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18 minutes 30 seconds
color
stereo sound (dual mono)
Japan
2015

When Kato-san introduced me to the work he was doing for the prefectural forest-research service to restore the forest, I was shocked. As an American tutored in wilderness sensibilities, I thought forests were best at restoring themselves. Kato-san disagreed: If you want matsutake in Japan, he explained, you must have pine, and if you want pine, you must have human disturbance. He was supervising work to remove broadleaf trees from the hillside he showed me. Even the topsoil had been carted away, and the steep slope now looked gouged and bare to my American eyes. “What about erosion?” I asked. “Erosion is good,” he answered. Now I was really startled. Isn’t erosion, the loss of soil, always bad? Still, I was willing to listen: pine flourishes on mineral soils, and erosion uncovers them.

Working with forest managers in Japan changed how I thought about the role of disturbance in forests. Deliberate disturbance to revitalize forests surprised me. Kato-san was not planting a garden. The forest he hoped for would have to grow itself. But he wanted to help it along by creating a certain kind of mess: a mess that would advantage pine.

Kato-san’s work engages with a popular-and-scientific cause: restoring satoyama woodlands. Satoyama are traditional peasant landscapes, combining rice agriculture and water management with woodlands. The woodlands — the heart of the satoyama concept — were once disturbed, and thus maintained, through their use for firewood and charcoal-making as well as non-timber forest products. Today, the most valuable product of the satoyama woodland is matsutake. To restore woodlands for matsutake encourages a suite of other living things: pines and oaks; understory herbs; insects; birds. Restoration requires disturbance — a disturbance to enhance diversity and ecosystems functioning. Some kinds of ecosystems, advocates argue, flourish with human activities.

Ecological restoration programs around the world use human action to rearrange natural landscapes. What distinguishes satoyama revitalization, for me, is the idea that human activities should be part of the forest in the same way as nonhuman activities. Humans, pines, matsutake, and other species should all make the landscape together, in this project. One Japanese scientist explained matsutake as the result of “unintentional cultivation,” because human disturbance makes the presence of matsutake more likely — despite the fact that humans are entirely incapable of cultivating the mushroom. Indeed, one could say that pines, matsutake, and humans all cultivate each other unintentionally. They make each other’s world-making projects possible.

As sites for more-than-human dramas, landscapes are radical tools for decentering human hubris. Landscapes are not backdrops for historical action: they are themselves active. Watching landscapes in formation shows humans joining other living beings in shaping worlds. Matsutake and pine don’t just grow in forests; they make forests. Matsutake forests are gatherings that build and transform landscapes. This part of the book begins with disturbance — and I make disturbance a beginning, that is, an opening for action.

One of the most miraculous things about forests is that they sometimes grow back after they have been destroyed. We might think of this as resilience, or as ecological remediation, and I find these concepts useful. But what if we pushed even further by thinking through resurgence? Resurgence is the force of life of the forest, its ability to spread its seeds and roots and runners to reclaim places that have been deforested. Glaciers, volcanoes, and fires have been some of the challenges forests have answered with resurgence. Human insults too have been met with resurgence. For several millennia now, human deforestation and forest resurgence have responded to each other. In the contemporary world, we know how to block resurgence. But this hardly seems a good enough reason to stop noticing its possibilities.

Several practical habits are obstructions. First, expectations of progress: the past seems far away. Woodlands, where forests grow with human disturbance, retreat into shadows because the peasants who work them, as so many authors tell us, are figures from archaic times.¹ It is an embarrassment to bring them up; we’ve moved on to barcoding life and big data. (Yet how could any catalog match the force of the forest?) Thus, second, we imagine that — in contrast to peasants — modern Man is in control of all his work. Wilderness is the only place where nature remains sovereign; on human-disturbed landscapes, we see only the effects of that modernist caricature Man. We have stopped believing that the life of forest is strong enough to make itself felt around humans. Perhaps the best way to reverse this tide is to reclaim peasant woodlands as a figure for the here and now — not just the past.

For me to reclaim this figure, I had to visit Japan, where satoyama revitalization projects make human disturbance look good in allowing for the continual resurgence of ever-young forests. Satoyama projects reconstitute peasant disturbance to teach modern citizens to live within an active nature. This is not the only kind of forest I want to see on earth, but it is an important kind: a forest within which human household-scale livelihoods thrive. I follow [here] the life of the forest, as this leads into more-than-human sociality, in and beyond Japan. The trail passes through pines and oaks. Where peasant farmers have created enclaves of tentative stability in the domains of states and empires, pines and oaks (in a broad sense) are often companions. Here resurgence follows blasting: The resilience of pine-and-oak woodlands remediates the excesses of human-caused deforestation, regenerating the more-than-human peasant landscape.

Oaks and peasants have long histories in many parts of the world. Oak wood is useful. Above and beyond its strength as a building material, oak (unlike pine) takes its smooth time in burning; it makes some of the best firewood and charcoal. Better yet, felled oaks (unlike pines) tend not to die; they sprout back from roots and stumps to form new trees. The peasant practice of felling trees in the expectation that they will grow back from their stumps is called “coppicing,” and coppiced oak woodlands are exemplary peasant forests.² Coppiced trees are ever young and quick growing even as they live for a long time. They outcompete new seedlings, thus stabilizing the forest’s composition. Since coppice woods are open and bright, they sometimes find room for pines. Pines (with their fungi) colonize denuded spaces, and thus they also take up other parts of the continuum of peasant disturbance. Yet without human disturbance, pine may give way to oak and other broadleaf trees. It is this pine-oak-human interaction that gives the peasant forest its integrity: As the quick growth of pine on repeatedly human-denuded hillsides yields to long-living stands of coppiced oak, forest ecosystems are regenerated and sustained.

Associations of oak and pine define and anchor peasant forest diversity. The long life of coppiced oaks, together with the quick colonization of empty spaces by pines, create a tentative stability in which many species thrive, not just humans and their domesticated, but also familiar peasant companions such as rabbits, songbirds, hawks, grasses, berries, ants, frogs, and edible fungi.³ Like the lives in a terrarium, in which one creature produces oxygen so that another may breathe, the diversity of peasant landscapes can be self-sustaining.

1 Scholarship on the disappearance of the peasantry begins with histories of the formation of the modern (e.g. Eugen Weber, *Peasant into Frenchman* [Stanford: Stanford University Press, 1976]). In the discussion of contemporary life, the trope is used to suggest our entry into a postmodern era (e.g., Michael Kearney, *Reconceptualizing the Peasantry* [Boulder: Westview Press, 1996]; Michael Hardt and Antonio Negri, *Multitude* [New York: Penguin, 2004]).

2 Oliver Rackham, *Woodlands* (London: Collins, 2006). Some biologists speculate that oaks may have developed their ability to coppice from long association with elephants, once common in the global north (George Monbiot, *Feral* [London: Penguin, 2013]).

3 For Japan: Hideo Tabata, “The Future Role of Satoyama Woodlands in Japanese Society,” in *Forest and Civilisations*, ed. Y. Yasuda, 155–162 (New Delhi: Roli Books, 2001). For the coexistence of tree species in the satoyama, see Nakashizuka T. and Matsumoto Y., eds., *Diversity and Interaction in a Temperate Forest Community: Ogawa Forest Reserve in Japan* (Tokyo: Springer, 2002).

To walk attentively through a forest, even a damaged one, is to be caught by the abundance of life: ancient and new; underfoot and reaching into the light. But how does one tell the life of the forest? We might begin by looking for drama and adventure beyond the activities of humans. Yet we are not used to reading stories without human heroes. Can I show landscape as the main protagonist of an adventure in which humans are only one kind of participant?

Over the last few decades, many kinds of scholars have shown that allowing only human protagonists to our stories is not just ordinary human bias; it is a cultural agenda tied to dreams of progress through modernization.⁴ There are other ways of making worlds. Anthropologists have become interested, for example, in how subsistence hunters recognize other living beings as “persons,” that is, protagonists of stories.⁵ Indeed, how could it be otherwise? Yet expectations of progress block this insight: talking animals are for children and primitives. Their voices silent, we imagine wellbeing without them. We trample over them for our advancement; we forget that collaborative survival requires cross-species coordinations. To enlarge what is possible, we need other kinds of stories — including adventures of landscapes.⁶

One place to begin is a nematode — and a thesis on livability.

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Call me Bursaphelenchus xylophilus. I’m a tiny, worm-like creature, a nematode, and I spend most of my time crunching the insides of pine trees. But my kin are as well travelled as any whaler sailing the seven seas. Stick with me, and I’ll tell you about some curious voyages.

But wait: who would want to hear about the world from a bug? That is the question addressed by Jacob von Uexkill in 1934 when he described the world experienced by a tick.⁷ Working with the tick’s sensory abilities, such as its ability to detect the heat of a mammal, a potential blood meal, von Uexkill showed that a tick knows and makes worlds. His approach brought landscapes to life as scenes of sensuous activity; creatures were not to be treated as inert objects but as knowing subjects.

And yet: von Uexkill’s idea of affordances limited his tick to the bubble-like world of its few senses. Caught in a small frame of space and time, it was not a participant in the wider rhythms and histories of the landscape.⁸ This is not enough — as the voyages of Bursaphelenchus xylophilus, the pine-wilt nematode, attest. Consider one of the most colorful:

4 Reflections on this problem have emerged from science studies (e.g., Bruno Latour, “Where Are the Missing Masses?” in *Technology and Society*, ed. Deborah Johnson and Jameson Wetmore, 151–180 [Cambridge, MA: MIT Press, 2008]); indigenous studies (e.g., Marisol de la Cadena, “Indigenous Cosmopolitics in the Andes: Conceptual Reflections Beyond ‘Politics,’” *Cultural Anthropology* 25 no. 2 [2010]: 334–370); postcolonial theory (e.g., Dipesh Chakrabarty, *Provincializing Europe* [Princeton: Princeton University Press, 2000]); new materialism (e.g., Jane Bennett, *Vibrant Matter* [Durham: Duke University Press, 2010]); and folklore and fiction (e.g., Ursula Le Guin, *Buffalo Gals and Other Animal Presences* [Santa Barbara: Capra Press, 1987]).

5 Richard Nelson, *Make Prayers to the Raven: A Koyukon View of the Northern Forest* (Chicago: University of Chicago Press, 1983); Rane Willerslev, *Soul Hunters: Hunting, Animism, and Personhood Among the Siberian Yukaghirs* (Berkeley: University of California Press, 2007); Viveiros de Castro, “Cosmological Deixis and Amerindian Perspectivism,” in *The Journal of the Royal Anthropological Institute* vol. 4 no. 3 (1998): 469–488.

6 Some humanists worry about “landscape” because one genealogy leads to landscape painting, with its distance between viewer and scene. As Kenneth Olwig reminds us, however, another genealogy leads to that political unit in which moots could be gathered (“Recovering the Substantive Nature of Landscape,” *Annals of the Association of American Geographers* 86 no. 4 (1996): 630–653). My landscapes are places for patchy assemblages, that is, for moots that include both human and nonhuman participants.

7 Jakob von Uexkill, *A Foray into the World of Animals and Humans* (Minneapolis: University of Minnesota Press, 2010).

8 Von Uexkill’s bubble worlds inspired Martin Heidegger’s idea that nonhuman animals are “poor in world.” Martin Heidegger, *The Fundamental Concepts of Metaphysics: World, Finitude, Solitude*, trans. W. McNeill and N. Walker (Indianapolis: Indiana University Press, 2008).

Pine-wilt nematodes are unable to move from tree to tree without the help of pine-sawyer beetles, who carry them without benefit to themselves. At a particular stage in a nematode’s life, it may take advantage of a beetle’s journey to hop on as a stowaway. But this is not a casual transaction. Nematodes must approach beetles in a particular stage of the beetles’ life cycle, just as they are about to emerge from their piney cavities to move to a new tree. The nematodes ride in the beetles’ tracheae. When the beetles move to a new tree to lay their eggs, the nematodes slip into the new tree’s wound. This is an extraordinary feat of coordination, in which nematodes tap into beetles’ life rhythms.⁹ To immerse oneself in such webs of coordination, von Uexhill’s bubble worlds are not enough.

Just as whalers catch whales, pine-wilt nematodes catch pines and kill them and their fungal companions. Still, nematodes were not always involved in this way of making a living. As for whalers and whales, nematodes become killers of pines only through the contingencies of circumstance and history. Their voyage into Japanese history is as extraordinary as the webs of coordination they weave.

Pine-wilt nematodes are only minor pests for American pines, which evolved with them. These nematodes became tree killers only when they travelled to Asia, where pines were unprepared and vulnerable. Amazingly, ecologists have traced this process rather precisely. The first nematodes disembarked at Japan’s Nagasaki harbor from the United States in the first decade of the 20th century, riding in American pine.¹⁰ Timber was a resource for industrializing Japan, where elites were hungry for resources from around the world. Many uninvited guests arrived with those resources, including the pine-wilt nematode. Soon after its arrival, it traveled with local pine-sawyer beetles; its moves can be traced concentrically out from Nagasaki. Together, the local beetle and the foreign nematode changed Japan’s forest landscapes.

Still, an infected pine might not die if it is living in good conditions, and this indeterminate threat is a form of suspense for matsutake, implicated as collateral damage. Pines stressed by forest crowding, lack of light, and too much soil enrichment are easy prey to nematodes. Evergreen broadleaf trees crowd and shade Japanese pine. Blue-stain fungus sometimes grows in pine’s wounds, feeding the nematodes.¹¹ The warmer temperatures of anthropogenic climate change help the nematodes spread.¹² Many histories come together here; they draw us beyond bubble worlds into shifting cascades of collaboration and complexity. The livelihoods of the nematode — and the pine it attacks and the fungus that tries to save it — are honed within unstable assemblages as opportunities arise and old talents gain new purchase. Japan’s matsutake enters the fray of all this history: its fate depends on the enhancement or debilitation of the von Uexkillian agilities of pine-wilt nematodes.

Tracking matsutake through the journeys of nematodes allows me to return to my questions about telling the adventures of landscapes, this time with a thesis. First, rather than limit our analyses to one creature at a time (including humans), or even one relationship, if we want to know what makes places livable we should be studying

assemblages, gatherings of ways of being. Assemblages are scenes of livability. Matsutake stories draw us into pine stories and nematode stories; in their moments of coordination with each other they create livable — or killing — situations.

Second, species-specific agilities are honed in the coordinations of assemblages. Von Uexkill gets us on the right track by noticing how even humble creatures participate in making worlds. To extend his insights, we must follow multispecies attunements in which each organism comes into its own. Matsutake is nothing without the rhythms of the matsutake forest.

Third, coordinations come in and out of existence through the contingencies of historical change. Whether matsutake and pine in Japan can continue to collaborate depends a great deal on other collaborations set in motion by the arrival of pine-wilt nematodes. To put all this together it may be useful to think of a madrigal. A madrigal is polyphony, that is, music in which autonomous melodies intertwine. To appreciate polyphony one must listen both to the separate melody lines and their coming together in unexpected moments of harmony or dissonance. In just this way, to appreciate the assemblage, one must attend to its separate ways of being at the same time as watching how they come together in sporadic but consequential coordinations. Furthermore, in contrast to the predictability of a written piece of music that can be repeated over and over, the polyphony of the assemblage shifts as conditions change. This is the listening practice that this section attempts to instill.

By taking landscape-based assemblages as my object, it is possible to attend to the interplay of many organisms’ actions. I am not limited to tracking human relations with their favored allies, as in most animal studies. Organisms don’t have to show their human equivalence (as conscious agents, communicators, or ethical subjects) to count. If we are interested in livability, impermanence, and emergence, we should be watching the action of landscape assemblages. Assemblages coalesce, change, and dissolve: this is the story.

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Telling stories of landscape requires getting to know the inhabitants of the landscape, human and not human. This is not easy, and it makes sense to me to use all the learning practices I can think of, including our combined forms of mindfulness, myths and tales, livelihood practices, archives, scientific reports, and experiments. But this hodgepodge creates suspicions — particularly, indeed, with the allies I hailed in reaching out to anthropologists of alternative world makings. For many cultural anthropologists, science is best regarded as a straw man against which to explore alternatives, such as indigenous practices.¹³ Because of this use of the term, to mix scientific and vernacular forms of evidence invites accusations of bowing down to science. Yet this assumes a monolithic science that digests all practices into a single agenda. Instead, I offer stories built through layered and disparate practices of knowing and being. If the components clash with each other, this only enlarges what such stories can do.

At the heart of the practices I am advocating are arts of ethnography and natural history. The new alliance I propose is based on commitments to observation and fieldwork — and what I call noticing.¹⁴ Human-disturbed landscapes are ideal spaces for humanist

9 Lilin Zhao, Shuai Zhang, Wei Wei, Haijun Hao, Bin Zhang, Rebecca A. Butcher, Jianghua Sun, “Chemical Signals Synchronize the Life Cycles of a Plant-parasitic Nematode and its Vector Beetle,” *Current Biology* (10 October, 2013) <http://dx.doi.org/10.1016/j.cub.2013.08.041>

10 Kazuo Suzuki, interview, 2005; Kazuo Suzuki, “Pine Wilt and the Pine Wood Nematode,” in *Encyclopedia of Forest Sciences*, eds. Julian Evans and John Youngquist, 773–777 (Waltham, MA: Elsevier Academic Press, 2004).

11 Yu Wang, Toshihiro Yamada, Daisuke Sakaue, and Kazuo Suzuki, “Influence of Fungi on Multiplication and Distribution of the Pinewood Nematode,” in *Pine Wilt Disease: a Worldwide Threat to Forest Ecosystems*, eds. Manuel Mota and Paolo Viera, 115–128 (Berlin: Springer, 2008).

12 T. A. Rutherford, J. M. Webster, “Distribution of Pine Wilt Disease with Respect to Temperature in North America, Japan, and Europe,” *Canadian Journal of Forest Research* 17 no. 9 (1987): 1050–1059.

13 For an influential version, see Bruno Latour, *We Have Never Been Modern* (Cambridge, MA: Harvard University Press, 1993). In the legacy of French structuralism, Latour contrasts the logics of Western modernity and non-Western alternatives.

14 Here I evoke the “new alliance” of Ilya Prigogine and Isabelle Stenger’s *La Nouvelle Alliance*, unfortunately translated into English as *Order Out of Chaos* (New York: Bantam Books, 1984). Prigogine and Stengers argue that appreciation of indeterminacy and irreversible time might lead to a new alliance between the natural and human sciences. The gauntlet they lay down inspires my efforts.

and naturalist noticing. We need to know the histories humans have made in these places and the histories of nonhuman participants. Satoyama restoration advocates were exceptional teachers here; they revitalized my understanding of “disturbance” as both coordination and history. They showed me how disturbance might initiate a story of the life of the forest.¹⁵

Disturbance is any change that makes a difference in ecosystems relations. Floods and fires are forms of disturbance; humans and other living things can also cause disturbance. Human disturbance is not unique in its ability to stir up ecological relations. Disturbance can renew ecologies as well as destroy them. How terrible a disturbance is depends on many things, including scale. Some disturbances are small: a tree falls in the forest, creating a light gap. Some are huge: a tsunami knocks open a nuclear power plant. Scales of time also matter: short-term damage may be followed by exuberant regrowth. Disturbance opens the terrain for transformative encounters, making new landscape assemblages possible.¹⁶

As a beginning, disturbance is always in the middle of things: the term does not refer us to a harmonious state before disturbance. Disturbances follow other disturbances. Thus all landscapes are disturbed; disturbance is ordinary. But this does not limit the term. Raising the question of disturbance does not cut off discussion but opens it, allowing us to explore landscape dynamics. Whether a disturbance is bearable or unbearable is a question worked out through what follows it: the reformation of assemblages.

Disturbance emerged as a key concept in ecology at the very same time that scholars in the humanities and social sciences were beginning to worry about instability and change.¹⁷ On both sides of the humanist/naturalist line, concerns about instability followed after the post-World War II American enthusiasm for systems: a form of stability in the midst of progress. In the 1950s and 60s, the idea of ecosystem equilibrium seemed promising; through natural succession, ecological formations were thought to reach a comparatively stable balance point. In the 1970s, however, attention turned to disruption and change, which generate the heterogeneity of the landscape. In the 1970s, too, humanists and social scientists began worrying about the transformative encounters of history, inequality, and conflict. Looking back, such coordinated changes in scholarly fashion might have been early warnings of our common slide into precarity.

As an analytic tool, disturbance requires awareness of the observer’s perspective — just as with the best tools in social theory. Deciding what counts as disturbance is always a matter of point of view. The disturbance that destroys an anthill is different from that obliterating a human city. Points of view also vary within species. Rosalind Shaw has elegantly shown how men and women, urban and rural, and rich and poor each

15 A most useful English-language reference on satoyama is Takeuchi K., R. D. Brown, R.D., Washitani I., Tsunekawa A., and Yokohari, M., *Satoyama: the Traditional Rural Landscape of Japan* (Tokyo: Springer, 2008). For a sampling of the extensive literature, see also Arioka, Toshiyuki, *Satoyama* (Tokyo: Hosei University Press, 2004 [in Japanese]); Nakashizuka, T. and Y. Matsumoto, eds., *Diversity and Interaction in a Temperate Forest Community: Ogawa Forest Reserve of Japan* (Tokyo: Springer, 2002); Fukamachi Katsue and Morimoto Yukihiro, “Satoyama Management in the Twenty-first Century: the Challenge of Sustainable Use and Continued Biocultural Diversity in Rural Cultural Landscapes,” *Landscape and Ecological Engineering* 7 no. 2 (2011): 161–162; Asako Miyamoto, Makoto Sano, Hiroshi Tanaka, and Kaoru Niiyama, “Changes in Forest Resource Utilization and Forest Landscapes in the Southern Abukuma Mountains, Japan During the Twentieth Century,” *Journal of Forestry Research* 16 (2011): 87–97; Björn E. Berglund, “Satoyama, Traditional Farming Landscape in Japan, Compared to Scandinavia,” *Japan Review* 20 (2008): 53–68; Katsue Fukamachi, Hirokazu Oku and Tohru Nakashizuka, “The Change of a Satoyama Landscape and Its Causality in Kamiseya, Kyoto Prefecture, Japan Between 1970 and 1995,” *Landscape Ecology* 16 (2001): 703–717.

16 For an introduction to disturbance, see Seth Reice, *The Silver Lining: The Benefits of Natural Disasters* (Princeton: Princeton University Press, 2001). For an attempt to bring histories of disturbance into social theory (here psychoanalysis), see Laura Cameron, “Histories of Disturbance,” *Radical History Review* 74 (1999): 4–24.

17 Histories of ecological thought include Frank Golley, *A History of the Ecosystem Concept in Ecology* (New Haven: Yale University Press, 1993); Stephen Bocking, *Ecologists and Environmental Politics* (New Haven: Yale University Press, 1997); Donald Worster, *Nature’s Economy: A History of Ecological Ideas* (Cambridge: Cambridge University Press, 1994).

conceptualize “floods” differently in Bangladesh, because they are differentially affected by rising waters; for each group, the rise exceeds what is bearable — and thus becomes a flood — at a different point.¹⁸ No single standard for assessing disturbance is possible; disturbance matters in relation to how we live. This means we need to pay attention to the assessments through which we know disturbance. Disturbance is never a matter of “yes” or “no”; disturbance refers to an open-ended range of unsettling phenomena. Where is the line that marks off too much? With disturbance, this is always a problem of perspective, based, in turn, on ways of life.

Since it is already infused with attention to perspective, I am unapologetic about my use of the term disturbance to refer to the distinctive ways the concept is used in varied places. I learned this layered usage from Japanese forest managers and scientists, who constantly stretch European and American conventions, even as they use them. Disturbance is a good tool with which to begin the inconsistent layering of global-and-local, expert-and-vernacular knowledge layers I have promised.

Disturbance brings us into heterogeneity, a key lens for landscapes. Disturbance creates patches, each shaped by diverse conjunctures. Conjunctures may be initiated by nonliving disturbance (e.g., floods and fires) or by living creatures’ disturbances. As organisms make intergenerational living spaces, they redesign the environment. Ecologists call the effects organisms create on their environments “ecosystems engineering.”¹⁹ A tree holds boulders in its roots that otherwise might be swept away by a stream; an earthworm enriches the soil. Each of these is an example of ecosystems engineering. If we look at the interactions across many acts of ecosystems engineering, patterns emerge, organizing assemblages: unintentional design. This is the sum of the biotic and abiotic ecosystems engineering — intended and unintended; beneficial, harmful, and of no account — within a patch.

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Species are not always the right units for telling the life of the forest. The term “multispecies” is only a stand-in for moving beyond human exceptionalism. Sometimes individual organisms make drastic interventions. And sometimes much larger units are more able to show us historical action. This is the case, I find, for oaks and pines as well as matsutake. Consider oaks: They do not take “species” very seriously, interbreeding readily and with fertile results across so-called species lines. But of course what units one uses depends on the story one wants to tell. To tell the story of matsutake forests forming and dissolving across continental shifts and glaciation events, I need “pines” as a protagonist — in all their marvelous diversity. Pinus is the most common matsutake host. When it comes to oaks, I stretch even farther, embracing Lithocarpus (tanoaks) and Castanopsis (chinquapin) as well as Quercus (oaks). These closely related genera are the most common broadleaf hosts for matsutake. My oaks, pines, and matsutake are thus not identical within their group; they spread and transform their storylines, like humans, in a diaspora.²⁰ This helps me see action in the story of assemblage. I follow their spread, noticing the worlds they make. Rather than forming an assemblage because they are a certain “type,” my oaks, pines, and matsutake become themselves in assemblage.²¹

18 Rosalind Shaw, “‘Nature,’ ‘Culture,’ and Disasters: Floods in Bangladesh,” in *Bush Base: Forest Farm* ed. Elisabeth Croll and David Parkin, 200–217 (London: Routledge, 1992).

19 Clive Jones, John Lawton, and Moshe Shachak, “Organisms as Ecosystems Engineers,” *Oikos* 69 no. 3 (1994): 373–386; Clive Jones, John Lawton, and Moshe Shachak, “Positive and Negative Effects of Organisms as Physical Ecosystems Engineers,” *Ecology* 78 no. 7 (1997): 1946–1957.

20 Consider a world with multiple interbreeding hominids; we might imagine resemblance beyond species more readily in that world. Our loneliness without closer cousins shapes our willingness to allow each species to stand apart in a Biblical tableau.

21 This process is what Donna Haraway usefully calls “becoming with” (*When Species Meet* [Minneapolis: University of Minnesota Press, 2007]).

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Peasant forests have only recently come into focus in Japan. Before the last thirty years, foresters and forest historians were obsessed with the aristocrats among trees: Japanese cedar and cypress. When they wrote about Japan’s “forests,” they were usually thinking about just these two trees.²² There is good reason: These are beautiful and useful trees. Sugi, called “cedar” but really a distinctive *Cryptomeria*, grows straight and tall like a California redwood, producing a glorious, decay-resistant wood for boards, paneling, posts, and pillars. Hinoki, Japanese cypress (*Chamaecyparis obtusa*), is even more impressive. The wood is sweetly scented and can be planed to a beautiful texture. It resists rot. It is the perfect wood for temples and makes beautiful floors. Both hinoki and sugi can grow to enormous sizes, allowing awe-inspiring posts and boards. No wonder that Japan’s early rulers did their best to cut down all the sugi and hinoki in the forest for their palaces and shrines.

Early aristocratic fixation on sugi and hinoki opened possibilities for peasant claims on other trees — particularly oaks.²³ In the 12th century, wars fractured the unity of aristocrats, allowing peasants to institutionalize claims to village forests. What trees defined the village forest? Japanese are proud of their location at the crossroads of temperate and subtropical suites of plants and animals: Japan has “four seasons” and is green all year round. Subtropical plants and insects are shared with Japan’s southern neighbors in Taiwan; a cold-weather flora and fauna is shared with the northeast Asian mainland. Oaks stretch across this divide. Deciduous oaks, with large, translucent leaves that turn color and fall off in winter, form part of the northeast flora. Evergreen oaks, with smaller and thicker leaves that are green all year, come from the southwest. Both kinds of oaks are useful for fuel and charcoal. But in some important, tradition-setting parts of central Japan, deciduous oaks are preferred to evergreens. Peasants weeded out evergreen oak seedlings, along with the rest of the underbrush and grass that grew under the trees, privileging the deciduous species. This choice made a difference for the oak-pine relationship — and the architecture of the forest: Unlike evergreen oaks, which offer constant shade, deciduous oaks leave bright spaces in the winter and spring where pines, as well as temperate herbaceous plants, might have a chance. Furthermore, peasants continually opened up and cleaned out the forest, letting pines and other temperate species in among the oaks.²⁴

Unlike pre-modern European peasants, pre-modern peasants in Japan did not raise milk or meat animals, and so they could not fertilize their fields with manure as Europeans did. Gathering plants and forest duff for green manure was a major occupation of peasant life. Everything on the forest floor was taken, leaving the forest floor cleared to the bare mineral soils favored by pine. Some areas were opened up to favor grass. The pillars of this disturbed forest were coppiced oaks; the most common was *Quercus serrata*, known as konara. Oak wood was useful for all kinds of things, from firewood to growing shiitake mushrooms. Periodic coppicing kept the oak trunk and branches young, allowing oaks to dominate the forest, since they grew back faster than other species could become established. On ridges, in open meadows, and on denuded hillsides grew akamatsu red pine, *Pinus densiflora*, with its partner matsutake.

22 Conrad Totman follows earlier Japanese historians in this in *The Green Archipelago: Forestry in Preindustrial Japan* (Berkeley: University of California Press, 1989).

23 This paragraph draws from Totman, *The Green Archipelago*; Margaret McKean, “Defining and Dividing Property Rights in the Commons: Today’s Lessons from the Japanese Past” (International political economy working paper #150, Duke University, 1991); Utako Yamashita, Kulbhushan Balooni, and Makoto Inoue, “Effect of Instituting ‘Authorized Neighborhood Associations’ on Communal (Iriai) Forest Ownership in Japan,” *Society and Natural Resources* 22 (2009): 464–473; Gaku Mitsumata and Takeshi Murata, “Overview and Current Status of the Irai (Commons) System in the Three Regions of Japan, from the Edo Era to the Beginning of the Twenty-first Century” (Discussion Paper No. 07–04. Kyoto: Multi-level Environmental Governance for Sustainable Development Project, 2007).

24 Hideo Tabato, “The Future Role of Satoyama.”

Japanese red pine is a creature of peasant disturbance. It cannot compete with broadleaf trees, which both shade it out and create rich and deep humus layers that only add to their advantage. Paleobotanists find that red pine pollen increased dramatically from almost nothing several thousand years ago when humans first begin to deforest the Japanese landscape.²⁵ Pine thrives with peasant disturbance: the bright sunshine of clearing and coppicing; the bare, raked mineral soils. Oak can drive out pine on peasant hillsides. But the practices of coppicing and the gathering of green manure created complementary spaces for konara oak and akamatsu pine. Matsutake grew with the pine, helping it to find a footing on ridges and eroded slopes. In particularly denuded areas, flush with pine, matsutake was the most common forest mushroom.

In the 19th and early 20th century, members of Japan’s burgeoning urban middle class began to visit the countryside on outings associated with the search for matsutake. This had once been an aristocratic prerogative, but now many could participate. Villagers designated areas of pine and matsutake as “guest mountains” and charged urban visitors for the privilege of a morning’s mushroom picking followed by a sukiyaki lunch in the refreshing outdoors. This practice wove an affective bundle in which matsutake hunting wraps all the pleasures of rural biodiversity into the escape from ordinary cares. Like childhood visits to one’s grandparents’ farm, matsutake outings scent the rural with nostalgia, and this scent has continued to influence present-day appreciation of rural landscapes.

Contemporary advocates of the restoration of Japanese peasant landscapes may aestheticize the peasant forest as the planned result of traditional knowledge, creating nature and human needs in harmony. Yet many scholars suggest that these harmonious forms developed out of moments of deforestation and environmental destruction. Kazuhiko Takeuchi, an environmental historian, stresses the extensive deforestation associated with Japan’s industrialization in the mid-19th century.²⁶ He argues that historical changes have been key to the peasant forests advocates have come to imagine, the forests of the first half of the 20th century. In the late 19th century, Japan’s modernization put pressure on peasant forests, leading to massive deforestation in central Japan. Visitors noted the array of “bald mountains” visible along the roads. By the turn of the century, these bare hillsides were growing back in akamatsu pine. In some cases, pine was planted, for example, for watershed management; but akamatsu seeds spread everywhere, and the pine, with the help of matsutake, came up by itself. In the first part of the 20th century, matsutake was as common and abundant as the pine forests. With growing demands for firewood and charcoal, oak coppicing was also active. The pine-oak woodlands of contemporary nostalgic views were in full flower.

Fumihiko Yoshimura, a mycologist and pine-forest advocate, stresses a later deforestation: the disturbance of the forests leading up to and during World War II.²⁷ Trees were cut down not only for peasant uses but also as fuel and building supplies for the military buildup. The peasant landscape was significantly denuded. After the war, these

25 Matsuo Tsukada, “Japan,” in *Vegetation History*, eds., B. Huntley and T. Webb III, 459–518 (Dordrecht: Kluwer Academic Publishers, 1988).

26 Interview, 2008. Deforestation was associated with logging, shifting cultivation, the spread of intensive agriculture, and residential settlement. See Yamada Asako, Harada Hiroshi, Okuda Shigetoshi, “Vegetation Mapping in the Early Meiji Era and Changes in Vegetation in Southern Miura Peninsula,” *Eco-Habitat* 4 no. 1 (1997): 33–40 (in Japanese); Ogura Junichi, “Forests of the Kanto Region in the 1880s,” *Journal of the Japanese Institute of Landscape Architects* 57 no. 5 (1994): 79–84 (in Japanese); Kaoru Ichikawa, Tomoo Okayasu, and Kazuhiko Takeuchi, “Characteristics in the Distribution of Woodland Vegetation in the Southern Kanto Region Since the Early Twentieth Century,” *Journal of Environmental Information Science* 36 no. 5 (2008): 103–108.

27 Interview, 2008. About one well documented Kanto forest, Wajirou Suzuki notes the acceleration of logging: “With development of domestic industries after World War I, the demand for charcoal increased dramatically, and during World War II, charcoal-burning and manufacturing equipment for military horses became the main industries in the area.”

landscapes experienced regreening: Pines grew up on bare landscapes. Dr. Yoshimura would like to restore the pine forests to a 1955 baseline, a time of regrowth. After that, instead of renewal, the forests deteriorated.

Here I want to spotlight the question of how great historical disturbances may open possibilities for the comparatively stable ecosystem of the ever-young and open peasant forest. It is ironic that these episodes of deforestation gave rise to the forests that have become the very image of stability and sustainability in much contemporary Japanese thought. This irony does not make the peasant forest less useful or desirable, but it shifts our appreciation of the work of living with forest resurgence: everyday peasant efforts are often responses to historical shifts far out of their control. Small disturbances eddy within the currents of big disturbances.

From
The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins
by Anna Lowenhaupt Tsing
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Left in the audible dark, listening to the crackling sound of forest, slowly coming to the phase of existence that is vision, following earthy grounds constituting a landscape of the informe — a beyond form. The film Shape Shifting composes a territory imbued with activity. The 16 mm film activates a specific sensation of color, sound and movement of different territories and different scales. Over almost 20 minutes the images give a poetic, slow and heterogeneous account of a particular Japanese landscape, satoyama, and the way it activates human and more-than-human engagements. Color becomes a refrain for the viewer creating a close entanglement between color-tonalities of the landscape and their effects as imprints on the celluloid. The shapes of the landscape are under constant negotiation. The camera follows the different human engagements with the rural land, slow, manual, sometimes machine-enhanced encounters, shifting radically the scape through burning fields of grassland, or digging up the earth. Left alone the images depict a curiosity for the trans-species and trans-material ciruclations and the way they seem to proceed in resonance on the same ground. The camera moves from grassland to forest, to close-ups of flora and fauna, to farming activities, from interiors of rural homes to the structures of a biomass power plant without any strict linearity. Its gestures are round, swift and gentle. The only straight line occurs when the camera appears to be a pig’s point of view searching the territory. Sound and image create their very own refrains throughout the film resisting any sense of homogeneity.

Relation takes precedence over concrete form, reference or representation. Traces of representation, however, are not absent. At some point the rural impressions of sweeping gestural color-images jumps into its economic envelope, the vegetable market, the labor of farming and appropriation of the land, of building and constructing. The representational envelope of value extraction, of some sort of exchange and transformation from land to commodity, perishes again once the images return to close-ups of blossoms and scenes dominated by the sound of wind. However, through its focus on rhythm, there is no antagonism between “natural” and “human” or “technological” image contents. Their relation

is not necessarily one of clash and contrast but of mutual inclusion beyond a human-nature divide. The territory that manifests its presence through the images comes alive through many micro-cuts constituting heterogeneous series of movements such as solar panels with cars in the background, workers building a charcoal burner, a frog sitting on a human palm. Everywhere we move with the traces of activity, along different zones of mutual engagement. But instead of an account “after the fact” the images feed forward into a different, sensuous, mode of activation. The relay between the action at a temporal distance and the filmic affection creates a new territory. The values of labour, appropriation, and harnessing of energies through nature gives way to another set of values that are more-than-human and beyond quantification or representation. Through the specific rhythms of Shape Shifting, the film opens an aesthetic register of the territory as composition, a sonorous composition of polyrhythmic qualities, a territory that expresses itself in waves and undulations forming series ready to be taken up in another context thus constituting a different, transversal, process of making new (existential) territories of sensation.

Introduction

Shape Shifting activates a relaying of processes of territory-making while preserving the singular rhythm of a territory. The notion of the territory immediately evokes the question of its composition, its dynamics and transformation. How is a territory neither a definite place nor an abstract space? It is here, where I see the main concern when it comes to the question of the territory as an active and dynamic field for relations of different strata to conjunct. A territory never comes as one but always as more-than-one, as a field crossed and constituted by the movements of “populations, packs and colonies, collectives and multiplicities.”¹ To a certain extent a territory is a relational field with geographical traits: “Geographical areas can only harbour

1 Gilles Deleuze, Félix Guattari, *A Thousand Plateaus*, trans. By Brian Massumi (Minneapolis: University of Minnesota Press, 1987), 48.

a sort of chaos, or, at best, extrinsic harmonies of an ecological order, temporary equilibriums between populations.”² The relation between populations appears as central figure. The concept of populations undergoes a crucial shift from a societal context of the human toward a more-than-human register.³ This shift allows to open up registers of material, organic and affective kinds. But how then, can we cope with this quasi chaos of these geographical areas in a world that tends to move far from equilibrium? When dealing with a particular yet generic territory, for instance that of the Japanese satoyama, I wonder how one can account for its temporary equilibriums as being unbounded and yet capable of relating to its “extrinsic harmonies of an ecological order?” Asking further, in which way does the notion of ecology afford a transformation in relation to what it includes, again, moving far from equilibrium beyond a romantic notion of harmony? Put differently, if a territory is a composition of a constitutional power for relations to occur in their conjunctive capacities, the ecological impetus asks, how to make ecology an open process of transvaluation? Transvaluation names the constant shifting of modalities in the composition of a territory generating its very dynamics and by that rendering its capacities to relate graspable.

In resonance with *Shape Shifting* the question of the territory extends its scope beyond a reduced natural ecology in relation to human appropriation towards an utterly inhumane dimension, which one might call *aesthetic*. Aesthetic as a realm of the inhumane defines the very field of relations composing the way a territory holds together without being finitely bound. Beyond the use-value or human-nature relation between humans and the land, the aesthetic dimension of the more-than-human seeps through the filmic expression of *Shape Shifting*, taking account of the circulation of values that cannot be subsumed under human categories.

Shape Shifting, the way I relate to this film, marks an investigation into the more-than-human values imbued within a territory.

A territory that, to follow Bernard Cache's elaborations on spatio-temporal dynamics and memory, is not defined by identity but by a certain specificity.⁴ This difference, I hope to illustrate along the way, is crucial if one wants to evade a substantialist account of a place. The audio-visual appearance of satoyama, in other words, provides a segue into thinking territories as expressive of dynamic processes of transvaluation which are specific without being identitarian. The crucial difference at stake is a thinking of the territory as open plane for different forces to insert themselves in the composition of the territory neither becoming relativistic nor indeterminate from the outset nor becoming an enclosed system that falls into a false paradigm of sustainability by means of equilibrium. In following the transformations of values along the compositional relations of the territory of satoyama as it surfaces in *Shape Shifting*, I propose to develop a conception of an inhuman or more-than-human aesthetics. In consequence, such an inhuman aesthetic account opens up a dimension of life beyond human values and thus potentially bears a different kind of politics, an affective politics.

Beyond Harmony

The question of satoyama, the Japanese landscape between village and mountain, but also between *sato* as human community and *yama* as nonhuman nature, resides in its *hypernaturalization*. By this term I mean how a specific landscape undergoes different waves of territorialisation through different forces of which the most significant seem to be attributed to what is defined as human.⁵ Human, in the discourse on satoyama, is often considered as the culture-pole on a continuum that is met by nature on its other end.⁶ This binary, however, has been criticized in several strands of contemporary cultural theory, such

as Science and Technology Studies with Bruno Latour as one of its key proponents⁷, feminist posthumanist theory like the works of Donna Haraway or the more recent discourse on speculative realism and new materialism. While most of these strands of theorizing tend to extend the range of actors contributing to the fabric of what constitutes the real, I consider ecological conceptualizations beyond an environmentalist stance, as to be found in the works of Gregory Bateson and Félix Guattari some of the more inclusive and, to use Guattari's term, transversal modes of thinking the more-than-human. The more-than-human takes on a specific role here, not nurturing the schism of a human-nature discourse and the critiques based on the presumption of their primordial difference (a point Bruno Latour attempted to tackle) but an account of existence in its differentiating and resonating modes. The crucial shift I am aiming at consists less in moving from the human as the Archimedean point of action towards a “world” at large that is a realm of the nonhuman conditioning any mode of action, rather I seek for a conception of the more-than-human which includes modes of sensing, feeling, and affecting. As modes of existence they propose different “manners of being” without relying on finite substances.⁸ A mode defines a specific capacity for relating, for affecting and being affected, under specific circumstances. The affective realm of existence poses the crucial question towards life of how to take existence not by “what there is” but “how to subsist.”⁹ Modes of existence are ways of subsisting, ways of creating affections and resonances, develop relays across different strata of existence. These strata, I suggest, are as much of an aesthetic and ethical nature and nature itself being neither a given nor something artificial but a first phase of existence from which the differential unfolding of life takes its course.

Implicitly such an account of the more-than-human as the ethico-aesthetic plane immanent to the composition of a territory includes not only multiple temporalities in its dynamic unfolding but resists a linear history of the human-nature relation. One of the major critiques of the current debates concerning the discourse on the *anthropocene* revolves around its bold (re)instantiation of a given nature, as resource ready for primitive accumulation, and the rise of industrialization, respectively the fossil fuel and steam paradigm, as its historical markers to be found in the 18th century. The human-nature bond extends into the discourse around satoyama as specific landscape subdued to human treatment increasing biodiversity and its relation to contemporary debates around climate change.¹⁰ Some discussions on satoyama fit it neatly into current narratives of the anthropocene emphasizing its recuperation as specific territory for sustainable forms of landscape conservation and extraction of alternative energies thus responding to governmental measures addressing climate change.¹¹ However these linear narratives clash with the dynamic and continuous transformation of the landscape depending on shifting social needs and values as much as transformations on the level of organic and inorganic life. In its very own way of territory-making satoyama undoes the grand narrative of its landscape being an ideal example of the harmony between humans and nature by resisting clearly definable measures of how to live better, more sustainable and environmentally sound. While part of the literature underlines satoyama's heterogeneous historical developments and continuous transformation, its objective remains in the frame of sustainable life where humans are the subjects responsible for its treatment. One of the repeated arguments is the apparent fact that through irrigation systems, paddy fields, and a sustainable use of forestry as energy resources actually increases biodiversity. The increase of biodiversity, for all its positive connotations, limits the potential and scope of satoyama as a diverse territory beyond the human value structure focused on energy management. This is because of

4 Bernard Cache, *Earth Moves: The Furnishing of Territories* (Cambridge Mass.: MIT Press 1995), 15.

5 Makoto Yokohari, Jay Bolthouse, “Keep It Alive, Don't Freeze It: a Conceptual Perspective on the Conservation of Continuously Evolving Satoyama Landscapes,” *Landscape Ecology* 7 (2011): 207–216, 201.

6 Tsugihiko Watanabe, “Local Wisdom of Land and Water Management: The Fundamental *Anthroscape* of Japan,” *Sustainable Land Management*, ed. By S. Kapur et al. (Berlin/ Heidelberg: Springer, 2011), 351–362.

7 Bruno Latour, *We Have Never Been Modern* (Cambridge Mass.: Harvard University Press, 1993).

8 Gilles Deleuze: “Cours de Gilles Deleuze: Spinoza–Ontologie –Ethique,” *Webdeleuze* (1980), accessed at: <http://www.webdeleuze.com/php/texte.php?cle=23&groupe=Spinoza&langue=2>

9 Gerald Raunig, *DIVIDUUM: Maschinischer Kapitalismus und molekulare Revolution* (Vienna: Transversal Texts, 2014), 248–251.

10 Tsugihiko Watanabe, “Local Wisdom,” 357.

11 Makoto Yokohari, Jay Bolthouse, “Keep It Alive,” 210.

a conception of nature as externalized to human action while reiterating their mutual influence and possible consolidation in harmony. In this sense, satoyama as *anthroscape*¹² aligns perfectly with a historical and environmental account of the human-nature binary, which has to be overcome in order to recuperate the possible transformations of value immanent in the composition of territories.

Value in the Age of the Capitalocene and the Common Phase of Nature

Investigating the composition of a territory requires a different take on nature as such. The dynamic relations between different “regimes” including human activities and the “regional natural” mark a decisive step towards another life-continuum based on dynamics and movements between different modes of existence.¹³ Despite the accounting for the intrinsic mutual involvement of natural processes and what might be considered human or cultural, these non-modern histories still re-instantiate categorical divides without attending to the relational fabric of the more-than-human as ground from which these domains arise. With the notion of the territory I propose to follow a specific yet open account of the differential dynamics constituting different modes of living and subsisting along the continuum of nature. Rather than seeing the territory as object of the human subject we follow processes of transformation or transvaluation “*co-produced* by human and extra-human natures.”¹⁴ Jason W. Moore’s critique opposes the anthropocenic discourse with a much more extensive account of what he calls the *Capitalocene*. Instead of attributing the dawn of the anthropocene to the 18th century emergence of forms of industrialization, he considers the capitalocene as different regimes of *value relation* where “capital is value-in-motion is value-in-nature. Value is a bundled relation of human and extra-human

natures.” He further unfolds his argument: “This perspective [of the co-production of human and extra-human natures] views capitalism as, at once, producer *and* product of the web of life. The patterns of co-production are contingent but coherent, and this coherence reveals itself in specific patterns of environment-making that reach well beyond conventional reckonings of landscape change.”¹⁵

Two points are crucial in Moore’s critique. On the one hand he perceives a general rift between the philosophical recognition of humanity-in-nature and the construction of histories of human relations prior to the web of life. On the other hand his conception of capitalism interlaces different forms of value production within a general “remaking of land and labor beginning in the ‘long’ sixteenth century, c. 1450–1640.”¹⁶ From here he develops the decisive concern for the underlying development of the notion of territory: Taking the transformations of value relations of early modernity as historical hallmark for the rise of the capitalocene, one might wonder if “industrialization is the most useful concept for explaining large-scale and long-run patterns of wealth, power, and nature in historical capitalism?”¹⁷ The alternative, he suggests, perceives large-scale processes, such as industrialization, moving through nature itself productively shaping a general *capitalist world-ecology* based on the constant transformations of value. In this sense, all aspects of the ecology, meaning all their modes of existence, contribute to the fabrication of value which in turn constitutes as *specific* territory. The continuous reshaping of value through making territories appear in satoyama’s transformations over the centuries and its continuing dynamic evolution resisting any coherent scheme of conservation. From this point of view, the making of a territory binds forces, contracts them and, in worst case scenarios, attempts to put them on hold — as in “controlling” — while the always already fully operating dynamics deterritorialize the entire system. Capitalism’s power of transvaluation underlines its very abstract dynamic of capture and release. Taking transvaluation seriously as a practice

means to invent with the making of a territory as world-making-practice resisting redundancy while moving creatively with the general dynamics of a relational field. It means to detach the concept of value from a human scheme of surplus and to activate values immanent in nature constituting specific territories in excess of their harnessing through capital.

In a first step, the concept of nature needs to be included into every domain of existence, marking a decisive phase common to all existence. This differential account of existence enables us to see nature as a first phase of existence in becoming (i.e. individuation), as the relational mesh, which is the ground for a territory to form.¹⁸ Nature, as Gilbert Simondon understands the term, is a “*reality of the possible*” or a realm of potential, which, in fact, is phaseless and only becomes a first phase when it relates to a process of individuation, that is, the making of a territory. In the midst of a phaseless potential of a common nature the human and extra-human natures compound relationally, activating or experimenting with different modalities of existence. In this attribution of nature as real potential the question of value expands from an economic grid towards a continuous transformation of an ecology rich with affections, capable of making transvaluation a life-practice. As practice transvaluation relies on the activation of different existential elements co-shaping a territory. If capitalism targets value relations, then the question of how to compose existential territories figures crucially as a political mode of activating values escaping capitalist capture (i.e. redundancy). For Moore, capitalism exercises a symbolic reduction externalizing nature. He writes: “Capitalism as project, emerges through a world-praxis that creates external natures as objects to be mapped, quantified, and regulated so that they may service capitals’ insatiable demands for cheap nature.”¹⁹

This brings us right to the second step addressing the aesthetic as environment-making practice. For Moore capitalism targets a symbolic transition between land or territory and its appropriation — only what can be drawn out can be seized upon. “The new imperialism

of early modernity was impossible without a new way of seeing and ordering reality. One could conquer the globe only if one could see it.”²⁰ Moore describes what I would call a representational regime of ordering the sensible, attuning its key signs to concrete values and their foreseeable transformations. In resistance to such a representational regime, it is the aesthetic domain of transvaluation that plugs right into the *common phase of nature* capable of activating new forces of the more-than-human resisting the coupling of capitalist quantification of value and perception. The shift from nature as externalized in representation towards nature as an aesthetic field of active values of the more-than-human leads us to a reconsideration of a general ethics.

An Ethico-Aesthetic Politics of the Sensible

The relation between value, aesthetics and ethics emphasizes the shift from an analytical take on the ecological as bound to the human-nature-binary towards an ethico-aesthetic politics of activation. Guattari writes, “ethical and aesthetic values do not arise from imperatives and transcendent codes. They call for an existential participation based on an immanence that must be endlessly conquered.”²¹ How can we engage in processes of transvaluation that take the making of a territory as inclusive process of human and extra-human values to actively generate an existential participation based on immanence? In an anthropocenic discourse satoyama figures as a suitable terrain for engaged, local and sustainable human practices of resourceful environmentalism. While climate change is a matter of fact as much as it is a matter of concern, I would follow Moore’s assertion that only on the level of value transformation such “programmed” environmental engagements can surpass their relation to a capitalist value system. In relation to climate change satoyama becomes a perfect example of the meeting of (world) governmental requirements in direct reference to negotiations with large-scale

12 Tsugihiko Watanabe, “Local Wisdom.”
13 Ibid., 361.
14 Jason W. Moore, “The Capitalocene: Part I: On the Nature & Origins of Our Ecological Crisis” (2014): 6, accessed at: http://www.jasonwmoore.com/uploads/The_Capitalocene__Part_I__June_2014.pdf

15 Ibid., 6.
16 Ibid., 11.
17 Ibid., 9.

18 Gilbert Simondon, *L’individuation à la limière des notions de forme et d’information* (Grenoble: Millon, 2005), 305.
19 Jason W. Moore, “The Capitalocene,” 12.

20 Ibid., 21.
21 Félix Guattari, *The Guattari Reader*, ed. By Gary Genosko (Cambridge: Blackwell, 1996), 266.

industries. Instead of challenging the entire world-ecology of capitalist value relations immanent to the capital-environmentalism nexus the conservation paradigm of landscape management inhibits more-than-human forces to transform or rather transversalize the notion of value in general. In the words of Guattari, “values have universal significance to the extent that they are supported by the Territories of practice, experience, of intensive power that transversalize them.”²²

Shape Shifting is a filmic expression following these more-than-human forces co-composing the territory of the film and through it a different engagement with satoyama. The film follows practices, an entire ecology of practices, whose actors are not always clearly identifiable. Action or rather activation takes precedence over the actor. The onlooker feels immersed in a sphere of minor gestures, of series of movements and transformations. Most strikingly, despite the use of “old” technology, such as the 16 mm camera, no feeling of romanticism or of romanticizing occurs. The juxtaposition of different movements, such as a biomass power plant and a river do not oppose these realms, neither is the image targeted on contrast but rather exposes the transvaluative activities constitutive of the territory. We perceive a world of constant mutual inclusion. At the same time, the appropriation of the land for the extraction of resources remains as striking fact of the filmic account of satoyama. The mode of inserting into the dynamic territory of satoyama moves through the gestural qualities of the camera. Generating a visual realm of haptic gestures, of haptic vision, opens a different aesthetic register neither to be found in the environmental writing about satoyama nor its prominent exposure in the animation movie *My Neighbor Totoro* (1988).

If we consider satoyama, as Marhöfer and Lylov suggest, as a membrane between different modes of existence, then the landscape becomes a territory of transvaluation. In the specific aesthetic expression of *Shape Shifting* a new conception of an ethics of value arises beyond a moral foreclosure exercised through a moralist discourse often inscribed in issues of

climate change. For Simondon value defines a process of integration, “an unlimited complementarity between the individual and other individuals.”²³ Simondon conceives of value as action, as potential capacity to relate. *Shape Shifting* draws our attention to the realm of values that activate another sphere than the relation between humans and nonhumans. The more-than-human defines the in-between zone of formative forces in mutual co-becoming in their very process of mutual activation. If we perceive, as Simondon does, the individual not as entity but a continuous process of individuation, its ethics exercised through value relies on the constant reactivation of potential for becoming. In this differentiating process values become the very capacities of specific relations transforming and shifting in resonance with a multiplicity of other relations. The quality of the film’s aesthetic expression is less its juxtaposition of heterogeneous elements generative of the satoyama landscape but rather the way relations and their capacities tune into each other without having to overcode their different ways of subsisting, their manners of being. Beyond a logic of synthesis yielding harmony *Shape Shifting* moves through different tonalities of a territory brimming with affection. It traces populations of relational movements collectively shaping the territory. The mutual immanence of sound and visual images is carried along the specific color tonalities of the 16 mm film material opening up a virtual territory of sensation. Sound and vision are two specific aesthetic forces with their very own ways of forming populations of an affective kind in resonance with a territory. The film practices what Simondon understands as the aesthetic act, that of *insertion*. Insertion goes beyond a mere subjective will to enter a process. It actively engages capacities for relating and participation in the very becoming of a territory. Ethics as continued process of individuation of a territory always inserts into the more-than-human aesthetic field of potential, its very capacity to relate in becoming. It is here where transvaluation takes on its most crucial role in the making of a territory. A territory that is affective and effects its capacities by exploding any capture in a form — it is the inform of becoming, that is, an affective pull towards

existence. Through the very mooring in the relaying of modes of existence, transvaluation becomes a technique to engage with a politics of the sensible beyond form.

The main problem with capitalist forms of valuation resides in the double capture of transcendentalizing values into quantities and their mere organization according to identifiable representations. Territories of transvaluation, on the other hand, account for the specific forces at stake, while refraining from substantializing them along definite attributes. Relation as aesthetic force is abstract in the sense that it enables the crossing of thresholds of different modes of existence and by doing so activating powers of a prior unknown and unfelt kind. The shifting of shapes is far from the circulation of forms. On the contrary, shapes are abstract capacities of territories-on-the-move. The question of satoyama as a territory of transvaluation pushes us to reconsider not only the locus of action but also the very practice of relaying the more-than-human potentials for activation across domains. From here one might venture on and explore how the discourse on climate change and the anthropocene utterly lacks awareness for the ethico-aesthetic values capable of composing worlds beyond the capitalist value form. *Shape Shifting* provides first clues of how aesthetics of the more-than-human opens up an ethics immanent to a politics of the sensible beyond identity and toward specificity.

22 *Chaosmosis: An Ethico-Aesthetic Paradigm*, trans. By Paul Bains, Julian Pefanis (Bloomington/Indianapolis: Indiana University Press, 1995), 130.

23 Gilbert Simondon, *L’individuation*, 503. Author’s translation.

To the untrained eye, satoyama, a small-scale rural practice, might seem to be absolutely outmatched by the colossal machineries of corporate and state enterprises. However, there is much to learn from this landscape precisely in terms of its composition and processes. In satoyama, as in many other locally emergent systems, hybridity, voluntary self-organization, environmental sustainability and social justice are created by self-organized flows of value through social ecologies.¹ We all have seen how state structures can go mad: capitalist and communist economies both contributed to any and all kinds of social and environmental crises. To describe the new scale of ecological devastations the new term “anthropocene” was invented. While it is quite common to notice inequality and destruction on a global level, alternatives on the local level still tend to be overlooked.

Ecologies can be observed in a variety of ways, for example in order to figure out their useful “services” or to map out a multi-nodal network of interdependencies built by biotic and abiotic elements. We propose to look at satoyama ecosystems as “basins of attraction”. A basin of attraction is a relatively stable state of affairs, which a system will tend towards from many different initial conditions. Of course not all basins are alike: there are many ways to turn an ecosystem into a barren wasteland, for example. But in the case of satoyama the basin is composed of a strikingly diverse set of species; even more than how many would be present if humans were not part of the system. Rather than causing overexploitation and collapse, human activity in the satoyama, such as rice cultivation and forest management, resulted in a net increase in biodiversity and other positive outcomes. This agricultural trajectory diverges twice: not only from dominant western practices, but also from its proposed alternatives. Unlike the organicist tradition, frameworks such as satoyama do not posit “the natural” as morally superior; unlike the Marxist tradition, they do not posit the artificial as the only practical means of improving productivity.

Locally emergent social ecosystems help us to map ‘bottom-up’ arrangements of value flow which contradict both organicist and Marxist expectations: hybridizing both nature and culture, they mix high productivity with unalienated value flow. This perspective focuses on the way value flow (both material and semiotic) occurs through the system. If value is returned to the locality in unalienated forms, the core generative properties of this social ecology may well be retained, despite the introduction of modern technologies to the scene.

In Niigata prefecture the rice season begins in late April, with local farmers tilling their fields. White herons, normally graceful, shamelessly crowd behind the tractors and cackle over the riches turned up in the soil. Soon irrigation pipes are opened, turning the relatively flat valley of rice paddies into tiny lakes, each knee-deep. Walking between the fresh pools, like floating on a mirror, one is surrounded by life. Hawks hunt overhead, skillfully stalking their prey as it swims between stringy bunches of reptilian eggs gathered near the bank. Frogs and insects overwhelm with their nighttime chorus. By summer, the watery expanse gives way to verdant fields of rice, like perfect green lawns stretching to the horizon in every direction. In autumn, pheasants run between the golden shafts of grain, and the harvest begins. Once milled, the rice husks are returned to the fields as fertilizer and the remainder burned,

scenting the air with a savory, bittersweet smell that announces the coming of winter in a few short months. Rice paddies interspersed with crop fields and ringed by mountainous forest.

Not only does wildlife gather in and around the paddies: humans come too. It is not uncommon for a farmer to let a field sit flooded for a week or more, waiting until the extended family has assembled to help with planting, or put off borrowing the tractor from the farming collective until everyone has arrived for the harvest. These annual practices are preserved in the form of national holidays during the first week of May and September. At three full working days plus a weekend, “Golden Week” and “Silver Week” are some of the longest holidays in Japan, allowing (mostly young) people everywhere the opportunity to return to the countryside for several days to help out on the family farm.

This custom of returning home is still alive in Niigata and elsewhere around the country and it continues an old cultural practice that integrates water from the mountains, fertilizers from the forest; insects, reptiles, amphibians and fish; plants, domesticated and wild; and, until recent decades, a majority of the Japanese people and much of the arable land. How is it that this annual cycle of rice cultivation — surely far from what would otherwise occur in the natural landscape — can increase biodiversity *and* simultaneously enhance human social production?

To speak from our experience, in North America there are few stronger meta-narratives than the one about the ‘Purity of Nature.’ Nature regarded as pure and distinct from human culture has become an essential feature of modernist conceptions of the relationship between humans and the world.² Consequently it informs many environmental efforts. Conservation and preservation are thus often geared toward returning Nature to its untouched state by prohibiting access to the offending humans. While a ban on humans may be descriptive as “fortress conservation,” there are problems with this conceptual framework.³ First, environmental purity has long been a useful analogy for racial purity: Donna Haraway for example notes the overlap between environmental groups such as the “Save the Redwoods League” and the Eugenics Society in the early 20th century.⁴ J. David Cisneros notes how contemporary media descriptions of immigration use metaphors of pollution and contamination.⁵ The common trope of organicist metaphors is often a bridge linking technophobic views of science and technology with homophobic, racist or classist undercurrents.⁶

Second, the empirical side of this “pristine myth” of Nature is also delusional: the untouched wilderness that European colonists thought they were coming to in the late-17th, 18th and 19th centuries had in fact been emptied of its population by diseases introduced by Western explorers of the 15th and 16th century.⁷ Europeans, living for centuries in close proximity to their beasts of burden, had developed immunity to a number of diseases that they

¹ For detailed discussion on the theory of generative justice in relation to social ecologies see Ron Eglash and Colin Garvey, “Basins of Attraction for Generative Justice,” in *Chaos Theory in Politics* (Berlin: Springer, 2014), 75–88.

² Bruno Latour, *We Have Never Been Modern* (Cambridge, Mass.: Harvard University Press, 1993).
³ P.H. Sand, “Fortress Conservation Trumps Human Rights? The ‘Marine Protected Area’ in the Chagos Archipelago,” *Journal of Environment & Development*, 21(1) (2012): 36–39.
⁴ Donna Haraway, “Teddy Bear Patriarchy: Taxidermy in the Garden of Eden, New York City, 1908–1936,” *Social Text* 11 (1984): 20–64.
⁵ J. David Cisneros, “Contaminated Communities: The Metaphor of ‘Immigrant as Pollutant’ in Media Representations of Immigration,” *Rhetoric & Public Affairs* 11, no. 4 (2008): 569–601.
⁶ Ron Eglash, “Oppositional Technophilia,” *Social Epistemology* 23, no.1 (2008): 79–86.
⁷ Jared M. Diamond, *Guns, Germs, and Steel: The Fates of Human Societies* (New York: Norton, 1999).

brought with them to the Americas, such as smallpox and influenza. Native Americans, having coevolved with a different mix of “companion species,” lacked immunity.⁸ As William M. Denevan explains,

By 1650, Indian populations in the hemisphere had been reduced by about 90 percent, while by 1750 European numbers were not yet substantial and settlement had only begun to expand. As a result, fields had been abandoned, while settlements vanished, forests recovered, and savannas retreated. The landscape did appear to be a sparsely populated wilderness.⁹

While it is easy to see how a discursive trope for the ‘Purity of Nature’ can be an illusion, in this case even the empirical evidence is misleading, having been created by historical contingencies arising from the disproportionate effects of human/animal co-evolution and disease resistance.

Third, the ‘Purity of Nature’ narrative blinds us to the profound structure of hybridity that lies between the poles of “pure Nature” on the one side and “pure Culture” on the other. Charles Darwin’s original analogy — that farmers breeding new plants and animals provided “artificial selection” on a passive Nature — has been gradually replaced by a bi-directional, active framing that highlights the co-evolutionary process of mutual feedback: a “broader plant community adapted to human processing of the environment around them” just as humans evolved behavioral and physiological adaptations to the new plant resources made available by those changes.¹⁰ In contrast to our current obsession with individual species, whole plant communities — such as those epitomized by satoyama — have been coevolving with our human lineage for millions of years.

Examples of millennia-old sustainable agricultural practices can be found throughout the world. Japan presents a particularly interesting case. The discovery of pottery dating to the Jomon era (12,000–2,000 years before present) suggests the islands’ inhabitants have been shaping the landscape for over 10,000 years.¹¹ With the coming of rice cultivation in the Yayoi era (roughly 2,000 years ago), human influence on the environment increased in intensity, though it did not follow the trajectory of resource exploitation leading to ecological collapse so familiar to us in the West. Instead of cleared forests and monocrop agriculture, a mixed-use zone of ecological interplay emerged: the satoyama, “a heterogeneous landscape, a land-use mosaic” composed of differing land-use elements that “are interrelated to one another, and together form a cohesive system.”¹² Though the rice-based agricultural systems of Japan at the center of satoyama are highly productive by any economic measures, they have sustained and even increased biodiversity over time, providing a potent counter-narrative to the dominant vision of Nature best off when it is devoid of human meddlers.

Why would Western systems tend towards narratives, which sacrifice social and ecological sustainability for deceptive notions of purity? In *Culture*

Builders: A Historical Anthropology of Middle Class Life Jonas Frykman et al. provide a compelling portrait of the role of nature/culture purification in the rise of the Swedish middle class from 1880 to 1910.¹³ Prior to that time, their society was primarily composed of peasants, who viewed nature in utilitarian terms, and nobles, who were viewed as decadent, surrounded by artifice. Creating an identity that would be distinguished from both meant that they had to demonstrate a “sensitivity” toward nature; thus the birth of scenic postcards, hiking clubs and wilderness preservation. Culture became the mirror reverse of nature’s wildness: factory management was dependent on clockwork precision, rational geometric order, and a utilitarian view of workers.

In any system with a “basin of attraction,” many different initial states will end up in the same configuration. A pendulum will come to rest at the same center no matter where it starts from; a cut in your skin will heal no matter what direction the slice. Although Frykman et al. presented the case specific to Sweden, different initial conditions in other Western nations resulted in similar end-states: capitalist industrialization typically creates a basin of attraction which are neither socially nor ecologically fair.

Our idea of generative justice systems posits that both environmental sustainability and social justice can be best achieved through self-organized flows of unalienated value.¹⁴ Karl Marx, building on Adam Smith’s distinction between the “exchange value” and “use value” of a commodity, argued that by paying laborers a fraction of the value they produce, owners of a given means of production can effectively extract much of that value as capital. Over a century later, ecological Marxists¹⁵ pointed out that the same process occurs when capitalists extract value from nature by using it as a source of raw materials or a sink for pollution. In both cases, the problem is in part a matter of imbalance: little of the original value returns to its source, leading to underpaid laborers and depleted natural landscapes. But the problem is also one of “alienated” value: even if you pay a worker more money, pounding nail number nine into a shoe heel all day long does not invoke a sense of pride in the product as the old style craft production offered. Similarly, dumping various chemicals into over-farmed soil does not turn it back into the rich microbial loam it once was.

Distributive models address the over-extraction of value from labor and nature with centralized mechanisms. Liberal capitalist societies return some value through tax-payer supported social and environmental services, and state ownership plays a similar role under communist rule. This leaves both labor and nature dependent upon centralized agencies for their welfare, instead of proximate actors and actants. In theory, a distributive model will allocate funds appropriately, thereby rectifying the problem of value-depletion. However, in practice that is rarely the case: once extracted, value rarely returns in quantities equal to those extracted, and even when it does, it is almost always in an alienated form. From this perspective, capitalism and communism are stunningly similar: neither system yields egalitarian societies nor sustainable agriculture, but rather class inequality and ecological crises.

8 Donna J. Haraway, *When Species Meet* (Minneapolis: University Of Minnesota Press, 2007).

9 William M. Denevan, “The Pristine Myth: The Landscape of the Americas in 1492,” *Annals of the Association of American Geographers* 82(3) (1992): 369–385.

10 Robin G. Allaby, Logan Kistler, Rafal M. Gutaker, et al., “Archaeogenomic Insights into the Adaptation of Plants to the Human Environment: Pushing Plant – hominin Co-Evolution back to the Pliocene,” *Journal of Human Evolution* 79. *Special Issue: Ancient DNA and Human Evolution* (2015): 150–157.

11 Richard Pearson, “Jomon Hot Spot: Increasing Sedentism in South-Western Japan in the Incipient Jomon (14,000–9250 Cal.) and Earliest Jomon Periods,” in *World Archaeology* 38(2) (2006): 239–258.

12 Kazuhiko Takeuchi, “Rebuilding the Relationship between People and Nature: The Satoyama Initiative,” *Ecological Research* 25(5) (2010): 891–897.

13 Jonas Frykman, John Gillis, and Orvar Lofgren, *Culture Builders: A Historical Anthropology of Middle Class Life*, trans. Alan Crozier (New Brunswick: Rutgers University Press, 1987).

14 Ron Eglash and Colin Garvey, “Basins of Attraction.”

15 The original writings of Marx are inconsistent on this point, sometimes positing a similar analogy between labor and nature, yet other times insisting that scientific advances under communism would allow “the full development of human mastery over the forces of nature.” See James R. O’Conner, *Natural Causes: Essays in Ecological Marxism* (New Yourk: Guilford Press, 1998) for an anthology on ecological marxism.

Generative systems present an alternative to distributive systems. They can be called generative if produced value returns in less alienated forms and fair social ecologies through self-organization of value flows are created. Examples of such systems include herding practices of Mongolia, Balinese rice irrigation, open source software, and, we believe, satoyama.¹⁶ In all these cases, local/grassroot-level social relations set the conditions for the sustainable, unalienated management of cultural, technical, or natural resources without a centralized authority. Considering, among others, the example of Mongolian pastures Elinor Ostrom points out that the details of such systems vary widely, but that their underlying principles — voluntaristic, bottom-up resolution of prisoner’s dilemmas or “tragedy of the commons” challenges — are universal.

These examples disprove Garrett Hardin’s famous prediction that resources held in common will always be over-utilized because economic logic dictates that those who best consume will survive the longest.¹⁷ The Mongolian case is striking because the relevant ecosystem overlaps two countries: the centrally-managed USSR (at the time of study) and a traditional land management system of voluntary associations between communities of Mongolian herders. The stark difference between the lush landscape of the traditional bottom-up approach to land management on the Mongolian side, and the scarred desertification due to the centralized model practiced just across the border in communist Russia can be seen plainly in overhead satellite photographs, as Ostrom notes. Rather than deplete soil by monocropping, or purchase commercial chemical amendments, which cut into profits and microbial soil health, the system of agroecology allows the soil ecosystem to be fertilized by the very animals it supports.

Jonas Stephen Lansing’s analysis of Balinese rice irrigation provides another case where voluntary associations provide egalitarian self-organization. In Bali, rice is farmed on the terraced slopes of dormant volcanoes. Rice is a water-intensive crop, and it was assumed for centuries — first by Dutch colonists and later by anthropologists — that the structural hierarchy of irrigation canals, running top-down along the slope, determined a corresponding sociopolitical hierarchy of water management. Because the volcanic craters are filled with fresh water, greater social power was thought to reside higher up the slope, with Brahmin priests of the many “water temples” lording over the system, determining irrigation schedules by fiat. However, Lansing found that the schedules were created by the farmers in a self-organizing, egalitarian decision-making process.

What makes this possible is linked negative and positive feedback between uphill and downhill farmers. Uphill farmers fear pest explosions: if rice irrigation is not synchronized, pests will not be drowned. Downhill farmers fear drought. Because of this mutually assured destruction, each season the farmers come together within the water temples, throw off class and caste distinction, and work out a schedule without relying on a centralized authority. The water temples house the Deity of the Weir, which requires offerings from farmers who benefit from water flowing through it. Farmers come and go, but the social unit defined by weir waters persists. The spiritual connotations

ensure that cooperation does not feel like it is putting you at risk of becoming a dupe in an iterated prisoner’s dilemma: each person’s debt is to the weir deity, not to other people *per se*.

Similar voluntary associations can be found in open source software, where workers avoid alienated modes of production and regain a sense of artisanal pride in their crafting of code. Previously we found an arrangement of linked negative and positive feedback in open source development that paralleled Balinese rice production: new code developers carried the threat of forking code to a new project, just as downhill farmers could cause pest explosions.¹⁸ Older developers tended to have more say in what code gets incorporated, but just as uphill farmers dare not cause droughts, they cannot arbitrarily cut off access without risking resistance from below. Thus a kind of “powers of the weak” maintain the voluntaristic, self-organized flow in both the gravitational hierarchy of Bali and the seniority hierarchy of open source.¹⁹

Although rice cultivation has been practiced in Japan for hundreds if not thousands of years, records kept during the relatively peaceful Edo period (1603–1868 CE) give us the clearest picture of the traditional satoyama. Here too, voluntary community associations formed underneath a distant totalitarian government (in this case the Tokugawa Shogunate), not only prevented a tragedy of the commons but sustained highly-productive bioagricultural practices and produced a flourishing social ecology.

Historically “satoyama environments did not belong to the people living and using the land, but were made up of public land or of a landowner’s large, private holding.”²⁰ The inhabitants of these commons “formed a local community to manage the landscape voluntarily” which in time:

transformed into an *iriai-shudan*, or a common group, the members of which consisted of people able to exercise their management rights on a coppice woodland, a wilderness, and other lands. The right came to be recognized as *iriai-ken*, or a common right, notwithstanding a feudal and totalitarian society. *Iriai-ken* is a right to manage the land, for regulating *iriai-shudan* and the harvest. This right was conserved as part of the Civil Code under the rule of law following the Meiji Revolution.²¹

Although the English-speaking world must await a more detailed analysis of the *irai-ken* and the *irai-shudan* to know their fate in the 20th century, the satoyama environments themselves were maintained until the “1960s fuel revolution and the rapid decline of agriculture and forestry.” Thus the length and stability of satoyama environments, like the irrigation systems of Bali and the herding practices of Mongolia, offer support to Ostrom’s claim that while they require time to establish, “rules developed with considerable input of the resource users themselves (if not fully their own decision) achieve a higher performance rate than systems where the rules are entirely determined by external authorities.”²²

All three cases illustrate the ways in which humans practices can set the conditions for a basin of attraction around which a sustainable social ecology

16 The detailed description of the cases are provided in Elinor Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action* (Cambridge: Cambridge University Press, 1990), John Stephen Lansing, *Priests and Programmers: Technologies of Power in the Engineered Landscape of Bali* (Princeton, N.J: Princeton University Press, 2007), Yochai Benkler, *The Penguin and the Leviathan: How Cooperation Triumphs over Self-Interest* (New York: Crown Business, 2011) and Elinor Ostrom, “Do Institutions for Collective Action Evolve?” *Journal of Bioeconomics* 16(1) (2013): 3–30.

17 Garrett Hardin, “The Tragedy of the Commons,” *Science* 162(3859) (1968): 1243–1248.

18 Ron Eglash and Colin Garvey, “Basins of Attraction.”

19 Elizabeth Janeway, *The Powers of the Weak* (New York: William Morrow & Co, 1981) and James C. Scott, *Weapons of the weak: everyday forms of resistance* (New Haven and London: Yale University Press, 1985).

20 Kazuhiko Takeuchi, Robert D. Brown, Izumi Washitani, Atsushi Tsunekawa, and Makoto Yokohari, eds., *Satoyama: The Traditional Rural Landscape of Japan* (Tokyo: Springer, 2013).

21 Ibid., 150.

22 Elinor Ostrom, “Do Institutions Evolve,” 13.

might form and flourish. However, the biophysical and geomorphological differences between the cases are not irrelevant. Indeed, the Mongolian steppes could not be more different than the intricate mountainous terrain of Japan, and taking these differences into account helps to illustrate the structural flow of value through satoyama.

Unlike in most of Europe and Asia where domesticated animals provided fertilizers for crops, in the Japanese satoyama the primary source was forested tracts of land and other wild vegetative resources. Instead of manure, traditional Japanese agriculturists gathered leaves from the mountainous forests and underbrush from the wooded meadows of the satoyama landscape to fertilize their crops. The woodlands also provided timber, charcoal, fodder, phytoremediation, and a host of other valuable ecosystem effects.²³ Thus the emergence of the satoyama is marked not by co-evolution with only a few ungulate “companion species,” as in much of Eurasian agriculture, but with a more diffuse suite of vegetative companions.

This necessitated the maintenance of forested tracts and wooded coppices in close proximity to agricultural fields and human settlements, leading to the distinct “landscape mosaic” of the satoyama. This mosaic was dynamic, however, as the regular fertilization of crop with “green manure” was supplemented in many places by the practice of “shifting agriculture”: periodically allowed to lay fallow, fields nevertheless became depleted; to maintain fertility over the long term they were replanted with trees in ten year cycles while coppice woodlands planted in the previous cycle, thus replenished, were cleared for fields.²⁴

In the view of Mohan Kumar and Kazuhiko Takeuchi, the satoyama is defined by an “unidirectional flow of materials, such as leaves/litter for manure and mulch, fruits and nuts for food, green fodder and wood for fuel, poles, timber, and various other non-timber products, with essentially no reverse flows.”²⁵ It is true that, in contrast to the Mongolian case, where the animals fertilize the pastures on which they graze, farmers in Japan return little or no material to the forests. So how is this any different than the exploitative systems of value-extraction that we critiqued earlier?

The distinction becomes clear when we see how human activity in the traditional satoyama generates heterogeneity — in stark contrast to the monocropping that typifies modern agriculture. Distinct biotic regions in close proximity produce ecological ‘edge effects,’ including an increase in biodiversity as the juxtaposition of habitats creates new niches. Taku Kadoya and Izumi Washitani point out that “[h]abitat diversity is one of the most important factors influencing biodiversity in agricultural landscapes.”²⁶ The human impact in satoyama heightens this hybridizing effect. The mosaic of habitats created and maintained within the multifunctional landscape yield a net increase of biodiversity in addition to productive agricultural output.²⁷

For example, woodlands maintained in “various stages of succession,”²⁸ as in coppice rotations or ‘shifting agriculture’ cycles, offer resources to a wider variety of species than those at any single stage. Additionally, Kaoru Ichikawa et al. found that the “disturbances and stresses on woodlands and grasslands by human extraction of plant resources” such as the regular gathering of grasses, underbrush, and fallen leaves for fertilizer, inhibits “the elimination of uncompetitive species by preventing the domination of competitive species,” encouraging diversity on the forest floor.²⁹ Indeed the general increase in productivity and biodiversity of “pulsed” ecosystems is now an established ecological paradigm.³⁰ These pulses include the obvious changes in surface water which accompany rice irrigation, but also pulses in population levels of microbial life, insects, rodents, and other organisms; as well as physical parameters such as local humidity, albedo and fractal dimension of the ecotone edge — the complexity of the transition space between two ecological communities.³¹

The list of these impactful locally emergent practices is long; but rice production stands out as one of the strongest. The annual planting of rice maintains wetlands in the form of paddies and irrigation networks, providing home to many aquatic species. Rather than exploitation of a landscape through the alienating extraction of value in the form of vegetative matter, as is the case in typical chemical-based monocrop agribusiness, human activity in satoyama sets the conditions for a sustainable social ecology defined by multispecies flourishing.

Thus, rather than think of satoyama as a one-way flow of biomass, as Kumar and Takeuchi suggest, the generative justice framework illuminates a more comprehensive understanding in which value is *circulated* — transformed, to be sure, but still returned in unalienated form — through a process in which cultural knowledge, biodiversity stimulus, and other kinds of social and ecological capital are co-generated between human and nonhuman agents. It is easy to mistake this for a one-way flow of biomass from nature to farmers, as these other forms of value are less visible and more elusive. In addition, it is easier to see the circularity in the better-known cases of generative justice — Balinese water irrigation, wherein the flow of water is negotiated between uphill and downhill, or open source software, wherein the inclusion of new code is negotiated between senior and “newbie” developers — because the strong vertical structure makes the coupled feedback loops more apparent. Nevertheless, the more subtle “horizontal” network of relations in satayoma stands out.

Despite the iconic and venerable position satoyama enjoys in Japanese history and culture, the term “satoyama” only began to gain academic attention as this landscape itself began to disappear, bulldozed over during the post-World War II urbanization of the 1960s. Like so many traditional agricultural systems around the world, the Japanese satoyama fell victim to the ‘Green Revolution’ push for synthetic fertilizers, pesticides and industrial

23 For detailed discussion on the material flows in satoyama see Kazuhiko Takeuchi, “Rebuilding the Relationship”; Kaoru Ichikawa, Nozomi Okubo, Satoru Okubo, and Kazuhiko Takeuchi, “Transition of the Satoyama Landscape in the Urban Fringe of the Tokyo Metropolitan Area from 1880 to 2001,” *Landscape and Urban Planning* 78(4) (2006): 398–410; B. Mohan Kumar and K. Takeuchi, “Agroforestry in the Western Ghats of Peninsular India and the Satoyama Landscapes of Japan: A Comparison of Two Sustainable Land Use Systems,” *Sustainability Science* 4(2) (2009): 215–232.

24 Ichikawa et al., “Transition of the Satoyama.”

25 B. Mohan Kumar and K. Takeuchi “Agroforestry,” 221.

26 Taku Kadoya and Izumi Washitani, “The Satoyama Index: A Biodiversity Indicator for Agricultural Landscapes,” *Agriculture, Ecosystems & Environment* 140(1–2) (2011): 20–26.

27 Kazuhiro Katoh, Sumire Sakai and Toshimori Takahashi, “Factors Maintaining Species Diversity in Satoyama, a Traditional Agricultural Landscape of Japan,” *Biological Conservation* 142(9) (2009).

28 B. Mohan Kumar and K. Takeuchi, “Agroforestry.”

29 Ichikawa et al., “Transition of the Satoyama.”

30 Shawn J. Leroux and Michel Loreau, “Dynamics of Reciprocal Pulsed Subsidies in Local and Meta,” *Ecosystems* 15, no. 1 (2011): 48–59.

31 M. Kollwe and H. Spitzer, “A Link between Multispectral Remote Sensing, Image Processing and Ecological Analysis of Landscape Elements” (presented at Geoscience and Remote Sensing Symposium, 1995. IGARSS ’95). “Quantitative Remote Sensing for Science and Applications”, *International* vol. 1 no. 1 (1995): 291–93 vol.1.

production methods. Yet in 2002, the Japanese government acknowledged a “new type of biodiversity crisis caused by the underuse of natural resources” in satoyama landscapes, which ultimately cover about 40% of Japan.³² When leaves and underbrush from the forested tracts were no longer necessary to fertilize fields, nor branches from the coppiced woodlands for charcoal, satoyama fell into disuse and in time, disintegration. A decade ago, Ichikawa et al. observed that a “large proportion of woodlands and agricultural land has been abandoned and diminished, and, in many areas, converted into urban land uses.”³³ More recently, Takeuchi has argued that the “satoyama landscape itself faces extinction.”³⁴

To be clear, this environmental problem is not caused by too much human impact on nature, but too little. The land management techniques practiced by the human agents within the satoyama are the product of centuries or millennia of trial and error learning, and therefore constitute collective wisdom about successful, long-term co-evolution. Over time, these practices shifted selection pressures on populations within the local ecology, causing many species to adapt to niches created within a landscape continually worked over by human agents. As a result, these species came to depend on the “repeated assembly” of satoyama bioagricultural practices as a necessary part of the environmental background for each generation’s development.³⁵ The human practices therefore set and maintain the conditions for a basin of attraction in which a sustainable social ecology can take shape.

A metronome keeps a steady rhythm even if perturbed: it forms a cyclic basin of attraction. Remove the motor and it gradually comes to a stop: a new basin of attraction was formed. Similarly, humans are a motor of biodiversity in this system. When humans cease to play much of an active role in the satoyama landscape, the conditions are not maintained and other basins — for example, the more static “climax community” of shade-tolerant forest — take shape, adversely affecting the developmental trajectory of many lifecycles within the ecosystem.³⁶ Without regular human impacts, native species’ habitats — flooded rice paddies each May and forest floors cleared of leaves and underbrush — do not persist in the environment. Kumar and Takeuchi note that as a result of this underuse, “many plants and animals characteristic of satoyama are now in danger of extinction,” with “79 of 200 native Japanese freshwater aquatic plants, terrestrial plants, and fish species” at risk.³⁷ Clearly something must be done, but what?

We agree with Takeuchi who argues that mere protection of satoyama areas is not enough. Indeed, many traditional environmentalist framings of protection, preservation, and conservation are problematized by satoyama’s hybridity. Thousands of years of co-evolution between human and other species in the satoyama led to a situation of significant interdependence, only relatively recently interrupted by the interjection of fossil fuels, fertilizers, synthetic pesticides, and the system of global capitalism they flow through. Now there are multiple native species at risk of extinction because farmers

have stopped irrigating paddies and ceased to clear and coppice the woodlands. Unlike many other environmental crises, the problem here is the removal of the human actor from their traditional role in the dense social ecology.³⁸ Therefore the preservation of this natural landscape through time will almost certainly fail if humans simply leave it alone. Rather, “[o]nly by sustaining a continuing connection between people and satoyama can these landscapes be handed down to future generations.”³⁹

Yet to merely rehabilitate the old would clearly be problematic. We agree with Makoto Yokohari and Jay Bolthouse that “satoyama landscapes are not fossils.”⁴⁰ Prior case studies of generative systems show that a wide variety of mechanisms can be introduced to maintain unalienated value circulation. In the case of open source software, a specific set of technical and legal mechanisms were introduced: licensing systems such as Creative Commons, code repositories such as GitHub, etc. In her book Ostrom lists examples such as the lobster fishers who cut a V-notch in the tail of female lobsters, preventing their sale. Lansing utilized computer modeling to oppose a development agency’s attempt to disrupt Balinese rice irrigation, and ultimately obtain UN status as a World Heritage site.

But currently the tendency is in the other direction, removing the mechanisms for sustaining and revitalizing satoyama. A case in point is the Trans-Pacific Partnership (TPP). The TPP seeks to 1) force the Japanese government to stop protecting rice farmers with high tariffs on imported grain and other favorable policies, 2) reduce the total number of farmers to allow Japan to take advantage of “economies of scale,” and 3) accomplish this by forcing them off their land through a combination of higher real estate taxes, weakened tenant rights, and the abolishment of farm subsidies for fallow fields.⁴¹ We hope it is clear by now that TPP and policies like it are products of the exploitative systems we critiqued in the beginning of the text, and as such pose a potent threat to what remains of satoyama. Global capitalism is blind to the flow of unalienated value — ecosystem positive externalities, health effects, aesthetic and cultural dimensions — that the mosaic satoyama provides. But locals are not themselves unaware of this contradiction: during one of our (Garvey’s) visits in the fall of 2014, anti-TPP signage was prominently displayed on the doors and entranceways of many farmers’ homes in Niigata, the “rice belt” of Japan — a rare and important show of explicit political orientation in a normally reserved culture.

Defying simplified purity narratives of Nature, the ‘horizontal’ flows of value within the satoyama found human/nature hybridity and ecological heterogeneity to be crucial to the system’s generativity. Our suspicion is that these qualities will also be critical in the fight against capitalist narratives of economic purity. To the extent that satoyama’s status as human/nonhuman hybrid or cyborg⁴² can be recognized and articulated, it may also hold a key to refuting such naturalizing ideologies, as we hear echoed in this poem by Japanese feminist Yosano Akiko:

32 Yukihiro Morimoto, “What Is Satoyama? Points for Discussion on Its Future Direction,” *Landscape and Ecological Engineering* 7 (2) (2010): 163–171.

33 Ichikawa et al., “Transition of the Satoyama,” 398.

34 Kazuhiko Takeuchi, “Rebulding the Relationship.”

35 Linnda R. Caporael, “Repeated Assembly: Saying What We Mean and Meaning What We Say,” *Evolutionary Psychology: Alternative Approaches*, eds. S.J. Scher and F. Rauscher (Dorbrecht: Kluwer, 2003).

36 H. Kobori and R.B. Primack, “Conservation for Satoyama, the Traditional Landscape of Japan,” *Arnoldia* 62 (2003): 2–10.

37 B. Mohan Kumar and K. Takeuchi, “Agroforestry,” 224.

38 Again, satoyama is useful in helping us reconsider our assumptions. Perhaps most environmental crises, with the exception of Antarctica, are actually quite similar, in that most of the current disaster areas were once inhabited by indigenous groups who practiced ecologically sustainable ways of life.

39 Makoto Yokohari and Jay Bolthouse, “Keep It Alive, Don’t Freeze It: A Conceptual Perspective on the Conservation of Continuously Evolving Satoyama Landscapes,” *Landscape and Ecological Engineering* 7(2) (2011): 207–216.

40 Ibid., 215.

41 Yutaka Harada, *Japan’s Agriculture and the TPP* (Tokyo: The Tokyo Foundation, 2013).

42 We reference here Donna Haraway’s idea of cyborg as in Donna J. Haraway, *Simians, Cyborgs, and Women: The Reinvention of Nature* (New Brunswick, New Jersey: Routledge, 1990).

Life continues to blossom and bear fruit in and out of season. Novelty is the true countenance of life ... Our ethical views must also be in habitual transition. The quest of eternal truth is as foolish as gluing down the bridges on a koto harp.⁴³

43 Yosano Akiko, *Critical essays of Yosano Akiko*, eds. Shikano Masanao and Kōchi Nobuko (Tokyo: Iwanami Shoten, 1990), 92. <https://nirc.nanzan-u.ac.jp/nfile/2126>

Talking in Waves — This conversation intermingles four characters Andrea Bellu, Elke Marhöfer, Matei Bellu, and Mikhail Lylov. *Each of these characters, with his or her name, its individuality, designates a multiplicity. Each is simultaneously in this multiplicity and at its edge, and crosses over into the others.*

: The difference between method and mode plays an important role. There is no method, but the search for a mode, which in contrast to a method, is not easily repeatable. The camera tries to establish a distinctive, irreproducible relationship with the surrounding. That is the reason why the films differ from one another, even though there are elements, which resonate within them.

: The camera is a tool, an apparatus, a viewing machine. It behaves and reacts to what it sees. It is as if it turns into an autonomous agent, because it doesn't frame anything, it doesn't pan, instead, it actually peers. Simultaneously it forms a kind of membrane between what is in front of it and what is behind.

: Finding a mode of working with film means to subjectify and somehow become the camera, while at the same time, to turn it into a tool, which implies that the camera isn't different from the tools animals use. After all, humans don't use their tools any differently than nonhumans.

: This mode of filming depends on and consists of relations, mutations and transitions; it's a relational practice. The camera doesn't use language to describe and define phenomena, as claimed by scientific epistemology, but instead it participates in the movements and changes of matter.

: The camera is a sensory tool and sensing the empirical has always been an important function in science. Scientific practices need an apparatus for investigation, but they tend to neglect its influences after a result has been produced and turned into so-called 'objective' knowledge. Each scientific measurement determines and disturbs the boundaries of what is measured. This intricate relation blurs the differences between epistemology and ontology.

: This fragile relation also reveals that you always have to deal with different kinds of constructions. You can't film forces. Energy has no manifest form, it can only be measured or witnessed through its effects, just like the wind. Many shots in the film are about these fragile relations.

: How can we film without forcing things to do what they cannot do? One cannot apply too much force, because then things retreat and the shared moment, the assemblage, disappears. Therefore, you just apply enough desire, produce just enough force for it to stay.

: No script is being followed, things are not forced to be filmed in a particular way. No setting is prepared, but a place is still chosen. Take for instance the scene with the dead bee. It is an assemblage, an arrangement made out of multiple components: spider web, dead bee, stick, hand, camera, and more.

: The scene of the dead bee somehow stands out, because it is one of the few moments when something happens specially for the camera. It is a pivotal moment, which suggests that there is someone handling the camera and at the same time it indicates that the process of filming is composed of multiple collaborating parts.

: It marks a specific moment, where the flow of images is interrupted, where the continuously moving camera suddenly stops, and is captivated by one single thing. Everything, which had been latently present, becomes tangible now: curiosity, learning, being together with a thing, playing the wind. Everything stays independent as active participants in a shared moment.

: There are also other moments of intimacy, the blossoming tree for example. Here as well the filmmaker, the camera, and the blossoms form an assemblage. The filmmaker pushes the camera to the extent that it touches the tree and this meeting of two different bodies generates sound.

: It is a moment when the relationship between the filmmaker and the camera is reversed. What does the camera want to film? In these non-cinematic moments of extreme close-up, the camera both animates and becomes animated itself. The camera seems curious of the smell of those blossoms.

There are always apparatuses, tools, engines involved, there are always artifices and constraints used in taking Nature to the fullest. That is because it is necessary to annul the organs, to shut them away so that their liberated elements can enter into the new relations from which the becoming-animal, and the circulation of affects within the machinic assemblage, will result.

: The separation between human and nonhuman is not as structured; the binary oppositions of animate and inanimate are not as properly installed. This also affects the tensions that emerge from the difference between conceptual abstraction and concrete practice.

: What if there was a way to approach the foreign and the unknown by relying on the affects of the world, which are passing through us? Relying on affects, including those of vegetables and animals, probably gives way to more perceptive cartographies and mappings of intensities and collective sensitivities. Some anthropological approaches do try to extend their boundaries and leave space for the nonhuman.

: Most of the time anthropology still deals with people doing things — it examines how people work, how people use and employ each other, plants and animals. There are many anthropological records that follow processes of production, subsequently evaluating them as either developed or underdeveloped under the criteria of usefulness. The view on production from the perspective of results also gives an idea of what anthropological film oftentimes delineates.

: In *Shape Shifting* production is conceived as being composed of different parts that do something together, thereby emphasizing their relational aspects. The concept of production is redirected, away from its results and towards its composition, defined by its interconnections and different conjunctures. It's a kind of machine that opens up and connects with other parts and machines, thereby constantly forming new assemblages and arrangements.

: *Shape Shifting* articulates forms that are difficult to name. They are glimpsed at by the camera in their constant and dynamic process of becoming different from what they had been just a moment earlier. Knowledge often turns into a form that can be transported from archive to archive, to some extent it is lifeless.

: Yet, dealing with forms, capturing something into a form, presupposes certain relations of forces, too. The film shows transformations of one modality of knowledge into other ones, for instance one can follow carbon molecules. At first, in the traditional, technological knowledge of rice husk carbonization carbon feeds the vegetables. Later these vegetables are sold on market, creating a second, a socio-economical modality of knowledge. Besides these two forms of knowledge, carbon molecules are exchanged in the geosphere and the atmosphere, enabling a third modality of knowledge to appear. The title *Shape Shifting* hints at all these different forms of movements.

The plane of consistency of Nature is like an immense Abstract Machine, abstract yet real and individual; its pieces are the various assemblages and individuals, each of which groups together an infinity of particles entering into an infinity of more or less interconnected relations.

: The problem with images is that they are often used and understood as representations. This triggers a neurosis of interpretation and signification, which reifies them, ascribing symbolic use value to them. Therefore, one aesthetic undertaking is to find ways to escape these forms of clichés and to uncouple images from their mere role of representation.

: In order to avoid relations of signification, the film is dissociated from the scientific knowledge described in the texts published in this book. The film relies upon the phenomenal reality of the images. Still, they are deeply interconnected and entangled with theory without being determined by it. Texts and film may correspond in parts, however, there is no relation of signification between them. They are not isomorphic, they do not have a shared form. It is solely in this book, that filmic and scientific knowledge come closely together.

: These modalities of knowledge, which are rooted in the filmic as well as in the scientific practice, have different potentials, which might inform, push and, at times, even weaken each other.

: The aim is to undergo a dichotomy between knowledge and non-knowledge. In the various steps different modalities of knowledge are taking part inherently and are changing articulations; together they form an 'ecology of knowledge'.

: What kind of knowledge enables an orchid to simulate the sexual organ of the wasp, for example? The orchid articulates knowledge, gained through the relationship with the wasp, and stores it in a way, we cannot explain. This deep knowledge that stems from movements, functioning through and rising by close relationships, may be similar to the swarm intelligence of birds and fishes.

: The sensation of a plant contracting the surrounding to express its colors and odors is comparable with the sensation of a film, coming into effect by contracting various materials: light, darkness, colors, sounds, shadows, silver halide crystals, silicon, digital zeroes and ones from different points in time and different environs.

: The orchid materializes sensation and sensibility as an image by contracting affections transmitted by a vibrating wasp. A knowledge in which affects of formed and unformed matter fold and unfold into a nervous-like system to be folded and unfolded again into the participating outside.

A season, a winter, a summer, an hour, a date have a perfect individuality lacking nothing, even though this individuality is different from that of a thing or a subject. They are haecceities in the sense that they consist entirely of relations of movement and rest between molecules or particles, capacities to affect and be affected.

: Science and scientific practices seem trapped in a topography of definitions and territories where everything needs to be cleaned up, disciplined, and clearly defined. And then there is this so-called “artistic research”, which promises to queer up some structures. That’s probably what makes it so attractive.

: Scientific knowledge production, however, is strongly affected by the institutional infrastructure of academia. Even though artistic knowledge may have brought some sparkles to the concept and practice of scientific research, often in so-called interdisciplinary collaborations, it also got disciplined.

: Scientific disciplines always tend to exclusively claim objective knowledge for their own practice and devalue other practices. They perpetuate a rather simplistic notion of truth, thereby rejecting the existence of different truths. Even though in the field of art the idea of objectivity is often questioned, it is still strongly marked by a certain kind of discursive rigidity, as well as by a competition of different practices for disciplinary hegemony.

: Knowledge produced by artistic practices might also be thought of in terms of their specificity, rather than in their relation to institutions. Deleuze and Guattari argue against interdisciplinarity in the way it is largely understood nowadays. They insist on the irreducibility of disciplinary practices: science works with references, functions and propositions, art works with affect and percept, philosophy works with concepts. They all have unique ways to produce knowledge.

: If we don’t look at science as a solid and unified entity, it falls apart in different tiny, contradicting practices. In this case, the common denominator might not be interdisciplinarity, but queering or questioning the field we are part of and finding alliances with others against sets of normative rules, which are in competition all the time.

BIOGRAPHIES

ELKE MARHÖFER is an artist and filmmaker who lives and works in Berlin. Through the potentialities of moving images and suppositious writing she works with notions of self-admitted foreignness and radical othering, revising common notions of animals, vegetables and matter. She studied Fine Art at the University of the Arts in Berlin, at the School of the Art Institute in Chicago and at the Whitney Independent Study Program in New York City. Her films have been screened at the British Film Institute London, Berlinale Internationale Filmfestspiele Berlin, International Film Festival Rotterdam, Courtisane Festival Ghent, Cinematek Brussels, The Showroom London, and Images Film Festival Toronto. She received fellowships, grants, and generous support from IASPIS Residency Sweden, Akademie Schloss Solitude Stuttgart, Cité Internationale des Arts, Paris. Her art exhibitions include the Palais de Tokyo Paris, Manufactura's Studio Wuhan, FCAC Shanghai, the Houston Museum of Fine Arts, NGBK Berlin, Kunstverein Hannover, Museum für Gegenwartskunst Siegen.

MIKHAIL LYLOV is an artist and curator who lives in Berlin. Until 2010 he worked in Moscow where he developed non-disciplinary methods in his films, installations, performances and writings. His works establish and discuss situations in which economic and knowledge models are questioned, renegotiated or rendered useless. Lylov's work investigates a genealogy of the divide between mental and material in different contexts, especially labor and anthropology. His work looks for situations in which concepts become sensually available forms and knowledge turns into a matter of perception. Mikhail Lylov's projects were supported by Le Pavillon program at Palais De Tokyo Paris, Cité Internationale des Arts Paris, British Film Institute London, Berlinale Internationale Filmfestspiele Berlin, International Film Festival Rotterdam, Courtisane Festival Ghent, and Houston Museum of Fine Arts. He participated at Global Prayers Congress in Berlin (2013) and The Dark Precursor International Conference on Deleuze and Artistic Research in Ghent (2015).

ANNA LOWENHAUPT TSING is a professor of anthropology at the University of California, Santa Cruz. She is also Niels Bohr Professor at Aarhus University, Denmark, where she will lead a transdisciplinary research group on the problems of living in the Anthropocene. She is the author of *Friction: An Ethnography of Global Connection* and *In the Realm of the Diamond Queen: Marginality in an Out-of-the-Way Place*, both from Princeton University Press. She has co-edited numerous volumes, most recently, with Carol Gluck, *Words in motion: toward a global lexicon* (Duke University Press). Her current research follows the humble trail of mushrooms into the great economic, cultural, and ecological dilemmas of our times.

CHRISTOPH BRUNNER is a cultural and media theorist working at Zurich University of the Arts. He is part of the SenseLab in Montreal, the editorial collective of Inflections — A Journal for Research-Creation (inflections.org), and member of the editorial board of On — Audio Journal for Experimental Art and Visual Culture. He recently finished his PhD on *Ecologies of Relation — Collectivity*

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RON EGLASH is a Professor of Science and Technology Studies at Rensselaer Polytechnic Institute, with a secondary appointment in Computer Science. He received his B.S. in Cybernetics, his M.S. in Systems Engineering, and his PhD in History of Consciousness, all from the University of California. A Fulbright postdoctoral fellowship enabled his field research on African ethnomathematics, which was published by Rutgers University Press as *African Fractals: Modern Computing and Indigenous Design*, and recently appeared as his TED talk. His courses range from a hands-on studio for design of educational technologies to graduate seminars in social studies of science. His Culturally Situated Design Tools software, offering math and computing education from indigenous and vernacular arts, is available for free at www.csdt.rpi.edu. Recently funded work includes his NSF Triple Helix project, which brings together graduate fellows in science and engineering with local community activists and K-12 educators to seek new approaches to putting science and innovation in the service of under-served populations.

COLIN GARVEY received his BA in both Japanese and Media Studies from Vassar College, followed by several years of training in Japan at a Zen Buddhist monastery. He began his PhD in the STS program at Rensselaer under the Triple Helix program. His doctoral dissertation uses evolutionary frameworks to examine symbiotic behavior at community-based and industrial scales, while at the same time reflexively analyzing the use and application of ecological and evolutionary analogies, the power of evolution as a unifying narrative, and the pernicious myth of genetic determinism.

ANDREA BELLU is an artist. Her installations are often part of interdisciplinary cooperations with other artists and theorists. At the moment she is mainly engaged in reading landscapes, literature and oral history in Eastern Europe while searching for the unfulfilled promises of late modernism.

MATEI BELLU is an architect and ethnographer. Currently, he is co-editing a publication together with Emilie Bujès about the concept of psychic trauma as a cultural and social paradigm.

PUBLICATION

Editors: Elke Marhöfer, Mikhail Lylov
Proof reading: Lojang Soenario
Design: HIT
Color correction: Max Color
Printing: bud, Potsdam

Published by Archive Books
Dieffenbachstr. 31, 10967 Berlin
archivebooks.org

Shape Shifting is done in collaboration with Mikhail Lylov and part of Elke Marhöfer's doctoral thesis *Ecologies of Practices and Thinking*.

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University of Gothenburg
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Acknowledgments
Both the film and the book are the results of many collaborations and encounters. We would like to thank Hiroyuki Yoshioka, Katsue Fukamachi, Ayumi Ogino, Tomoyo Adachi, Sninichi Mori, Satoshi Asakura, Kent Hadlock, Naoki Shiomi, Kazuma Higashida, Mamoru Daido, Shinichi Aoki, Susumu Nakanishi, Horie Ryohei, Cloé Fricout, Lina Grumm, Paolo Caffoni, Chiara Figone, Vera Tollmann, Stoffel Debuysere, Pieter Paul Mortier, Vincent Stroep, Stefanie Schulte Strathaus, Uli Ziemons and Anselm Franke.

We would particularly like to thank the contributors Andrea and Matei Bellu, Christoph Brunner, Ron Eglash, Colin Garvey and Anna Lowenhaupt Tsing for their incredibly interesting thinking.

Additional support was provided by the Palais de Tokyo. Paris, the University of Gothenburg, Valand Academy, and Konstnärliga forskarskolan.

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ISBN 978-3-943620-36-8

Anna Lowenhaupt Tsing: DISTURBED BEGINNINGS (p. 41)

Christoph Brunner: TERRITORIES OF TRANSVALUATION (p. 51)

Ron Eglash & Colin Garvey: HYBRIDITY, HUMANITY AND BIODIVERSITY (p. 58)

Andrea Bellu, Matei Bellu, Mikhail Lylov, and Elke Marhöfer: TALKING IN WAVES (p. 69)

ISBN 978-3-943620-36-8

FILMED IN:

KAJIYACHO,
KONISHICHO,
OBATACHO
IN AYABE,
AND
OMIYACHO KAMITSUNEYOSHI,
YASAKACHO FUNAKI
IN KYOTANGO.

Shape Shifting is the practice of a landscape by which it preserves and changes simultaneously. *Shape Shifting* is a film as well, akin to a living territory, both build themselves in response to a broader environment by transforming their internal composition. Being a landscape, or drawing a cartography of a landscape is to develop an attentiveness towards the doings of human and nonhuman forces. The book brings together the receptivity of images and the spontaneity of words, from there different theories emerge. Anna Lowenhaupt Tsing develops the conception of landscape assemblages, scenes of interspecies livability, produced by ecological disturbances. Christoph Brunner in his contribution proposes a theory where nature is imbued with practices of transvaluation. Ron Eglash and Colin Garvey elaborate on the sprouting self-organization of social ecologies traversed by the flows of energy. A conversation between Andrea Bellu, Elke Marhöfer, Mikhail Lylov and Matei Bellu evokes a dimension in which things are always in a process, always emerging, never finished, scrutinizing the relation between artistic practice and knowledge production.