More-than-human Geographies of Nature: Toward a Careful Political Ecology[1)]

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Abstract : The recent diagnosis of the Anthropocene challenges public understanding of nature as a pure and singular entity removed from society, as the diagnosis confirms the earth-changing force of humans. In geography, the nature-society divide has been critically interrogated long before the diagnosis of the Anthropocene, developing several ways of theorizing nature-society relations. This paper introduces a new frontier for such theoretical endeavors: more-than-human geography. Inspired by the material and performative turn in geography and the social sciences around the 2000s, more-than-human geographers have sought to re-engage with the livingness of the world in the study of nature-society relations. Drawing on actor-network theory, non-representational theory (NRT) and vitalism, they have developed innovative ways of thinking about and relating to nature through the key concepts of 'nonhuman agency' and 'affect'. While more-than-human geography has been extensively debated and developed in recent Euro-American scholarship on cultural and economic geography, it has so far received limited attention in Korean geographical studies on nature. This paper aims to address this gap by discussing the key concepts and seminal work of more-than-human geography. I first outline four theoretical strands through which nature-society relations are perceived in geography. I then offer an overview of more-than-human geography, discussing its theoretical foundations and considering ontologies, epistemologies, politics and ethics associated with nature-society relations. Then, I compare more-than-human geography with political ecology, which is the mainstream critical approach in contemporary environmental social sciences. I would argue that more-than-human geography further challenges and develops political ecology through its heightened attention to the affective capacity of nonhumans and the methodological ethos of doing a careful political ecology. I conclude by reflecting on the implications of more-than-human geography for Korean studies on nature-society relations.

Key Words : more-than-human geography, political ecology, nonhuman agency, affect, actor-network theory, non-representational theory

요약 : '인류세'라는 새로운 지질학적 연대가 도래했다는 최근 지질학계의 주장은 인간 사회와 자연을 분리된 것으로 여겨온 기존의 대중적 인식에 균열을 가져오고 있다. 인문지리학자들은 인류세 논의가 시작되기 오래 전부터 이같은 이분법적 인식을 해체하고 인간과 자연의 관계를 새롭게 이해하기 위한 이론들을 개발해 왔다. 본 논문은 이같은 이론적 논의의 최전선에 있는 '비인간지리학(more-than-human geography)'의 주요 개념, 논쟁, 연구 성과를 소개, 국내 정치생태학 논의의 이론적 지평을 넓히고자 한다. 최근 영미 정치생태학계에서 비인간지리학은 인간−자연 관계를 이해하고 형성하는 데 있어 그간 소외돼 온 비인간 행위자의 활약에 주목하으

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로써, 인간 행위자 중심의 기존 연구를 발전시킬 수 있는 새로운 이론으로 주목받고 있다. 이 이론은 2000년대 전후 지리학계에서 발생한 '물질적, 수행적 전환'에서 출발, 인간과 자연의 물질성에 주목하고, 이를 통해 자연에 대한 구조주의적 이해와 생산주의적 이해를 넘어서고자 한다. 비인간지리학자들은 행위자−연결망 이론, 비재현 이론, 생기철학에 이론적 기반을 두고, 비인간 행위성(nonhuman agency)과 감응(affect) 등의 개념을 통해 인간−자연 관계를 분석한다. 비인간지리학에서 자연은 다양하고 이질적인 인간 및 비인간 행위자들의 수행(performance)에 따른 결과물로 인식되며, 네트워크 행위자들의 다양한 수행에 따라 끊임없이 새롭게 만들어지는 것으로 생각된다. 이같은 혼종적, 과정적, 내재적 존재론에 기반을 두고, 비인간지리학은 비인간 행위자와 비재현적 소통이 인간−자연 관계의 이해와 형성에 깊이 개입돼 있다고 보고, 자연에 대한 정치적, 윤리적 결정에 있어 비인간 행위자를 적극 포함시켜야 한다고 주장한다.

주요어 : 비인간지리학, 정치생태학, 비인간 행위성, 감응, 행위자−연결망 이론, 비재현이론

1. Introduction: Nature in the Anthropocene

In August 2016, over 30 geologists from the Anthropocene Working Group of the International Commission on Stratigraphy gathered in Cape Town, South Africa, and voted in favor of the formal designation of the Anthropocene, a new geological epoch that claims humans have been an earth-changing force since the 1950s (Carrington, 2016). The formalization of the Anthropocene confirms sustained human (i.e. society's) interference with nonhumans (i.e. nature), thus challenging public understanding of nature as a pure and singular entity removed from society. In geography, however, the binary understanding of nature and society in separation has been critically interrogated long before this diagnosis of the Anthropocene. As early as in the 1970s, geographers have critically engaged with the supposed distinction and have theorized the discursive and material exchanges between nature and society in different ways (Castree and Braun, 2001; Braun, 2004; Castree, 2005; Hinchliffe, 2007). The recent diagnosis of the Anthropocene offers momentum for geographers to re-engage with sustained efforts to conceive of nature-society relations outside of binary conceptualizations.

This paper introduces a new frontier for such theoretical endeavors: more-than-human geography. In a nutshell, more-than-human geography - the term is used interchangeably with hybrid (Whatmore, 2002), posthumanistic (J. Lorimer, 2009), vitalist (Greenhough, 2010) and multinatural (J. Lorimer, 2012) geographies - refers to "an approach to geography and social sciences more generally that is open to the agency of nonhumans and recognizes the material and affective interlinkages that cross between humans and nonhumans" (J. Lorimer, 2009, 344). Inspired by the material and performative turn in geography and the social sciences around the 2000s, more-than-human geographers have sought to re-engage with "the livingness of the [human and nonhuman] world" (Whatmore, 2006, 602) in order to study nature-society relations. Drawing on actor-network theory (ANT), non-representational theory (NRT) and vitalism, they have developed innovative ways of thinking about and relating to nature. For them, nature is continuously reconstituted by the performance of an array of human and nonhuman actors. They envision a different mode of nature-society relations, where nonhumans and their differences are taken seriously in the making of political and ethical decisions. As such, more-than-human geography has unsettled the privileged place of humans as the rational subject of knowledge about and practices

of nature.

While more-than-human geography has been extensively debated, applied and developed in Euro-American scholarship on cultural and economic geography - especially for its potential to challenge and develop the mainstream humanist approach to nature (Braun, 2008; Hinchliffe, 2008; Bakker, 2010; J. Lorimer, 2012) - it has so far received limited attention from Korean geographers. This paper aims to address this gap by discussing the key concepts and seminal work of more-than-human geography. I begin by outlining four theoretical strands in geography through which the relations between nature and society are thought about. I then offer an overview of more-than-human geography by discussing its theoretical foundations and considering ontologies, epistemologies, politics and ethics associated with nature-society relations. After this, I compare more-than-human geography with political ecology, before reflecting on the utility of more-than-human geography for Korean geographical studies on nature. In this paper, I would argue that more-than-human geography could further challenge and develop political ecology theoretically as well as empirically. By carefully attending to the affective capacity of nonhumans and the possibility of becoming otherwise, more-than-human geography opens the analytical space for nonhuman subjects and more-than-discursive relations in the unexpected and surprising shapings of nature-society relations. It thus encourages geographers to explore less attended research areas, for example, nonhuman resistance to human orderings,[2] which would allow fuller understandings of nature-society relations.

2. Geographies of nature

The study of nature - both as a concept and as the biophysical world (Castree, 2005) - and society relations

in geography have undergone marked transformations in the past few decades. The vast body of work on this subject can be categorized into four theoretical strands: nature-society dualism; social construction of nature; social production of nature; and more-than-human geography (Demeritt, 2002; Braun, 2007). In this section, I provide an overview of each strand in order to detail the disciplinary background from which more-than-human geography emerges.

While largely focusing on key Euro-American works, I must note that such theoretical engagements have also occurred in Korean scholarships on sociology and geography. There is a large body of social science work that critically examines the production of nature and its consequential social injustice through case studies of large-scale construction projects, pollution struggles, energy policy and so on.[3] Here, nature is largely treated as the biophysical world, specifically, as resource, background, and commodity, with which economic and environmental interventions can be made. This eco-Marxist and/or political ecology work has dominated critical environmental social science in Korea, and papers have been published in two journals (Korean Association for Environmental Sociology's Eco and Korean Association of Space and Environment Research's Space and Environment), a review of which goes beyond the scope of this paper. There is now a growing body of geography work whose theoretical approaches resonate with some key themes of more-than-human geography. Kim Sook-Jin (2006b; 2010; 2016) develops an actor-network approach to theorize 'social nature', which focuses on the performance of heterogeneous actors in the material and discursive construction of nature (see also Kim and Wainwright, 2010; Kim and Kim, 2013; Lee, 2015). Jin Jongheon's (2013) review of NRT approaches to landscape study offers a useful introduction to this theory (see also Song, 2015). Recently, several young geographers start to engage with the capacity of the nonhuman world to shape particular modes of nature-society relations,

exploring volatility of nature in the making of riskscapes (Hwang 2016), the role of rural landscape in the shaping of walking experiences (Choi 2016), the agency of animals in dolphin shows (Nam, 2014).

1) Nature-society dualism

Nature is conventionally considered the biophysical world (e.g. animals, habitats, ecosystems) defined in relation to urban and industrial society. In this dualistic conceptualization, nature is conceived of as a discrete domain removed from society where nonhumans are placed. It is associated with an ontologically pure, fixed, singular, temporally 'timeless', and spatially 'out there' entity (J. Lorimer, 2012). Here, nature is treated as an inert and passive thing or a background on which human intervention can be made.

This is the version of nature most prevalent in modern society and that is held by the public, the majority of scientists, policymakers and conservationists. For them, nature is viewed as a 'resource' that can generate profit and be sustainably managed through science and technology (Anderson and Leal, 2001; Adams, 2009). It is also viewed as 'wilderness' that is confronted with ecological crises of species extinction and habitat loss, all of which require immediate intervention (Adams, 2013). Such an understanding supports and legitimates a particular mode of conservation practice, which puts nature back in situ through the designation of protected areas and nature reserves.

In geography, not only physical geographers but also classical cultural geographers have used this version of nature in their landscape studies (Whatmore, 2006). This version of separated nature, however, "seems [to have] stopped working so well" (Bingham and Hinchliffe, 2008, 83) in recent geographical studies on nature that tackle the nature-society divide. Furthermore, the recent diagnosis of the Anthropocene has started to reshape the public's dualistic understanding of nature.

2) Social production of nature

Marxist geographers have challenged nature-society dualism, arguing that nature and society are metabolically related through material exchanges. In his seminar work, Smith (1984) illustrates that the capitalist economy - specifically, the commodification process - transforms 'first nature' (e.g. corns) to 'second nature' (e.g. genetically modified corns) in order to facilitate further monetary exchanges. Capitalist overproduction and resource scarcity create material environmental degradation of the environment (O'Connor, 1988; Smith, 2007). As such, Smith and others argue that social relations produce particular outcomes for nature. For them, nature is viewed as a 'resource' and/or a 'commodity'.

Marxist geographers developed Smith's nature-society metabolism by focusing on the political and economic struggles over nature. In this sense, they 'politicize' ecology (Latour, 2004). These political ecologists critically engage with the ways in which environmental management is neoliberalized and produces social injustice and violence (McCarthy and Prudham, 2004; Heynen *et al.*, 2007; Castree, 2008). They are particularly critical about the neoliberal mode of conservation, which deploys conservation practices for further accumulation (e.g. ecotourism, carbon offsetting) while creating political and economic inequality and the degradation of nature (Brockington and Duffy, 2011). While this body of work deals with the material basis of the nonhuman world, they tend to treat nature as a passive thing that adds little to the story of nature-society relations (Braun, 2008). Here, the livingness of the world has not been fully engaged with (Bakker and Bridge, 2006; Bakker, 2010).[4] I will revisit this gap of materiality in political ecology in section 4.

3) Social construction of nature

While Marxist geographers focus on material ex-

changes, post-structural geographers attend to the linguistic and cultural relationships that mediate nature and society through representations and discourses. Inspired by Foucault and Derrida's claim that representations are not neutral reflections of reality but are partially constitutive of it, post-structural geographers have critically analyzed the particular ways in which representations and discourses on nature are shaped in relation to power relations (Wilson, 1991; Demeritt, 2002). They argue that our ideas about nature are neither universal nor fixed but are historically and culturally constructed and, therefore, partial and situated. For example, environmental historian Cronon (1996) documents the changing representations of the American wilderness over time - from "Satan's home" to "God's own temple" and "America's lost frontier" - proving that ideas and meanings of nature are "socially contrived, produced by people and their value systems, political systems, [and] cultural sensibilities" (Hinchliffe, 2007, 8).

These scholars are especially attentive to the political consequences of specific representations, which might be able to legitimatize certain ideas and practices as natural (e.g. subjugating 'passive' local people or domesticating 'passive' animals). Critical geographers employ the social construction thesis to politically refute certain ideas (e.g. passive local people) by demonstrating that these ideas are actually socially constructed and therefore not truthful. Other social constructivists engage philosophically, arguing that nature is socially constructed and therefore ontologically contingent and epistemologically artificial (Demeritt, 2002). However, by only treating nature as "envelopes of meaning" (Braun, 2008, 668) - i.e. as a concept - social constructivists fail to discuss the material basis of the nonhuman world that participates in the construction process (Braun, 2008; J. Lorimer, 2012).

4) More-than-human geography

The latter two theses reject the idea of nature being

external to society and instead theorize nature as discursively and materially produced as 'social nature' (Castree and Braun, 2001). Nonetheless, both seem to fail to engage with the materiality of nature as 'life'. This gap began to be addressed with the material and performative turn in geography studies. This theoretical turn was led by "a new generation of cultural geographers" (Whatmore, 2006, 602) who strove to move beyond the social constructivism's analytical focus on textual representations (Spencer and Whatmore, 2001; Bakker and Bridge, 2006; Whatmore, 2006). Instead, these cultural geographers sought to examine "the ways in which we intervene in and are shaped by the life worlds of others" (Greenhough, 2011, 37-38, my emphasis) in diverse geographical areas, including landscape, urban, postcolonial and feminist geographies. As Whatmore (2006) explains, these authors are inspired by: firstly, science and technology studies (STS) that offer a hybrid understanding of the world as human and nonhuman collectives and, secondly, performance studies that emphasize the body as a medium of knowing and interacting with the world. They suspend thinking of 'matter' as representations or indifferent stuff, and instead started to value matter for their livingness, vitality, and thing-ness. As such, these scholars redirect our attention to matter and its bodily involvement in the world. For them, not only humans but also nonhumans and non-living matters 'perform' together, ordering "the worlds that they purport to represent" (J. Lorimer, 2012, 600). In so doing, they redefine the world as a 'more-than-human' and 'more-than-representational' space (Braun, 2005; Hinchliffe and Whatmore, 2006).

Drawing on this new mode of materialist thinking, Whatmore (2002) and others have developed 'more-than-human' geographies that take nonhumans and different modes of communication seriously (Hinchliffe, 2007; Bingham and Hinchliffe, 2008; Braun, 2008; J. Lorimer, 2009; 2012; Greenhough, 2010). More-than-human geographical study is often associated with a

keen interest in (nonhuman) agency and affect, exploring what these can add to the story of nature-society relations. As I will explain in detail, first, these authors are attentive to the co-constitutive role of nonhumans (e.g. animals, landscapes, objects) in the making of the world. For them, nature (and society) is envisioned as impure and hybrid forms that comprise humans, animals and non-living objects, rather than a purified stuff out there. Second, not just human rationality and culture but bodily responses, feelings and emotions also have gained attention as important media through which to understand the world. To explore this non-cognitive dimension of the world, more-than-human geographers carefully examine the embodied, emotive and affective dimensions of nature-society relations. As such, more-than-human geography challenges the prevalent humanist approaches to nature-society relations that emphasize "our human capacities for visual abstraction and textual communication over other ways of knowing and interacting with the world" (Greenhough, 2010, 51).

While efforts have been made in terms of theoretical development, there is now a growing body of more-than-human geography investigations based on case studies of biosecurity (Bingham, 2006; Buller, 2008; Hinchliffe and Bingham, 2008; Law, 2010; Greenhough, 2012), food (Stassart and Whatmore, 2003; Hayes-Conroy and Martin, 2010), animal geographies (Cloke and Perkins, 2005; Bear and Eden, 2011; Barua, 2014) and conservation (Hinchliffe, 2008; J. Lorimer and Driessen, 2013a; J. Lorimer, 2015). I will give more detail and examples in the following section.

3. More-than-human geographies of nature

This section introduces key concepts and characteristics of more-than-human geography. I provide its theo-retical foundations, and then discuss the ways in which nature-society relations are analyzed through this strand of geographical thought.

1) Theoretical foundations

More-than-human geography draws on three interwoven theories in geography and the wider social sciences. These are vitalism, ANT and NRT.

Vitalism is a philosophy that appreciates vitality - namely, the immanent matter-energy of the nonhuman world. Vitality is expressed through the capacity of things to comply with or disrupt the will and design of humans (e.g. storms). It also enables them to act in unexpected ways beyond their tendencies (e.g. virus) (Fraser *et al.*, 2005; Bennett, 2009). In this regard, matter is not dead but vibrant, creative and inventive (Braun, 2008). Inspired by the material turn, more-than-human geographers have attended to the vitality of matter and their capacities to participate in the constitution of the world (Greenhough, 2010). For them, nonhuman matter is not a passive and inert thing that is waiting to be enlivened by humans. Instead, it is viewed as an active agent that is capable of intruding upon humans. Their attention to "vibrant matter" (Bennett, 2009) helped more-than-human geographers develop the idea of nonhuman agency.

ANT has contributed to a more theoretical development of nonhuman agency (Murdoch, 2005). ANT is an influential body of work initially developed in STS by Latour, Callon and Law who questioned the purported objectivity and universality of science.[5] In his examination of the Pasteurization of France, Latour (1987) argues that what endowed power to Pasteur's experiment was not the scientific facts but the network that connected laboratories and farms across France. He redefined Pasteur's experiment as the effect of the gathering of heterogeneous actors, involving scientists, farmers, cows, technologies, germs and so forth. For him, Pasteur's experiment is irreducible to a single and pure category

of either human or nonhuman, but is a "quasi-object" in which an array of human and nonhuman elements are entangled with one another.

His insight of a heterogeneous network informs hybrid ontology where the world is continuously constituted through the performance of diverse human and nonhuman actors. In this sense, the world is neither fixed nor pre-given, but is the contingent 'effect' or 'outcome' of a particular formulation of a network. For example, for Whatmore (2002), wildlife is not 'untouched' animals or species. Instead, she understands it as a 'relational achievement' that is "spun between people and animals, plants and soils, documents and devices in heterogeneous social networks which are performed in and through multiple places and fluid ecologies" (2002, 14). As such, ANT-inspired geographers dissolve nature-society dualism - Latour (1993) claims that such a separation actually has never begun - and instead view nature-society as "collectives". In other words, they view nature-society as "socio-material assemblages" of "people, practices, technologies and other nonhumans" (J. Lorimer, 2006, 540).

Nonhuman agency

Hybrid conceptualization of the world leads to a reconceptualization of the role of nonhumans in human-nonhuman collectives. For ANT theorists, both humans and nonhumans are also active actors who have the capacity to act, i.e. agency (Callon, 1986). More-than-human geographers have theorized the lively participation of nonhumans, exploring the differences nonhumans make to the ways in which nature and society are thought about and related to (Jones and Cloke, 2002; H. Lorimer, 2006; Buller, 2008; Bear and Eden, 2011; Clark, 2011). Such close attention to nonhuman agency distinguishes more-than-human geographers from social constructivists and political ecologists, who share the hybrid understanding that heterogeneous actors participate in the discursive and material construction of nature.

For more-than-human geographers, the agency of

nonhumans is not the property individually possessed. Instead, the agency is distributed to them through the network they are enrolled in (Whatmore, 2002; Bennett, 2005). In other words, agency is viewed as a 'relational achievement' of the network. In this regard, it differs from the animistic belief that animals and non-living things inherently possess spirit. The capacity to act allows nonhumans to become political subjects who perform in accordance with, disrupt, and exceed humanist orderings (Hobson, 2007).

Animal geographers have examined diverse ways in which animal agency is expressed and bears political consequences. Philo and Wilbert (2000) draw attention to the mismatch between humanist spatial arrangements of animals (e.g. zoos, farms) and the capacity of animals to fissure and even resist humanist orderings (e.g. exhibiting their sufferings, escaping from cages). The dissonance between human-created "animal spaces" and animal-created "beastly places" convincingly shows the role of animal agency in the constitution of human-animal spaces. Similarly, in their examination of cetacean tourism in New Zealand, Cloke and Perkins (2005) illustrate that the commercialized human-dolphin encounter is heavily dependent on the agency of dolphins that may or may not appear and exhibit charismatic behaviors.

While ANT unsettles the privileged place of humans, NRT displaces textual representation as the primary epistemological vehicle through which to comprehend the world (Braun, 2008). Thrift and other non-representational theorists have drawn attention to the creative role of the (human and nonhuman) body and non-cognitive modes of engagement (H. Lorimer, 2005; 2007; 2008; Thrift, 2007; Harrison and Anderson, 2012). They combine ANT's focus on the heterogeneous entanglement of humans and nonhumans with a phenomenology-inspired interest in 'encounters' through which the world unfolds. To explore more-than-representational modes of engagement, these authors pay particular attention to

bodily encounters - i.e. embodiment - that take place in practices, through which an array of human and nonhuman bodies are enrolled and perform.

This leads to a series of reconceptualizations of the body and nonhumans. For these authors, the body is not a passive container of social identity but a 'sense-making vessel' through which the world is known. They unsettle the hegemony of the visual and seeing, and diversify types of bodily sensations (e.g. smell, feeling) and modes of engagement (e.g. touching, doing), which produce multisensory, emotional and affective encounters (Crouch, 2001). Nonhumans are also reconfigured as bodily partners whose performative properties attract scholarly attention. These properties include their materiality, agency and affordance (i.e. the property that affords the possibility of inviting particular (human) bodily responses based on historically established reciprocal relations (Gibson, 1979)). As such, NRT geographers have theorized human-nonhuman encounters as 'embodied performance' within which diverse bodies of humans and nonhumans perform together, shaping noncognitive modes of engagement. NRT application in geography has mostly been concerned with dance (McCormack, 2003) and tourism (Michael, 2000; Franklin and Crang, 2001; Coleman and Crang, 2002; Pons, 2003) and is now extended to the non-cognitive dimension of human-nature encounters (MacNaghten and Urry, 2001; Cloke and Perkins, 2005).

Affect

The concept 'affect' has become a useful tool for more-than-human geographers to examine the bodily and non-cognitive aspects of nature-society relations (Dewsbury *et al.*, 2002; McCormack, 2003; Anderson, 2014). Whatmore (2006) explains that affect is "the force of intensive relationality - intensities that are felt but not personal; visceral but not confined to an individuated body" (2006, 604). In other words, it refers to "the capacity to relate" between different bodies (Anderson, 2009,

78). Emotion and feelings are thought of as expressions of affect (McCormack, 2008; Pile, 2010). The notion of affect is developed to explain the transpersonal intensities produced in more-than-representational and more-than-cognitive modes of engagement. It redefines humans and nonhumans as 'affective beings' whose bodies have the capacity to affect and to be affected by other bodies (Thrift, 2004).

More-than-human geographers have explored the ways in which affective relations are established and produce particular political, ethical and economic consequences. McCormack's concept of 'affective logic' is especially useful to examine power and affect. Affective logics refer to the means that relate to diverse human and nonhuman bodies in a way that generates particular emotions and feelings. In their studies on post-9/11 war films, Carter and McCormack (2006) examine an array of cinematic narratives and techniques. They argue that an affective logic of 'combat experience' is deployed to relate the audience, screen and warfare; this intensifies a geopolitical sensibility of 'fear'. For another example, J. Lorimer (2010b) identifies three common affective logics of volunteer tourism, which are spectacle, touch and adventure. As he illustrates, these affective registers appear to evoke and relate the bodies of UK tourists, elephants in Sri Lanka, conservation discourses and tourism practices. He argues that affective relations reconfigure "the nature of their practices and their associated ethical concerns" (J. Lorimer, 2010b, 318), leading to particular political consequences.

2) Nature-society relations in more-than-human geography

Drawing on theories and concepts of vitalism, ANT and NRT, more-than-human geographers envision other modes of relating to nature that can be differentiated from those of social constructivism and political ecology, l*et al*one nature-society dualism. This section discusses

the ways in which nature-society relations are thought about in more-than-human geography by considering four key themes. These are related to: the relations that exist between human and nature (ontology); how it is possible to know about nature (epistemology); how political decisions are considered (politics); and how nonhumans should be used (ethics).[6]

(1) Multinatural ontology

Drawing on ANT, more-than-human geography foregrounds a hybrid ontology that claims the world emerges from an assemblage of heterogeneous actors in interaction.

This hybrid ontology reconfigures the forms and territories of nature. Attending to the agential and affective participation of nonhumans, more-than-human geographers argue that nature is constituted and reconstituted through the performance of interacting actors (Bingham and Hinchliffe, 2008; J. Lorimer, 2012). Its form is not pre-given but is emergent from specific assemblages. This means that the form of nature is not fixed but is contingent. It is open to the possibility of becoming otherwise - when the actors perform different practices that shape and reshape the actors themselves and the practice itself (Mol, 2002). As such, more-than-human geographers reject the prevalent idea of nature being ontologically fixed, transcendental and singular. Instead, they claim nature is a relational achievement of a specific assemblage, which can take other multiple forms. This echoes Latour's (2004) 'multinaturalism', the term he uses to describe multiple political orderings of nature (J. Lorimer, 2012).

By thinking of nature as impure, processual and multiple, more-than-human geographers completely dissolve the cartographical division that places nature and society in discrete domains. Instead, they conceive of the territories of nature (and society) as a more-than-human, and a equally more-than-nonhuman, space in which impure forms emerge and inhabit (Braun, 2005; Hinchliffe and Whatmore, 2006). Grounded in a multinatural ontol-

ogy, more-than-human geographers are less interested in revealing the purported transcendental form of nature (e.g. species) and are more concerned with exploring the potentials and possibilities of the world that produce new forms and trajectories (e.g. ethological process) (Bingham, 2006; Hinchliffe and Whatmore, 2006; J. Lorimer, 2015).

Hinchliffe *et al.* (2005) offers an example of such ontological examination through their investigation of water vole survey in Birmingham, UK. To draw out a local biodiversity action plan, amateur ecologists in Birmingham and Black County were asked to chart the populations, behaviors and lifestyles of urban water voles in the area. Ecologists began their water vole tracings by trying to spot animal footprints and faeces and compare them with those printed on field guidebooks. However, they soon discovered that half squashed and washed off animal traces, which they actually encountered with, were far from those neatly described in the books. Instead of relying on guidebooks, they had to learn to observe numerous modified versions of footprints and to smell water vole faeces. Through such self-propelled trainings, this group of amateur ecologists became different people, who are now equipped with sensitive eyes and noses, from the ones whom they started with. Similarly, water voles in the field guide were described as elusive suburban habitants known for their exclusive use of the habitat. However, ecologists found the surveyed population of water voles actually shared their tunnels with brown rats. Being adapted to the urban environment, water voles seemed to have changed their behaviors. In terms of behaviors, they are no longer the same species specified in the field guide. The changes occurred to both ecologists and water voles posed Hinchliffe *et al.* an ontological question what counts as (human and water vole) species. For them, people, animals and things are not ontologically fixed but are emergent out of particular practices. Being attentive to the ontological instability, these authors suggest a radical shift in ontological analysis of

conservation from focusing on 'biological species' to 'the process', through which water voles are made into different beings.

(2) Embodied epistemology

Post-structuralist and feminist scholars have been skeptical about 'modern scientific epistemology' that claims to be the objective and universal foundation of knowledge, coupled with the purported authority of white, male and Western (social) scientists. Haraway (1988) and others offer an alternative epistemological understanding, where knowledge is geographically and politically "situated". They extend the cast of knowledge producers to non-experts - namely, citizens, folk people and non-Western indigenous groups (Rose, 1997; Agrawal, 2002; Raffles, 2003).

Drawing on NRT, more-than-human geographers have further extended epistemological pluralism to include the body and nonhumans as important producers of knowledge. This does not mean a simple extension of the category of experts to nonhumans. Instead, these authors focus on the affective bodily capacity of humans and nonhumans, and develop "an alternative, modest, and embodied epistemology based on open learning to be affected by the world in partial and situated context" (J. Lorimer, 2009, 350). They argue that bodily encounters produce a kind of non-cognitive and embodied knowledge, which representation-based conventional epistemology might fail to witness. To establish this, more-than-human geographers trace the affective energies, habits and everyday practices that are deployed to tune humans into the multitude of the nonhuman world. In his examination of herders and reindeers in the Scottish highlands, H. Lorimer (2006) illustrates how knowledge is coproduced through the affective engagement of humans with nonhumans. He carefully rereads historical documents that report the intertwined lives of the herders and reindeers and recreates an entangled biography of the two species. H. Lorimer argues that being affected by

each other, the herders and reindeers develop particular knowledge about the land and of each other, the result of which we are able to witness from their behavior and ecological changes.

To practice an embodied and affective mode of epistemology, more-than-human geographers have developed innovative ways of doing geographical research (Vannini, 2015). For example, they develop the methodological idea of 'affective fieldwork', which demands cautious engagement with bodily sensations, emotions and feelings of not just the researched, but the researcher themselves (Crang, 2003; J. Lorimer, 2008; Laurier, 2010; 2011). They view the researcher as another resourceful participant whose sensitized and emotive self-reflections are to be observed and recorded. In addition, some more-than-human geographers develop an embodied approach to archives (H. Lorimer, 2009; J. Lorimer and Whatmore, 2009; Barua, 2013). As H. Lorimer demonstrates, they suggest reanimated reading of archival documents by paying close attention to the emotional and corporeal accounts. This method enables the researcher to recreate the affective energies of historical encounters. Grounded in a partial and situated foundation of knowledge, more-than-human geographers are modest about their method and methodology, treating them as tentative, speculative and experimental, as well as emergent from specific embodied encounters.

(3) Cosmopolitics

The politics of nature in environmental social sciences is often associated with 'the politics of who' - i.e. who makes important decisions that relate human and nature in particular ways (e.g. knowledge production, ethical decisions) (Latour, 2004; Bingham and Hinchliffe, 2008). In the conventional modes of environmental management, this job tends to be relegated to the professionals and experts - scientists, policymakers, and corporates. Political ecologists have sought to democratize the politics of nature by extending this category toward

non-experts, critically engaging with the ways in which their voices are heard in the decision-making process (e.g. involving citizen sciences, creating consumer citizens).

More-than-human geographers draw attention to the fact that "all of the actors are not humans" (Haraway, 1992, 67 in Bingham and Hinchliffe, 2008, 84). They point out that the vitality of nonhumans is hardly acknowledged in decision-making processes despite their lively participation in the reconstitution of the world. For them, as Bingham and Hinchliffe (2008) argue, the current politics of nature is entrapped in the social realm, "doing politics [of nature] without nature" (2008, 83). Foregrounding multinatural ontology, more-than-human geographers suggest a radical involvement of nonhumans in decision-making such that nonhuman differences can flourish (Bingham, 2006; Hinchliffe and Whatmore, 2006; J. Lorimer and Driessen, 2013a). Taking the co-constitutive role of nonhumans seriously, more-than-human geographers demand an open attitude toward surprising and multiple outcomes that might transgress the prescribed trajectories. In other words, they advocate an agnostic approach to practice this novel mode of politics. In this sense, Braun (2008) argues that "our politics of nature must invariably be a kind of active experimentation since we do not know in advance which way a line is going to turn" (2008, 676).

J. Lorimer and Driessen's (2013a; 2013b) analysis of rewilding, a new mode of conservation burgeoning in Western Europe, offers an example of how such a mode of politics can be practiced. They focus on Oostvaard-ersplassen (OVP) in suburban Amsterdam, the Netherlands. OVP was reclaimed from the sea in the 1960s for industrial purposes but was soon abandoned. In the 1980s, Dutch bureaucrats and ecologists introduced herds of grazing animals (horses, cattle and red deer) to OVP with a view of renaturalizing this plot of the land. Their aim was, however, not to recover 'the balance of nature' by putting the introduced animal population under control. Instead, they used the grazing practices of

these herbivores to attract other organisms so that 'new nature' - whatever it might mean - can emerge. In this way, Dutch bureaucrats and ecologists managed to invite nonhumans into the rewilding practice, making room for their ecologies and differences to flourish. They also managed to stay open to the uncertain futures of the re-wilding project.

This immanent mode of politics echoes STS sociologist Stengers's concept of 'cosmopolitics' (Bingham and Hinchliffe, 2008; Braun, 2008). She develops this notion to underscore the political nature of, and an open attitude toward, the multiple outcomes of the world that an array of different actors performs together. While focusing more on the political side, this concept resonates with aforementioned Latour's (2004) multinaturalism, which envisions multiple versions of nature coming into being through different performances of heterogeneous actors. Cosmopolitics, however, differs from multiculturalism, which claims the existence of multiple cultural perspectives toward a single nature. It can also be distinguished from cosmopolitanism, which tends to be an apolitical celebration of multiplicity (De Castro, 1998; Bingham and Hinchliffe, 2008).

(4) Relational ethics

By taking nonhumans seriously, more-than-human geographers depart from the prevalent anthropocentric mode of ethics that is largely concerned with humans as the containers of ethical value for their proximity, shared concerns and reciprocal relations with other humans (Bingham, 2006). Instead, more-than-human geographers develop a relational mode of ethics that values nonhumans for their distance, alterity and immanent potential (Whatmore, 2002; J. Lorimer, 2010a; Srinivasan, 2012; Ginn, 2014). For these authors, ethics emerges from "the willingness and the capacity to 'learn to be affected'" from nonhumans (Bingham, 2006, 289). They thus propose an ethical attitude that is sensitive to nonhuman differences and the multiple ways in which

human-nonhuman relations might evolve and be governed (J. Lorimer, 2012).

In developing this mode of ethics, Haraway's (2008) notion of the "response-able" mode of relating has been influential. In her account of human-canine relationship, she stresses the importance of 'looking back' the animals that are looking at us (e.g. returning the regard). For Haraway, ethics is not grounded in disciplinary codes or principles. Instead, she turns to the embodied and mundane commitments of individuals to nonhumans, through which a kind of ethical sensibility can be cultivated. For example, the continued interactions between a lab scientist and animals in experiment could enable the scientist to sympathize and respond to animal sufferings. Haraway uses various and overlapping terms to refer to this mode of ethical relations, including "response-ability", "being polite", "flourishing" and "companionship". This mode of ethics is practiced through sensibility to be curious about and to respond to nonhumans. It is normative in the sense of advocating an affirmative mode of relating. Yet, it is profoundly different from the popular idea of animal rights that extends ethical concerns to a small subset of animals viewed as compatible to humans.

More-than-human geographers have developed Haraway's ethics to create diverse concepts that describe and demand 'living well together' between humans and nonhumans. These include "companionship" (J. Lorimer, 2010a), "nonhuman friendship" (Bingham, 2006) and "a politics of conviviality" (Hinchliffe and Whatmore, 2006). Here, J. Lorimer and Driessen's (2013a) contribution is notable. They theorize the ethical relations between humans and nonhumans as a form of biopolitics. The prevalent mode of ethical attitudes toward nonhumans is based on calculations and principles that draw 'appropriate' boundaries between humans and nonhumans (Adams, 2013). It thus adopts a traditional mode of biopolitics, which 'takes a life' through punishment and surveillance (Foucault, 1978). For more-than-human geographers, however, the radical uncertainty of

human-nonhuman relation paralyzes such calculations and boundaries (Braun, 2005). The ethics being developed here thus adopt an alternative mode of biopolitics that 'makes a life'. J. Lorimer and Driessen call this "a biopolitics of living with". It is grounded in and promotes interspecies flourishing, values imminent and affective forces of nonhumans, and lets these qualities proliferate. As such, it proposes a halt to the anxiety of human mastery and instead suggests a radical letting go. I will return to the affirmative mode of human-nonhuman biopolitics in the next section, where I discuss the implications of more-than-human geography for conservation practices.

4. Toward a careful political ecology

What do the concepts and characteristics of more-than-human geography add to geographical studies of nature? Following Braun (2008), Bakker (2010) and J. Lorimer (2012), I argue that more-than-human geography is able to renew political ecology for two reasons. First, by focusing on the affective capacity of nonhumans, it offers a useful analytical platform to develop the critical studies of the neoliberalization of nature. Second, it suggests a novel methodological ethos of being attentive to nonhuman differences and the possibilities of becoming otherwise.

As reviewed in section 2, geographical studies of nature-society relations have changed over time. The majority of environmental management in practice is largely based on a dualistic view of nature and society, seeking optimal use and management of nature. Political ecologists have politicized environmental practices (which purport to be apolitical) by critically engaging with market-based and postcolonial exchanges in capitalist environmental management. While political ecology has become the mainstream approach in critical environmental social sciences, the renowned political

ecologists Braun (2008) and Bakker (2010) point out the discipline's own indifference to nonhumans and vitality. More-than-human geographers, on the other hand, have unsettled prevalent humanist approaches by re-engaging with the livingness of the nonhuman world (Bingham and Hinchliffe, 2008). Yet, their efforts have been fairly theoretical, leaving a gap in terms of addressing the political and economic consequences of affective and agential relations deployed in capitalist ecology (J. Lorimer, 2012). To address the nonhuman gap in political ecology and the political and economic gap in more-than-human geography, these authors draw attention to the fertile interdisciplinary ground upon which a renewed examination of nature-society relations can be built.

On the one hand, the cooperation of political ecology and more-than-human geography revolves around the analytical utility of nonhuman agency and affect in the critical examination of the neoliberalization of nature, as these concepts enables to explore diverse ways in which affective and agential relations are deployed in capitalist environmental development. Neoliberalization exists in not just economic and social, but also in emotional and affective processes through which the affective conditions for capitalist growth and diversification are created (Bakker, 2010). However, the affective dimension of neoliberalization has received limited attention in political ecology. Largely focusing on the 'production' of nature as a 'capitalist commodity', political ecologists tend to remain less interested in the 'consumption' of nature, where 'the affective bodies' of nature are pertinent (Bakker and Bridge, 2006). This leads to "a failure to address the full scope of environmental processes and socionatural entities subsumed within processes of neoliberalization" (Bakker, 2010, 717).

To exemplify the utility of a combined approach, Bakker (2010) offers an example of 'blood diamond'. Here, the conventional political ecology approach is useful, as it can reveal the global commodity chains and the unintended violence with which the production of this valuable commodity is entangled. At the same time, the consumption of, and political boycotts against the diamond are carefully orchestrated in a way that evokes a specific emotion, such as desire or guilt. For example, the campaigners use a guilt-invoking slogan, "diamonds are a rebel's best friend". As Bakker points out, this emotive dimension can be better analyzed through intensive analysis of the agency of nonhuman resources and affective relations. As such, more-than-human geography would allow geographers to trace the differences that nonhuman agency and affect make to the ways in which nature is produced and consumed in a capitalist economy. Such analytical focus on nonhuman agency and affect would be particularly useful for the critical analysis of the recent frontiers of the neoliberalization of nature - such as climate sciences, the pet industry (Nast, 2006) and ecotourism (Rutherford, 2011) - in which diversified strategies of accumulation are deployed.

On the other hand, more-than-human geography offers a type of methodological ethos that focuses on being 'careful'. In the conventional sense, political ecologists have largely concerned themselves with 'justice' claims, seeking to reveal and remedy the exacerbated political and economic lives of powerless people. Taking nonhumans seriously, more-than-human geographers seek to think outside of such humanist interests. For them, what is at stake is the ontological instability of the world, which is continuously reconstituted through the performance of human and nonhuman actors. Foregrounding the uncertainty of the world, more-than-human geographers are aware of, and cautious about, the limits of knowledge and the capacity of humanist interventions. For them, doing political ecology in theory and in practice is an enterprise full of contingences, rather than a self-evident exercise. To fix political ecology in the light of the radical uncertainty of the world, more-than-human geographers suspend recourse to 'certainties' of nature, upon which theoretical and practical investment can be built. Instead, they suggest a speculative, "pre-

cautious" (Braun, 2008) and "experimental" (J. Lorimer, 2012) approach, which is attentive to nonhuman differences and the multiple ways in which they are performed. Hinchliffe (2008) calls this "a more careful political ecology" and explains:

> This amounts to a more careful political ecology, not in the sense of being cautious or even being full of care (in the sense of sheltering others), but in the sense of being open to others, or being curious about others. […] It is an attentiveness to difference, that makes for useful, curious and surprising relations, and for a collective that can stay on a learning curve. (2008, 95)

More-than-human geographers' reconfigurations of conservation can illustrate how a careful political ecology is practiced in environmental management. These authors are skeptical about the conventional mode of conservation that aims to return to an equilibrium status by putting wild animals back in situ. Instead, they demand a different mode of conservation that ensures that "what matters to nature conservation is allowed room to breathe and to become otherwise" (Hinchliffe and Bingham, 2008, 86; Hinchliffe and Whatmore, 2006; J. Lorimer, 2015). Here, conservation is reconfigured as a speculative arrangement, through which evolving ecologies and the lively potentials of nonhumans can flourish. In this sense, conservation serves as an affirmative mode of biopolitics that governs nonhumans in order to make a life (J. Lorimer and Driessen, 2013a). Perhaps the case of rewilding discussed earlier offers a real-world example of this novel mode of conservation. A careful political ecology appears more useful for social scientists in the Anthropocene, as this new epochal diagnosis requires a renewed approach to exploring diverse ways in which humans and nonhumans intervene with each other.

5. Conclusions

In this paper, I introduced more-than-human geography, an emerging mode of geographical theorization of nature-society relations. Inspired by the material turn in geography and the social sciences, more-than-human geography is distinguished from previous theoretical endeavors by its intensive engagement with the livingness of the world. Developing useful conceptual tools (such as nonhuman agency and affect), more-than-human geographers envision a different mode of nature-society relations within which nonhumans are considered significant partners in reconstituting the world. For them, the world - i.e. nature, society - is perceived as an emergent outcome of a specific assemblage in which heterogeneous actors perform together. I argued that more-than-human geography can further develop political ecology by offering a new analytical tool in terms of the affective capacity of nonhumans and a methodological ethos of being careful to nonhuman differences and multiple becomings.

To conclude, I briefly consider the implications of more-than-human geography for Korean geographical scholarship on nature. Given that more-than-human geography has not featured much in Korean geographical studies, this new mode of theorization offers useful tools and frameworks to analyze Korean nature-society relations in different ways. An attention to the status of nonhumans as political subjects, combined with the affective and emotional relationships deployed in environmental governing, would broaden the scope of environmental analysis for Korean cases, which have largely been examined through the political ecology lens. For example, to study stray cat control, typical political ecologists would examine the power dynamics of diverse (mostly human) actors, which lead to an introduction of Trap-Neuter-Return (TNR) program as economically and ecologically rational choice (Lee, 2015). An analytical attention to the affective capacity of cats can add complexity to

this humanist understanding of TNR. As nonhuman subjects enrolled in the TNR assemblage, cats disrupt the human orderings. Their elusive behaviors, cuddly faces, and displays of suffering can evoke feelings of sympathy and guilt from TNR practitioners (Srinivasan, 2013). Such affective human-cat relations can inspire humans to consider other options more attuned to the differences of cats, such as, providing cat food.

Furthermore, the experience of accelerated modernization led by the developmental state has resulted in the concurrence of diverse forms and practices located in different time-spaces. This produces unusual modes of environmental governances (e.g. the leadership of the state in community-based ecotourism) and practices (e.g. the concurrence of eating and watching of whales for tourism purposes in Ulsan). Such characteristics are not easily mapped onto the prevalent stories of political ecology, which have been largely developed through the narrative of North-South relations; however, they can have commonalities with other developmental states that have experienced similar time-space compression. Here, the speculative methodology of more-than-human geography offers an analytical space in which "the awkward, unequal, unstable and creative qualities" (Tsing, 2005, 4) of the Korean cases can attract proper academic attention instead of being marginalized as unique exceptions. Taking an experimental and agnostic approach, Korean political ecologists can use the Korean cases as ways of illustrating the forms and practices of 'other' political ecologies (Kim *et al.*, 2012), especially those of the developmental state. This could theoretically and empirically further develop political ecology scholarship.

Notes

1) I borrow this title from Hinchliffe's (2008) paper, *Reconstituting nature conservation: Toward a careful political ecology*.
2) A few examples can be found in contemporary Korean society, including: escapes of domesticated moon bears from cages, occurrences of algal blooms in four major rivers, and rapid transformations of viruses nullifying a series of vaccine development.
3) For a recent example in geography, Hwang (2015) critically examines the characteristics and political consequences of the state-led production of nature (see also Hwang and Park, 2013).
4) For a few exceptions, see Bakker (2003) who engages with the "unruliness" of water that resists political economic transformations.
5) For an accessible introduction of ANT, see Latour (2007), Kim H-S (2006), Kim (2010) and Park (2014).
6) The structure of this section follows J. Lorimer's (2009) review of posthumanistic geographies.

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