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2 More-than-Human Sociality

A Call for Critical Description

Anna Tsing

How could it have ever occurred to anyone that living things other than humans are not social? The more one thinks about it, the more ridiculous an opposition between human sociality and non-human—what? ‘non-sociality’?—becomes. If social means ‘made in entangling relations with significant others,’ clearly living beings other than humans are fully social—with or without humans. Yet, as this volume discusses, an opposition between nature and society has been quite conventional in the modern humanities and sciences. The opposition defines what we call the social sciences, which almost never deal with the intrinsic sociality of non-humans, that is, those social relations that do not come into being because of humans. I was trained in this tradition too. I am embarrassed to see that, in my earlier work, I sometimes defined social as ‘having to do with human histories.’ Now this seems quite strange. The concept of sociality does not distinguish between human and not human. ‘More-than-human sociality’ includes both.¹

My own wake-up call occurred after an interview with a mycologist curating the fungi collection at the University of Copenhagen Botanical Gardens. I asked him about his dissertation research, and he explained that he worked on mushroom sociology. I was surprised. I had not known there was a field called mushroom sociology. Yet, of course! Whole fields of biological inquiry have been devoted to the social lives of non-human beings. For almost a century now, these fields have been underfunded and commonly dismissed as ‘mere description’; perhaps that is why they had escaped not only my thinking, but the thinking of most social scientists. Recall, too, that this negative assessment as ‘mere description’ has also been applied to anthropology. We have something in common. Indeed, the moment we seekers of the ‘social’ notice descriptive biology and natural history, something new is clear: We may have allies in studying sociality, and we might think together about how to study social relations and networks.

Perhaps some social science readers may think at this point, “Spare us such allies: socio-biologists, who reduce social life to reproductive strategy, along with evolutionary psychologists, who explain the worst features of the status quo as inevitable; these are not our theories of the social.” These

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1 are not the allies I have in mind. Those theories explain away social life,
2 rather than getting curious about it. I'm thinking instead of those, on both
3 sides of C.P. Snow's (2001) 'two cultures' (the humanities and the natural
4 sciences), who are avid about arts of description. If we want to know some-
5 thing about social life, our first step is to immerse ourselves in its ways,
6 to learn it. Across the divide between humans and other species, we have
7 work to do together.

8 I'll call that work 'critical description': critical, because it asks urgent
9 questions; and description, because it extends and disciplines curiosity
10 about life. At the intersection of ethnography and natural history, we have
11 a lot to learn about how humans and other species come into ways of life
12 through webs of social relations. Now that we are beginning to imagine an
13 anthropogenic Earth in which humans are everywhere, involved in shaping
14 everything, we need to know what more-than-human socialities are being
15 made, with or despite of clearly formulated human intentions. And now
16 that we are beginning to imagine an environmentally engaged humanity in
17 which other forms of life are everywhere, involved in shaping everything,
18 we need to know what more-than-human socialities are being made, with
19 or despite of clearly formulated human intentions. The task of this essay
20 is to open the door to this kind of work, to extend an invitation to social
21 scientists not afraid of learning about new and different kinds of sociality.

22 Opening a door is a specific kind of intellectual task, requiring imagi-
23 native leaps as much as data and argumentation. To lay out the ground in
24 which we can even consider more-than-human sociality, I need to ask some
25 alarmingly big questions. First, how did anyone ever come up with the idea
26 that non-humans are *not* social? Second, how can anyone study the social
27 worlds of other species if they can't talk to us? Third, how can we expect
28 to appreciate more-than-human sociality if we can't get around the limita-
29 tions of specifically human knowledge? Fourth, what use is any of this in
30 knowing the world? These are the questions I will raise in what follows. It
31 should be clear, however, that a small essay such as this one can only open
32 such questions, not fully and properly answer them.

33 Before this, too, there is one small piece of groundwork I can't seem to
34 avoid. What about things that are not alive? Aren't they social too? I can-
35 not think of a good reason to argue that non-vital things are not social.
36 After all, they are constituted in relations with others. They react; they are
37 transformed. There is no reason not to extend social theory to rocks and
38 rivers. Yet, there is also something specific about life. Eduardo Kohn (n.d.)
39 has a useful way of guiding us here: He argues that living things include
40 futures in what they do in the present. The yet-to-come is part of the way
41 living things react; we offer our living designs in regard to potential futures.
42 This is not the case with rocks or other non-vital things. I think this makes
43 a difference, not to the definition of sociality, but to the kinds of critical
44 description upon which analysts might embark. Critical description of liv-
45 ing things maps those designs, intentional or unintentional, that gesture
46

toward the future, making worlds for the yet-to-come as well as for the present. This essay focuses on the sociality of living things.

My ability to write about these issues depends on good company. I am inspired by Donna Haraway’s (2007) commitment to relearning humans as one “companion species” among others. Bruno Latour’s (2005) actor-network theory opened the door to theories of the social in which non-humans play a central role. Tim Ingold’s (2011) insistence that we attend to life in motion reworks the possibilities of a more-than-human anthropology. Eduardo Kohn’s (n.d.) assertion that forests ‘think,’ that is, do representational work, helps immensely. These are just a few of the theorists who push me forward. While the distinctiveness of my approach will be clear in what follows, it is less important than the contributions that these authors and more, taken together, are making to what I am calling critical description. Many social and natural scientists are already doing critical description; my job here is to appreciate our unfolding work from a new angle.

HOW COULD ANYONE EVER IMAGINE LIVING THINGS WERE NOT SOCIAL?

The moment one considers the obviousness of more-than-human sociality, the question of how we could have missed it jumps out. Of course, this is much too big a question to consider properly here, and perhaps the most useful contribution of raising it is to bring many answers to mind in every reader. There are many currents of history that congealed in a social science oblivious to non-humans. Still, there seems to me one small current that is usefully addressed to help us reopen this history. This current is the genealogy of ‘freedom’ as an attribute that separates humans from all other living things. If humans are free, while other species are mechanical toys, then perhaps human sociality is entirely unique. But do other species really lack freedom?

In the good-and-evil religions that grew up in the ancient Middle East, from Zoroastrianism to Islam, and of course including Christianity, God asks humans to choose the morally proper path: This is freedom. Humans are alone among God’s creatures in being asked to choose between good and evil. The Christian form of thinking about freedom as moral choice was inherited by the European Enlightenment, which transformed freedom into a secular exercise. Still, at least at first, secular freedom was still a moral choice. (Only later in the hands of utilitarians did it become merely the ability to pick among options, as the consumer chooses purchases.) Moral freedom was freedom of the will; it was not embodied in action, but rather a kind of mental determination. For Immanuel Kant, indeed, moral freedom was contrasted with the sensual dynamics of nature, which were mere technical achievements. Freedom was the ability to transcend nature’s call through attention to what ought to be done.²

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1 Anthropologist Talal Asad (1993) usefully contextualizes Kant's notions
2 of freedom within local genres of political discussion as well as the policies
3 of the repressive Prussian state in which Kant lived. Following Foucault,
4 Asad argues that, because subjects of the state were allowed little political
5 room for manoeuvre, all they could do was think. In contrast, Asad points
6 out, Muslim philosophers have had quite different social forms and fora;
7 their philosophies are often philosophies of action, not will alone. Yet, in
8 all its limitations, Kant's philosophy offered a charismatic view of the role
9 and rule of humans; humans are distinguished from the rest of nature by a
10 morally based freedom of action. Human sociality, it would follow, is based
11 on moral reason, while other creatures blindly obey the demands of nature.
12 No wonder their social worlds seemed insignificant.

13 Step outside for a moment to the world mycologist Alan Rayner (1997)
14 conjures in titling his book about life's cross-species challenges *Degrees of*
15 *Freedom: Living in Dynamic Boundaries*. Thinking through fungi, Rayner
16 argues that all living things have freedom to manoeuvre within the worlds
17 each of us helps to make. For each species, freedom depends on the bodily
18 form we have inherited; through it, we navigate the world. In this, humans
19 and fungi are rather similar: We both want to learn more about the worlds
20 we inhabit, for example, even as we also change those worlds. Yet fungi
21 have freedom to do lots of things we humans can never imagine, for exam-
22 ple, growing into new shapes the better to explore our environments. Like
23 comic book heroes, they transform themselves in action. We think we are
24 so special. But, just as with others, our freedom is both limited and facili-
25 tated by what our bodies can do.

26 The idea that freedom is essentially an act of will gets in the way of
27 learning about other forms of freedom. Freedom becomes intentionality
28 and planning. Yet human actions are only rarely executed from a blueprint.
29 An academic talk read from a script is an example of this, and its odd and
30 formal singularity as a kind of human action makes the point. Most of
31 the time, we do the best we can with the circumstances we find, just as
32 other creatures do. Planning is only one element in our repertoire, and it
33 hardly defines our freedom to act. The first step in appreciating more-than-
34 human sociality is to embrace a wider sense of what freedom to act might
35 mean—for humans and non-humans. This requires recognition that the
36 morality-and-planning definitions of freedom are products of an exotic and
37 limited cultural tradition, rather than good descriptions of how we live in
38 the world. We need to take freedom back from the Kantians; we need to
39 rethink its range and potential.

40 Anthropologists are already thoughtful practitioners in this. We rarely
41 imagine the social as encompassed by moral codes enacted through inten-
42 tion and planning. We are the discipline that pays special attention to learn-
43 ing about the social by 'being there', rather than just asking the opinions of
44 a few powerful people. We learn other socialities by experiencing them, not
45 through blueprints, but as ways of life. Those of us who have tried fieldwork
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in radically unfamiliar situations know how important it is to bumble our way into the sociality of others, at least until we find our feet. Clifford Geertz's (1973) cockfight story of running from the police and ending up, with other fugitives, having tea in someone's garden is exemplary: We learn social forms by being thrown into surprising situations. Fieldwork 'immersion' works because we are forced to enter other ways of life—that is, to become social—before we have any idea what we are learning.

But, of course, other living beings have ways of life too. Social relations are the forms through which ways of life are organized. They do not have to be organized through conscious direction to be social. Indeed, to stay as far as possible from the confusion between human consciousness and planning and the social, I will stay away from animal sociology in this chapter. Too often, animals are brought into discussions of social worlds by showing that their consciousness and communication overlaps with that of humans. By human standards, then, they are at least sort of social. This is the freedom we know through post-Christian common sense: The social emerges as we communicate our common and divergent *intentions*. Here we are still in Kant's world of moral freedom disconnected from action; it limits our curiosity.

Freedom is hardly the whole problem. Consider, for example, the problem of Being. In Heidegger's (2008) discussion of 'worlding', animals, unlike people, are "poor in world." But at least they have some ability to make worlds, according to Heidegger! In contrast, plants, to Heidegger, have no ability to make worlds at all—because they have nothing to compare to human consciousness. To work against the limits organized by this presumption, in the rest of this chapter I avoid animals and go straight for the social lives of plants—and their common companions, fungi. Plants and fungi do not have Levinas' ethical faces, nor mouths to smile and speak; it is hard to confuse their communicative and representational practices with our own.³ Yet their world-making activities and their freedom to act are also clear—if we allow freedom and world-making to be more than intention and planning. It is from this shared potential of freedom and world-making that we can proceed into more-than-human social lives.

HOW CAN WE STUDY SOCIAL WORLDS OF BEINGS THAT CAN'T TALK TO US?

Social scientists are used to talking to people as a way of learning. Since we can't speak directly to them, how do we know anything about the social lives of plants and fungi? Two approaches are common: attention to assemblages and attention to form. Assemblages are just those we find assembled: the plants that grow around each other on a particular landscape, for example. My inclusion of fungi with plants comes from a common assemblage arrangement: Most plants get their non-carbohydrate nutrients through the

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1 help of symbiotic fungi. Some fungi live inside plants; others twist around
 2 plant roots. Fungi feed from their plant hosts as they provide them with
 3 nutritional supplements. Many plants gather several species of fungi, and
 4 most fungi link up with several species of plants, often at the same time,
 5 forming a web across the forest. Still, these arrangements are not open to
 6 all comers. Some plants and fungi prefer each other. For humans to find out
 7 about such preferences is hard work, but not impossible. For example, one
 8 method of assessment has to do with forest succession. Some fungi prefer
 9 plant pioneers, the first to fill open spaces. Others prefer to live among
 10 the shade-tolerant species that slowly come in to replace the pioneers. Fur-
 11 thermore, the fungi participate in making these forest worlds: Some fungi
 12 facilitate the spread of forests, making it possible for trees to grow in what
 13 otherwise would be daunting places for plants; other fungi facilitate the
 14 succession of one kind of forest into another. The mushroom sociologist I
 15 met in Copenhagen wrote his dissertation on these kinds of problems.

16 A second approach is observation of bodily form. Humans don't always
 17 think about bodily form as an expression of sociality because, like many
 18 animals, we have determinate body structures. We develop our basic form
 19 between conception and adolescence; afterwards, we can lose a limb or
 20 gain a layer of fat, but we don't develop a different interface with the world.
 21 Our social lives have to do with how we move around and meet others.
 22 Many plants and fungi, in contrast, are indeterminate in their bodily form.
 23 They keep growing and changing throughout their lives. Even if they can't
 24 pick up and move to another place, they can grow into new environments
 25 and social fields. Their form shows their biography; it is a history of social
 26 relations through which they have been shaped. Alan Rayner (1997), think-
 27 ing from fungi, and Francis Hallé (2002), thinking from plants, are superb
 28 spokespeople for this perspective. Thus, for example, a tree with thick lower
 29 branches probably grew up without too many neighbours, even if you find
 30 it now surrounded by other trees. If it had grown up in the shade of others,
 31 those thick lower branches would not have developed. A tree with multiple
 32 trunks may have a fire or an ax in its biography. A gentle concave curve
 33 near its base is a sign of coppicing: That stem grew up from a stump.⁴

34 Fungi grown on artificial media offer a privileged glimpse of social his-
 35 tories inscribed in form. (The artificial medium is important only because
 36 it allows we limited humans to see the fungus, which otherwise might be
 37 in wood or in the ground.) The fungus explores the medium, leaving traces
 38 of what it finds in its bodily form. Fungal growth solves complex mazes
 39 to find patches of food. It retreats in the presence of hostile competitors.
 40 Most surprisingly, perhaps, one fungus sometimes joins a similar-enough
 41 other as an entangled mosaic. In one lovely experiment, white and brown
 42 varieties of *Pholiota nameko* became entangled and produced white-and-
 43 brown spotted mushrooms—not as offspring from a mating, but as bodily
 44 developments from the mingled pair (Babasaki et al. 2003). Form can be a
 45 materialization of social relations.
 46

Despite these exotic details, both assemblage and form are completely familiar tools for anthropologists. Whenever we study a social gathering, a community, or an institution, we pay attention to assemblages: Who is included? What kinds of status relations do they have to each other? Every time we look at material culture, performance, or even the everyday working out of social life, we pay attention to form. Indeed, some of our sites for looking at social form are human bodies—as in enactments of gender, religion, ethnicity, or in fashion or tattooing. We know how to read social relations through form. This is common ground. There is no reason that extending our analyses to these other socialities should invoke the fear, retreat, and contempt or envy that sometimes arises when humanists confront the natural sciences. Wouldn't it enrich our studies to include more-than-human socialities? We could see human histories within a multispecies field of histories.

There are some issues, indeed, for which our exclusive focus on human sociality really hurts us. I think particularly of questions of environmental change. If we want to know something about environmental change, we need to know about the social worlds other species help to build.

Furthermore, this is where a nature/society dichotomy can cause the most trouble: We think we already know how to study nature, as anthropologists. We study it in relation to human goals and needs. Anthropologists study things as gifts, as commodities, as signs, and as tools. But all of these are human projects for being with things. None allow things to have their own socialities. In contrast, in the approach I am suggesting, humans would have to join more-than-human socialities. We might not always be in charge. We might get to know other-than-human worlds in which we participate, but in which we don't make the rules.

The social lives of plants and fungi may or may not include humans. Now that humans have established themselves across the planet, it is hard to find a place where humans are not relevant. However, it is not a prerequisite of plant and fungal sociology that humans be involved. Their social relations do not need to be authorized by humans to count. Human actions may be an indirect rather than a direct stimulus to the social relations of plants and fungi. Sometimes, humans are not key players at all.

Writing about bacteria, sociologist Myra Hird (2012: 69) speaks of radical asymmetry: “[W]hile bacteria are largely indifferent to our thriving,” she writes, “we are utterly dependent upon the teeming assemblages of dynamic microbes that make up and maintain both our corporeality and our biosphere” (see also Hird 2009). Hird argues that there is not much humans can do, other than physically obliterate the planet, that will make much of a difference to bacteria. Plants and fungi have been more sensitive to human disturbances. I need human histories to tell of plant and fungal socialities. Still, as with bacteria, I need to keep in mind their relative autonomy from human designs. Plant and fungal exercises of freedom do not depend on their interactions with humans.

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1 **BUT AREN'T WE LIMITED BY OUR HUMAN KNOWLEDGE?**
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3 We only know more-than-human socialities through human knowledge
 4 practices, including practices of living. We identify other species' ways of
 5 life through working engagements, through thought projects, and through
 6 their inclusion in our technology-enhanced experimental designs. The
 7 practical arrangements through which we know them shape what other
 8 species *are* to us. We'll never have the chance to become plants. That is,
 9 indeed, a limitation.

10 But 'limitation' is not the only way to think about this situation. Our
 11 humanness is also a starting point, an opening for getting involved in
 12 multispecies worlds. Our explorations take us into new and varied social
 13 arrangements, human and otherwise. We are continually developing new
 14 ways to learn about others, extending our ways of living and knowing. We
 15 are participants as well as observers; we recreate interspecies sensibilities in
 16 what we do. We don't just identify non-humans as static others, we further
 17 learn them and ourselves *in action*, through common activities.

18 Our own human involvement in multispecies worlds is thus a place to
 19 begin. Our doings are a way to trace the doings of others. This requires
 20 following the practical arrangements and dynamic interactions of other
 21 species along with human fumbling. We might begin with arrangements
 22 humans set into motion, but then trust guides such as form and assemblage
 23 to tell us about social relations in which we are only indirect participants.

24 In this way, what I am proposing goes beyond how sociologists have
 25 addressed non-humans through questions of technology, on the one hand,
 26 and ethics, on the other. Technology refers to tools that help humans do
 27 the things we want to do. Technologies are human prostheses. Humans
 28 are always relevant players in the social networks of technology. While it
 29 is possible to follow the materials that go into a technology beyond their
 30 moment of assembly into a human tool, most analyses of technology—such
 31 as Bruno Latour's actor-network theory—are most interested in the inter-
 32 face between humans and things, as this makes technologies possible (e.g.
 33 Latour 1996). Similarly, analyses of ethics can focus on human relations
 34 with non-humans. The important moment is the interchange between per-
 35 son and other: for example, Derrida (2008) looking at his cat. In contrast,
 36 I am proposing methods that would move from technological and ethical
 37 object making to pursuing the social worlds of these objects in motion. To
 38 take one key example, we could explore multispecies landscapes—identi-
 39 fiable to us as ethics and technology, indeed, but more lively than that in
 40 their interspecies socialities. Here we would meet the challenges of critical
 41 description. Human plans would be important, but we would not just fol-
 42 low human plans; humans would be one of many historical agents. All the
 43 varied trajectories that have made an impact on the landscape would be
 44 relevant, human and otherwise. Together these would make up the land-
 45 scape's polyrhythms, that is, its enactment of multiple conjoined histories.
 46

HOW DOES THIS HELP US KNOW PARTICULAR LANDSCAPES?

So far, I have been laying the groundwork for bringing more-than-human sociality into our understandings of the social. To develop this approach, I need not only an example but also further specification of critical description. Let me turn to a particular multispecies landscape to see what kinds of social relations and histories might be relevant. My landscape is the satoyama forest of central Japan, the useful peasant forest.⁵

Satoyama can refer to the entirety of traditional peasant landscapes, including rice fields, vegetable gardens, irrigation channels, village paths, and tree plantations (Takeuchi et al. 2003). The heart of the satoyama concept, however, is the peasant woodland, and my discussion here focuses on that landscape component. Satoyama forests are not tree plantations; they are not planted but they are heavily used, and shaped in the using. Satoyama forests provide wood for firewood and charcoal making, and they are the source of non-timber forest products, such as mountain vegetables, chestnuts, bamboo shoots, mushrooms, forage, and green manure. Satoyama forests have become an object of research and advocacy in recent years because they have been in a sharp decline caused by conversion to other uses, on the one hand, and plant succession resulting from farmers' neglect, on the other. Since the 1970s, citizen groups and scientists have agitated for the restoration of satoyama forests. Satoyama forest thus refers both to an imagined social assemblage and to real forests. I follow my informants, scientists and citizen advocates, to see this object. It is a technology and an ethical matter. It is also a site of more-than-human socialities. Following my informants here allows me to let them lead the way between self-consciously human stakes and more-than-human world-making. Along the way, I'll use numbers and italics to signal postulates for the critical description of multispecies landscapes.

One: I begin with human investments because they frame the object. The satoyama forest, advocates explain, is a place of beauty and biodiversity. It is a key place for nurturing perceptions of the four seasons, they say, perceptions dear to their sense of national consciousness. In the satoyama forest, one can watch flowers opening in spring, chase dragonflies in summer, gather mushrooms among turning leaves in fall, and admire snow in winter (e.g. Kishi 2006). But passive admiration is not enough. Work is necessary to know the satoyama because work places people in the social world of other living things. For people to learn to appreciate the satoyama forest, they must make it produce for them, even if all it produces now is tourist and educational value along with specialty products such as tea-ceremony charcoal and gourmet mushrooms. The satoyama landscape must be a working landscape; otherwise it has nothing to teach.

I learned quite a few things working with advocates to restore satoyama forest. I learned how human disturbance—both planned and unplanned—has helped to shape forest architecture. Satoyama forests are open forests

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1 dominated by deciduous oaks and red pines. They exist in that form because
 2 of peasant landscape disturbances: coppicing; burning; logging; shifting
 3 cultivation. Coppicing is the practice of periodically cutting down trees
 4 that grow again from stump sprouts. Deciduous oaks make the best wood
 5 for firewood and charcoal. Cutting them maintains their forest dominance
 6 by keeping them forever young and quick-growing. Coppiced oaks regrow
 7 before other seedlings can become established. Meanwhile, Japanese red
 8 pine is a pioneer species whose seedlings need light and bare mineral soil;
 9 it does not occur in central Japan's hilly forests without disturbances—
 10 human or otherwise—such as fires, erosion, and deforestation. Before the
 11 use of fossil fuels, Japanese peasants removed much of the organic matter
 12 on their forest floors for use as green manure. This helped create the bare
 13 mineral soils loved by pine seedlings. They also cut trees and burned to cre-
 14 ate meadows and to open forest for shifting cultivation (e.g., Suzuki 2002).
 15 All this encouraged red pines, the second key component of the satoyama.
 16 Deciduous oaks and red pines create an open forest with an admixture of
 17 other trees and a diverse ground layer and wildlife. This is the secret not
 18 only of the satoyama forest's biodiversity but also of the four seasons so
 19 admired by artists and ideologues.⁶

20 *But also, two: It is dynamic relations among these species, not their*
 21 *individual enrollment as human tools, that create the forest's web of*
 22 *social relations.* Light-loving species survive because of forest clearing for
 23 firewood and the coppicing of oaks—not because farmers purposely rear
 24 them. The distinctive plants and animals of the satoyama forest thrive in
 25 the disturbed open woodlands created by peasant practices. Red pine and
 26 its associates would disappear from these forests if peasant practices did
 27 not create open spaces; yet peasants were not planting these pines, whose
 28 seeds spread and germinate readily wherever humans expose bare mineral
 29 soils. One might call the relations that grow up together in the satoyama
 30 forest a kind of multispecies design, but an *unintended* design. This almost-
 31 oxymoron highlights the independent social trajectories of the living things
 32 that gather in the satoyama forest, making worlds for themselves and for
 33 each other.

34 The satoyama forest exudes multispecies livability particularly through
 35 contrast to the kinds of forests that have grown up to replace it. Again,
 36 this is the working experience of scientists and advocates. Looking at those
 37 other forests through the window of a car is perfectly acceptable. Inside
 38 those forests, however, it is dark, crowded, and foreboding. Dark forests of
 39 two kinds have replaced satoyama woodlands: plantation forests and fore-
 40 sts of neglect. Each has a multispecies story worth telling. To even begin
 41 to tell these stories offers a reminder of the entangling of multiple scales
 42 and trajectories in the making of social landscapes.⁷ *Thus, three: Many his-*
 43 *tories, human and otherwise, come together in sites of more-than-human*
 44 *sociality. One is not enough.* Let me raise a few, emphasizing their simul-
 45 taneous multiple scales.
 46

The two most valuable timber species in Japan are not represented in the satoyama forest. These are *sugi*, *Cryptomaria* or Japanese cedar, and *hinoki*, Japanese cypress. Both are aromatic and insect resistant; both have been in demand since ancient times for building temples and mansions. That is why they are not represented in satoyama, although they occur in mixed forests. *Sugi* and *hinoki* were claimed by aristocrats even when they grew near peasant villages. By the late 19th century, state-sponsored plantations of these two trees had become common, and these plantations account for the view expressed in the English-language literature that Japan is a “green archipelago,” good on forests (Totman 1989). It was only after World War II, however, that *sugi* and *hinoki* plantations took off across central Japan on both private and state land. Broadleaf and pine forests were cut down; *sugi* and *hinoki* plantations took their place.

After the devastation of World War II, wood plantations were a national priority, especially as foreign currency was saved for oil, so no wood could be imported. Wood prices were high, and there was lots of rural labour. Plantation planners thought this situation would continue, and they encouraged close planting on steep slopes, which would require hand thinning and harvesting. Close planting meant that the plantations were dark and monotonous; little else could grow in their deep shade, and forest animals without browse quickly became pests. Then oil became cheap, and the government gave in to pressure from the construction industry to import cheap timber procured from Southeast Asia. The price of domestic wood plummeted. No one wanted *sugi* or *hinoki* except for a few specialized uses, such as ornamental posts in traditional Japanese rooms. Rural labour moved to the city. No one was left to thin the trees (Iwai 2002). It became too expensive to manage the new forests at all, and they were abandoned, crowded, dark, and increasingly full of pests and rots (Ishikawa 2009). Neither was there recreation pleasure there; besides, the mass production of plantation pollen had caused a wave of allergies that made urban people abandon trips to the countryside altogether. *Thus, four: “The best-laid schemes o’ mice an’ men/ Gang aft agley” (Burns 1786). Contingency is key to both human and non-human histories.* This is one half of the story of why satoyama started to look so good.

The other half is the story of species change in those forests that were not converted to wood plantations. The change started when the price of oil dropped. Farmers stopped using firewood and charcoal, turning instead to imported fossil fuels. They stopped gathering green manure, buying artificial fertilizers instead. They stopped coppicing and raking. They stopped disturbing the forest. Without these peasant disturbances, new species took over.

Central Japan sits at the meeting point of two suites of species: From the northeast Asian mainland come species such as deciduous oak and pine, while from the southwest come species such as evergreen oak and laurel. Peasant disturbance helped maintain the northern suite of species—not

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1 just trees, but a whole assemblage, including characteristic ants and drag-
 2 onflies. Without peasant disturbance, and with fires suppressed, southern
 3 species advanced. Evergreen oaks and laurels displaced deciduous trees
 4 (Tabata 2001). In place of the open, seasonally changing forest, they cre-
 5 ated a closed, dark canopy with few seasonal changes. The shrubs and
 6 herbs of the undergrowth died out in the shade. The birds and animals of
 7 the satoyama forest left. The new forests were dense with closely spaced
 8 evergreens; even more than the plantations, they did not permit human
 9 entry. Worse off yet were the pines. Without light openings, new pines
 10 could not get established. Even mature pines were under stress from the
 11 shade of the spreading evergreen oaks and laurels. Invasive species such
 12 as giant bamboo added to the problem. Under these conditions, a pine
 13 wilt disease carelessly imported from the United States at the beginning
 14 of the 20th century spread. Red pines died, and with them their associ-
 15 ates (Suzuki 2004). *Five: Changes in the species mix have social conse-*
 16 *quences for both humans and non-humans. Species change is not just*
 17 *about metaphors.*

18 These are the contrasts that inspired research and advocacy for satoyama
 19 forest. But restoring satoyama forest turned out to be quite different than
 20 putting in a tree plantation. The goal of restoration was necessarily *indi-*
 21 *rect*—that is, encouraging an effect by changing other things that might
 22 allow other-than-human sociality to take over the work. Interspecies inter-
 23 actions have been the heart of both research and restoration. Two brief
 24 examples can illustrate.

25 Gray-faced buzzards, which mate in Siberia and northeast China,
 26 migrate to Japan in April to nest and raise chicks, staying until the end of
 27 October before flying south. As one researcher put it, “Why do the buz-
 28 zards fly to Japan? The answer is not known, but maybe the secret is in the
 29 satoyamas” (Azuma 2003: 106). Male buzzards feed themselves and incu-
 30 bating females by perching on tall trees to survey the landscape for small
 31 amphibians, reptiles, and insects. By putting radio transmitters on male
 32 buzzards, the research team found that the birds are willing to wait only 14
 33 minutes without finding any food before moving to a new surveying site.
 34 The wealth of frogs and insects of the satoyama forest and nearby rice fields
 35 makes satoyama an ideal site for raising buzzard young. *Six: Social worlds*
 36 *pulse with multiple rhythms.*

37 My second example is research and restoration for matsutake, the high-
 38 value gourmet mushroom that is the main subject of my current research
 39 (Matsutake Worlds Research Group 2009). Matsutake is an associate of
 40 pines in the satoyama forest. Like other ectomycorrhizal fungi, matsutake
 41 wrap around tree roots, obtaining their carbohydrates from the trees even
 42 as they assist the trees in gaining water and other nutrients. Matsutake help
 43 trees grow even as they require tree hosts to survive. As mentioned before,
 44 satoyama pines—the most important host trees for matsutake in Japan—
 45 are dying. As a result, the matsutake fungus is dying too. Matsutake
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mushrooms were abundant in the first half of the 20th century in central Japan, but by the late 1970s, they had become rare.

Because people love matsutake, they are concerned: The pleasure and price of matsutake make it a charismatic object for satoyama forest restoration. But no one knows how to make this mushroom grow through direct human action. Despite millions of yen invested in university and corporate science, no one has succeeded in producing a matsutake mushroom in a laboratory or a plantation. The best anyone can do is restore the pines of the satoyama forest and hope matsutake develop with them (Ito & Iwase 1997). This is a long-term proposition. As one retired man, who has been busy restoring satoyama forest, explained, he does not expect to see any matsutake in his lifetime in the forest he works to restore. He is working for the forest, and for the future, he said. It is up to more-than-human sociality to make the matsutake emerge.

He may never see the mushrooms, but for them he immerses himself in the lifeworld of the forest. Thinking through dialogue between human Self and non-human Other may not be enough to learn multispecies worlds-in-the-making. *Seven: Humble yet ubiquitous organisms, such as fungi, draw us into worlds of many interacting species. This is a useful vantage for knowing ourselves as participants in more-than-human sociality.*

REVITALIZING CRITICAL DESCRIPTION

Delving into the life of the satoyama forest helps us think about why anthropologists might want to know about more-than-human sociality in considering environmental change in relation to landscape transformation. But how should anthropologists take on this responsibility? We might make some observations ourselves about other-than-human social relations; after all, we are already quite good at arts of observation. We also need collaborations with researchers who have focused more particularly on some of the social relations about which we want to know. Although such collaborations have been neglected, there are lots of good reasons to get to know some phytosociologists, mycosociologists, and, of course, animal sociologists. One stimulus might be our common history of struggle for the social. Consider the following: Yet another reason most anthropologists have never heard of non-human sociologies is that they have long fallen out of favour in biology. The Copenhagen curator I mentioned in beginning this essay told me that he no longer works in mushroom sociology, because there is no funding or recognition for the field. You might think I want to lay the blame on the high prestige fields of biochemistry and genome studies, but my target is older—a field that begins at the turn of the last century. At that point, the excitement in biology turned to an emergent population genetics, the field that studies the successful expansion of populations. Population geneticists argued that mutations succeed when they outcompete others;

1 thus they expand. This innovation brought together Mendelian genetics
2 and Darwinian evolutionary theory; the revolution this spawned is called
3 the ‘modern synthesis’. It became the centre of theory and innovation in the
4 biological sciences.

5 One thing stands out to me about population genetics: It depends on
6 a deeply impoverished understanding of sociality. The field’s thinking
7 depends on self-contained and non-reactive individuals. Within a species,
8 individuals compete to establish future generations. Across species, they
9 know only predators or prey. No other social relations are possible. This
10 was a productive simplification, of course. The mathematical modelling of
11 population dynamics depended upon it. However, it was hardly a platform
12 for thinking about other-than-human social relations. It did its best to kill
13 off professional natural history, and with it multispecies sociologies.

14 This kind of productive simplification is familiar to social scientists: We
15 know it from the field of economics, established around the same time on
16 the same principles. In neo-classical economics, individuals are self-con-
17 tained maximizers with simple relations of competition with others. Social
18 relations are reduced to costs and benefits. Here too the simplifications
19 have been very powerful, establishing the hegemony of this science over all
20 other sciences of the human. Anthropology grew up in the shadow of utili-
21 tarian individualism. Because of the latter’s power, we have been fighting
22 to enrich the domain of the social throughout the history of our discipline.
23 This is true too of the brave souls in other-than-human sociologies. To for-
24 mulate enriched understandings of social relations, they have had to work
25 against the grain of the non-social simplifications of population genetics.
26 In one sense they have had the advantage over humanists struggling within
27 the social sciences; no one in biology has suggested creating a discipline in
28 which species multiplicity is irrelevant. Natural historians live *with* the sim-
29 plifications of population biology, rather than the situation in anthropol-
30 ogy, where we must live *against* neo-classical economics. We might learn
31 from their “both-and” skills in elaborating on how social relations make up
32 our world. Perhaps they will benefit from our critical positions as well.

33 Such collaborations might make it possible to understand human social-
34 ity neither as conquest of other species nor as a parallel to other ways of
35 being—but instead as an ingredient in social worlds in which both humans
36 and non-humans live together. More-than-human sociality is our world as
37 well as theirs.

40 NOTES

- 41
42 1. My thanks to Kirsten Hastrup and the participants in the “Nature/Society”
43 conference who made the writing of this chapter possible. Forest walks and
44 discussions with Zachary Caple, Donna Haraway, Gail Hershatter, Andrew
45 Mathews, and Heather Swanson generated many of the ideas in this chapter.
46 The research project within which this chapter is based is the collaborative

- work of the Matsutake Worlds Research Group, including Tim Choy, Lieba Faier, Michael Hathaway, Miyako Inoue, and Shiho Satsuka, as well as myself. My particular gratitude goes to mycologist Henning Knudsen, who made me think by speaking to me about the sociology of fungi.
2. My understanding of Kant's position on freedom has been much influenced by the interpretation of Pheng Cheah (2003).
 3. For a passionate and poetic plea to extend Levinas' ethics to non-humans, particularly dogs, see Rose (2011).
 4. I am indebted to Andrew Mathews for these examples, which describe trees he pointed out during a forest walk.
 5. I am indebted to Shiho Satsuka for introducing me to the satoyama forest. I had the privilege of visiting quite a few satoyama restoration projects between 2005 and 2009; I was led by land owners, scientists, students, housewives, retired people, and other volunteers and advocates. I am grateful to many scholars of the satoyama who walked me through their research sites and findings, including Drs. Kishi, Kitagawa, Kuramoto, Natuhara, Takeuchi, Yamada, and Yoshimura. My contribution is only to put the results of their research about satoyama into the context of my argument about more-than-human sociality.
 6. To hold on to social science readers, I have identified species in this essay only by common names. Some of the key species discussed here and below are as follows: deciduous oak: see particularly *konara*, *Quercus serrata*; red pine: *akamatsu*, *Pinus densiflora*; sugi: *Cryptomeria japonica*; hinoki: *Chamaecyparis obtusa*; pine-wilt nematode: *Bursaphelenchus xylophilus*; giant bamboo: *Phyllostachys edulis*; grey-faced buzzard: *Butastur indicus*; matsutake: *Tricholoma matsutake*.
 7. See Tsing (2012) for a discussion of scale in landscape histories.

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