Not-Quite-American Chestnuts: Engaging Poststructural Epistemologies in Nature-Society Research

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Abstract

This article presents a research design that examines how the production of a not-quite-American chestnut articulates across multiple axes of difference. The chestnut was rendered virtually extinct by an invasive blight in the early 1900s, but plant breeders have now produced blight-resistant trees that are 15/16 'American' and 1/16 'Chinese.' Using a series of moments across space-time, I suggest a way to study the species as a gathering together of multiple realities rather than a fixed and coherent entity. More broadly, this article advocates for research strategies that address the messy relations within and between species without recourse to totalizing explanations or mere description. I also contend that critical geographers emphasizing multiple socioecological realities have a responsibility to explore the ontological politics of these realities and to consider what types of worlds our own scholarship helps to enact.

Introduction

The American chestnut (*Castanea dentata*) is, at present, a tree without a forest. It is alive and well in biotechnology labs, greenhouses, orchards, and history textbooks, but in its native range in eastern North America, the chestnut is a ghost of its past glory. At the turn of the 20th century, the American chestnut was a dominant tree in eastern forests and particularly Appalachia, where it was highly

valued for its abundant nut crop and straight, rot-resistant timber (Lutts, 2004). In the early 1900s, however, the chestnut blight fungus (*Cryphonectria parasitica*) was brought to the U.S. from Asia in imported nursery stock. By about 1940, the blight had spread throughout the American chestnut's native range, leaving very few surviving trees in its path. The species is not fully extinct, however, because chestnuts are able to sprout from roots of trees that were previously killed by the blight. Although some young chestnut saplings can be found in Appalachian forests today, they are generally killed by the blight fungus before they reach maturity.

In light of this near but incomplete extinction, a group of esteemed plant geneticists founded a non-profit organization called The American Chestnut Foundation (TACF) in 1983. Using a technique called backcross breeding, TACF scientists have spent three decades breeding a hybrid Chinese-American chestnut that possesses the blight resistance of the Chinese chestnut species (*Castanea mollissima*) and the large stature and familiar aesthetics of the traditional American species. In the mid-2000s, the foundation successfully bred the first generation of blight-resistant B_3F_3 specimens, which are considered 15/16 American and 1/16 Chinese (The American Chestnut Foundation, 2012). The New York state chapter of TACF is also using biotechnology to genetically engineer a blight-resistant transgenic chestnut, but this approach has received lukewarm reception from some TACF members in part because it is seemingly less 'natural' (Freinkel, 2007; Merkle *et al*., 2007). The ultimate goal of both of these methods is to restore the chestnut as a dominant canopy species throughout its native range. Importantly, many chestnut devotees portray chestnut restoration as not just an ecological project, but also a social and cultural project that aims to revive and restore Appalachia, a region and a people that have experienced tremendous loss, degradation, and exploitation over the past two centuries. The tree is thus valued for more than its timber and nut crops—it is also considered an American icon, symbolic of the seemingly simpler days and ways of old (Davis, 2006; Bolgiano and Novak, 2007).

The ongoing research outlined here problematizes and contextualizes these efforts to create and restore a blight-resistant, not-quite-American chestnut tree, guided by the broad understanding that through the restoration of the chestnut, forest ecologies become intimately intertwined with racial biologies, class division, national identity, and the political, economic, and environmental histories of Appalachia. In this article, I aim to clarify the ontological principles that undergird this hypothesis and discuss a research design that presents the not-quite-American chestnut not as a cohesive and fixed species but instead as a 'gathering together' of multiple and divergent realities, from chestnut tissue cultures in biotechnology labs to seedlings planted as a national memorial. Although a thorough discussion of results is beyond the scope of this article, a few brief examples from field research will be incorporated to illustrate the connections and contradictions inherent in the chestnut restoration movement and the ways in which the chestnut articulates with issues such as nation, race, and Appalachian history. The broad aims of this article,

then, are to consider the practical and methodological implications of poststructural theoretical commitments and to advocate for research strategies that explicitly address the often-messy relations within and among species without recourse to totalizing explanations or mere description. I contend that critical geographers emphasizing multiple realities have a responsibility to explore the ontological politics of these realities (Mol, 1999, 2002; Law, 2004) and to consider what types of worlds, and what types of natures, our own scholarship helps to enact.

A framework of moments

This research is premised on three assumptions that underpin poststructural sensibilities about nature: (1) what we call nature is always already social, but is simultaneously irreducible to the social (Castree and Braun, 2001; Whatmore, 2002); (2) categories such as species are unstable and fraught with power relations, yet have significant material consequences (Whatmore, 2006; Bakker and Bridge, 2006); and (3) nature, race, and other forms of difference are often articulated together in discourses about landscape, nation, and identity (Moore *et al*., 2003; Foucault, 2003, 2007; Kosek, 2006). These ontological assumptions are associated broadly with poststructural perspectives on the problems of essentialism and totalizing explanations, the crisis of representation, and the importance of attending to difference and inequality (Ettlinger, this issue). More specifically, these assumptions stem from recent theoretical developments in feminist science studies, human geography, and science and technology studies (STS) that challenge the nature-society dualism and instead emphasize the ways in which humans and non-humans together co-produce each other and the world (Latour, 1993, 2005; Castree and Braun, 2001; Whatmore, 2002; Haraway, 2003, 2008; Castree, 2005; Lorimer 2012). While these theoretical developments share a focus on the materiality of nature, they differ in their conceptions of non-human agency, power, and the relative importance of affect and emotion. For example, while actor-network theory (ANT) has inspired literature on the agency of non-human entities in conservation and restoration networks (Goedeke and Rikoon, 2008; Dempsey, 2010), other scholarship has focused more specifically on the affective and emotional geographies of human-animal relationships (e.g., Bingham, 2006; Lorimer, 2007).

Here, I focus on the varied material and discursive relations between people and chestnuts, emphasizing the multiple realities that emerge from these relations and the connections and contradictions that occur as particular realities are forged, maintained, or disrupted (Law and Mol, 2002; Mol, 2002; Law, 2004). Geographers working under similar assumptions have used a variety of research strategies, including interviews, ethnography, participatory action research (PAR), participant observation, and ecological field methods, to better understand nature-society relations. The purpose here is not to evaluate or suggest specific *methods* such as interviews or participant observation, but rather to demonstrate how one might engage these methods within a broader research strategy that recognizes mess (Law 2004) and allows multiple realities to emerge, connect with, and transform each other.

To this end, my ongoing research on the chestnut is organized around four moments in the chestnut's becoming: the chestnut as germplasm in a university biotechnology lab, a blight-resistant sapling planted on National Forest land, a donor-sponsored memorial tree in TACF's Virginia seed orchard, and a seedling on a reclaimed strip mine at the Flight 93 National Memorial[2]. I chose these specific moments because they represent key sites in the tree's restoration as well as its enrollment in divergent networks and truth narratives. This approach is inspired by Deleuze and Guattari's (1987) notion of *becoming* as a generative process of change, in contrast to *being*, which implies a static existence, as well as Annemarie Mol and John Law's recognition that multiple perspectives indeed produce multiple material realities (Mol, 1999; Law, 2004). The goal of this strategy is therefore to appreciate the multiplicity of social and ecological relations represented by the chestnut as well as the "pluralization of causes" for the chestnut's restoration (Foucault, 2000, 227). Although I initially approach each moment as an individual case study, the ultimate goal is to understand the ways in which disparate moments are entangled in the same "knot in motion" (Haraway, 2003, 6). While the four moments do not exhaust all of the potentialities of the chestnut, they allow the chestnut to be pursued from slightly different angles, playing off the idea that the tree itself, as well as the movement to restore it, is not a single cohesive entity but rather a gathering together of multiple material and discursive realities. Further, treating the chestnut as a collection of moments demonstrates how the same research methods performed in different settings can bring to light divergent practices, perspectives, and material consequences within the seemingly cohesive movement to restore the American chestnut.

Field strategy

This research design includes interviews and participant observation, beginning in the context of the specific moments and gradually broadening to understand how the moments relate to one another. My discussion of these methods assumes that neither interviews nor participant observation have built-in ontological principles; rather, both methods can be performed in a variety of ways that map onto divergent research paradigms. Here, these methods are explicitly used to move beyond totalizing discourses and generate evidence regarding the many actors, practices, representations, and material outcomes associated with the production and restoration of a not-quite-American chestnut. Interview subjects thus include a wide variety of actors: scientists involved in the genetic engineering of the chestnut, volunteers who helped plant chestnuts at the Flight 93 National Memorial, donors who sponsor chestnut plantings, foresters with the U.S. Forest Service, and landowners who choose to plant chestnuts rather than other tree

[2] Located on a former strip mine in western Pennsylvania, the Flight 93 National Memorial marks the site where U.S. Airways Flight 93 crashed on September 11, 2001 as passengers attempted to wrest control of the plane from three hijackers. American chestnut seedlings are being planted at this site as part of an effort to reforest Appalachian minelands with native species of particular ecological or cultural importance.

species. The goal here is not to obtain representative samples of particular groups, but rather to grasp the spectrum of views on the chestnut's restoration and to begin to evaluate which modes of chestnut restoration should continue to be pursued and which, perhaps, have unexpected consequences or associations. In the words of Law (2004, 67), "We might hope… to make some realities realer, others less so." This approach to interviews connects directly with the idea that multiple truths exist, compete with, and complement each other. Rather than seeking out common themes in order to make a single generalization about why the chestnut is being restored, by whom, and with what consequences, this research instead purposefully seeks out *both* discrepancies and similarities between interviewees.

At the Flight 93 National Memorial, for example, the success story of the B_3F_3 American chestnut tree, once threatened by foreign invaders but now presumably blight-resistant, is juxtaposed with the attacks of 9/11 and the rebuilding of a nation in the wake of disaster. But in the biotechnology labs where the chestnut is being genetically modified, the success story has been muted by researchers' struggles to show that their methods are indeed no less natural and certainly no less 'American' than backcross breeding methods. The materialities of the chestnuts themselves play key roles in these moments as their genetic composition is scrutinized and evaluated. Scientists performing genetic modification claim that *their* chestnuts are actually genetically closer to the pre-blight American chestnut species than the blight-resistant B_3F_3s, which possess some genetic material of the Chinese chestnut. Yet at the same time, plant breeders are working diligently to render invisible the Chinese heritage of the not-quite-American B_3F_3. As one TACF member described, "Ideally you're not going to be able to tell that it's 1/16 Chinese. The Chinese genes should be so diluted that you can't tell by looking at it. They're trying to breed any wonky characteristics, undesirable traits, out of the trees" (Author interview, 2012). A tension emerges, then, as a materially novel specimen is asked to play the part, both ecologically and in the cultural imagination, of an historic and venerable keystone species. This friction surfaces in part through conversations about the lineage and national identity of the chestnut. What makes the chestnut American: its genetic composition, its ecological functions, the emotional responses it evokes at the Flight 93 National Memorial, or its visual appearance and aesthetics?

But although interviews provide an opportunity to understand what a wide range of actors think and say about chestnut restoration, they do not provide *direct* evidence of material practices and outcomes. Therefore, this research couples participant observation with interviews to explore the connections and contradictions between discourse and practice. In this case, participant observation includes various experiences and settings, from planting chestnuts on strip mines to observing biotechnology laboratory processes to attending tree dedication ceremonies. While it is certainly possible to focus an analysis on either representations or material practices, poststructural research in geography has in recent years moved toward explorations of the links between representation and

practice, or what Lorimer (2005) has referred to as "more-than-representational." By putting data from interviews and participant observation into conversation with each other, I am attempting to grasp not only divergent meanings or visions of the chestnut, but also divergent practices and material realities and their *relation* to discourse. These methods complement each other in that they allow for connections between broad narratives expressed in interviews – such as the idea that restoring the chestnut will 'improve' Appalachian forests and communities – and more specific material practices and outcomes, such as the locations of chestnut plantings and the stakeholders involved in the process. At the same time, however, particular discourses and practices may conflict or diverge, problematizing the idea that discourse and practice map directly onto one another. The chestnut's becoming is a result of *both* connections *and* contradictions, and thus it is imperative to allow friction between discourse and practice to emerge.

I use the term friction here to describe the general idea of tension or discord as well as the more specific particularities, differences, and contingencies that enable or empower certain material realities while altering or excluding others (Tsing, 2005). I will highlight two additional examples of frictions, the first dealing with representations of chestnut restoration, and the second regarding multispecies interactions which alter chestnut restoration practices and outcomes. First, although many TACF members express hope that the return of the chestnut will revive Appalachian identity and folkways, some longtime Appalachian residents are cynical about the tree's restoration and view it as an example of elite outsiders pushing an agenda on the region with little to no material benefits for rural landowners. This tension has already begun to affect *who* participates in restoration, *what lands* are selected for planting, and *who* benefits from the chestnut's renewed presence on the landscape. A second friction has emerged that deals with interactions between chestnuts and white-tailed deer (*Odocoileus virginianus*). Chestnut restoration is often marketed by supporters as a way to increase food and habitat for wildlife because the American chestnut was historically a prolific nut producer. Yet in practice, many young chestnut seedlings planted in Appalachian forests never produce nuts, in large part due to wildlife such as deer that browse on the young trees and ultimately kill them or stunt their growth. Although such frictions may be unsurprising, their effects on material practices and outcomes nonetheless have potential consequences for Appalachian ecosystems, economies, and populations.

Conclusions

The goal of the research design presented in this article is to explore *how* and *why* the chestnut is being remade, and how power works through the production of nature in varied and often conflicting ways. The benefits of studying the American chestnut through a series of moments in which participant observation and interviews are performed are threefold. First, this research strategy sets the species into motion, recognizing that chestnuts are dynamic, both in their biophysical materiality and in their social meanings. Rather than studying the restoration of the

American chestnut by considering solely trees planted in forest ecosystems, the series of moments allows us to see the underbelly of chestnut restoration—the processes that lead to restoration but are not necessarily the most publicized or apparent.

Second, performing methods such as interviews or participant observation in the context of *specific moments* allows research to proceed on-the-ground, unconstrained by *a priori* theory, thereby permitting the identification of messy and unpredicted empirics. The goal is not to identify a single explanation for the return of the chestnut or a single group of stakeholders who are guiding the process. Rather, it is to seek out multiple explanations for and consequences of the chestnut restoration movement, thus suggesting how the production of nature articulates across space and across multiple axes of difference, such as race and class and regional identity. Contradictions between moments, therefore, do not undermine research results, as they might in a research design based on triangulation, but are instead important results themselves (Elwood, 2010). For example, by interviewing actors involved with genetic modification and considering who might benefit from a transgenic chestnut, one might conclude that the chestnut restoration effort is merely a publicity ploy or accumulation tactic for biotechnology corporations and the pulp and paper industry. And while this may indeed be a sliver of the story, studying chestnuts in other settings, such as trees planted in memorial orchards, challenges this totalizing explanation and begs a more complex understanding of the reasons for and consequences of restoration.

A third and related advantage of this research design is that it considers moments in concert with each other and with other ostensibly unrelated phenomena. Although research methods such as interviews and participant observation are performed in discrete locations, such as a laboratory and a national memorial, the intent is to seek out *lateral connections* between chestnut restoration practices and broader discourses, such as those about race, nature, purity, and Appalachian identity (Deleuze and Guattari, 1987; Foucault, 1998). But beyond the theoretical contributions of this research strategy, the purpose for performing interviews and participant observation through four distinct moments is to generate a detailed empirical account of the histories, lived experiences, and socioecological material outcomes of one particular production of nature: the messy business of restoring a not-quite-American chestnut to the rural Appalachian landscape.

Poststructural sensibilities can help to interpret our world, but analysis requires rigor, specifically regarding the connection between ontological assumptions and research strategies used to generate, contest, and reformulate knowledge claims. Approaching a phenomenon through a series of moments is one way to expose and animate the multiple realities that make up our world, though it is of course not the only way. By recognizing and demonstrating that the objects of our research are necessarily composed of multiple realities, we can begin to make choices about *which* realities we believe should be enacted and *how* their enactment will involve and affect humans and non-humans far and wide.

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