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Groundwork in the Margins

Symbiotic Governance in a Chinese Dust-Shed

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Dust's Edge

The rolling dunes of Inner Mongolia's western plateaus undulate wildly out of the side windows of the shiny Chinese-made jeep that Forestry Secretary Xiao has claimed for the week. From the smooth new government road piercing its way through the scrublands that buffer it against encroaching dunes, the landscape appears as a frenetic rhythm. 'This area, because of its proximity to the Helan Mountains', an inland range cutting rain shadows into the fickle clouds, 'receives much more water than deeper in (*litou*)', he explains, pointing toward the yellow streak of dunes. By 'deeper in', he means the open desert, the vast belly of the continent extending west from the province's western frontier, as though the jeep were skating on the rim of the earth. 'That is why we can seed here.'

The road, beset by spreading sand, marks Alxa as the frontier of a national meteorological crisis. The dust storms that rise off the sandy surfaces of the increasingly desertified Alxa Plateau, in the far west of China's Inner Mongolia Autonomous Region, have since the early 2000s earned the region the dubious distinction of 'cradle of dust storms', when two seasons of upwind drought across northern China registered as Beijing's two most catastrophic dust storm seasons since the declaration of New China in 1949. More than a thousand kilometres and a full day from Beijing as a dust storm flies, the remote reaches of sparsely populated Inner Mongolia appeared in dangerous proximity by the wind.

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Beijingers demanded a form of environmental protection that would disrupt the continuity of spreading sand into strange weather: protecting Beijing from the meteorological fallout of devastating upwind desertification, or, the protection of some environments from others.

Inner Mongolia, a region of China whose coal has powered the Chinese economy and unleashed a boomtown economy of rampant resource extraction (Woodworth, 2017), has in the same stretch of time emerged as a meteorological frontier for the developed cities of the Chinese coast. In 2000, after a catastrophic season of eight closely-spaced dust storms over Beijing in the course of two months (Stein, 2015: 320–321), then-Premier of the Chinese Communist Party Zhu Rongji left the capital, wending his way against the trajectory of a dust storm until he arrived at the Alxa Plateau. There, he announced that desertification was not simply a problem of local, if catastrophic, land degradation, but rather an atmospheric and political problem for the country as a whole. If the desert continued to advance, if the earth could not be held steady, he warned, 'Inevitably, China will have to relocate its capital.'[1] The announcement punctuated a broader administration reworking of China's interior as Beijing's dust-shed, a zone of social, economic, ecological, and technical experiments (Ong, 2006) installing themselves across the landscapes where a desert might become a storm, and a frontier might press into the centre. Supplemented technically through back trajectory analysis, remote sensing, and the proliferation of dust monitoring and data collection stations, desertification and dust storm politics rework China's interior as a new kind of margin, in which relations of centre and periphery are coordinated as points in the development of a problematic meteorological process.

Dust-Sheds and the Proximate Frontier

This chapter concerns itself with this doubling of a resource frontier into the headwaters of a meteorological catastrophe, and experiments in social and landscape governance that have aimed to hold the earth to the ground (Zee, 2017). It hangs in a reworking of frontier regions in China, historically sites of imperial encounter and later contentious ethnic politics (Rossabi, 2004), into key sites in a geography of meteorological vulnerabilities. This reworking is closely tracked to the dust storms that have become a mark of urban life in contemporary northern China as much as the vertiginous social and economic change that has accompanied decades of Reform and Opening and its attendant social and market experimentation (Anagnost, 1997).

As the editors of this volume suggest, frontier regions have often been framed as distant, lawless regions. It is also true that they are made imaginatively, materially, and governmentally as sites of political experimentation; their status as margins is central to their productivity as incubators of political possibility and mutation. For dust storm source regions, the distance of the frontier is tempered by a paradoxical proximity through aistreams that draw together farflung places as stations in a possible storm. Since the early 2000s, China's desertifying Inner Asian frontier has increasingly appeared through the vexed and simultaneous figures of problematic meteorological closeness on the one hand, and the furnace of China's economy through decades of coal boom. These contradictions and the political experiments that they necessitate recall Owen Lattimore's seminal reflections on China's Inner Asian frontiers as sites of complex and negotiated sovereignty (1940). Two decades of concerted central government attempt to manage the content of Beijing's air have reworked northern Chinese airstreams and upwind desertification into the administrative footprint of a political apparatus spilling over what appears, through remote sensing and on-the-ground dust monitoring sites, as the capital's dust-shed. The distant resource frontier thus appears as a startling proximity, describing a meteorological entanglement playing out over the several days and hundreds of miles that connects places like Alxa to Beijing in a dust storm.

As the Inner Mongolian fringe doubles into a meteorological proximity, frontier ecology and environments are remade in dust control campaigns as an open laboratory of social, economic, and ecological re-orderings (see also Choi and Woodworth, this issue). In particular, this chapter aims to think through the various ways that figurations of 'environment' in experiments that draw together market interventions and forestry strategies generate emergent notions of political and ecological subjectivity. 'Environment', I suggest, is emerging as a governmental template for the gathering, manipulation, and control of social, economic, ecological, and geophysical dynamics in China's meteorological frontiers. That is, it appears as a contemporary means of assembling the frontier as a matter of state organization of relations that cut across staid distinctions between human, technical, and natural domains.

Thinking land, air, and more-than-human life in relation to shifting demands for economic development is a way of approaching the slipshod implementation of what has been grandly hailed in Chinese officialdom as a coming 'socialist ecological civilization'.[2] I approach this question through the fortuitous symbiosis of two plant species, whose planting has offered a tentative rubric for imagining and implementing a reworking of socialist and postsocialist institutions and social formations into part of an environmental strategy for changing the physical

characteristics of a windprone landscape. I argue that this symbiotic reworking of governance – a government modelling of social and geophysical entanglement through botanical entanglement – deploys the semantic potentials of the notion of environment, in English as well as Chinese, to posit a political logic in which 'environment' is both an object and a tactic of governance.

As anthropologist Lisa Hoffman reminds, 'environment', *huanjing* in Chinese, as in English is polysemous. It refers to extra-human nature, but also, more abstractly, to an arrangement of things, a milieu in and out of which things can be made to happen, the set of 'conditions that make something possible' (Hoffman, 2009: 107). An environment is a formal principle, as well as an account of the event through its shifting infrastructural conditions. It is a set of conditions in which something is held, and it is open to rearrangement.

I explore how the management of a diverse set of human and more-than-human domains as part of an integrated yet internally heteronomous environmental strategy introduces new modes of managing human behaviour and its environmental consequences. Put succinctly, the conditioning of economic environments – and thus the rethinking of an economy as an environment among others – has become a key strategy for conditioning ecological environments in Alxa. It does so without reference to categories of belief or care, instead foregrounding naturalized notions of economic rationality as a general theory of human action. In this, I engage with and supplement important theses on environmentality, the creation of environmental subjectivities. I gesture toward frontier experiments that re-assemble economic and ecological convergences into environments for reshaping human behaviour as a site where we might consider state environmental programs that do not aim to create 'people who care about the environment' (Agrawal, 2005: 162) as much as they seek to continually coordinate human labour into desired ecological formations (Figure 3.1).

In what follows, I focus on one project of experimental social and landscape governance. Forestry quotas for the planting of *suosuo*, a sand-binding shrub and the key species for windbreak afforestation in Alxa, especially on sandy former pastures, has hinged on the promotion of the planting of a second root, *rou congrong*, that grows only by interrooting in the micro-environment created by established *suosuo*. *Rou congrong* is a potentially valuable sand ginseng, and local forestry officials bet on creating markets for this second root as a way of enticing ex-pastoralists to grow *suosuo* as its symbiotic precondition. Out of this symbiosis, the entangling of economic and ecological formats give shape to modes of more-than-human environmental governance (Figure 3.2).

Figure 3.1 In a *suosuo* forest, inspecting *rou congrong* bodies allowed to seed for next years' crop. Photo: Jerry Zee.

Figure 3.2 *Rou congrong* supermarket. Photo: Jerry Zee.

Groundwork

March 2012: Alxa. I've tagged along with Mr. Li in his jeep, as he rides over the high dunes that were once his pasture. Mr. Li has gotten lost, and he stops multiple times to radio the leader of his hired planting team on a walkie-talkie. Here, as winter turns to spring, the frozen earth thaws into windblasted motion, spraying loudly against the metal doors of the car. Li assures me with gruff good humour that he's sure the forest is here somewhere. He pauses to get his bearings before he punches the ignition, sending the jeep barreling down the windward face of a high dune. When he sees the red flag and the faint silhouette of water trucks, he hits the gas gleefully. This corner of what was once pasture is now a field of sand drifts, and in the short springtime planting window, it is abuzz with activity. Workers are busy planting shrubs in rows at right angles to the wind. They wear bright scarves over their faces, protection from the dusts that whip around our boots and peel off the surface of the dunes.

I walk with Mr. Li as he inspects the workers, mostly ex-herder women hired as day labourers, moving in groups of three. They plant files of *suosuo* (English: saxoul, Latin: *Haloxylon ammodendron*) saplings in straight lines across the undulating topography of sand dunes, one sinking a shovel into the loose sand, a second carrying a bundle of seedlings, a third setting them upright in the ground. Moving slowly between these rows, men, also ex-herders, drive trucks hauling water pumped and purchased from a neighbour's deep well. They spray and tamp down wet sand around the scraggly root balls of the saplings.

From a tentative promontory on the windward edge of a dune, Mr. Li invites me to imagine this expanse of sand as a future forest of shrubs, dampening the hard wind into a pleasant breeze, and catching the wayward dust in the screen of its brambly foliage. *Suosuo* is a hardy shrub adapted to the environmental and climatic conditions of the desertifying Alxa Plateau. Quotas for its planting emphasize its status as a key species in the mega-forestry projects for re-engineering shifty desertified topographies into geophysical stabilities.

For a local government charged with the task of sand control, *suosuo* is a key species. Forestry officials value the plant's quick-growing roots as an effective 'biological method' (*shengwu fangfa*) of dune stabilization (Wang, 2009), an ersatz sand-binding and wind-breaking infrastructure on and below the shifting surface of dunes. *Suosuo* shrubs establish by shooting out a network of roots that binds the earth to itself. Their dense foliage splits the winds at the turbulent surface, breaking nascent suspensions of sand and wind before they can coalesce into dust storms.

On his ex-pastureland, Mr. Li oversees this transformation of dune to shrubland, indeed even collecting forestry subsidies for his efforts. In his estimation, however, he is not a *suosuo* farmer. *Suosuo*, while a key species for anti-sand forestry programs, is not in itself economically valuable, he explains, even with the forestry subsidies that substantially underwrite its planting. For Mr. Li, it is another plant, another product, that drives this work. When *suosuo* establishes, its roots create the ideal micro-environment for *rou congrong*, a desert ginseng that, for its snakelike shape, is said to bolster virility through sympathetic magic.

While *rou congrong* roots thrive in sandy conditions, they only grow in the roots of plants like *suosuo*; that is, in order for *rou congrong* to root, it must inter-root. While Li has no interest in planting windbreaks per se, he nonetheless plants them anyway, as they are a botanical prerequisite for the *rou congrong* that Mr. Li hopes will make his land again profitable. He tends these forests of shrubs as one builds and maintains a machine in a factory. '*Rou congrong*', he tells me, 'is a *chulu*', a road out of the dead end of his desertified pasture. And on this road out, growing and maintaining *suosuo* is the first step.

When Li looks out over his forest of seedlings listing in the wind, he sees money. Money put in, money borrowed, and accumulated through state incentives. He sees money in the future, when the shrubs establish and root production goes online, when he can sell these roots to state buyers, who promise stable prices and unquenchable demand – they will buy as much as he and the other ex-herders, on their patchwork of broken pastures, can produce. He sees money bet against his future, because even with careful maintenance, *suosuo* forests have a remarkable tendency to die before establishing and even after. The growing cycles of the plants comprise a multi-species business plan that links afforestation and root-harvest as moments in a broader economic calculation that will make the sand productive again. *Suosuo*, he assures me, will turn the land into a biotic factory for these roots, spinning sand into gold.

As Li and other ex-herders retrofit the desertified pastures into future root factories, they have become inadvertent agents of the forestry bureau, growing the rows of *suosuo* that local forestry officials can and will count toward their afforestation quotas. The botanical pair of *suosuo* and *rou congrong* indeed makes the land, in the very same act of planting, *both* a forestry zone and a living machinery for root production, oriented toward a future market in roots. Alxa's Forestry secretary Ye, in his dusty office in Alxa's main town of 100,000, lays out this fortuitous doubling of the forestland – in its infrastructural and economic functions – as the template of a political technique for absorbing herders into the implementation of state afforestation projects. 'If we can find

ways to make herders convert their land to *rou congrong* farming', he says, 'they will grow *suosuo* more diligently than if we just paid them to grow windbreaks in the first place'. He continues, 'Those pastoralists will plant the *suosuo* forests and pay and work to keep them alive because they need *suosuo* to grow *rou congrong*.'

The inter-rooting of two plants in preparation for *rou congrong* cash cropping is an instance of what I call 'groundwork' in two senses, each fixated on the stabilization of the loose earth. For Li, planting of windbreaks is a groundwork in the sense of a preparatory labour that precedes what for Li is the 'real' work of root cultivation. Groundwork is what must be done so that things can get done. Second, for the region's forestry administration, it is 'groundwork' in the sense of a literal labour on the earth and its geophysical properties, a technical necessity for protecting downwind atmospheres from 'local' dust storms. Between these two kinds of groundwork, regional forestry officials see the promotion of monoculture root farming – or a di-culture of inter-rooted windbreaks and cash cropped roots – as a key means of achieving geophysical stability.

On degraded pastures, 'groundwork' stitches together changes in the region's economy as a possible means of generating a new sand-holding ecology. It is a way in investing in the unruly nature at desert's expanding edge as it shifts between two economic imaginaries and the social and ecological worlds gathered by action into earth on the move. Desertification and its control slips the broken pasture into an unruly motion, and in the continent-threading wind, state-sponsored overgrazing has made Alxa a meteorological frontier through land degradation. Where groundwork makes preparation and anticipation of new economic horizons into a nature made wild in transition, ex-herders and forestry officials inhabit the land as 'an edge of space and time: a zone of not yet', as Anna Tsing writes (2005: 28). This anticipatory affect, animated through the earth as a set of economic principles, geophysical transformations, and promises, is crucial as a governmental principle oriented toward future earthforms, markets, and opportunities, none of which have yet materialized (see Paprocki, this volume).

This engineered entanglement of economic and ecological changes, presaged fortuitously in the symbiotic inter-rooting of plants, makes economic and ecological processes disparate and yet interacting elements in a state-sponsored landscaping process. Groundwork, I want to emphasize, is a reminder that the hoped-for forestry ecology of roots, shrubs, and their planters, is not an end in itself, but rather a means of intervening into the geophysical landscape and its flighty properties. The multi-species ecology growing through the sand, that is, is the point

where engineering an economy becomes a way of engineering a shifty landscape. It is the particular reworking of multi-species ecology into a potential technique of meteorological control that I want us to notice here. Life forms are openings to earthforms.

'Environment-making' names a governmental technique oriented toward instrumentalizing arrangements of things, acting on and modulating the conditions for new practices to emerge. Forestry officials maintain that it is important to build an effective economic *environment*, and not just a developing economy, to induce herders to plant. That is, human behaviours were thought as not only environmental, in the sense that they have effects that can be registered on some external world. This is the sense of culture that Marilyn Strathern describes as 'the workings of human activity as such' (2013: 215) whose effects might be registered in a scalar manner against some pre-given nature.

However, human behaviours are also 'environmental' in the sense that they could be elicited as reactions to changing, and therefore changeable environmental conditions. Behaviour in this sense does not emerge from an acting subject, but in reactions triggered by stimuli. Foucault's discussion of 'environmental technologies', associated with what he calls 'American neo-liberalism' (Foucault, 2008: 259) is a helpful way of framing this capacity of an economic environment to elicit behavioural responses. In his reading of a proposed measure to control drug use in the US War on Drugs based on liberal economics, the template of an environmental type of intervention is the artificial manipulation of drug prices as a way of manipulating the market milieu in which drug users operate. Prices were kept artificially high for new users who might yet be dissuaded by high initial cost, and they were tamped artificially low for habitual users so they will not commit criminal acts to secure cash for expensive drugs. Environmental intervention, he suggests, acts indirectly to efficiently condition behaviours. It acts 'on the market milieu in which the individual makes his supply of crime and encounters a positive or negative demand' (2008: 259).

In what follows, I explore how ecological construction programs more concretely experiment with market environments in order to dismantle pastoralism and institute a replacement economy for *rou congrong*. In this process, forestry officials and local cadres have experimented with building a carefully calibrated economic environment, from start to finish, aimed at creating the economic, labour, and market conditions for *rou congrong* and *suosuo* to propagate. This is predicated on an increasingly powerful governmental understanding that the tight management of specific economic conditions can orchestrate human economic behaviours in the creation and maintenance of state-sanctioned landscapes.

Bankrolling Symbiosis

In the wake of major storms in the early 2000s, a new meteorological villain burst onto the scene in Beijing. In accounting for dust storms, state officials blamed 'irrational land use practices' – most notably 'overgrazing' in upwind regions. In public discourse, the problem of overgrazing crystallized in the figure of ravenous upwind goats in distant dust source areas, transforming grassy pastures into deserts. Newspaper editorials in national publications demanded 'Killing goats and protecting grass' in Alxa and other points along the wind to protect Beijing's airspace. Cashmere goats, the mainstay of Reform Era pastoral economies in Alxa, emerged at the centre of a new form of atmospheric accounting, measured in dwindling grasses and increasing dust events.

Forestry officials and environmental NGOs in Alxa alike cite the conditions of an under-regulated market for animal products as the main driver of this degradation. They argue that the unregulated profitability of cashmere – 'soft gold' in local parlance – combined with the slicing of communal mega-pastures into smaller family plots meant increasing ecological and economic pressure on exhausted pastures. Herd sizes ballooned 10-fold in 20 years, in local accounts, in response to the high price of deregulated cashmere. The pastoral economy in its extant form for officials increasingly indicated a maladjustment of economic and ecological conditions and effects.

To protect grass and Beijing, mandatory seasonal controls on grazing were implemented in Alxa in the early 2000s. Several years later, the forestry administration offered full bans on grazing as a voluntary measure in the mid-aughts, funded by the nation's forestry agencies as anti-desertification work became one of their key mandates in northern China. Families afflicted by desertification – and whose herds were blamed for causing it – could, in exchange for their compliance with grazing bans, gain access to a suite of benefits and subsidies disbursed by regional, provincial, and national governments. Most immediately among the benefits attached to voluntary cessation of grazing were access to free and subsidized off-pasture housing, technical trainings, and access to streams of money for many new 'ecological' endeavours, including *rou congrong* plantings. It is these moneys that forestry programs would increasingly offer: not as emergency financial support in the aftermath of pastoralism but rather as a pool of starting capital available to ex-pastoralists to immediately reinvest in new, state-regulated economies retooled specifically toward state ecological construction goals.

For three decades after the dismantling of communal pastoral brigades in the early 1980s, the Li family raised ever-growing flocks of cashmere goats on the plot of land redistributed to their family after

land reform, rapidly growing their herd to deliver the goats' meat and cashmere wool to a rapacious market for luxury goods in China and beyond. In 2010, Li's family, facing the dual pressures of desertification and the controls on grazing implemented to control it, decided to comply with these full state bans on grazing, selling 90% of the family's flock of goats in exchange for access to this package of government programs and payouts.

For their part, forestry mega-projects have cobbled existing institutions of socialist support and redistribution into streams of cashflow, ready for disbursement to prospective root growers. Additionally, state coffers are flush with new money, not only from well-funded forestry programs supported by the central government, but also money from Inner Mongolia's booming coal extraction industries (see Woodworth, this volume) – which are never blamed for the ecological devastation that has swept across pastures. When I speak with Li, he lists the government's programs each as a source of financing, culled into a fund that he uses as seed money for his family's new enterprises. But he also collected more money from other diverse state and non-state sources: state supplementary benefits for 'poverty relief' (*pinkun fuwu*), the windfall from the one-time sale of the family flock, loans from relatives and Alxa's regional agricultural bank, not to mention the combined pensions of he and his wife's retired, still-living parents.

'This year', he says, 'the first *suosuo* planting from two years ago will have grown large and deep enough, and we will begin the planting of *rou congrong*'. He interlaces his fingers to demonstrate the interlacing of the root structures of two plants, the one growing through the other. Li narrates his choice to participate in state forestry programs as essentially a matter of gaining access to new sources of investment capital, cobbling together state resources with other moneys. This money has underwritten the preparation of the land for *rou congrong* planting while getting the family through the two years before *rou congrong* can be interplanted.

Grazing bans and this reformatting of forestry into venture capitalism were part of a cluster of governmental techniques that aimed to induce pastoralist families to opt out of grazing, as if by choice. In order to avoid 'social chaos' in the aftermath of compliance of bans, forestry officials worked to create an immediate replacement economy that would 'catch' ex-herders in a new state-built ecological apparatus. A properly adjusted market could be used to reinvest pastoralists in their land's potential new productivity, while at the same time making pastoralists-turned-cashcroppers-turned-foresters into de facto arms of the forestry administration in their planting and maintenance of windbreak forests. It also aimed to create populations whose future economic livelihoods

are directly dependent on the ecological construction programs that aim to stabilize dunes by transforming them into *rou congrong* farms, and thus *suosuo* forests.

Closing the economic loop, local officials have actively worked to create potentially infinite demand for *rou congrong*. They have promoted *rou congrong* as a local specialty product, experimenting with new uses for the root. Buyers from nearby Ningxia Province have recently set up shop here, coaxed by deep tax breaks and promises of political favour from the local government, which has invested in creating the conditions for a new resource boom in medicinal roots and other so-called sand products (*sha chanye*). As potential resources, these roots are not transparent receptacles of value waiting to be extracted, then. Rather, cementing their status as resources is the continual and explicit goal of forestry campaigns that depend on the creation of value in roots as a key spoke in the stoking of the economic and ecological environments deemed necessary for slowing dust storms in their tracks. The state creation, manipulation, and maintenance of an economy, Party Secretary Bataar insists, aims to remove any 'natural' economic barrier to the expansion of *rou congrong* planting, and thus to the *suosuo* forestry that it generates as its precondition.

Forestry officials work with other government agencies and companies in order to create a plug and play economy with niches waiting to be occupied by ex-herders. They are building a supply chain with everything but suppliers. Becoming a producer of the root is to occupy a structural position in a commodity chain anchored by buyers waiting, state money in hand, for an as-yet unproduced product. State manipulation continuously props open this market in roots, organizing economic activity without the pitfalls of unpredictable market fluctuations: an economy with guaranteed buyers meant that the market phenomena of over-supply, fluctuations in supply and demand, and even economic competition can be neutralized. Where more production does not mean falling prices, there can never be enough producers. Against Alxa's degraded ecology, this is a political economy of infinity rather than scarcity.

Cutting to the chase, when Li explains his decision to grow *rou congrong*, he points to the existence of these companies as the evidence of a state-guaranteed market. These conditions make him think of his land as the site of a long-term business strategy, one he narrates as a feedback system of mutually-causing economic and ecological transformations. Proceeds from sales will roll back into his *suosuo* planting fund so he can expand production, setting in motion the ex-pasture as a self-sustaining machine of step-by-step ecological and economic change. Because this market exists by sheer political will, it can persist as long as

the state supports anti-desertification work, that is as long as Alxa remains a dust storm source area for Beijing, its earth a latent cloud. Against the endurance of the sand, these groundworks must continue.

Coda: Response

The status of Alxa as a meteorological frontier and the attempt to generate a resource boom as a state strategy of anti-desertification engineering characterize this frontier in a number of unexpected ways. These introduce a set of tensions and double movements into the notion of a frontier itself. First, as a dust storm source region, Alxa's remoteness from the centres of state power, as a sparsely settled, distant 'small place' (Kincaid, 1988) in the political geography of the country, is continually rendered as a meteorological proximity. As a key station in the formation and motion of a storm, this 'remote place' (Ardener, 2012; Harms and Hussain, 2014) appears in state forestry programs as a key chokepoint in a northern China figured less as a topography of windprone sandy lands, storm-channelling mountain passes, and plains that sprawl open as the bed of dusty rivers.

But in addition to this, Alxa and its hoped-for transition from pastoral sandscape to an infrastructure of dust-catching windbreaks in a bonanza of state-sheltered speculation means that frontier regions do not simply emerge in the freeing of a rampant capitalist impulse. Indeed, they emerge in the state promotion of market agency as a theory of human behaviour. In this last section, I attend to the meteorological frontier as an incubator for experimental techniques of social governance. I suggest that in the remaking of remoteness into meteorological proximity, the market, as an environmental medium for human behaviour, converts naturalized understandings of economic freedom and choice into new modes of social and ecological control, relation, and management. In doing so, the frontier has become a generative site for experimenting with the constitution of environmental subjectivity as an already constituted neoliberal subject. The *homo oeconomicus* presumed and continually enacted in environmental techniques of governing, however, does not appear either as the environment-loving affective and ethical subject presumed by Agrawal's formation of environmentality, nor as a rational agent seeking a competitive and individualized mode of economic advantage. Rather, this environmental economic subject is constituted as an ensemble of virtual behaviours that can be properly elicited by well-calibrated environmental triggers, as we will see below.

The creation of a highly artificial economic environment, bankrolled through the cobbling together of state moneys and driven by a demand

held open by state intervention was posed as a means of orchestrating ex-herder behaviours. These interventions aimed to leverage the capacities of markets and other economic phenomena as tools for directing economic behaviours that would double as vehicles of desired ecological construction. At the centre of this is an idiosyncratic vision of the political subject that environmental techniques presume. This is an environmental subject that is quite different from the political subject of certain brands of environmentalism, for whom coming to 'environmental awareness' unlocks ecological change.

Curiously, any sense that there was a need to foster a care or consciousness of one's actions vis-à-vis 'the environment' was absent or incidental in any of these re-engineerings of the economic environment in service of ecological construction. In the case of anti-sand programs in Alxa, the environmental subject presumed by these techniques is one whose behaviours could be anticipated and elicited as *responses* to modifications to a milieu. It is necessary to foreground 'behaviours' and 'responses' as the politically expedient features of this figuration of environmental subjectivity. Foucault argues that in a becoming-environmental of power (Massumi, 2009), that the individual governable through action on its environment 'is sensitive to modifications in the variables of the environment and which *responds to* them in a non-random way, in a systematic way' (Foucault, 2008: 269, italics added).

The governability of this environmental subject inheres in its responsiveness to changed in its environmental conditions. That is, from the perspective of an environmental technology, the actions of environmental subjects can be interpreted as responses to environmental conditions. In Alxa, *behaviour* was the important level of response because behaviours could be coordinated for their effects on a physical environment. For instance, the means of converting ex-herders into de facto forestry workers through the dual planting of *suosuo* and *rou congrong* did not have to do with instilling or fostering a desire to do good ecological work or even a desire to plant. Rather, the creation of an economic environment that incentivized *rou congrong* production was aimed at eliciting a specific behavioural reaction – planting – without reference to subjectivity.

Curiously, the ecological environment is both central and strangely absent in Lee's plans. While he describes his land in the midst of an ecological transformation, this is continually reframed as practice of economic preparation, a technical prerequisite for participation in the market in medicinal roots. Animated by a market in which demand for roots was propped open by political intervention, planting sand-binding plants takes on a distinctly economic character, better grasped through budgetary than biological considerations. Instead, his story of ecological

transformation is subsumed in a story of navigating through, being a player in, a new economic game, where subsidies become seed money and shrubs become a means of production.

In any case the environment has 'worked'. In Mr. Li's plans, the ex-pasture is slated to become, with each season, an ever-expanding forestry zone. As he busily participates in the economic environment engineered to make ex-herders grow medicinal roots, he has coordinated the planting of shrub forest against dust storms. Variables in this 'environment' are available to perpetual strategic adjustment to elicit and activate the propensity of elements and in the fact of arrangement itself (Jullien, 1995). Effective configuration of elements in the economic environment in which human behaviours are epistemologically re-situated is a way of unlocking proper, controlled behavioural responses, which in this case can be adjusted to specific ecological ends. Mr. Li's participation in the *rou congrong* economy has been engineered into the economic environment as the anticipated response to well-calibrated arrangements of economic things and forces.

A crucial difference in economy and environment then, is this: where the economic agent acts, the environmental subject is configured as only ever having the capacity to *respond*. Or rather, in the framework of a technique directed at the control of behaviours through an economic environment, the environmental subject is one whose actions are always interpreted as a response to environmental conditions, and the environment is engineered in such a way as to activate economic agency as a response. When an environmental subject, so posed, acts, these acts are not a self-originating assertion of agency, but rather a confirmation of the efficacy of the conditions in which it is embedded. Crucial to the many explanations of ecological degradation in Alxa, and then to the programs to retrofit them, is that the environmental subject at stake in these techniques is one who never acts per se but who is seen as only ever responding, quasi-mechanically, to the changing conditions of its environment, in the format of a response to an introduced stimulus.

Notes

1 See *Renmin Bao*. (2000). *Zhu Rongji xialing 'sha yang hu cao' bao Beijing*. http://www.renminbao.com/rmb/articles/2000/8/23/2504.html.

2 See Pan, Yue. (2007). Shehuizhuyi Shentai Wenming (Socialist Ecological Civilization). Ministry of Environmental Protection of the People's Republic of China. www.zhb.gov.cn/hjyw/200702/t20070206_100622.htm.