Landscape and Inscription

CARY WOLFE
Department of English and 3CT: Center for Critical and Cultural Theory, Rice University, USA

MARIA WHITEMAN
Humanities Research Center, Rice University, USA

Abstract This essay discusses the changing notions of landscape and nature at work in the video installation *Mountain Pine Beetle* and explores some of the forces that eventuated in the devastated landscapes of the Rocky Mountain West brought on by the infestation of the mountain pine beetle beginning in the early 2000s—an infestation caused, in no small part, by what some scientists have called a perfect storm of circumstances created by global warming. For this project, the landscape becomes a site of inscription of forces that operate both above and below human scales of perception and interaction with the landscape—forces that are at once geological, economic, and geopolitical.

Keywords landscape, climate change, symbiosis, Rocky Mountains, pine beetle

Over the past couple of years, we have been working on a suite of video installation projects based on different landscapes. The first in the series is set in the Central Flyway Migration Corridor of the southeast Texas coast on the Gulf of Mexico, near Houston, where we live, which in turn sits in the middle of one of the largest and most concentrated oil and petrochemical refining and shipping complexes in the world, which runs from the Port of Houston and the Houston Ship Channel to Galveston Bay and from there to the Gulf of Mexico. The second is set in and around Big Bend National Park in west Texas, on the Mexican border—a UNESCO biosphere reserve that is the size of the state of Rhode Island and the most remote place in the lower forty-eight states, sitting at the "big bend" of the Rio Grande. Big Bend is a dramatic landscape of animal and human migration, not only home to 430 species of birds and more than 50 endangered, threatened, and otherwise listed species but also a hot zone for human movement across the US-Mexico border—a perennially explosive political issue in the United States, particularly in states such as Texas and Arizona. The third in the series, the one we focus on here, *Mountain Pine Beetle*, is set in the radically altered mountain forests of Colorado after the mountain pine beetle infestation that began about twenty years ago, reaching devastating proportions in the mid- to late 2000s.

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All of these pieces are interested in the movement and migration of human and animal populations across particular landscapes and particularly in the forces that drive them, some of which (like transportation networks) are visible and tangible, and some of which (like climate change and international circuits of energy production and distribution) are located nowhere in an immediately tangible sense but, for all that, are no less real. Our aim here is not to produce documentary art—on the model of, say, the Center for Land Use Interpretation—but rather to gesture toward how these landscapes and our experiences of them are in a fundamental way postnatural in the sense evoked by our colleague Timothy Morton. Morton argues that the world (and we need to hear the Heideggerian resonances of that term) has in fact *already* ended, that in fact it ceased to exist with the invention of the steam engine by James Watt in 1784. From that point forward, the Anthropocene was launched and climate was radically denaturalized (and for that very reason ecologized) by humans who had become a geological force inseparable from the nature they were in the process of befouling.[1] Our interest is less in the details of Morton's claim (dating this phenomenon, for example, to the invention of the steam engine) than in the sense we share with him that such concepts as nature are no longer adequate to a truly ecological thinking in this more complex sense in which human action and its impacts on the natural world are implicated in the scalar and temporal complexities of the Anthropocene and global warming. Morton characterizes these as "hyperobjects" that "are massively distributed in time and space relative to humans" and thus in a fundamental sense defy thought—certainly representational thought.[2] To shift the conversation in this way is to realize that any environment is fundamentally a virtual space—virtual in the sense not of less real but of *more* real, more multidimensional, in a way that is not domesticated or exhausted simply by human ways of knowing, seeing, and experiencing a landscape. This brings us back, of course, to the small, lowly pine beetle and its short life cycle, on the one hand, and the massive pine forests and mountain ranges, moored in geological time scales, on the other.

Mountain Pine Beetle focuses on the radically changed landscape of the Front Range and Gore Range in Colorado since the early 2000s due to a historically unprecedented infestation of small insects about five millimeters long, sometimes also called the Rocky Mountain bark beetle. When we lived there for a couple of months during the summer of 2013, in the Winter Park area, what caught our attention—and would capture anyone's attention at first sight—was the immense devastation of the pine forests in places like Fraser River Valley and Rocky Mountain National Park. In many places, as much as 80 percent of the pine forest is either dead or dying. The current infestation began in the mid-1990s in the lodgepole pine forests of British Columbia, and the first signs of Colorado's current infestation were seen in 1996 in and around Rocky Mountain

1. Morton, *Hyperobjects*, 4, 7.
2. Ibid., 1.

National Park.[3] But the infestation really took off in 2002, the same year that high winds in British Columbia allowed the pine beetle to migrate to the Alberta Plateau, well beyond its normal range.[4] As of May 2013, the pine beetle was devastating forests in all nineteen western states and Canada, decimating approximately 88 million acres of timber at a kill rate of 70 to 90 percent. The infestation has now slowed, simply because so many of the prime host trees in Colorado are either dead or dying.[5]

The way this process works is fascinating: the pine beetle lodges in its preferred host (typically ponderosa or lodgepole pine, though it does attack other species) and lays its eggs in late summer or early fall. The larvae winter over in "galleries" under the bark and start to mature the following spring; by July most of the pupae have turned into adults. Adults feed under the bark during the summer, and where the feeding chambers meet, the beetles emerge from the tree through an exit hole, where they can attack surrounding trees. Once infested, the trees try to defend themselves by using their pitch to push out the attacking beetles—hence the oozing pitch tubes found on infested trees. The beetles, however, have a powerful partner—a blue stain fungus, *Grosmannia clavigera*, which in fact is a symbiont of the beetle. The fungus travels from tree to tree in a special structure built into the beetle's head, and it attacks the tree by producing a thread-like mass that takes over the tree's phloem and colonizes its sapwood, thus blocking the ability of the tree to send out pitch to the pitch tubes, at the same time disrupting the nutrient-conducting columns of the tree.[6] Between the blue fungus's effect on the tree's circulation and the feeding of the beetles, the tree dies.

But the beetle has another, even more powerful ally that is important to our project: global warming. When we ask why this scale of infestation did not happen a long time ago (given that the mountain pine beetle is indigenous to Colorado), we find that the epidemic has been made possible by what a US Forest Service document calls a perfect storm of three primary factors. First, large stands of target species trees of a sufficient diameter (six or more inches), aging and growing in dense stands, allow the beetle to exit and move easily from one tree to the next. Second, a prolonged and chronic drought in Colorado began in the late 1990s and became severe in 2000, which stressed the trees and made them more susceptible to attack. Third, warmer than normal temperatures during the winter over the past fifteen years in Colorado have both greatly decreased beetle mortality rates and increased their reproduction.[7] In fact, in one high-elevation study, these warmer temperatures enabled the beetles to complete their

3. US National Forest Service, "Frequently Asked Questions about Mountain Pine Beetles in Colorado," www.fs.fed.us/rmrs/docs/bark-beetle/faq.pdf (accessed November 18, 2015).

4. Ibid.

5. Sims et al., "Complementarity in the Provision of Ecosystem Services."

6. Rice, Thormann, and Langor, "Mountain Pine Beetle Associated Blue Stain Fungi."

7. US National Forest Service, "Frequently Asked Questions"; Union of Concerned Scientists, "Rocky Mountains, Colorado, USA," *Climate Hot Map: Global Warming Effects around the World*, 2011, www.climatehotmap.org/global-warming-locations/rocky-mountains-co-usa.html (accessed November 18, 2015).

generational cycle in one year instead of two.[8] This, in turn, has only accelerated the devastation, and one result is not just that there are downed trees everywhere but that there is *lumber* everywhere. In fact, when we were in the Fraser River Valley, so many trees had been hauled to the sawmills and processed that there was a glut of lumber, and many of the mills were idle, even in the peak of summer—there was simply too much wood to deal with, all of it with the telltale blue ring of the fungus in evidence.

Still, as earlier experience with the epidemic in Canada had shown,[9] only a very small fraction of the dead trees can be cleared. When you travel around these areas of Colorado, you see how the scale of devastation far outpaces the availability of manpower and machinery—it would literally take an army decades to clean up the deadfall. As such, clearing and hauling away the dead trees is mainly strategic and infrastructural, focusing on proximity to roads, power lines, public use areas, and the like. What this means, of course, is that millions and millions of dead, dry pine trees litter the mountain landscape all over Colorado. In the bigger picture of which we were speaking earlier, this is less a matter of aesthetics (though it is also that) than of the complexities of the carbon cycle. Indeed, as a white paper on the pine beetle and climate change by the Union of Concerned Scientists puts it,

> A healthy forest normally stores significant amounts of carbon. By killing off millions of acres of trees, which then decay or provide fuel for wildfires, the mountain pine beetle has instead turned lodgepole pine forests into a source of carbon emitted into the already overloaded atmosphere. The pine beetle epidemic shows how warming temperatures can lead to a problem that, in turn, causes temperatures to rise even further. Such a feedback loop serves to amplify global warming. The added carbon in the atmosphere warms mountain temperatures even more, allowing the beetles to continue to multiply and destroy more trees, which give off more carbon. The feedback loop continues until the preferred host trees are gone.[10]

In these vast ruined landscapes, where millions of dead pines litter the ground, it is as if time is trying to decide what it wants to become: "the slow smokeless burning of decay," to use Robert Frost's words from his poem "The Wood-Pile" (an important intertext for the poem that is part of our *Mountain Pine Beetle* installation and film), or the fast release of carbon through wildfires into the atmosphere, thus accelerating the global warming that partially caused the forest's demise in the first place, a classic positive feedback loop responsible for the fact that the thirty largest fires on record in Colorado have all occurred since 1996, coincident with the pine beetle infestation.[11]

8. Union of Concerned Scientists, "Rocky Mountains."
9. National Forest Service, "Frequently Asked Questions."
10. Union of Concerned Scientists, "Rocky Mountains."
11. Resnick, "A 125 Square Mile Wild Fire in Colorado."

What we want to emphasize, though, is this: while it is true that the dramatic character of the mountain forest landscape and its devastation is what initially caught our attention—aesthetically, emotionally, viscerally, it was like nothing we had ever seen—as we dug deeper into the conditions and factors behind what we were seeing, that landscape became a site of inscription, a set of traces to be deciphered rather than something that could be known immediately and all at once, even as we experienced it like a blow to the face. This is true in a rather obvious way, of course: as the pines go down by the millions, they become traces of retention of an evolutionary past suddenly ill-fitted to new environmental conditions and traces of protention for a landscape that will look very different in twenty years, as other trees (especially the aspens) come in to take their place. But it is also true in another way more interesting to us: the trees become a cipher of sorts for factors and causes that indelibly left their mark there but were not limited to and did not begin and end with that plot of land before us: the use of fossil fuels, its effects on climate change, and its links to the chainsaws and heavy equipment that took the trees down; the transportation networks that hauled the trees away as they became lumber (and that allowed us to see much of what we saw); and the national borders between Canada and the United States that were in a fundamental sense effaced by these larger ecological forces, such as the winds that brought the beetles from Alberta to Colorado, in the same way that they are increasingly effaced by the economic forces at work in developments such as the Keystone XL pipeline that already, in an important sense, links the tar sands of northern Alberta to refineries in southern Texas, where we live.

In that sense, the fallen pines of the Front Range are traces of something both there and not there, the graphic materialization and registration of factors and forces at scales both above and beneath the domesticating world of the human who looks at nature and composes a landscape. For us, this asymmetry and asynchronicity of scales in both time and space are captured in the difference between the lowly mountain pine beetle, at a mere five millimeters long, and the vastness of the landscapes—entire mountain ranges, in fact—altered by its presence under quite ecologically and historically specific conditions. In the end, then, an emotional and affective response to landscape becomes the point of entry for a more complex and multivalent engagement of the question of ecology and environment—for what we would call a posthumanist (though not *anti*human) response to ecology.[12] This means that the emotional and affective charge we experience in the face of these landscapes—the almost visceral response one has to the palpable presence of death and devastation—does not go away. Indeed, it is fundamental to the poetic text that is central to the installation. Rather, that affective response, which takes place at our own human scale, by means of our own human orientation and physiology, gets mobilized as part of a much bigger picture.

12. For a more developed discussion of this distinction, see Wolfe, *What Is Posthumanism?*

CARY WOLFE is Bruce and Elizabeth Dunlevie Professor of English at Rice University, where he is also founding director of 3CT: Center for Critical and Cultural Theory. His recent books include *What Is Posthumanism?* (2010) and *Before the Law: Humans and Other Animals in a Biopolitical Frame* (2013). He is founding editor of the Posthumanities book series at the University of Minnesota Press, which has published work by Donna Haraway, Isabelle Stengers, Roberto Esposito, Vilem Flusser, and many others.

MARIA WHITEMAN is a Lynette S. Autrey fellow at the Humanities Research Center at Rice University. She has taught at the University of Alberta and McMaster University and has published work in *Public*, *ESC: English Studies in Canada* and other journals. Her work was recently included in the show "Between Species" at the Urban Video Project in Syracuse, New York, and she is currently working on a new piece for the Museum of Walking in Tempe, Arizona.

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To view materials from the *Mountain Pine Beetle* instillation, please visit www.environmentalhumanities.org/archives/landscape.