crew. He takes the mandible from one of the crew members and studies it for several moments: “Calf, unless I tell you otherwise.” A crew member documents this in the necropsy report. Data collected, specimens gathered, and report completed the crew lingers for a few moments looking over the carcass. They wonder whether the pack will return to it now that it has been handled so much.

11:55 am—The crew is back at the pullout, keeping visual contact with the wolves resting on the ridge. There are no wolf-watchers present and no cars passing on the road. The area is silent. Two crew members debate the likelihood of the study team leader having information about the location of the pack. The crew leader decides to text him the information. I ask her whether they have had many interactions with wolf-watchers or visitors thus far and she says no. “This is the first day we have set up right by the truck.”

12:30 pm—The word from the study team leader is that conditions are too windy to fly. Conditions are calm on the ground so there must be high winds aloft. Yet at 12:38 the crew hears the whine of the spotter plane east down the valley. The wolves are observed sitting up, but they remain in place. The crew begins to prepare for activity—either the pack moving or a

possible collaring operation. A crew member radios another study team member to ensure he has visual contact with the pack in case the crew loses contact.

12:55 pm—The crew leader deploys the radio telemetry and picks up six bars from the collar of the alpha male; a steady, persistent beep, beep, beep, beep. I ask her about the range of the device and she estimates about three miles. I ask another crew member and he claims it always depends on the terrain. I ask the third crew member and she thinks the range is further than three miles, depending on the terrain. I ask the other study team member who has stayed with the crew since arriving at the carcass site and he offers: “highly variable.” The spotter plane is circling to the east of the crew’s location. It then flies directly above the pack resting on the ridge. Wolves are observed standing up and stretching at the intrusion, but they quickly settle back into resting positions. I mention this behavior and the crew leader says “they will move if they hear the heli.” She asserts that the wolves know the difference between the plane and the helicopter (plane is observational only, the helicopter is the collaring machine). The helicopter “scares” them.

1:48 pm—A group of three people, two women and one man, stops at the pullout. They appear to be in their sixties, a relatively common age demographic in the Park at this time of year. Like many visitors, they have stopped because they see people looking at something with binoculars or scopes. A crew member offers his scope and each one takes a look at the resting wolves in turn. The man in the group notes the government plates on the crew vehicle and asks if they work for the Park. The crew leader assumes control of the conversation and describes what they are doing and their duties. The man notes that both women were molecular geneticists (“bench work,” one of the women interjects). The group says they come to Yellowstone every year, but right now they are looking for otters. After the visitors drive east looking for otters, the crew

leader says the plane has peeled off and is now looking for another pack. She is disappointed.

Over the next hour two cars with visitors stop, observe the wolves and briefly converse with the crew while a few wolf-watchers have now arrived on the scene. The helicopter is being used to collar elk to the east.

3:08 pm—A study team member radios to say the helicopter is going to attempt to collar the crew's pack. The crew leader says, "yes!" Three photographers and two more wolf-watchers arrive and begin to set up their equipment. A giddy and nervous expectation begins to circulate among the people gathered in the pullout. Unseen, the spotter plane circles to west before coming into view heading east and then south.

3:18 pm—The crew leader is concerned. The pack is observed standing up, stretching, and howling. She tries to radio another study team member about the urgency of the situation. The wolf interpreter, now on scene, informs the small gathering in the pullout that the goal is to collar two wolves from this pack. The plan of approach will depend on the recommendation from the spotter plane.

3:30 pm—A coyote approaches from the west, sauntering down the middle of the road. It appears to pay no attention to the crowd of people, keeping its eyes fixed on the road heading east. But as the coyote slowly trots past, right at the moment it is perpendicular to the majority of humans in the pullout, it casually turns its head and briefly observes the people observing it. The coyote continues on its way until a bend in the road takes it out of sight.

3:46 pm—Word comes across the radio that the collaring operation is being called for the day. It is late, the winds remain tricky, and the helicopter must fly back to Bozeman. Several team members from other crews arrive at the pullout. Five more Park visitors pull in as well. A few minutes later the helicopter crew arrives, and the scene in the pullout becomes lively as the study

team recounts the day's events while Park visitors and wolf-watchers engage with team members and each other. So many team members have now arrived and are in one place that they decide to take a group photo. I capture the group shot with several different cameras. The temperature is below zero now. At 4:10 I am on the road heading west toward Gardiner.

Knowing is not always seeing

Physical proximity of humans and wildlife is a shifting, ever-present conundrum in Yellowstone. Many visitors come to the Park with hopes of seeing animals. It is a central element in the Yellowstone “experience.” Park managers and staff are of course deeply cognizant of this and attempt to manage interactions between wildlife and visitors in ways that do not prohibit these interactions from taking place. Capacity is also an issue (McCarthy 2002). The Park simply does not have enough staff to actively manage every interaction, especially in the summer when visitation peaks. Yet it is incumbent upon managers to enforce boundaries between wildlife and people which devolves to managing people’s behaviors at moments of interaction, but also managing the behaviors of animals as well. For example, when I asked the head of the grizzly management team what his team did most during the height of summer visitation he said, “babysit the bears” around the Lake Yellowstone area. A topographic choke point, the developed area around Lake is a major corridor through which grizzlies move north/south in the summer while also being heavily visited and used by tourists. The potential of grizzly/human interactions (food and garbage attractants) are significant and vigilance is necessary. In terms of frequency, numbers, and actual injury no animal/human interaction is more significant than bison. One can find numerous videos online of Park visitors approaching bison incautiously and too closely. All of this is simply a condition of the Park (close but not too

close, near but not too near), but the dynamic I want to highlight is a very specific problem that becomes evident around the question of wildlife/human proximities. How knowledge practices shape subjectivity and the possibilities of experience. How prior, long established, material conditions shape knowledge practices and subjectivity. How embodied practices of knowledge are shaped by the rationales that underwrite them which in turn shapes subjective relations with animals and the wider environment.

In early July 2013 I attended a four day wildlife tracking class at the Yellowstone Institute. The seven participants, excluding myself, ranged in age from early fifties to seventies. Only two people were from the Yellowstone region. The rest were from around the country and Canada. The class was led by a tracker/scientist with thirty-five years of experience, deeply knowledgeable about tracking, biology, ecology, and the Park. Class days consisted of a morning classroom session followed by an afternoon field session. The classroom sessions were intensive with significant amounts of information delivered through lectures and images. The afternoon sessions were no less intensive and we were expected to practice in the field what we had covered in the morning session. Data was unrelentingly put before us. Besides the material covered in the morning lecture sessions, scattered throughout the classroom area was snotel data, Lamar River flow data, long and short term drought data, the ten-day weather forecast, tracking guidebooks, wolf, grizzly, and cougar chart data (which identified biological measurements and characteristics of known animals in the Park), a badger study, and various scientific measuring instruments.

On the first day of class the instructor said tracking was the first and most ancient science; that “people who name and compare things are naturalists” and the first trackers were the first naturalists/scientists; the goal of tracking is to “see and think;” “learning to read a trail is like

learning to write a sentence” and that tracking did something to (our) human brain which helped to develop it evolutionarily. He clarified in simple terms the practice of science as the search for or awareness of clues which leads to the generation of one or more hypotheses to be tested and disproved until a hypothesis is proved correct. “No is the most powerful word in science,” but “single factor reasoning” is to be avoided at all costs; whole “diagnostic suite reasoning” is essential. As a tracker and scientist “no one will want to hike with you” and one must “start thinking like an animal” which he described as “first eat, second don’t be eaten, and third reproduce.”

When we went into the field after lunch every day, we never “hiked” more than a half mile. It was not hiking in any case. Every field site was near moving water (Soda Butte Creek, Slough Creek, Lamar River) with exposed mud beds which enabled us to carefully scan for animal tracks in pairs of two. When a pair found a track we were taught to track both forward and back to establish the trail. Depending on the extent of the trail and the precise measurements of the track way we could then begin to pick up clues about the species, sex, age, and weight of the animal as well as the speed and direction of travel, the direction the animal was looking as it travelled, and perhaps, though this was usually no more than a surmise, what the animal may have been doing in that area. If it was a wolf track, and we had taken accurate measurements of the tracks, we could use the instructor’s chart that identified the track measurements of known wolves to potentially identify the precise animal that had left the track. At Soda Butte Creek the group documented four sets of wolf tracks, three sets of coyote tracks, one set of cougar tracks, two sets of black bear tracks, grizzly tracks, and pronghorn tracks in no more than a quarter mile length along the creek.

After the first day several people in the group noted how tracking forced them to look at the landscape differently. But it was not just a matter of looking at the landscape differently. It was more that everyone was not only or just *looking*—as they were accustomed to doing. In the field, the group crossed waist deep swift water more than once to access mudflats where tracking might be good. This was not an insignificant physical challenge for some of the men and women. Each participant quickly learned from watching the instructor that “looking” at the ground was a minor and first step. Anything thing of interest might require getting on one’s hands and knees to observe more closely and from different angles depending on the angle of light, putting one’s face inches from the mud so as to gently blow fine debris from the track or poking at animal scat with a stick to determine its type, age, and what was consumed. The eyes were the guide and often the first tool used, but the practice required every part of the body to be used. We did not go far. We mostly stayed in place, moving only feet at a time, in order to construct narratives and develop knowledge about animals, incidents, movements, and events that would never be accessible to us through looking alone.

Just like the study crew’s debate about the carcass was finally resolved by referring to the parameters established in the necropsy report, for our narratives to take shape and our knowledge to become useful (and thus transposable to other communities and contexts) we had to accede to prior procedures, definitions, and representations—and consensus was crucial. The instructor insisted on the use of correct and consistent terms. Everyone had to agree to use these precise terms to represent the world around us. Any analogical slippage, any metaphor, any translation of one term into another (“you know what I mean”) was immediately called out and corrected by the instructor. Subjects, terms, and definitions were always open to revision, debate, and argument, but not simply as a matter of course or convenience. One needed good or compelling

reasons to open a debate. As the representative of the scientific community, our instructor needed to agree to even the slightest deviation. Every unwarranted deviation was answered by the disciplining force of the community's already established consensus. Some of the participants quickly learned not deviate, to proceed slowly and seek confirmation by referring to the consensus, but others found it very difficult. For example, one evening after field work another participant and I were attempting clarify the relationships of "groups" of tracks to gait patterns. The instructor saw us working and freely offered his help. The participant was having as much trouble as I was differentiating between some gait types, but in thinking through the concepts she would frequently veer off into assumptions that took her beyond the evidence at hand. The instructor was relentless in his disapproval and would not move on until she accepted the parameters and terms under which the evidence could be discussed. When looking at flash cards of track patterns, and drawing gaits on the white board did not advance our comprehension he made us get into a quadruped stance and enact the patterns of movement bodily. Thus we momentarily became like the animals we were trying to understand, but more importantly the attempt to understand (as trackers and scientists) demanded a brief transformation our bodily posture and habits.

Excepting birds on the wing, we saw only two animals in three days of field time. One could see more animals by hanging around the congested parking lot at the Lower Falls of the Yellowstone for ten minutes. On the second day as we strolled to our field site a woman in group exclaimed, "A wolf!" But when we took note of the animal trotting across a small knoll some distance away we quickly established it was a coyote. The second time it was only my partner and I. It was the end of the day and the group was slowly making its way back from an area on Slough Creek to the bus by following the edge of the water course. I chose to take a more direct

route over the rise and fall of land away from the creek with my partner following. As we came around a bend we heard a distinct, loud squawk from approximately seventy-five feet away and the sound of something large beginning to move. The sounds startled my partner. She gasped and instinctively grabbed my arm just as we saw a movement of rich brown rust against the silver of the sage all around us. Three large sand hill cranes lifted to their feet, spread their wings, and took to the air because of our intrusion. “For a second I thought we had run into a grizzly,” she said laughing. We never did see a grizzly in the field or anything else beyond the coyote. Yet we saw abundant evidence of grizzlies in tracks and tree markings. We saw evidence of beavers, otters, muskrat, weasels, badgers, pronghorn, elk, deer, moose, mountain lions, wolves, foxes, and black bears all around us; evidence of a dense and complex community that is only intermittently available to the eye if at all. Visually, the wildlife remained out of sight, unknown and unseen, but the effect of our practices seemed to erase the distance. Arguably the class accessed Park wildlife more intimately in having never seen it at all. Animals were never immediately there in the field, yet our proximity was very close and we did begin to gain a sense of what it would mean to be a “local” in the Park. Of note, participants did take pictures but on the whole not very many when compared to the norm in Yellowstone.

Approximately 11:30, 3/7/13, 24 F.

A crowd is gathered at the Upper Hell-Roaring Creek Overlook, approximately twenty-two people. Far below in the valley, looking north, wolves are bedded down across a several hundred yard expanse. Using binoculars, a large, irregular pattern of blood is distinguishable on the snow, but the animal to which it belonged is no longer visible. The wolves have consumed nearly all of it. A crew from the wolf study team is on the scene, set up not far, but noticeably apart from the rest of the observers. Wolf-watchers are scattered here and there, eyes on their scopes, sharing

observations with each other. A small Yellowstone Institute bus is parked in the lot, the same one I will ride in to tracking field sites in early July. The rest of the people are either in an Institute class or volunteers or employees of the Institute. The excitement from observing the kill has not abated, but everyone is waiting in anticipation. The wolf study team is going to attempt to collar two wolves from this pack.

The whine of the fix-wing, the spotter plane, can be heard approaching from down valley to the west well before anyone at the overlook makes visual contact. At first only the radio contact between the plane and the crew at the overlook alerts the gathering to its arrival. Despite its bright yellow paint, the plane is difficult to locate and it takes more than a few moments to find it through the binoculars. When one finally does the plane appears so absurdly small and slow moving relative to the vastness of the topography that it seems no more effective than hiking in from Gardiner to spot the wolves. The pilot confers with the ground crew and begins a wide circle above the valley floor. When the plane comes over the wolves they are already up and trotting north, on a knoll just above the valley floor. After circling two times to establish visual contact with every wolf the pilot contacts the helicopter jump crew, already on their way up valley, to notify them the situation is ready. Just minutes later the thump-thump of helicopter rotors becomes audible. The wolves perk up at this sound; their body language indicates they are now quite alert. When the helicopter comes into visual range it is even more difficult to locate than the plane. It flies at significantly lower elevation and is moving much faster, seemingly with aggression. The study team helicopter circles quickly and decisively over the valley floor, the jump crew conferring with the spotter plane as it does so. The wolves are clearly not comfortable with this flying machine. Some begin to sprint away; others are less sure and turn in circles, trotting nervously this way, then that. The chase has now begun.

The goal is to dart and collar the alphas. Members of the ground crew are each responsible for keeping visual contact on one or two wolves. They coordinate with plane and the helicopter, directing the helicopter toward the target when asked or needed. The situation is well-coordinated, but it is not controlled. Wolf-watchers with scopes are contributing as well, relaying movements and locations to the study team on the ground. The wolves begin to sprint in multiple directions, but the helicopter is focused on the alpha female. Of the alphas, she is in the most vulnerable position. As the helicopter zeroes in I momentarily have no doubt she will be darted. She is sprinting due south across the open valley. The helicopter is at her six o'clock pursuing quite closely. It is only a matter of moments before the pilot will position the gunner at a favorable point adjacent to the animal and it will be done.

Yet, as this micro-event unfolds within the larger event two things become obvious through the small circle of the binoculars. 1) The wolf is digging and lifting her paws from the snow with the greatest force of concentrated, singular intention that I have ever witnessed. 2) The helicopter actually may not be able to get in position. The alpha cuts hard to her left, east, before making another sharp cut and sprinting north. The helicopter pilot banks hard and then whips the tail of aircraft south toward those of us observing from the overlook. The outcome is now no longer a foregone conclusion. The helicopter still has a chance to put the gunner in position, but the brilliance of the wolf's tactical change of direction becomes apparent to everyone observing her. The crew at the overlook notifies the helicopter jump crew of what they already must know: she is sprinting toward a draw on the north side of the valley covered in brush and trees. If she gets to the draw before the helicopter it will be very difficult to get a clean shot. It is a race and just before the wolf makes it to the cover of the draw the helicopter pulls up alongside, but the moment is too brief. The helicopter is forced to pull up as she darts into the brush.

It is not over however. Relying now on the spotter plane to keep visual contact, the helicopter banks to the west and circles back over the draw. What happens next is hard to follow through the binoculars. The grey miniature of the helicopter blends too easily with grey/brown of winter vegetation and rock strata angling down the hillsides. I lose and regain, lose and regain sight of aircraft as it appears to dive toward the draw and circle round it seemingly in probing thrusts meant to force the wolf out of hiding and into the open. Twice, she does break from cover sprinting just as hard as before, but she never gets more than perhaps a hundred yards before turning back to the safety of the brush. Not long after her last break from cover I lose contact with the helicopter and the wolf. Radio chatter between the aircraft and the ground crew finally clues me in that the helicopter has given up on the alpha female is now pursuing other pack members.

The study team eventually did immobilize and collar two wolves, though neither alphas. The action had become increasingly hard to follow both because once I lost visual contact with the helicopter it was difficult to reacquire and because the helicopter had moved east up the valley which from my particular vantage was harder to see. The excitement of watching the operation gradually began to wane and people fell to eating lunch and talking in small groups. Every so often a plaintive howl would echo through the valley as pack members called to one another. This would entail a ripple of annoyed shushing through the gathering. After the second round of shushing the Park's wolf interpreter said in the gentlest, most reasonable tone one can imagine, "We are encouraging people to be as quiet as possible."

I then noticed a wolf-watcher, the woman who would later ride with me to the meeting in Helena, in an animated, not to say heated, discussion with a man who worked for the Yellowstone Institute. I would find out later he was a volunteer. They were debating the practice

of collaring wolves and he appeared to dislike it. The conversation ended with the wolf-watcher saying, "I'm not trying to change your mind." A few minutes later I approached him to get a better sense of his disapproval, but an Irish man, taking park in the Institute class, intervened and began to give his own enthusiastic opinion of the day's events. "This is great!" He meant the whole event, seeing the predation of the elk and the collaring operation. "These young kids doing the research and spotting are great to see." Having briefly participated in the previous conversation between the volunteer and the wolf-watcher, he went on to say that he "believed in this." Before I could query him about the meaning of "this" he moved on, but my sense was "this" was the science and research of the study team, but also the Park as an ecological preserve which made it possible to see wolves hunt prey and a helicopter hunt wolves all in the same day. And then, as with so many other people I spoke with, he shuffled wolves out of the conversation. He began to speak about American politics, seemingly as a way to index his feelings about wolves. He mused over the polarization of American gun control debates, Republicans and Democrats, and the recent presidential election. The debate over wolves, he seemed to be saying, was of the same dynamic. "Science" and "watching" supported wolves; to support wolves was to want to watch them, watching wolves was to support scientific research on them, and supporting scientific research entailed a politics that dovetailed with supporting wolves. The man's excitement had caused him to pontificate rather than engage in a conversation with the volunteer. Had he wanted to listen he might have had his monolithic notions of science and politics vis-à-vis wolves nuanced a bit. But it did not matter, the volunteer no longer wanted to argue his point knowing that he was fast becoming a drag on the good cheer of the gathering.

I interviewed the volunteer a few weeks later. The interview was more like a wide-ranging conversation, over three hours long. He had been volunteering with the Institute since 2002

during the winter season only. When I asked him what he disliked about collaring he offered several reasons.

I don't like collaring animals for ethical reasons. You know, most of this research could be done observationally, especially in the early years when there were lots of wolves and elk. Some people say, 'we wouldn't have this data without the collars,' but you were seeing them from the road—seeing them separate the weak in the herd and sorting kills—you didn't need the collar for that. ...In some ways, with the way they [wolves] are followed socially on the road by some of these groups, these collars create these iconic animals that everybody falls in love with and it becomes this really amazing story. And when, say, the 06 female gets shot outside the Park, it creates this emotional groundswell from the people that really love the wolf. And then that really pisses off the people that hate the wolves. And it continues to create this polarization that doesn't allow people to meet in the middle because these folks have gotten to love this wolf so much.

Biologists in the Park would not deny that a significant amount of research can be carried out observationally. The difference that collaring makes, as the Craigheads came to realize, is the extensive amounts of data that can be obtained because of the procedure. It makes statistical, population-scale knowledge possible. His second point, however, touches upon the annoyed dismissal of “celebrity” Park wolves by the FWP official in his presentation at the Commission meeting. The social circulation of wolf and wolf pack histories, the personalization and humanization of pack social dynamics, and the social attachment to particular wolves is no doubt one consequence of collaring Yellowstone wolves. The capacity to track and locate wolves without visual contact or having to slog into the field to make observations—the convenience and relative comfort which the road, telemetry, radios, and cellphones afford all contributes to the subjectification of wolves.

There's this magazine at the Ranch right now. I think it's a Defenders of Wildlife, but I'm not sure. And you know, right there on the cover is a picture and an article about the 06 wolf. It says something like, 'Beloved Yellowstone wolf shot outside Park.' That wolf was shot legally by a hunter that had every right to do so.

Everybody knew delisting and hunting was going to happen and, sure, you get upset when a wolf is killed but the reaction just creates more polarization. ... This year there is more edginess of the road because of the wolves killed in the last couple of years.

I then ask him about the day we met at Hell Roaring Creek Overlook and what specifically bothered him.

I wasn't particularly happy that day because of what was happening. I rather not see it. What amazes is how rapt people are by that whole process. I'm amazed that people think it's cool to see this helicopter basically chasing this wolf, who a few minutes before had been perfectly satisfied. People got to see a really amazing thing in that they got to see a kill. Now all of sudden, let's get the heli out and chase these wolves, and I would think 99.99 percent of those people think that's cool. And here I am working for this education institute and I'm the anti-collaring guy. I usually like to keep this to myself. I have these questions that no one wants to hear. They've been doing research for eighteen years. How many of these animals do you really have to collar? That whole process of 'let's watch the heli and handling the animals' ... I've seen that process up close and what it does to the animals and that's what changed my mind. I realize that it's okay for me to have that opinion, but maybe it's just not okay to express it. Yesterday [wolf] 759 was found dead. The recovery crew went to get her and there was a huge crowd for that. It amazed me how many wanted to take pictures of a dead wolf being dragged out to the road. I understand the interest in seeing the animal but the pictures? I still can't believe how much attention this stuff is getting.

How to process a wolf processing

12/14/13, 14 degrees F.

8:15 am—It is the last day of the winter study period. I am with a crew of three, all women. They have a faint signal from a collar, but no one is able to make visual contact with the wolf. We are several hundred yards off the road scanning terrain below us to the north. One crew member spies a large bull elk off in the distance using a lodgepole pine as a scratching post. The crew briefly shifts their attention to the elk. I note to the crew member nearest me how haggard bull elk look this time of year following the heavy exertions of the rut and, depending on their location and foraging patterns, the stresses of the hunting season. She tells me a herd had taken up residence just outside her bedroom window during the rut led by an old bull known as “Broke Nose.” The bull, she said, was always “screaming” [bugling] outside her window in the early morning. “I’m glad he got eaten by a bear,” she says definitively.

10:45 am—Having no visual contact with their pack and losing telemetry contact all together, the crew leader decides to drive several miles west to the Black Tail Plateau. After several minutes of discussion the crew settles upon hiking north to the top of a feature called North Butte.

12:40 pm—Sounds of the helicopter and fix wing reverberate from the north and east. Word comes over the radio that the helicopter is “netting” wolves. The boom of the net gun echoes across the plateau. The crew with their high-powered spotting scopes is able to follow the action of the helicopter while my binoculars are too limited to provide a visual. One of the crew members says, “That helicopter pilot is badass.”

1:46 pm—The helicopter flies directly over our heads, approximately 100 feet off the ground. It circles us while a member of the jump crew signals the crew to ask if they know in which

direction the next targets are located. The crew points to the south and the helicopter zooms away, across the plateau.

1:55 pm—The crew has hiked back to the road and driven approximately an eighth of a mile west to an area known as the S curves where there is a large pull out on the south side of the road. The helicopter has located the wolves and a second collaring operation is underway. Study team members from other crews begin to arrive on the scene. A little while later the wolf interpreter arrives followed by a visitor's car; a woman and her teenage daughter get of the car and the interpreter explains what they are about to see. The helicopter is a significant distance to the south, but still visible for the most part. The land slopes gently downward from the road and every so often visual contact with the helicopter is lost as it dives into the unseen depression chasing wolves.

2:18 pm—The helicopter is out of visual contact for several minutes, but the sound of the net gun echoes toward the gathering on the road.

2:30 pm—Word comes through on the radio that a wolf has been successfully netted and tranquilized, but the helicopter crew has decided to “process” the wolf at the Mary Meagher cabin rather than at the scene of the capture. Anyone who wants to see the wolf should proceed to the cabin which is approximately a mile west of the gathering. The cluster crew has just completed collecting data on a carcass nearby and is already on the scene. Everyone at the pullout dives into vehicles and races to the parking area. The cabin is approximately a three quarter mile hike through the snow from the parking area.

2:55 pm—Arrive at Mary Meagher cabin, scene of processing.

I hear voices and activity, but nothing is visible until I come around the front left corner of the cabin. When I do all I see are colors of winter outerwear gathered in a circle. I edge my way into

the circle and see the helicopter crew busily taking various measurements of two wolves, one larger and the other smaller. They call out measurements and general observations to the two cluster crew member who document the information on data sheets. Adrenaline is coursing through the assembled. Everyone is talking loudly and excitedly. The helicopter crew takes blood samples from both wolves and then they weigh each of them. The larger wolf, #778, already wears a collar and is known as Big Brown. He weighs approximately 116 pounds. One would likely estimate his weight much higher if it was a matter of observation alone. The younger wolf is an uncollared male, but he will wear one now. He will be known and numbered by the study team. Once all the measurements have been taken and the data collected the study team leader instructs the crew assigned to these wolves' pack to stay on the scene until the pair are recovered and fully mobile. Another pack is known to be in the area and the team leader does not want the two wolves left vulnerable to attack. The crew is told to form a semi-circle twenty yards from the sedated wolves and chase off the other pack, if need be. Shortly thereafter the helicopter comes roaring back into the scene and picks up the jump crew. They wave as the helicopter momentarily hovers above the gathering and then they are gone.

The wolf interpreter along with the Park visitors, the mother and daughter, arrived at the cabin a few minutes before the helicopter left. There are now eleven study team members, two tourists, two sedated, immobilized wolves, and me. With no more data to collect team members begin to stroke, touch, pet, and examine the wolves. One woman notes the appearance of mange on one of the wolves. Another study team member with longer experience feels the animal has already recovered from the disease. She tests the joint movements of both animals and they appear healthy. Lots of pictures have been taken already, but now team members begin to take pictures of the wolves and themselves with each of the wolves in earnest. Group pictures with the

wolves, individual pictures with the wolves, smaller group pictures with the wolves, duo pictures with the wolves, trio pictures with the wolves, and yet more pictures of each category because a prior picture had been fuzzy, or someone had blinked, or looked away, or the wrong camera was used, or the light was not right, or the flash had been on or not on. And for each picture of the humans and the wolf it is not enough to be near or close or touching the wolf. Each picture requires that the human lift the tranquilized wolf from the shoulders so that wolf's face is framed and centered the way human faces are framed and centered—an action that is reminiscent of hunters posing with their dead quarry. But because the wolf is tranquilized its tongue tends to loll out of its mouth which does not make for a good picture which means pictures have to be retaken and the wolf's tongue carefully put back in its mouth.

The visitors, a mother and daughter from southern California, previously dumbfounded by the scene they are witnessing and their extreme good luck, now begin to pet and stroke the wolves and take their own pictures—picture after picture after picture. The mother seems to feel a particular affection for the larger wolf, 778. She sits on her knees, beside the animal's head, gently stroking his fur and taking pictures, even after he begins to lift his head again and again and again; always unsuccessfully because the effects of the drug, Telazol, are still too powerful. No one on the study team appears concerned by this. One study team member thinks the younger wolf feels cold, however, so she and another member take the wolf's temperature rectally. The animal is between one and two degree below normal. Not a significant problem, but some are concerned so team members begin to shed their coats. One coat is slid between the wolf and the snow and three or four more are placed over him. The larger wolf is now lifting his head continuously, attempting to sit up, but he still very much lacks the muscle control to do so. Over and over and over again the animal lifts, only to reach a threshold, seemingly a precise

geometric point, which he cannot overcome to achieve a sitting position. The younger wolf has not yet moved at all. The study team member with longest experience, a woman, asks everyone to move to the cabin so as not to disturb the wolves as they come to. The group gathers with backs against the cabin and watches the larger wolf trying to sit up. After a few minutes of observing this she decides she might be able to shift the animal into a position that will enable him to sit more easily.

After all the rare, fleeting, absurd, and strange scenes I had come across doing fieldwork in Yellowstone National Park, this moment counts as the most captivating and remarkable sight I ever saw: a woman, seven months pregnant, sitting on wide-spread knees in the snow and fading light of December with a one hundred and sixteen pound wolf in her lap trying to help this drugged animal into a slightly more comfortable position. After several attempts she let the animal rest, got to her feet and returned to us whispering, "I don't know if that helped." A few minutes later the younger wolf starts to lift his head. We move around to the front of the cabin to give the animals more space, but continue to observe them from an angle off the cabin. Team members have already begun drifting away back down the trail to the parking area. The crew responsible for these wolves and their pack remain, along with the pregnant team member, and the mother and daughter from California. The mother is asking how one goes about getting a job like theirs. Her daughter will be starting college in less than two years and needs practical advice. What were their majors? What work have they done prior to this? What path did they take to get here? The daughter is a little embarrassed and self-conscious, but only says softly, "Mother." I drift away too. At 4:23 I am in my truck turning west out of the parking lot.

The processing of the wolves is a revealing portrait of what Yellowstone presently is: a core of ecological preservation and experimentation guided by the principles of positivist scientific

research whose existence remains dependent upon and conditioned by the generic practices of tourism in modern North America. I do not deny the portrait is partial and limited, but it is accurate. A helicopter, young, educated, aspiring biologists from all over the country, radio telemetry, high-powered spotting scopes, the convenience and accessibility of the paved road, some lucky tourists, camera phones, and two tranquilized wolves covered in Patagonia, Marmot, and Arc Teryx outwear to ward off the winter chill. I was a little taken aback by the young biologists in the way they mirrored the behavior of hundreds of thousands of tourists. The seemingly unthinking and unconscious desire to not only capture an image of the animals, but to include their own image with and alongside the animals; the desire to bring the animals within the closest possible range of human representation and not pause to consider the strangeness, the depth of the difference, or the dislocation that confronted them there.

I was taken aback, but I probably should not have been. They were part of a team and part of a research program now going on two decades whose goal is to bring every wolf in Yellowstone closer to human representations, to briefly dislocate the wolves from their dense material world, abstract them and make them more amenable to calculation and management, to make them knowable. That they behaved as tourists might behave given an opportunity to be near two wild wolves should come as no surprise either. They were in Yellowstone, after all, among friends and in high spirits. The behavior is as old as the Park and modern photographic equipment itself. In reprints of old photographs on the walls of the visitor centers and lodges around the Park one can see similar behavior from fifty, seventy-five, and one hundred years ago: a tourist reaching out of his car to pat the head of a road-side black bear or ladies and gents in their Sunday best posing for a portrait on the delicate terraces of Mammoth Hot Springs. Yellowstone expresses

modernity's peculiar relationship to nature both in the way it is known and the way it is experienced.

Tourism and science are certainly intertwined in Yellowstone, but not just because of a functional relationship between this research program and those visitor activities. The relationship is deeper than that. Some of the most basic practices that define tourism and science in the Park appear capable of transposing into one another rather easily. The subjectivity of the biologists, switching effortlessly from one mode to the other and back again, gives some evidence for this. What may be most peculiar about the basic practices of tourism and science in Yellowstone is how each approaches wildlife as being there, available, for purposes which the practices define—as resource, as data, as spectacle, as image (Debord 1969; Heidegger 1997). Again, this also is to be expected given the history and the express function of the Park. Yet to be confronted by a wolf in such close proximity (even the stolid and ubiquitous bison can confront one in this way) presents one with an opportunity to briefly get outside the practices and the play of forces that determine in advance what such an event is for and what one's response should be. It might only be a moment, so brief it is not worth measuring, but the field will be open and all manner of reciprocity is possible.

Does tourism and science define the whole of the Park? Certainly not, it is too vast to be captured totally by either of these modes or their methods. There is always a remainder, an excess in the “nature” of Yellowstone—including its sociality and human dimensions—that exceeds both. The grunt of a bison cow to her wobbly, orange-red calf as they negotiate a road with cars passing on both sides of them, the determination of a wolf to outrun a flying machine, or the sight of a woman in her third trimester gently, but firmly lifting the body of an immobilized wolf to comfort it: all point toward the tensions of present-day Yellowstone.

Bison

V. On the boundary

Tempers are starting flare. On a warm September night in 2013 around thirty people have gathered at the meeting house in the small gateway community of Gardiner, Montana to discuss the possibility of year round tolerance for bison in the Gardiner Basin. The crowd could be roughly divided between those who are pro-bison and those who are anti-bison, but this simplified division hides more than it reveals. The format of the meeting calls for two rounds of comments and most in attendance have already expressed an opinion in the first round. The comments mostly address the issue at hand in a respectful way, but a few subtle and not-so subtle jabs have been directed at people on the opposing side and now with the second round of comments beginning, those jabs, among other things said and unsaid, have had time to sink in. As a result the fragile sense of decorum is starting to fray.

Gardiner is a very small place and many of the participants in this room know, or know of, each person in the room. Some are neighbors, some are co-workers, some are friends, and some have been frequent adversaries on wildlife issues. Nothing about the meeting is impersonal. A man who has spoken already rises to his feet and says with vehemence, “The park boundary stops here. I don’t want Montana to look like Yellowstone.” Another man sitting across the aisle stands up and angrily asks, “Who are you talking to? If you have something to say to me then say it! I’ll stand right here!” Order is quickly restored, but the mood in the room is heavier now and the meeting breaks up ten minutes later. I gather my things and after briefly speaking with a couple of people, I head for the door where I absent-mindedly walk right into the middle of a near physical confrontation between two women. I never learn what precipitated it.

Nothing about the meeting was particularly unusual. Heated words can be exchanged in public meetings and this one was illustrative of the politics surrounding the management of Yellowstone wildlife, bison in particular. When the man claimed that the park boundary “stops here” he was literally correct; a ninety second walk from the Gardiner meeting house would put one within the boundaries of Yellowstone National Park. Yet he was claiming more than that, as were many of those who spoke against greater tolerance for bison in the Gardiner Basin.

Boundaries in this very small corner of rural Montana have definite material consequences as well strong figurative overtones. Yellowstone National Park looms over the town of Gardiner and the Gardiner Basin, but there is National Forest Service land, state land managed by FWP, and a checker board of private lands sandwiched by the Gallatin Mountains on the west side and the Absaroka Mountains on the east, with the Yellowstone River coursing through the middle.

A visitor may observe the wind-swept, wide open vistas from Gardiner see mostly natural, mostly empty space, but many locals do not. For some that same space is quite full. Occupied by hundreds of thousands of tourists annually, occupied by two federal land management agencies, occupied by state wildlife and livestock management agencies, occupied by transient labor that appears late in the spring and departs in the fall, occupied recently by Native Americans who come to hunt bison during the winter, occupied by a seemingly steady stream of newcomers from all over the place buying up private land, occupied by wildlife like elk, deer, bighorn sheep, wolves black bears, grizzlies and, yes, bison. Some in this small community see the definition offered by clear and definite boundaries as the best means for ensuring that all the activities, processes, institutions, people, animals, and objects keep to their proper domain. For some, boundaries are rhetorically useful in local debates over wildlife. Alternately, boundaries are seen

as constraints by some of those same people. Partly because of what those boundaries enclose, but more because of what the boundaries enable (Thompson 1990; Williams 1973).

The debate at the meeting centered on what boundaries meant and thus what they entailed. But the discussion was not confined to the legal or political boundaries that could be identified on a map. The participants invoked and disputed all sorts of boundaries. When one person claimed that bison leaving the park in winter was natural because they are a “migratory species” behaving as they have for “thousands of years” another person responded that:

This is the 21st century; we came to this meeting in cars. We don’t need a free-roaming population. Is it smart management to put [bison] in harm’s way with cars on the road?

When someone linked the economic prosperity of the community to bison, the Park and tourists, another person invoked his status as a landowner, “not a renter,” and spoke of damage to property bison can cause. When one person admitted that the park is a “treasure,” but that the management philosophy of natural regulation doesn’t work because “you can’t just let [bison] go wherever they want.” Another person quickly responded that “[Gardiner] is part of the Yellowstone ecosystem.” All other wildlife roam at will and bison should be allowed the same.

An outsider listening to the disputants might conclude that each side was talking past the other. In some sense this is true, but that had more to do with the structure and intent of the meeting itself. It was not a deliberative body meant to reach consensus or resolution on the issue of bison in Gardiner Basin; rather it was merely a forum organized by the Park County commissioners to give local community members an opportunity to express their opinions on tolerance for bison in the basin. The commissioners were considering whether or not to send an official letter to FWP on the issue of year round tolerance for bison. Two of the commissioners own ranch land in Paradise Valley twenty miles north of Gardiner and are squarely opposed to

greater tolerance for bison; the third commissioner was much more ambivalent. It would be hard to measure just what effect, if any, this local, temporary, and populist gathering would have on the actual management of bison. No representatives from the agencies responsible for bison management attended the meeting. Thus one could certainly construe the entire meeting as one more example of the post-politics prevalent in environmental governance issues where institutional and technocratic forms of power and expertise foreclose meaningful democratic decision-making or action (Goeminne and Francois 2010; Ranciere 2001, 2007; Swyngedouw 2009). Still, it would be a mistake to dismiss the debate on that early fall evening as futile. Taken as whole, the debate among community members added up to a nuanced and responsive argument with both sides seemingly aware of its implications: Who or what belongs to the community? How should community relations be governed as a result? The issue was not simply whether bison should or should not be permitted on Montana land, but what activities, relations, objects and beings constitute and organize a proper community. It was an impressive, albeit a fleeting and partial, attempt to define the composition of the community—human and nonhuman alike (Haraway 2008; Latour 2004; Sundberg 2011; White 1996). This is one example of what makes the Yellowstone area exceptional, Gardiner especially. Community politics frequently encompass the nonhuman; nature and wildlife are always a social matter and a social concern.

No other large species in Yellowstone can and does live in such close proximity to humans as bison. The everyday, spatial intimacy of bison and humans is what creates the communal concern, and discord, over their management. This intimacy as well as the tolerance bison have for being near humans, paradoxically, makes their management more difficult, not less. Bison trouble the boundary that divides nature from society in ways that grizzlies and wolves do not. This fact, in turn, leads to disputes over the *nature* of bison. In many ways, how bison nature is

defined determines how they are managed and where they can be located on the landscape. The central question which occupies this chapter (what is the nature of bison?) is posed less by me than by those directly involved in the debates over bison management. The question is indeterminable and continually subject to revision. Bison are akin to a powerful, mobile, and willful boundary object. Their *nature* is open, conditioned by the interactions and interests of the actors, institutions, and environments that engage them. As such, Yellowstone bison reveal the core indeterminacy that confronts every attempt to locate nature *here* and culture *there*.

Colonial icon in the present

A 2008 GAO (United State Government Accountability Office) report on the then current state of Yellowstone bison management introduces bison in this way: “Long symbolic of the vastness of the North America’s plains, American buffalo, or bison, today roam freely in only a few places, including Yellowstone National Park” (U.S. GAO, 2008, 1). Such description is common in almost any introduction to a discussion of bison. Bison are said to be “symbolic” and “iconic.” They are taken to be integral to the socio-cultural imaginary of the American West. The national iconography of bison reflects a self-conscious, colonialist nostalgia in which the naked appropriation and transformation of territory and resources generated at the same time a niggling sense of loss (Braun 2002; Cronon 1995). Manifest Destiny as a political project generated its own counter-perspectives and some of what had been transformed, erased, or cornered by colonial expansion—American Indians, bison, land more or less untouched by settler projects, to name a few—reappeared, even in the midst of destruction, now as symbols and icons of the West (Berkhofer 1978; Catlin 2004; Conn 2004; Deloria 1999; Spence 1999). Indeed, the 19th century formation of Yellowstone as the first national park with what was already fast becoming a remnant population of wild bison constitutes a definitive example of this history. The bison as

icon attained this cultural status as a function of its historical abundance on the landscape, and in its subsequent erasure from that same landscape; it combines a glorification of nationalist American colonial power with the culture's troubled sense of that power. Indians, bison, and wilderness signify as remainders, vestiges imbued with a quasi-totemic significance that represent and embody America's political and natural history (Ingold 1988; Tapper 1988).

The bison evokes a dual historical perception of the American West that is essentially Lockean in shape: a pristine, Edenic state, and a frontier, a waste awaiting the appropriation, organization and transformation by civilized human power. Indeed, Locke's origin story of the formation of society out of nature in the Second Treatise attains its proper (nonhistorical) location in the colonial space of America. It achieves the status of political myth; a secular metaphysics expounding the origin of social relations as organized by the concept of private property. It is, in short, an early modern European colonial fairy tale inspired by the discovery and exploitation of the "New World."

Yet if this iconic view of bison denotes a cultural ambivalence with regard to the historical expansion of state power across the continent—at once triumphant and melancholic—the determination of the material vagaries of bison within existing local social relations is less obvious. This was made clear to me in a conversation with a scientist and longtime researcher in Yellowstone. I had been expressing my befuddlement over just what made the debates on the management of Yellowstone bison so intractable. He paused for a moment and said

You know, we don't have a history with [bison]. We've only been living with them for two hundred years or so and most of that was just shooting at them. We haven't figured out what our relationship is to them.

At first I did not know what to make of such a statement. Clearly, he was speaking of dominant Euro-American society. Native Americans, Plains Indians in particular, had and have

intensive material and symbolic relations with bison. And as will be discussed in the next chapter, Native Americans and bison are still linked, occupying similar symbolic and material space within the dominant socio-cultural order. But leaving this aside for the moment, the scientist's point is worth considering. Living with iconic bison sequestered safely within the confines of a national park is palpably different from living with bison on the wider landscape—especially when one considers what “wider landscape” means in practice; a patchwork of federal, state and private lands with multiple interests and administrative jurisdictions all placing differential, and often contradictory, claims on bison and their management. Whether the scientist's claim is historically accurate or not, it has a contemporary social valence that is pertinent. The controversy surrounding Yellowstone bison reveals an unfolding and as yet unsettled attempt to come to terms with the place of bison outside the boundaries of the nature reservation that is Yellowstone. There are many social factors, some more prominent than others, which keep the issue of bison on the wider landscape unsettled. Much of the discussion that follows touches upon them in different ways. However, the bison as a very large and gregarious herd animal must be contemplated in its own right, especially in light the assertion the “we” do not yet know how to live with them.

A former Park biologist that studied the animal for many years made two claims to me worth noting here. “Bison are the king of the range,” by which she simply meant that a bison does what a bison wants to do because there is nothing else on the range capable of challenging it. She also said that “bison are not big elk.” This statement, in part, expressed her annoyance at the design of scientific studies of bison which tend to mimic the procedures, methods, and assumptions of smaller ungulate studies. Beyond that, she was referencing a related, but larger, more socially resonant assumption that is common in the Yellowstone region, particularly among those who

support greater tolerance for bison outside the Park. This assumption frames bison as a relatively passive and retiring animal like other herbivores. I interviewed a former longtime Yellowstone Park Service staff member, now employed with a different federal management agency, who fleshed out the two statements above.

You know, interestingly, bison are—I love bison—but they’re not that easy to live with. A few things about bison are, they hurt more people than any other animal in Yellowstone and it’s usually because, almost always, because people get too close to them. So, you know, you have to know to stay some distance away from them which every school kid in Mammoth knows, but not everybody in Gardiner knows that, or in Paradise Valley or wherever. They’re also tough on property, they beat things up. They just are; they’re big and they’re bulky. Also, weirdly, they’re agile. I’ve seen them rear up on their back legs and jump over a fence. And I say, ‘my god, how does this animal that weighs a ton do that?’

The more common perception of bison is, as the retired biologist put it, “stolid,” relatively slow moving, passive, and tolerant. It is not incorrect, but it is certainly not complete. Unlike elk, unlike bears for that matter, bison are not easily intimidated. One only need ask Park Service, MFWP, or MDOL (Montana Department of Livestock) agents who have experience hazing the animals once they “sour,” as the agents describe the behavior. When bison sour they essentially become obstinate, potentially aggressive and dangerous to be near. To actually witness the agility of bison does border on the weird. I have seen young, not quite, mature bulls in the Gardiner Basin jousting playfully with one another; hopping, bouncing and running in a way that is more akin to kittens than anything commonly associated with bison. Even more impressive, one day I had pulled off the road just above Black Tail ponds on the Park’s northern range to scan the area for predators. There were a few other cars nearby, tourists and young families taking in the view. I noticed, but paid little mind, to a herd of bison, primarily cows and older calves, moving up to the roadway from the open valley below, about three or four hundred yards southwest of my position. After several more minutes of fruitless scanning I was just about to get

into the truck and continue on my way when I heard a very distinct rumbling that seemed to be gaining in momentum and volume. I looked west and saw the herd was now on the road and the slight, treeless hillside above it, charging east in my direction. I could tell from the herd's general position I was in no danger, the truck was right there in any case, but as the full extent of the herd barreled past me at a speed I had never seen bison attain, felt and heard the vibration of their collective mass and force, I was awed—and a little chastened.

And yet it is also the case that bison are more “manageable” than other species. Bison are domesticated and raised as livestock, though domestic stocks often have varying percentages of cattle genetics bred into them. That the animals are manageable does not make their management as a species any easier however. If anything, it complicates their management. Opponents of greater tolerance for bison argue for more management interventions based on a presumption that they are something like cattle and should be handled accordingly—which sometimes they are. Proponents of greater tolerance for bison argue for less management interventions based on the presumption that they are wild animals, but generally pretty tame and nonaggressive and can be handled relatively easily if the need arises. It is counterintuitive how the accessibility of bison, their availability to various forms of capture makes the question of co-existing with them so fraught. Unlike grizzlies and wolves, the proximity of bison for research, management, and observation is rarely a problem. With bison proximity is the problem. As I heard a Park ranger say once, “bison do not blend into the landscape.”

Bison localize attempts to reinscribe social and political boundaries over the ecology of the GYE. There are many reasons for this, but none are more pivotal than the observation of the ranger. The ubiquity of bison and the immediacy of their physical presence drag the politics of

ecological management and species conservation right out into the open. Bison cannot be ignored.

The politics of bison

The politics of bison management did not become a live issue until the middle of the 1990's though its roots, as with grizzly and wolf management, can be traced back to the management shift to natural regulation in the 1960's. Like elk, active interventions on the bison population through culling stopped at the end of that decade. Yet bison exist today in Yellowstone only because of interventions. Outside almost total annihilation, their relationship to colonial expansion is attested to by the fact that a remnant herd, in a newly established national park in far off Wyoming Territory, was nursed back from the brink of extinction by the U.S. Cavalry. After the small population dipped to a reported 23 animals at the turn of the century it was supplemented with animals from captive herds in Texas and South Dakota, and Yellowstone's bison population slowly began to rebound. However, through the first half of the 20th century the population was actively managed, some herds were corralled at the Buffalo Ranch in the Lamar Valley, given supplemental feed, and culled during some years. But once natural regulation was instituted as policy, their active management came to an end and bison were free to distribute and reproduce across the Park more or less as they pleased. From the end of 1960's onward the curve of the bison population showed a steady growth trend.

Toward the close of the 1980's, FWP sent Park management letters outlining the need to discuss the issue of bison migrating to state lands and their status as carriers of brucellosis. Brucellosis is a zoonotic pathogen. This means the condition caused by the infection can cross the species barrier; humans as well as livestock and wild ungulates are subject to infection. Brucellosis causes infected female carriers to abort late-term fetuses, which then sheds the

pathogen into the environment. From 1985 through 1992 Montana had a seasonal hunt of bison, but the public perception of a “shooting gallery” along with pressure from advocacy groups convinced the state legislature to end the hunt. During the winter of 1992 agents from the Park Service and FWP shot several hundred bison as they left the Park. And by 1994 Governor Marc Racicot was threatening to sue the Park Service. Montana’s cattle industry was anxious and hearing rumblings from some state veterinarians around the country that they were considering preventing the importation of Montana cattle because of the purported threat of brucellosis transmission. There were several cattle operations running the Gardiner Basin at this time. Today there are only two and they are quite small. Pressure from the state vets was applied mainly through the federal auspices of APHIS (Animal Plant Health Inspection Service). The agency had informed the state that its brucellosis-free status was in jeopardy. Coinciding with rising tensions over bison management, 1995 saw wolves reintroduced to Yellowstone amid fanfare and controversy. A year later another round wolves were released into the Park.

Early in the winter of 1995 the Park received a round of heavy snows followed by an interim of unusually warm weather. The warm temperatures then gave way to bitter cold and more snow. Bison are renowned for their toughness and ability to withstand extremely harsh weather conditions. In fact, a small herd of bison for much of the Park’s history overwintered in the Pelican Valley just east of Lake Yellowstone. At over 8000 feet and subject to some the harshest winter conditions in North America, Pelican Valley is a very difficult place to live in winter, but bison did it and some bison still do. The area’s geothermal features certainly help make overwintering in such an unforgiving environment possible, but still.

The weather pattern in the winter of 1996 and into early 1997 created conditions that was not sustainable for the population. Bison use their massive heads to move snow from the ground to

get at what forage is available during winter. But because the early heavy snowfall had been subjected to warm air it melted, and when frigid air returned along with more snow a layer of impenetrable ice, one to two feet thick, formed over the ground. There was nothing that much of the population, now around 3,600, could do except migrate north to lower elevation where forage might be available. The bison problem had been brewing for some time, but the freakish weather effects acted as a threshold through which all interested parties crossed. Once crossed, the situation escalated to a higher register.

Bison arrived in large numbers into the Gardiner Basin and were shot or captured and sent to slaughter by the state of Montana, over 1,100. Mostly they were shot. The event sparked outrage locally, regionally, nationally, and internationally (Peacock 1997). In a public meeting with local and state officials a woman threw a bucket of bison blood over several officials. Native Americans from Montana and elsewhere came to harvest what they could of the animals and to pray over them. Others refused, condemning those that did for being in any way complicit in the killing. The state of Montana and Governor Racicot blamed the Park Service for their mismanagement and subjecting Montana's ranching industry to a potential outbreak of brucellosis while nationally and internationally Montana was blamed, and given a "black eye" because of the event.

Just about everything to do with bison management and bison politics currently, exists in the shadow of the 1996/97 winter. The multiple tribal, state and federal agency body, the Interagency Bison Management Plan (IBMP), responsible for the trans-boundary management of bison exists because of the event. Local, regional, and national NGO advocacy for greater bison tolerance on the Montana landscape exists because of the event. The four treaty tribes that now hunt Yellowstone bison during the winter would not likely have that opportunity (they would

argue it is their right) without the event. That people in the Yellowstone region who are not ranchers, have no interest in livestock and have no biological or epidemiological training know what brucellosis is, how it spreads, and what it does is directly related to the winter of 1996/97. Many developments occurred over the next decade. Bison continued to be captured and sent to slaughter and sometimes shot, though the numbers were far less. The sides of the dispute hardened, even as state and federal agencies were forced into more coherent cooperation by a series of court orders. 2008 became the last year in which a large number of bison, well over a thousand, were captured and slaughtered. This garnered negative attention for the state and the Park Service, but nothing like the winter a decade prior. However it did seem to convince the state and federal agencies that such actions were no longer viable.

Then in August 2012 Park County, along with co-plaintiffs the Montana Farm Bureau and the Park County Stockgrowers Association filed suit against FWP, DOL, and the Montana Governor's office. At issue was the state's involvement in two closely linked, but separable actions during the winter of 2010/2011. The first was that the state had allegedly "allowed" bison to freely roam the Gardiner Basin without conducting an adequate review of the potential effects on the "human environment" thus violating citizens' rights to a "clean and healthful" environment which is written into the Montana state constitution. Further, in April 2011 the body responsible for the management of bison, (IBMP), of which DOL and FWP are members, agreed to expand the "tolerance zone" for bison further north in Gardiner Basin. This, it was argued by the plaintiffs, was a post-hoc justification of the mess created during the winter by the lack of active management of bison in the basin. The second action though not explicitly named in the lawsuit was clearly a background condition of it. This was an executive order from the governor's office which blocked the importation of Yellowstone bison into Montana for

slaughter. The order represented a fairly shrewd political maneuver by Governor Schweitzer's office. The ostensible reason for blocking shipments of bison destined for slaughter was a familiar one to anyone with even a cursory knowledge of the politics of Yellowstone bison: brucellosis.

The order claimed that shipping Yellowstone bison, known carriers of brucellosis, posed too much of a risk to the Montana cattle industry. On its face, Schweitzer's action appeared to be a protective measure designed to ensure the safety and integrity of Montana cattle production. Yet the effect of the order within the context of the situation on the ground was quite different. Ranchers in Paradise Valley felt the Governor's action was at best disingenuous. His claim to be protecting Montana cattle from brucellosis was belied by his tacit approval of bison running free on their perceived doorstep. Another issue during the winter of 2011, the Governor's office had been making plans to ship quarantined, brucellosis-free bison to Indian reservations in Montana. Threats of court filings and injunctions had stymied those plans, but in March 2011 Schweitzer ordered bison to be shipped to the Ft. Peck Reservation in eastern Montana. The order was carried out in the middle of the night with no prior warning. Opponents in the state legislature and the cattle industry were infuriated by the purported sleight of hand. The action drew intense state and region wide focus back to bison management issues, and perhaps explains the Montana Farm Bureau's appearance as a plaintiff to the case. When I later met a representative from Ft. Peck at a meeting I asked him how the bison were doing. He told me they were doing well. I asked if people in the area, outside the reservation, were still miffed about it. He smiled and said, "Yeah, but there is nothing they can do about it." That there is nothing they can do about partly explains the anger. Indian reservations are (in limited ways) sovereign territory and thus the power of the state where the reservation is located exists on a scale from restricted to basically

nonexistent. In truth, because of the trust doctrine which guides the federal government's relationship to tribal government and land, reservations are spaces, like national parks, where federal power is dominant. Native Americans are subject to this power, but as in the case of Yellowstone bison they can harness it for their own ends, at times.

The lawsuit appeared to represent two constituencies. The ranching community in Paradise Valley who feared the putative threat of brucellosis transmission to cattle and "competition for grass" posed by bison, and residents in Gardiner Basin who decried the potential costs and hazards of living in close proximity to the animals. But the lawsuit was noteworthy for another reason as well. Historically, as I outlined above, antagonism and dispute over the management of bison occurred between the state of Montana and the Park Service. The state reliably sought to protect ranching interests against the purported threat of bison on land outside the Park, primarily by empowering the Department of Livestock to lead bison management rather than Montana's wildlife agency, FWP. This dynamic conformed quite closely to a longstanding narrative common to the rural West in which the capacity of individual communities and states to manage local resources is continually overrun by federal power in the form of agencies such as the Park Service, the National Forest Service, and the Bureau of Land Management (Kosek 2006; McCarthy 2002; Warren 1997). But in this case a new dynamic was unfolding. The county government, acting ostensibly in the interests of local citizens, was challenging state management of bison or, at any rate, state cooperation with federal agencies in the management of bison. In the patchwork of federal, state, and private lands that comprise the Gardiner Basin, bison were activating the differential and unevenly distributed powers of bounded territorial claims. Local government was now seeking some measure of power over bison, against both the state and federal governments.

The winter of 2010/11 brought record amounts of snow to the Yellowstone region, but thankfully without the freeze-thaw-freeze phenomena of 1996/97. The Park Service had estimated the bison population at close to 4000 during the summer. And by mid-winter with deep snow covering the Park interior, bison from the Park's northern and central ranges began migrating toward lower elevation on the north boundary. The northern boundary, specifically the Gardiner Basin, constitutes an ecological and meteorological gradient. The interior, caldera-formed plateau of Yellowstone averages over 8000 feet elevation and captures significant amounts of moisture moving east over the continent. The Gardiner Basin sits at 5200 feet elevation and lies squarely within the rain shadow of the Gallatin Mountains and the Yellowstone plateau. The basin is significantly drier, warmer, and less vegetated than the Park certainly, or other areas of Montana at similar elevations. As a Park County commissioner opposed to bison in the basin told me during an interview: "Have you spent time out there [in the basin]? It's a desert." In fact, Paradise Valley, separated from Gardiner Basin by the narrow Yankee Jim Canyon through which the Yellowstone flows, is so named not because of its beauty. Its name derives from the relatively warm winter temperatures. Like the Yellowstone river, large masses of air flow downward and north channeling through Gardiner Basin and gaining velocity through Paradise Valley. The winter winds are ferocious but warm, relatively speaking. Their force picks snowfall off from the ground and disperses it into the atmosphere. Unlike the Gallatin Valley only some twenty-odd air miles to the west, Paradise Valley can be snow free for much of the winter which emigrants, homesteaders, and ranchers found advantageous, hence the name.

At the time of Schweitzer's order in the Spring of 2011 the Park Service's bison capture facility at Stephen's Creek, located a few miles west of Gardiner just inside the Park boundary

was already bulging with over 500 bison in the pen. More bison were scattered across the Gardiner Basin taking up residence mostly on private lands along the valley bottom around the Yellowstone River. Park management had intended to ship many of the captured bison to slaughter and send the meat to several Native American tribes, but with the executive order in place the Park Service no longer had a place to ship the animals to. Agents of both FWP and DOL admitted during the trial and in interviews that they had been overwhelmed by the sheer number of bison in the area, but they were quick to assert that expanding the tolerance zone northward in the basin would not and did not contribute to the problems that winter. If anything, they argued, opening up habitat to bison would have helped relieve the situation, then and in the future. Whatever the case, record snowfall and what was, historically speaking, a relatively high population count created a situation in which the density and distribution of bison across Gardiner Basin was unlike anything most area residents had seen before. In short, a kind of socio-natural experiment in human-bison dynamics was underway in the winter of 2011; a situation that would not have been unprecedented in the Park where animals, especially bison, mostly have the right of way. But despite their proximity and despite many people in Gardiner relying on the Park directly or indirectly for income, Gardiner Basin and Yellowstone National Park are quite different places. More than any other species, bison draw out these bounded differences in demonstrable ways.

Right from the beginning in the lawsuit against the state of Montana, the plaintiffs' attorneys sought to establish the normative parameters through which bison should be understood. They argued bison were not wildlife as the term is typically used. Citing "one hundred years" of direct management of the animal, it was more appropriate to think of bison as similar to wild horses, but with capacity to be far more destructive. Bison were something like a wild species capable of

domestication or a domestic species with capacity to become feral and pest-like. Either way bison occupied an ambiguous zone that allied them, perhaps paradoxically, too closely with humans, which itself argued for more intensive management of the animal. It is no small irony that one of the more vocal critics of bison tolerance and a participant in the trial owns a small herd of domestic bison. They are usually visible behind a high fence as one drives north or south on the highway, just south of Yankee Jim Canyon. The attorneys argued that in light of Yellowstone bison history and the species' entanglements with human interventions it was problematic to call them "wildlife." Unlike elk, moose, deer, bighorn sheep and antelope, Yellowstone bison never were free-roaming animals—outside the park; they were always constrained by political boundaries and direct managerial control. Yes, it was freely admitted by the plaintiffs, citizens of Montana are used to coexisting with the seasonal movements and temporary contingencies of passing wildlife, but not so with bison. The animals had not migrated or moved freely since before the establishment of Montana as state. "The natural background condition for landowners is no bison," claimed the lead attorney for the plaintiffs in her opening statement.

This last bit is critical to understanding the conflict over bison management. The plaintiffs' case relied extensively on an implicit valorization of property rights. Bison, it was argued, disrupted and interfered with the exercise of rights and prerogatives associated with owning property. Moreover, it was a further specified type of property owner that was represented at trial, best described to me in an interview with a landowner in the basin thusly: "it's a totally different thing owning a piece of land out here in the valley than owning a piece of sidewalk in [Gardiner]." The more land and property one owned, the greater the potential cost of bison on the landscape. The economic logic is not unfounded. Advocates for greater bison tolerance and

management agency staff are quick to point out that Gardiner residents have lived with bison (and other wildlife) in their yards and on their streets for many years with little complaint. While true enough, this assertion elides the fact that bison rarely occupy any part of town, excepting the high school football field which directly borders the Park, in great numbers or density. The town, though small with less than a thousand residents, is settled in a dense configuration mostly on the east side of the river. As such, Gardiner is not an attractive area for an animal that prefers to aggregate like bison. When seeking winter forage bison tend to cross the Park boundary on the open flats west of the river and the town. As a result, they congregate in larger numbers down valley in the basin. Thus it is most often landowners miles from town that are confronted with large numbers of bison on their property.

But whether residents were pro or anti bison cannot be reduced to a matter of owning acreage in the basin as opposed to a plot in town. I spoke with and interviewed landowners who owned property in the basin that were staunchly in favor of increased tolerance for bison; people that wanted bison on their property in winter and were frustrated when FWP or DOL hazed the bison off their land. Differences over the management of bison and their distribution on the landscape stratified along clear class lines, but this was not necessarily a factor of personal income or wealth. Rather these class differences were activated in a kind of cultural politics that found expression in how people talked about and used their property, as well as the wider landscape. Haggerty and Travis (2006; see also, Robbins 2006) document in the case of elk management that as more and more landownership in this area of Montana is transferred to wealthy absentee owners and to those moving to the area from out of state, a concomitant change in community relations with wildlife and the landscape has occurred. The newly arrived tend to see (abundant) wildlife and a naturalized landscape as an “amenity” of ownership. A classically bourgeois

conception, it values wildlife as aesthetic (natural) elements of modernist consumption and orders the landscape so that its predominant mode of relation to nature—vision—is favored (Berger 1990; Braun 2002; Cosgrove 1984; Williams 1973). This conception also links up with a bourgeois environmentalist politics that tends to look askew at primary production activities on a landscape as privileged as the greater Yellowstone ecosystem (Kosek 2006; White 1995). To be sure, as I argued in previous chapters, Yellowstone itself both constitutes and is a product of this sensibility—nature framed so as to please the eye of the one who views it (the tourist gaze instantiated in an explicitly national, nonlocal space).

The issue, however, becomes acute when a very mobile, but defined public good like wildlife intersects with competing articulations of private rights and property. Management and public access to elk has grown problematic due to changes in land ownership in the Yellowstone region. This is mitigated somewhat by the decline in the elk population over the last twenty years and by a history of landowners (particularly ranchers) and hunters working with MFP to manage problems associated with elk. Indeed, this history explains, at least in part, the tolerance shown to elk, despite the relatively widespread knowledge that elk are no less a reservoir of potential brucellosis transmission than bison. Whereas elk have long been seen as a Montana animal, despite the fact that their historical abundance (and even overabundance) in the Gardiner Basin/Paradise Valley areas is predicated on their seasonal dispersal from the northern range of Yellowstone, bison are not. One explanation for this is that Montanans hunt elk. They have definite material relations with the animal. The history of state revenue generated by elk hunting also helps. Bison, however, are expressly associated with Yellowstone. And for some residents this calls other associations to mind.

One witness for the plaintiffs brought this point home while highlighting how tangled relations are between the Park and the local community. The witness, a resident of Gardiner Basin, did not own a large property, had no livestock, and worked for the Park Service as a dispatcher. He was however, based on his testimony and the vehemence in his voice, very opposed to having bison on his property or anywhere in the basin. When asked by a defense attorney why he had not availed himself of the financial aid offered by a NGO to help build a fence around his property he argued that the sanctity of private property in “America” was sacrosanct. “Yellowstone bison” had no right to his property and he had no interest in “getting into bed with environmental groups [which could allow] other interests to get their hooks into my property.” For him, bison belonged to a nationalized space of nature, constituted by federal power, and were associated with projects that utilized various forms of federal power to expand a contested “public” sphere at the expense of the private “America.”

The second argument made by the plaintiffs, ostensibly on behalf of all county residents, claimed that bison posed an unnecessary risk to human health and safety. Examples were given of children unable to walk home because of loitering bison, elderly women unable to get from their cars to their front doors, family pets menaced by bison, and county deputies spending inordinate amounts of time hazing bison away from roadways. A particular sticking point had been the suggested use of portable corrals or enclosures for children while they waited for the school bus. Picturing the image is a little humorous, but some residents were not amused at the idea of school children being temporarily enclosed so bison could move freely.

Defense attorneys and witnesses were quick to counter that bison represented no special threat. Bison are wildlife, they argued, and so long as one lived in or near Gardiner, one could reasonably be expected to deal with all manner of wildlife from time to time. However obvious

and noncontroversial this claim may seem to be it is by no means given in communities that border the Park. Frankly, there is historical reason for those who claim that bison are not “wildlife” in the way grizzlies, wolves, deer, or even elk are. Until the adoption of natural regulation bison were managed intensively by the Park Service. Many longtime residents of Gardiner have clear memories of this. As one elderly man speaking to me on the current controversy of bison management said, “I helped...feed 85 head [of bison] up at the Buffalo Ranch in the early 50’s and now you can’t even count them all.” As longtime residents are well aware, since the mid 1990’s when the controversy over bison management erupted in full force, the state of Montana had continually hazed bison back to the Park boundary, shot them, sent them to slaughter, and generally managed the situation intensively. The claim that bison are wildlife, no more and no less, is in some people’s minds belied by the memory of state and federal management. It is more precise to say that the state’s (and others’) argument that Yellowstone bison are wildlife like any other in the region is a normative claim that proposes a future social relation to bison rather than describing the present situation or confirming a known historical one. This debate over the nature and status of bison, as well as their proximity to residents, reveals how bison localize attempts to manage and control a whole host of boundaries: federal and state, state and local, urban and agrarian, resident and migrant, wild and domestic, and nature and culture. Bison reveal the fluidity and basic indeterminacy of these boundaries, how they are imagined, and spotlight the sites where they come up for dispute.

This argument that bison were just wildlife is one indication of how easily claims about nature, ecology, and wildlife in conservation contexts slip into a kind of discourse that too readily homogenizes highly specific modes of spatial and temporal relations at the boundaries of society and nature (Fairhead and Leach 1996; Forsyth 2003; Goldman 2008; Hughes 2005; West

2006). In particular, Hughes (2006), Neumann (1997), and Cronon (1995) have shown how the “wilderness” of conservation areas is actively produced in practice yet all the while conceived as an artifact of natural history. The dissonance this double movement creates—practices which shape and order a naturalized landscape coupled to a conception of nature that effaces those practices—is not lost on some people in the community even if it is not articulated as such.

Speaking of the claim that bison are wildlife, a rancher from Paradise Valley said,

They claim these are wild animals. No—they are coddled by tourists and rangers. They have the attitude that they have the right of way.

In other words, the specific social conditions of the Park define the animal. Insofar as those social conditions are operative, management agencies should be duty-bound to manage for those conditions—and for that animal. A landowner in Gardiner Basin who has a small number of livestock argued

I just spent six days up in the Lamar [Valley] and it’s eaten down to the dirt. You can’t put 1500-2000 [grazing animals] in a river valley.

Of course, Yellowstone is managed ecologically which is to say that the range management principles the landowner invoked are not applied in the Park. I listened to several opponents of greater tolerance for bison in Gardiner Basin make this or a similar argument; there are too many bison, the Park is overgrazed and the Park Service is abdicating its management responsibility in allowing it. What the argument overlooks, or rejects outright depending upon who is making it, is that the Park is conceived as a (experimentally) natural space. Ecological management in Yellowstone is mostly a negative proposition. It means not interfering with the unfolding of natural processes except to observe and study it. Ideally, significant management interventions, as in the case of wolf reintroduction, serve only to reinforce or reanimate ecological relations and functions. In fact, in talking with Park Service managers one gets the impression that they would prefer to do still less management, not more. But doing less direct management of bison within

the Park means having to do more along its boundaries; that is the tension managers are forced to reckon with.

Listening to the leader of the Park's bison management team talk about bison, one word comes up again and again: "pioneer." The term refers to the animal's capacity to probe, discover, remember and inhabit new areas. As a former Park biologist said to me:

They are fundamentally a nomadic species with mountain habitat usage superimposed on that...the drive to aggregate is [paramount]; they will move to maintain those social bonds if they can.

Bison are not predictably migratory. Rather they readily push into and explore new areas providing the plant phenology is suitable, will stay so long as forage is adequate, and, most importantly, remember and reuse the area again. Outside of the breeding season in midsummer, mature bulls prefer solitude or the company of a few other bulls, increasing their capacity to pioneer. Lone bulls are often seen in unexpected places. A brief furor erupted among those interested in bison management in late spring 2013 when a bull, undetected, pushed its way north of the expanded tolerance zone out of Gardiner Basin and into Paradise Valley, around the Dome Mountain area. Once discovered, the bull was shot by state agents. This capacity to pioneer is not something which Park managers want to control or inhibit inasmuch as it is taken to be a defining quality of bison-ness. Within the Park the novelty and unpredictability of pioneering is valued as prototypically natural bison behavior, but outside it may be considered a nuisance or worse. Linked to a historically large population count, the drive to aggregate, and familiarity with humanized landscapes, this capacity becomes problematic beyond Park boundaries where social space has not been smoothed—naturalized—for large-scale bison movement by a collective historical memory of institutional management and social relations—as with elk.

When I interviewed the retired Park biologist that studied bison for decades, she repeatedly hinted at the fact—while refusing to address the details of the management situation and the bureaucratic politics involved—that she had advocated for more intensive management of bison in the years leading up to the infamous winter of 1996/97.

Two years and they [bison] knew all the travel routes, right around Mt. Everts. They knew where they were going. And that is Park-wide now of course. Nor was anybody willing and able to discuss the [impact of plowed winter] roads and quite honestly even if management had been willing to sit down and talk, I thought I had a valid case. We might have lost in court; simply because a court tends to like a nice, neat $1+1=2$. And with a lot of ecological problems and this is no exception, hindsight helps your understanding, versus even at the time—let alone foresight. So the winter of 96/97 was the last time we had any possibility of reversing this and that would have required something I don't think we could have sold publicly—that means field killing a lot of bison. You know as the groups move you remove the knowledge. You cut it back [population] to where you don't have the pressure.

Constrained by a definition of the national park that couples historic “preservation” to ecological management—a form of ecogovernmentality in tension with biopolitical management goals—Park managers are forced to relinquish technocratic capacity and the managerial power that Yellowstone's federalized boundaries confer; as an expanding bison population continues to probe the landscape beyond the Park's borders during winter months.

Advocates for greater bison tolerance are also confounded by the dissonance that defines bison differentially depending upon the boundary that encloses them. One advocate involved in a range of wildlife issues asked me if I had heard about a bill that failed in the previous state legislative session.

Did you hear about that bill to turn [bison] into domestic livestock? You know, now I think maybe we shouldn't have opposed that bill because if they are domestic livestock ranchers would have to fence them out. And they'd be welcome on public land! Isn't that crazy to think about?

What these points highlight is there is no *a priori* definition or principle that grounds the parameters of bison management in bison biology or ecology alone. “Social” forces come to bear

upon agency management of bison capacities every step of the way. And any significant decision or action *vis-a-vis* bison carries the potential of configuring novel and different sets of relations which would then need to be addressed by management agencies. So, for example, when I am told that “they should just put a fence up around the park and be done with it” or that the Park should go back to “culling bison like they used to” one can only echo the retired biologist who believed neither the Park Service nor the (national) public would entertain “field killing bison.” If the Park Service was inclined to do either, the national and international attention would activate a host of actors and institutions all seeking to direct the politics of bison and the parameters of their management. New boundaries would take shape, others would be erased, and still others would harden.

Ultimately, the court ruled against Park County in their lawsuit against the state of Montana. In his ruling, the judge indicated that the basis for his decision fell to whether bison were legitimately wildlife or not. He was persuaded by defense attorney arguments and defense testimony that the situation in the winter of 2011 was a result of natural events, not mismanagement or abdication of management responsibilities. Interestingly, the judge’s ruling reinforced the boundary between nature and society by placing bison to the side of nature while placing their impacts, conditioned by extreme winter conditions of course, to the side of society. Society, he indicated, cannot reasonably expect the random events and impacts of nature to be fully controlled. Understandably, he did not rule that bison are hybrids which would be more accurate, but make rendering a verdict far more difficult (Haraway 1991; Latour 1993; Raffles 2002; Whatmore 2002). The situation with bison and Gardiner Basin continues to unfold. The Park Service has in the past year showed signs of taking greater control of the population and the management situation while bison are within the Park’s boundaries and under the Park Service’s

jurisdiction. There is talk of transferring brucellosis-free, “surplus” bison to other federal lands and reservations around the country, starting seed populations elsewhere. This pivot, once again, demonstrates the significance and power of boundaries. Recently, Park County commissioners sent a letter to the IBMP requesting that Park County become an active and permanent member of that management body. It will likely be a difficult boundary to cross.

VI. “Let us be part of it again”

People opposed to greater tolerance for bison on Montana land question the management practices of the Park Service and other agencies, but they rarely questioned the presuppositions that guide those practices. Native Americans on the other hand, have consistently taken the Park to task on the conditions created by its adoption of an ecological management model, while more or less being allies in the push for greater tolerance of bison beyond the boundaries of the Park.

Because of a Clinton administration push for federal agencies to consult with tribal governments on a more equitable basis, staff from Yellowstone initiated a series of meetings with tribes that had historical ties to Yellowstone beginning in the middle of the 1990's. The meetings which began somewhat informally, evolved into yearly planned events which lasted until 2008. Over the course of twelve years Park Service managers repeatedly had their assumptions about the nature of Yellowstone bison and the Park itself called into question. The meetings typically covered a range of topics, but the subject of bison management dominated the discussion for two reasons. The first was because the meetings began in the wake of the 1996/97 winter and tribal governments were concerned for the future of bison. Second, many American Indian tribes have a long history of intensive material and symbolic ties to bison. The memory of these ties remains fresh and vivid despite being attenuated or severed for over one hundred years by the eradication of Plains bison herds and the removal of Indian peoples to reservations. As one Assiniboine man from the Ft. Belknap reservation in eastern Montana put it at a meeting in 1999, “Lately I had a dream in which some bison came to me and said, ‘we were your whole economy once; let us be a part of it again.’” But, lest one fall too easily into romantic caricature,

the context of the man's statement is worth noting (Krech 1999; Harkin and Lewis 2007). Prior to speaking of his dream, he had been discussing the exigencies of rural political economy at Ft. Belknap. He explained that, like much of rural Montana, some on the reservation were opposed to bison because of fears of brucellosis transmission to cattle and because "bison take up room that could be used by livestock."

Today, four "treaty tribes" exercise their right to hunt Yellowstone bison just outside the boundaries of the Park. The Shoshone/Bannock, the Confederated Tribes of the Salish and Kootenai (CTSK), the Nez Perce, and the Umatilla are often referred to as the treaty tribes because their original treaty agreements with the federal government gives them standing to hunt bison, but only within the last eight years have they been able to return to the Yellowstone region and do so legally. The return of these tribes, and their re-instantiation of material relations with bison, brings the colonial history of Yellowstone and the American West into sharp focus. But it is not just the treaty tribes and their seasonal hunts which shine a light on the coloniality of Yellowstone. To varying degrees, all Native American tribes who claim a historical relationship with the lands that became the world's first national park cast a shadow over present-day Yellowstone. From the twelve years of annual meetings between Yellowstone staff and tribal representatives, the Park established that twenty-six tribes had strong evidence of historical relationships with Yellowstone land. These tribes are now officially "affiliated" with Yellowstone National Park. That shadow grows longer and deeper still in the confrontation between the presuppositions that guide the preservation and management of Yellowstone and the ways in which Native American representatives call those presuppositions into question. This chapter explores that confrontation as well as the conditions under which the treaty tribes are reestablishing relations with bison in the Yellowstone region.

Sundberg's (2013) critique of post-humanist geography touched upon in chapter four raises an important point. If geographers want to think beyond the "universality" of the enlightenment tradition they might consider looking to peoples with traditions that are not wholly defined by it. Where Sundberg's criticism is most salient is the potential Indigenous traditions offer for exploring how different sets of human/nonhuman relations are structured and organized. Significantly, she references Latour's elucidation of the "modern constitution" through which vast conceptual terrain has been purified and bounded according to a fundamentally dualist logic—contra Indigenous knowledge traditions—to bolster her argument (1993). The power of the constitution derives not from what it denies, still less from what it destroys, but from what it is able to (re)direct, (re)arrange, (re)organize, and (re)make. It is less a means for understanding or knowing than a means for creating effects or as Nietzsche says, "taking possession of things." This distinction is important. To speak of the essential equivalence of Indigenous epistemologies and Modern epistemology may be politically necessary, but the radical difference of just what "epistemology" means for Modernity needs to be kept in mind (Goldman 2003; Nadasdy 2011; Watson-Verran and Turnbull 1995). For Latour anthropological symmetry is axiomatic: nothing inherent (ontological) distinguishes the practices of modernity from those it categorizes as primitive or traditional except the quantity and "length" of networked relations it establishes and makes proliferate—a universal claim, albeit one that claims to attend to the specificities of difference. This is certainly a debatable point and one that has been argued among some of the leading lights of science studies (Callon 1999b; see also, Descola 2014). However, equality of representations is not the same thing as equivalence of representations and confusing the two can violate valuable differences.

In Sundberg's account she seems to tack between arguing for greater inclusion of Indigenous "theorizing," "scholarship," and "authors" in post-humanist geography and arguing for the necessity of recognizing the validity of those epistemic models for post-humanist thinking. Of course these are not mutually exclusive, but they are different arguments and the latter point is where the problem grows most acute. What most differentiates Indigenous knowledge from the dominant forms is liable to be that which is immediately constrained, suppressed, or translated away in order to render it legible and operative to the juridical, political, or economic powers to which it necessarily speaks (Argawal 1995; Bryan 2009; Nadasdy 2003). And as matter of political practice it is usually the case that whatever *it* is that distinguishes Indigenous knowledge claims must be managed carefully enough to retains its coherence as "Indigenous" while at the same time being reconfigured to operate among "networks" (the juridical being a prime example) that only recognize specifically articulated claims. Moreover, for scholars it is not simply a question of engaging with Indigenous scholars or knowledge on an equal footing—as if the footing were ever equal—which itself runs the risk of fetishizing epistemological differences and re-inscribing still more pernicious boundaries in a different register.¹⁴ The question is how does one "translate" such epistemic difference into scholarly practice, where does one put it into "circulation," for what purposes, and why?

In the politics that emerges around natural resource management, usage and control Indigenous peoples do assert trenchant counter-perspectives to science-based conservation practice and discourse (Fienup-Riordan 2001; Nadasday 2003, 2010). Nadasday has made this particularly explicit, highlighting moments where the Kluane people contest the metaphysics that

¹⁴ See the Sahlins/Obeyesekere debate (Obeyesekere 1997; Sahlins 1987, 1996) for a clear demonstration of the political and epistemological difficulties alluded to here.

presuppose dominant managerial conceptions of human/wildlife relations. The force of these counter-perspectives derives from the unwillingness to bracket off and separate the great realms of politics, science, law and religion as Latour claims the moderns did.

This dynamic transpired repeatedly in the series of meetings between the Yellowstone staff and the representatives of various tribes in their discussions of bison. In reading through the transcripts of the meetings one begins to feel a real measure of sympathy for the Park Service staff in their bewildered attempts to rationalize the arguments being made. At one moment tribal representatives would insist on the absolute “cultural” importance of bison to tribal peoples, but once Park Service staff would seem to comprehend the significance of the claim and begin to incorporate this “cultural” significance into their own speech the subject would shift dramatically to the “poor state of health” and “lack of access to quality food” for people on reservations. Next the subject of “treaty rights” and “sovereignty” would be broached along with lectures on the precise legal meaning of “government to government consultations.” But before Park staff could get their footing on any of those topics, the discussion would move into probing questions on the current state of scientific knowledge on bison and brucellosis which would be followed by a discussion of political economic power of Montana cattle interests, before coming back around to the “cultural” and “spiritual” significance of bison to tribal peoples.

These swerves from the typically religious to the typically social, from the typically political to the typically scientific and so on constituted a refusal to accept the presuppositions that rationalize these categories as clearly demarcated domains of concern (Asad 1993). They were in part demonstrations of the centrality bison had and still have to these communities; demonstrations which made it possible to imagine how an animal could be the whole of a community’s “economy.” What is more, in crossing these unspoken boundaries tribal

representatives forced the metaphysics that underwrite the privileged nature of Yellowstone out into the open.

This was crystalized in a brief exchange between a Cheyenne River Sioux representative and two Park managers. It is illustrative insofar as the regulations that guide human/wildlife interactions in Yellowstone most clearly express the kind of nature a national park such as Yellowstone is meant to preserve and the social space that is created thereby. After noting that the “mentality” that led to the massacre at Wounded Knee—evidenced by the then fairly recent slaughter of bison on the park boundaries—was still “alive and well,” the man went onto say, “what we need is another natural predator to hunt bison in the Park.” A Park manager responded by reminding the room of Yellowstone’s mandate—to remain pristine, untrammled and natural. He noted that some parks in Alaska allow hunting by Indigenous peoples but those represented special cases that do not apply to Yellowstone. Another manager chimed in by pointing out that Theodore Roosevelt National Park, for example, is managed more like a ranch where the bison are fenced and tested for disease (brucellosis) every other year, but “Yellowstone is about maintaining those ecosystem processes which is larger than just bison.” The Cheyenne River man said he respected their point of view:

But I work with bison and ecosystems and there are many possibilities of managing ecosystems. These bison are not a free-ranging herd. There are too many fences and too much private property, maybe not in the Park, to make that claim.

There are many possibilities for managing ecosystems, but Yellowstone in particular and the national park model generally represents a particularly dominant form for managing ecosystems (Boyce and Kieter 1991; Neumann 1997, 2004). The logic of what Neumann calls “fortress conservation” where the boundaries of the conservation area are firm and precise and human activity is limited to tourism and scientific research perforce creates tension, even contradiction,

along those boundaries. Restrictions on human activity in the privileged natural space of a national park has, many conservationists would argue, enabled the recovery and restoration of species such as bison, grizzlies and wolves. This hardly seems deniable. But as ecological conceptions of managing interrelationships of flora and fauna on a wider landscape have taken hold over the last forty years in places like Yellowstone, the boundaries which protect increasingly have become a hindrance to ecosystem management and a means for a variety of often opposing groups to contest management actions.

When the Cheyenne River representative suggested hunting bison in the park as means for dealing with the intractability of trans-boundary management issues in 1999 it was not the first time a Native American broached the issue, nor the last. I witnessed an acute rehashing of this issue under different circumstances and with different actors at a summer 2012 meeting of the agencies responsible for managing bison across political boundaries, the IBMP.¹⁵ A Park Service representative had just finished a presentation on the current population of Yellowstone bison (estimated then at 4200) and the possibilities and contingencies of managing that number during the upcoming winter when the potential for bison to leave the park increases dramatically. He closed his presentation by noting that the IBMP operations plan needed to be updated and signed by all parties because the current plan did not “remotely reflect what we are doing the field.” In response to a question from the Montana state veterinarian, the Nez Perce and Salish/Kootenai representatives spoke about factors that limited tribal hunters taking of bison during the previous two years (limited numbers of bulls available, pregnant females, tribal referendum that prevented hunting after a February 1, poor winter condition of the animals).

¹⁵ Those agencies include the Park Service, the USDA-National Forest Service, the USDA-Animal and Plant Health Inspection Service (APHIS), the Montana Department of Livestock, Montana Fish, Wildlife and Parks, the Inter Tribal Buffalo Council, the Confederated Salish and Kootenai Tribes, and the Nez Perce Tribe.

Following their reply the state vet said that he “wanted to continue to stir the pot a little.” This was a magnificent understatement as he went on to suggest the possibility of hunting within the Park as a method for getting the bison population closer to the 3000 number agreed upon in the original, year 2000 IBMP management document. Based upon agency compromise, the target number of 3000 takes into account genetic viability of the population as well as the management exigencies of ensuring spatio-temporal separation of bison and cattle. While the 3000 figure is part of the agreement, the state vet referenced it in no small part because the lower the population total, the less bison will migrate out of the Park. Park Service representatives were decidedly nonplussed by the suggestion (as were several of the bison and environmentalist advocates in the room). One noted that such a move would literally take an act of congress while the other mused—probably rightly—that a “decadal legal fight” would ensue, to say nothing of the international opposition it would generate.

The opening provided by the state vet was, however, all the tribal representatives needed. The Nez Perce representative reminded everyone of the Nez Perce people’s historic use of “Park” animals and that his people would love to get into the Park to hunt. Noting that it might not “happen in our lifetime,” a Salish/Kootenai biologist wanted to at least get the discussion started. The Blackfeet representative of the ITBC joked in all seriousness that this was “one of the few times I agree with [the Montana state vet].” He then reiterated the “restrictions” Indians self-impose on bison hunting which showed that “we have respect for the animals.” He also spoke of his reservations about the tribal hunt as it was currently constituted where, he claimed, it was a kind of “animal show” in which Indians arrived on a small patch of ground outside the Park to “just shoot them.” The Salish/Kootenai biologist noted that “we have to have access to where the animals are at” and while some people might find hunting offensive, many people find the ship

and slaughter program which IBMP partners had been utilizing for years offensive as well. He went on to say that it was hypocritical that Park Service staff could both shoot and slaughter bison but Indigenous peoples could not.

Hinting at how powerful Yellowstone's constituency could be, the Park Service representative responded that the Park has over three million visitors a year, many of whom come to see bison. Hunting bison would likely guarantee that bison would no longer be visible along roadways. He then warned everyone to not underestimate the difficulties of instituting a hunt in the Park. Moreover, he added, large-scale hunting could jeopardize the IMBP mandate to reduce disease (brucellosis). The state veterinarian claimed to appreciate the difficulties but noted that in the fall, when most big game hunting occurs, there were fewer bison available for hunting outside the Park. The Nez Perce representative, touching on a fundamental point, said he respected the "aesthetic quality" of Yellowstone, but "nutrition" was a bigger concern; tribal people "don't have the [physiological] mechanisms for eating [modern, industrial] food." The Park representative reiterated that what the group was discussing would "entail changing the enabling legislation of the world's first national park." Tribal representatives had little sympathy for that point, noting that the United States had repeatedly broken treaty agreements, with the Salish/Kootenai biologist saying, fully cognizant of the irony, "change happens." At this point the leader of the Park's bison management program requested a microphone. He noted, also ironically, that this discussion was a positive if it meant this was the first step toward "abandoning the goal of disease reduction [brucellosis in bison herds]." The state vet, aware the last comment had been directed at him, responded that population management of the herd took precedence over disease management; less bison would mean less conflict on the borders of the Park.

In the end little came of the discussion, despite the heat it generated. It was agreed that the committee would table further discussion on the subject until the next meeting, but when the next meeting occurred in the fall there was no talk of hunting in the Park. The discussion is illuminating nevertheless. It reveals just how sacrosanct the nature of Yellowstone is with its highly particular human/animal relations. Just as revealing were the responses of bison advocates and environmentalist NGO representatives to the discussion. During the break that followed that contentious discussion several of them expressed mortification at the prospect of hunting in the Yellowstone. This was due, at least in part, to the fact that some of them had been diligently working for years to create both space and tolerance for bison on the Montana landscape. And now, just when they were beginning to see slightest fruit of their labors, with bison being allowed a measure of tolerance on land outside the Park, to hear of the possibility, however remote, of hunting in Yellowstone as method to control the population—it was more than they could stand. I talked to very few bison advocates that opposed tribal hunting of bison outside the Park. This, so it seemed to me, represented equal parts sympathy to the claims of the tribes and recognition that tribal hunting was a politically useful means of managing bison on the wider landscape. Indeed, much like the case of wolves, if hunting of bison could be further extended to all Montana hunters so much the better in the politics of creating more space for bison on the landscape. But in Yellowstone? The answer seemed to be no way.

During public comments bison advocates and NGO representatives warned tribes of becoming pawns in the Department of Livestock's efforts to protect cattle interests. The Lacey Act was invoked, even quoted. Yellowstone's early history of "poaching" was rehashed, though without seeming awareness of the historical conditions under which said poaching had occurred (Nabokov and Loendorff 2003; Spence 1999; Warren 1997). Tribes, it was duly noted, may have

treaty rights, but discussion of hunting in the Park would be a “destructive debate.” And, in any case, hunting in the park was a “solution to a concocted problem;” the bison population was expanding in a “confined space.” The answer was to expand available habitat in areas around the Park.

Is a Yellowstone a confined space? It is certainly a bounded space. Its bounded-ness, as I have argued, is generative. It is generative of bison and of conflicts over bison. It protects bison, enabling them to multiply and occupy a range of ecological gradients, while also exposing them, under certain conditions, to a variety of harms—from repeated hazing and harassment to confinement and slaughter. Simple though it sounds, the solution of expanding available habitat for bison is far from it. Out beyond the boundaries of Yellowstone is not simply more Yellowstone. A map may show extensive public lands bordering the Park. A drive on the roads that lead to the Park may reveal a rural, sparsely populated landscape that is home to a wide variety of animal species traversing the ridges and river valleys irrespective of social and political boundaries. But it is a mistake to assume that the world inside the Park is isomorphic with the world outside of it. Yellowstone’s bison, travelling right down the roadways, habituated to human environments, unafraid of human contrivances, more than willing to eat the feed of livestock and appropriate the spaces humans unquestioningly define as *mine*, demonstrate this point like no other animal. This is not to say that there is nowhere for bison to go, that bison simply do not fit beyond Park boundaries, but the solution is by no means obvious either.

A narrow strip of land

Nothing illustrates the problem of bison and space in Gardiner Basin better than the tribal hunt. At present there are four tribal entities that have the right to hunt Yellowstone bison: the

Confederated Salish/Kootenai, the Nez Perce, the Shoshone/Bannock, and the Umatilla. Though the tribes are sovereign, and thus decide their own hunting season and provide their hunters with permits, in practice they work closely with FWP and other IBMP partners to coordinate the hunt.¹⁶ Hunting bison within Park boundaries is obviously illegal so tribal hunters must wait for bison to exit the Park. In the Gardiner area there are only two genuinely viable areas for hunting bison. The Eagle Creek area lies on the east side of the Yellowstone River above the town of Gardiner to the southeast. The area is steep with homes scattered along the narrow road that winds its way up to the old mining camp of Jardine. Because of the topography bison do not usually congregate in large numbers in the area. The topography also makes the logistics of recovering a bison more difficult.

The second, and by far the more heavily used, is the Beattie Gulch area. Beattie Gulch lies on the west side of the Yellowstone River on relatively flat and open ground, just off the old Yellowstone Trail road. Logistically, Beattie Gulch offers easy access for hunting and recovery of kills. However, the geography of Beattie Gulch creates its own difficulties for tribal hunters. It is a narrow strip of National Forest land less than a mile wide. It is bordered immediately to the north by Reese Creek and the Park boundary, mountainous, forested terrain to the west, the Yellowstone River to the east, and to the south and east are residences. The area is a corridor for wildlife, Beattie Gulch trail has use restrictions during certain times of the year to reduce potential human/grizzly conflicts, but it is neither a remote nor a secluded place to hunt. Far from it actually, the area is well within eye and earshot of homes. For that matter, hunting at Beattie

¹⁶ The Shoshone/Bannock are something of an exception to this. Though they do coordinate with FWP, they do not have a hunt season and exercise their right to hunt bison throughout the year. This, however, is mitigated by the fact that relatively few Shoshone/Bannock actually partake in the hunt and they keep a very low profile when they do. For example, in 2012 they reported taking only six bison, and all of those were taken in the West Yellowstone area.

Gulch is observable to people as they drive north or south on Highway 89 on the east side of the river. The Nez Perce and the Umatilla predominantly use the Beattie Gulch area. As noted above, the Shoshone/Bannock have very few hunters who make the trek from Ft. Hall, Idaho to hunt bison and those that do usually hunt outside of West Yellowstone, Montana. The Salish/Kootenai hunt predominantly on the west side also because a tribal referendum dictates bison hunting occur from mid-September through January only, in order to avoid killing cows carrying late-term fetuses. In most years very few bison will have migrated into Gardiner Basin within that timeframe. The number of Nez Perce and Umatilla hunters has expanded significantly in the past three years and so has the attention from locals who live near the hunting zone at Beattie Gulch.

The increase in tribal hunting of bison is linked to broader interagency efforts to manage “social tolerance” of bison on the wider landscape. As the bison population continues to grow (estimated by the Park at 4600 during the summer of 2013) IBMP partners, particularly the Park Service, FWP, and DOL, face increasing pressure to effectively manage the effects of living with bison. Tribal hunting is seen as one way of dealing with bison population issues, primarily because it has the potential to transfer the lethality of human/bison relations away from the management agencies and onto the tribes. At an August 2013 Missoula, Montana meeting convened in advance of the upcoming hunting season, Park Service, FWP, DOL, Forest Service, and Nez Perce, Shoshone/Bannock, Umatilla, and Salish/Kootenai representatives tried to hash out how best to coordinate biological and social management objectives with the “cultural” objectives of tribal hunting. The Park Service described their goal as a calibrated overall reduction in the bison population that took into account specific population demographics of Yellowstone bison. It would through hunting, selective culling, and utilizing the ship and slaughter program get the population down to 3300 within five years—that number being closer

to the 2000 IBMP agreement to maintain the population at 3000 animals. An FWP representative, noting past difficulties in meeting population goals wondered whether a goal of 800 animals removed per year was not more realistic than the 600 per year proposed by the Park Service. The agency concern, expressed succinctly by the Park representative, was, given the population trend and the right meteorological conditions

There will come a time when there is too many [bison migrating out of the park] and we will have to capture and hold them...and if any get into Paradise Valley and get in cattle operations it will not be good for bison.

Tribal representatives balked at the direction the discussion was taking. The Shoshone/Bannock representative saw a “big pulse” coming out of the Park as a way to get more bison on the landscape “to see how the expanded tolerance zone works.” A point the Nez Perce biologist echoed. The primary Nez Perce representative pointedly mentioned

The year 1600 [bison] was slaughtered you couldn't live here people were so mad, but you guys are saying now we still need to kill them?¹⁷

The Umatilla biologist noted the challenges of having tribal hunters meet population goals because of tribal traditions associated with hunting. The Nez Perce representative followed up saying that, “putting scientific goals to cultural and traditional actions” could not provide a short term solution to longer term problem.

We think the government studies the animals to death. We have to know this and that and it winds up diminishing them [bison]. It's as simple we talk about stalking the animal and the state talks about hazing and they are different things. It's a slow process to get to certain demographic goals and I understand how much work these guys have to do to get this info, but...

What the representative left unsaid, but seemed to imply, was an even larger question than whether tribal hunting could provide a means for meeting population goals. To what end does the type of relation with bison as constituted by the Park lead? What exactly is the goal of all the

¹⁷It was not clear to which year he was referring, but it was likely 2008; the last year in which a significant number of bison were shipped to slaughter.

scientific data produced on Yellowstone bison? To what or where does this kind of knowledge lead? Here one actually sees the outlines of two epistemic orders confronting each other—though, again, by no means on equal footing. They are neither irreducible nor incommensurable, otherwise dialogue would be impossible, but they do reflect how a *telos* animates every production of knowledge and gives shape to material relations in definite ways. To answer the question left un-posed by the Nez Perce representative, the mounds of data, Park management practices, even the Park itself serves a classically biopolitical function (Foucault 1973, 2007): to oversee and coordinate the continuing reproduction of the bison population. A kind or type of relation to bison is not necessarily presupposed by the biopolitical goal, though its correlation with tourism—observing, watching, looking—is obvious. While no specific relation is determined by biopolitical management it does preclude, negate, and limit potential relations—hunting being the most prominent. From the tribal representatives’ perspectives, this arrangement appears to put the cart before the horse. The type or kind of relation with the animal ought to specify the parameters of what one seeks to know about it. The goals which animate population biology and tribal traditions may be very different, but the practices of each can be fitted together and made to hold—at least for the time being. However there is friction in doing so and depending on the shifting of power differentials, something will always be lost in the translations needed to make them fit.

Despite their increasing reliance on the tribal hunt as a solvent for the sticky population problem, agency staff members are not misinformed about the difficulties of having a tribal hunt that conforms to biological and population goals. Two months before the tribal hunt meeting I interviewed the head FWP game warden in the Yellowstone region. As one of the key actors in

coordinating and regulating the hunt on the ground, he expressed doubt that the hunt as presently constituted could achieve the goals managers would like.

You know in order to try and stop the growth and try and flatten this trajectory, [for] this population we need to remove probably 600 this year. The target was 425 or 450 last year. That's where I go back to the aboriginal hunt cannot be the only tool that that happens with because on this current footprint we harvested somewhere in the neighborhood of 250 last year [2012]... That overall 250, especially that harvest area in the Greater Beattie area down there, is probably very close to pushing the edge of what we can pull off; 600 probably not.

Hence the Park Service, in a consensus agreement with all IBMP partners, will resort to capturing bison at the Stephens Creek facility and selectively shipping animals to slaughter; a method viewed with only slightly more favorability among the managing agencies than the DOL shooting the bison as they leave the Park. The tribes care for it not at all, though the CSKT and the Nez Perce, because they are IBMP partners, have grudgingly agreed to it. On that point the head game warden said:

What I'm saying is that with the CSKT and the Nez Perce tribe, it's becoming, it's a little tougher to have that [negative] perspective [on ship and slaughter] when you are part of the body that makes those decisions. It's like you can't get all the benefits from being on the IBMP and not stand with the decisions of the IBMP that are collaboratively made at that level. Because you look at everybody that's on the IBMP and no one that's on the IBMP is getting everything they want.

In speaking with tribal representatives at different meetings the general consensus seemed to be that ship and slaughter—even simply capturing and holding bison at Stephens Creek—interfered with tribal treaty rights to hunt the bison. During the meeting the CSKT lawyer put it thusly:

The reason tribes got involved in in the IBMP is because of ship and slaughter. We can't stand it. We don't like the bad optics of shipping off 1500 [bison], like 2008. The rub is a lot of tribal people want to go down there and provide for themselves. That can be a healing thing and a learning thing versus going down and collecting the meat wherever they are giving it away. There is some history there.

The lead Nez Perce biologist told me during a break which he then echoed later in the meeting

Look, we're learning right now and so are the bison in a way. They've been hazed and harassed for so long [when leaving the park]. We haven't seen yet what several hundred bison on the landscape look like or what they will do. We much prefer using hunting to ship and slaughter.

Negotiations became tenser when discussion turned to the problems associated hunting in such a small and visible area. I had already spoken with several locals in the Gardiner area who voiced their displeasure with how the 2012/13 season had been managed; the number of gut piles and carcasses left on the ground had been the main issue. When I asked about the complaints I heard from some people to the head game warden he said:

Yeah, absolutely. You don't get to 8000 pounds [of gut piles], and that's with the rumen dumped out...I mean you had in excess of 100 bison harvested right there. One woman who owns land and rental cabins very near Beattie Gulch told me: "[the hunt]

was a mess. A bullet whizzed by someone's head on my property. I'll be getting the word out about what's going on." She was also at the meeting and said to the room, "I live 300 yards from Beattie Gulch...I couldn't be on my driveway or on my land; my guests won't come back because of safety issues." FWP is the agency most involved in the day to day coordination of the hunt, but because the hunt occurs on Forest Service land Forest Service staff are also required to help coordinate and regulate. When discussion at the meeting turned to Beattie Gulch a Forest Service representative claimed the two primary issues arising from the hunt were human health and safety as well as the safety of the area's grizzly population. He noted that the Gallatin National Forest issues a food storage order beginning on March 1 every year to reduce bear/human conflict as bears emerge from hibernation looking for forage. He then contrasted the precaution embodied in the food storage order with the situation they encountered at Beattie Gulch

In a very small area we picked up 8000 pounds of guts, plus a whole bison and lots of other parts.

With so many bison remains on the landscape and bears coming out of winter hibernation looking to feed, the situation at Beattie Gulch was potentially ripe for negative encounters. He reiterated how narrow the Beattie Gulch corridor is, how it was about to become narrower because of two houses under construction, and that the number of gut piles and the number of residences nearby all led to a possible public perception of a “firing line” all of which could be mitigated if “we can get those animals [to move] a little farther north.”

The discussion clearly made tribal representatives defensive. It also clarified the double-bind tribes must contend with as the hunt is presently constituted (Bateson 1973). Caught between the desire to reestablish material relations with bison and the contingencies of the actually existing situation on the ground, the tribes have chosen to exercise their sovereignty and hunt bison under less than optimal conditions. But neither the exercise of sovereignty nor the hunt occurs in a vacuum. In practice, both are an assertion and demonstration of political power which necessarily puts the tribes into contact with other forms of political power. Certainly one can point to the various management agencies tribes must contend with in order to hunt, but because of the geographical bounds of the hunt tribes must also contend with the micro-politics around Yellowstone and Gardiner Basin. And because it is Yellowstone, the treaty tribes potentially have to contend with politics articulated at regional, national and international scales as well.

By no means is the hunt viewed approvingly by all tribal peoples either. In late March 2014 a Blackfeet man—Blackfeet people are not recognized by Montana as having the right to hunt Yellowstone bison—walked into the Montana governor’s office with a bison heart he claimed to have recovered from Beattie Gulch; he wanted to protest the hunt, claiming it was “unjust” to bison. Three months later I inadvertently met this man at a rally for greater protection of

Yellowstone wolves in Gardiner. He had given a rousing and rambling speech to the assembled earlier in the day and as I was walking to my truck I saw him with his two young children. We exchanged pleasantries and then I asked him when the Blackfeet were going to come down and hunt bison. Much of Glacier National Park was once Blackfeet land, but the tribe lost it through broken treaties and outright annexation by the Department of the Interior and the Park Service (Burnham 2000). The Blackfeet reservation now borders the eastern boundary of that national park. He told me they would not be hunting these buffalo; they were “sacred.” He said he had told the treaty tribes they should not hunt them either. He told them they were wrong. They told him they needed to assert their treaty rights. He then mentioned that he was the man who had taken the heart to the governor’s office. When I indicated I had heard about that he put his hand on his son’s shoulders and said it was his nine year-old son’s idea. The man and his son had found the heart in a carcass. He said as he held it in his hands wondering what to do with it, how to honor it, his son suggested taking it to the governor’s office—and so he did.

When I asked the regional supervisor and the head game warden of the Region 3 about complaints on the tribal hunt they both confirmed that they were getting “a lot of emails about it.” Each then said the same thing: “we tell people we have no control over the tribal hunt and we forward all those complaints to the tribes.” Wildlife and environmental advocates are sympathetic to tribal claims to bison and generally see the tribes as allies in the politics of creating space and tolerance for bison beyond Yellowstone’s boundaries, but this could change depending on how the hunt continues to evolve. While ranching interests in Montana, whose power is greatest in the state legislature, are vehemently opposed to providing greater tolerance or more land to bison they have expressed little if any opposition to the tribal hunt. The CSKT lawyer said he had been asked by several people in the state legislature, “why aren’t you guys

taking out more [bison]?” I heard a similar sentiment expressed in a meeting of ranchers in Paradise Valley. One rancher who is a state representative said

I asked a Crow woman in the legislature, when are you going to exercise your treaty rights and hunt in the Park? And she said, ‘we hadn’t thought about that.’ He went on to say, hyperbolically, that “they were here first and if they hunt [bison] out of there then the white man might have a chance.” Concern over the extinction of the white man notwithstanding, it stretches credulity to think that it has never occurred to the Crow to reassert their treaty rights to the Yellowstone region. Especially since an FWP staff member told me during an interview that the Crow officially petitioned the governor’s office to take part in the hunt and the matter was then under review with the state attorney’s office. If the Crow are able to gain access to the hunt it will only add to the much discussed “congestion” at Beattie Gulch and conceivably intensify the perception that the hunt is little more than a “firing line.” Forest Service officials may see pushing bison farther north into Gardiner Basin as a way of attenuating the congested nature of the hunt, something which the tribes see favorably as well, but the logistics of doing so are easier said than done. Allowing or pushing bison north complicates management actions for FWP and the DOL as the likelihood of bison lingering on private land increases and puts bison nearer to the northern boundary of the tolerance zone and that much closer to ranch land in Paradise Valley.

It would be an overstatement to say twenty years ago no one could have predicted, as the controversies over wolf reintroduction and the trans-boundary management of bison were starting to boil, that four tribes would be hunting Yellowstone bison today. The CSKT, the Shoshone/Bannock, the Nez Perce, and the Umatilla have been agitating, working, and arguing for their right to hunt the wildlife of Yellowstone for years. I do not know, but they might say they have been working for the right since the time their treaties were signed well over a hundred

years ago or more. Despite having the lowest number of hunters and consistently keeping the lowest profile, the Shoshone/Bannock in particular have found ways over the years to remind the wider culture of their rights. Several of their tribal members in the 1980's and 1990's were cited, a few arrested, for "poaching" wildlife around Yellowstone and Grand Teton National Park. It is an old and reoccurring story for them (Warren 1997). These tribes are now exercising their rights and reestablishing material relations Yellowstone bison, but it is hard not to notice how the history of colonization haunts the hunt in the way it is pinched onto a small piece of ground in the Gardiner Basin. Despite the fact that two tribal governments and one intertribal institution are members of the IBMP and that tribal hunting is coordinated with the IBMP, there are sharp differences between the goals of the tribes and the state and federal management agencies regarding bison. Some of the differences, which have been highlighted in this chapter, indicate how colonialism as a definitive mode of modernity informs present-day conceptions on the management of human relations with nature and wildlife. It may be that the Blackfeet man I met in Gardiner who, in taking the bison heart to the heart of political power in Montana, has highlighted those differences most poignantly.

Conclusion

Picture the GYE

When I pull into the gravel parking lot at the entrance to the Taylor's Fork drainage I am surprised by the number of people already milling about in groups of three and four. The Taylor's Fork is a high, wide, sweeping valley that drops from the imposing peaks of the Madison Range east to Highway 191. The valley lies within the Gallatin National Forest and is just north of the northwest boundary of Yellowstone. Gardiner Basin, and its bison politics, is almost due east from the Taylor's Fork approximately twenty miles away, but there are no roads linking them; only the high, upland country of the Gallatin Range which borders the western boundary of the park and continues north some fifty miles before being bisected by Interstate 90 near Bozeman. It is a warm, dusty, cloud-free day. Fifty or so people, agency and tribal representatives, NGO and wildlife advocates, local landowners, and interested citizens, have gathered in late summer 2012 for an IBMP "field trip" to see and discuss the future possibility of bison roaming the Taylor's Fork. After introductions and a brief spiel by Forest Service and FWP representatives on the day's events, we divide into groups, load up in agency SUV's and drive several miles west to a vantage point at over 7500 feet where the full extent of the valley becomes visible.

I chat briefly with a FWP biologist who having heard about my research during introductions wants to know more. I mention that I am studying the politics of bison management and she offers a wan smile that could readily be confused with a grimace; this, I will come to learn, is the common, unsolicited response from just about any management agency staff when the word "politics" is uttered. She goes on to tell me a little of her frustrations with the socio-politics of her work and that she would rather just be doing "science." When the biologist moves on to speak with someone else I am approached by an energetic and bright-eyed middle-aged woman

who introduces herself as the education director for the CSKT. Having overheard my discussion with the biologist, she asks me if I am aware of Indian peoples' historical use of the area. While it seems that "politics" for the biologist is a constraint and limitation—a barrier that narrows the capacity to do her work—for the education director it is an opportunity; an opening that enables her to instantiate a historical claim in the present moment. Later, at lunch, I will be reminded of this when a Nez Perce man tells me his ancestor helped Lewis and Clark on their journey of discovery across the western half of the continent. When I mention something about the other Indians on the field trip he gives me a wry smile and says that his people did not always get along so well with some of these other people, but times change and now they are all working toward the same goal. The politics of bison, he seemed to be saying, is older than you might think.

Yet there was something new in this particular iteration of bison politics. The people gathered on the side of a mountain, looking out across one small aspect of what is now called the Greater Yellowstone Ecosystem, were there to picture what it might be like to have bison in this valley. Though it looked perfectly empty the area is home to a dude ranch that hosts guests in the summer and fall. It also used heavily by a wide variety of recreationists throughout the year who come from the growing city of Bozeman an hour and half north as well as visitors from around the country who come to hike, hunt, fish, camp, bike, ski, and snowmobile. Not long ago the area had been used by cattle ranchers, but there were no longer any grazing allotments in the basin. The district ranger of the Forest Service noted this by saying, "we've rolled up a lot of fences around here." Starting in the early 1990's the area, mostly through land exchanges, had been converted to federal (Forest Service) land. The FWP biologist related that the Taylor's Fork had once been home to a very large herd of elk, 600-800 strong, but since 2005 the herd had

diminished and now very few elk were to be found in the area. When someone asked why, she said “predator pressure; all the elk have moved [west] into the Madison [valley.]” The long, somewhat quizzical pause following her reply prompted her to say simply, “wolves.” Ranchers, cattle, fences, and elk are gone for now, historical footnotes replaced by wolves, an ever growing number of outdoor recreationists—and perhaps bison.

Asked to comment on the suitability of the Taylor’s Fork for bison, the team leader for Yellowstone’s bison program said he saw little difference between the habitat here and what was found on the Park’s northern range, but he did wonder whether there were enough wetlands to sustain a herd through the fall months. Then someone asked the question that was on everyone’s mind: how would bison get into the Taylor’s Fork? The team leader, speaking in hypothetical, replied, “Over the top [meaning east from the Park over the Gallatin Range] if they could learn the route or the highway; encounters on a daily basis shape [bison] movements and behavior.” Wolves of course found their way into the Taylor’s Fork, and beyond, but they are much more furtive and “blend into the landscape” far better than bison. Any hypothetical bison for the Taylor’s Fork would likely come from the Park, but the Park Service would not have the lead in “bringing” bison to the valley. Though, the Park Service did not technically have the lead in bringing wolves to the valley either. Federal power and scientific research instantiated in Yellowstone’s grizzly population is what initially made the GYE realizable, after all. Another Park Service manager noted having bison in the area would be another “tool in the toolset for the IBMP;” another instrument—an entire mountain drainage—for the management of a manageable yet difficult to manage species

The regional supervisor of FWP spoke up and said that there was as yet no plan for getting bison here; the timeframe was “two, ten, even fifty years.” He spoke of possibilities: allowing

them to arrive “naturally,” a portable capture and release program or moving quarantined animals from the Stephens Creek facility, but, he said, “we literally do not have a plan at this time.” The few landowners from the area voiced their concerns. None were opposed outright, but they were skeptical. Would bison really have enough forage here in the winter? If they did not where would they go? What if bison got in among their horses, would they be empowered to shoot bison that menaced them? What was to stop the bison from heading west into the Madison or north to the resort community of Big Sky? Highway 191 was a well-travelled corridor between Bozeman, the Park’s west entrance and points south, was it really advisable to place bison near such a high speed regional thoroughfare? A little later in the day I would talk with some bison advocates who expressed frustration with their perception that agency staff were overly solicitous of landowner opinion. While FWP staff and a landowner were engaged in an exchange, a representative from a national environmental NGO leaned over to me and whispered, “you realize that this area is over 97% public land.” This event, the location, and the shifting discussions are an accurate microcosm of the social and political negotiations that have necessarily defined the exemplary nature and ecology of Yellowstone and the GYE over the last forty years.

No decision has been made on whether or how bison will appear in the Taylor’s Fork. For now, it seems as though the wolves and grizzlies that inhabit this nook in the GYE will have to wait for the arrival of bison. But if they do appear they will likely arrive one of two ways. They will follow the Madison River Valley out of the Park and head west into the Hebgen Basin before turning north to follow the Gallatin River and highway 191 some thirty miles, until they arrive at the Taylor’s Fork drainage and turn west. In order to do this the bison would most certainly have to be “allowed” (as the plaintiffs in the Park County suit against the state argued)

to do so, if not actively encouraged. How likely the eventuality that bison will “pioneer” across the crest of the Gallatin Range and arrive by chance is anybody’s guess. The longtime Park biologist who studied bison for many years voiced her doubts about it thusly:

You don’t have the kind of habitat that would allow the cow/calf groups to come up here in any numbers. In the Gallatins I never saw...a travel route as some people now propose... I don’t see the Gallatin as good summer range which could perhaps foster that kind of movement. It just isn’t; if you spend time up there it isn’t the kind of habitat in terms of subalpine meadows that will let numbers aggregate...[Pointing at Hayden Valley and Lamar Valley on a map of the park] these are the two breeding sites, they’re not going to be there [in the Gallatin Range]. There is no incentive. So, with the snows up there as well, un-uh, I don’t see that.

That does not mean it is impossible. By her own admission, bison now occupy or utilize land in the Park that historically they have not for a very long time, if ever; primarily because of human interventions. If bison pioneering into the area is unlikely that only leaves one other option—trucking them in. It would certainly engender opposition. Even if local landowners agreed to it opposition would still arise from other parts of the state, likely in the Montana legislature, from people and interests who would see the action as an expansion of Yellowstone and the relations with the landscape it engenders. But if it does happen it may be for the best that it happens in such an overtly social, overtly experimental way.

A point that is always overshadowed by the rhetoric of preservation, conservation, and ecology is that Yellowstone is a space of experimentation in the management of natural conditions (Schullery 1997). One could argue that this has been the case since the Park’s inception in 1872, but there is no doubt that this became the case in the 1960’s with the advent of natural regulation and the concurrent grizzly research of the Craighead team. To study, manage, and produce nature with the goal of intensifying its naturalness, what could be more modern? Certainly this goal of increasing the naturalness of nature, wildlife especially, requires the

definitions of what is natural and what is not to be continually refined and sharpened by scientific practices and management actions which militates against the desired naturalness. Of course, if Yellowstone has been the site of a grand experiment in producing a modern vision of nature it is only possible because of human interventions along every step of the way.

Paradoxically, the “feedback” from these interventions in the name of naturalness, from the reintroduction of wolves to the development of the GYE based on the techniques for knowing a population of grizzlies, takes its most recognizable form in the intensified socio-political dimensions of Yellowstone’s still unfolding nature. This investigation of the human/wildlife ecologies that constitute Yellowstone, both real and imagined, represents a concrete exploration of that “feedback.”

This dissertation has attempted to demonstrate that Yellowstone is a privileged artifact of modernity. As such, colonial history, capitalist tourism, and scientific practice have shaped and continue to shape the Park. The wildlife of Yellowstone, as distinct species and as related ecological elements, is a defining characteristic of what the Park is. The focus on the preservation, management, and study of Yellowstone’s wildlife ecology which began over forty years ago will continue to both clarify and intensify for the foreseeable future. In many ways, this focus now animates the Park’s overall purpose. In coming to know grizzlies as intimately as the Craighead study team did, they along with many others created the conditions of possibility for a much more encompassing view of both grizzlies and the wider Yellowstone ecosystem. Seeing grizzlies in a new way entailed seeing the Park and its purpose in a new way as well. The reintroduction of wolves, in many ways a culmination of the dynamics which began in the 1960’s, constituted not just a release of wolves onto the landscape, but a release of forces. These forces were not confined to the privileged nature of Yellowstone or the GYE alone. Restoring the

ecology of the Park through the reintroduction of wolves generated intense socio-political energy while actively marking human, all too human subjectivities in relation to these animals. Through their intensive study and observation both by researchers and visitors, wolves indicate how tourism and science constitute one another in the Park. As the home of the last remaining wild bison herd in the lower 48 states, the entire history of Yellowstone and bison right up to the present moment connotes the centrality of colonialism to modernity's alternating exploitation and preservation of nature. Apropos of that history, bison continually trouble efforts to keep the line that separates nature and culture clean and bright. Native American involvement in bison management and hunting not only indicates the ongoing coloniality of Yellowstone and, more widely, the United States, their involvement serves to question and trouble the dominant presuppositions that guide the conservation and management of nature.

As a privileged place of experimentation in the production and maintenance of natural conditions, where the division of nature and culture is made material, Yellowstone is a site worthy of ontological contemplation. On the one hand, as a monumental artifact of modernity, it reflects the unthinking anthropocentrism that defines colonialism and the modern era. On the other, it is a site and a possibility for thinking through and experiencing something outside that anthropocentrism. The relations that define human and animal interactions in the Park offer a particularly rich opportunity for considering these faintly seen possibilities.

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