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A WORLD OF MATTER

Wall paper, collection of archive material, texts, photographs, video, 19:41 min., 2014
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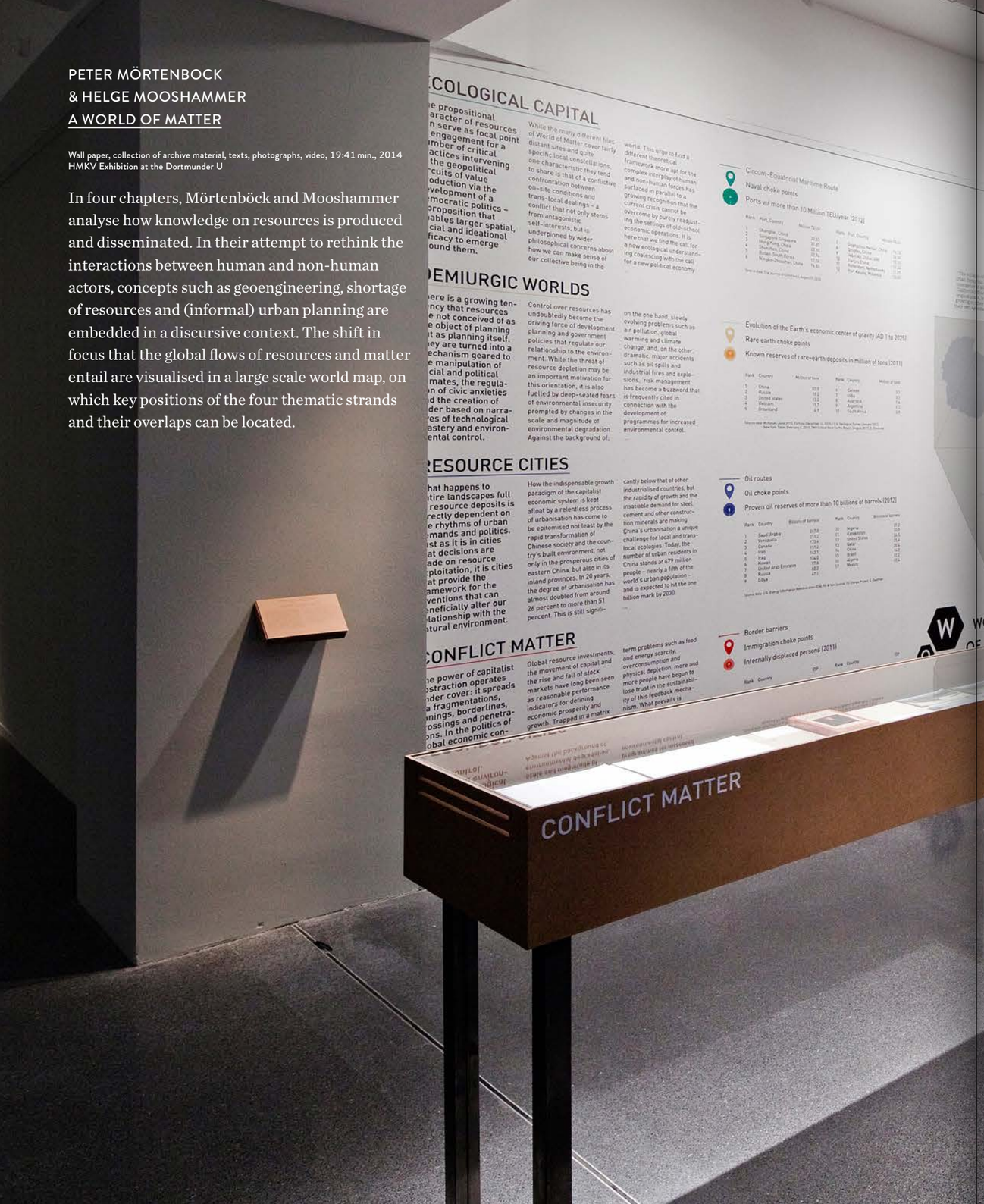
In four chapters, Mörtenböck and Mooshammer analyse how knowledge on resources is produced and disseminated. In their attempt to rethink the interactions between human and non-human actors, concepts such as geoengineering, shortage of resources and (informal) urban planning are embedded in a discursive context. The shift in focus that the global flows of resources and matter entail are visualised in a large scale world map, on which key positions of the four thematic strands and their overlaps can be located.



A WORLD OF MATTER

PETER MÖRTENBÖCK & HELGE MOOSHAMMER

Oh Mister Hatfield, you've been good to us:
You've made it rain in ways promiscuous!
From Saugus down to San Diego's Bay
They bless you for the rains of yesterday.
But Mister Hatfield, listen now;
Make us this vow:
Oh, please, kind sir, don't let it rain on Monday![1]

Anonymous poem about the early
twentieth-century rainmaker Charles Hatfield

THE POLITICS OF SCARCITY

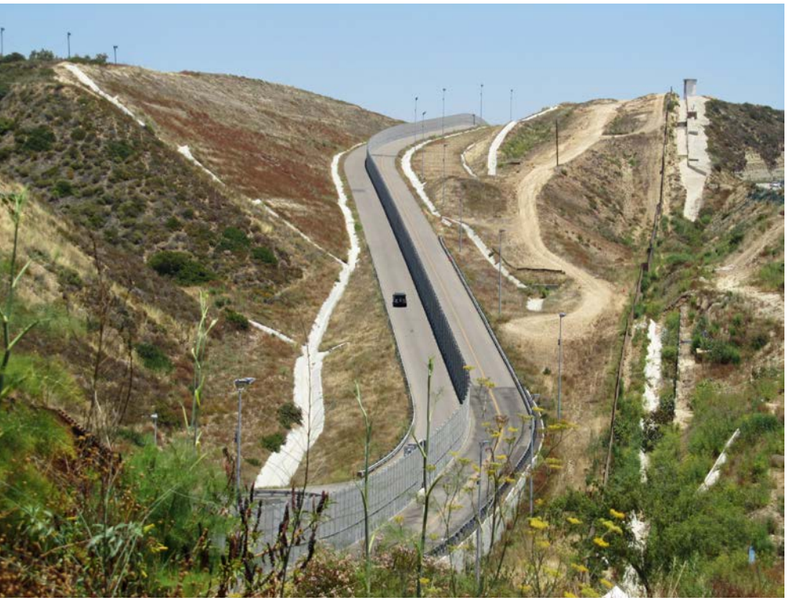
Global resource investments, the movement of capital, and the rise and fall of stock markets have long been seen as reasonable performance indicators for economic prosperity and growth. Trapped in a matrix of consumer economies, we have nurtured a belief in a feedback system based on share values, focus groups, and customer reports. As the Western economy now flatlines and the economic crisis collides with long-term problems such as food and energy scarcity, overconsumption, and physical depletion, more and more people are losing trust in the sustainability of this feedback mechanism. What prevails is scarcity, and with it the profound crisis of our time: nothing threatens to hamper consumerist habits more than the prospect of increasing resource constraints.

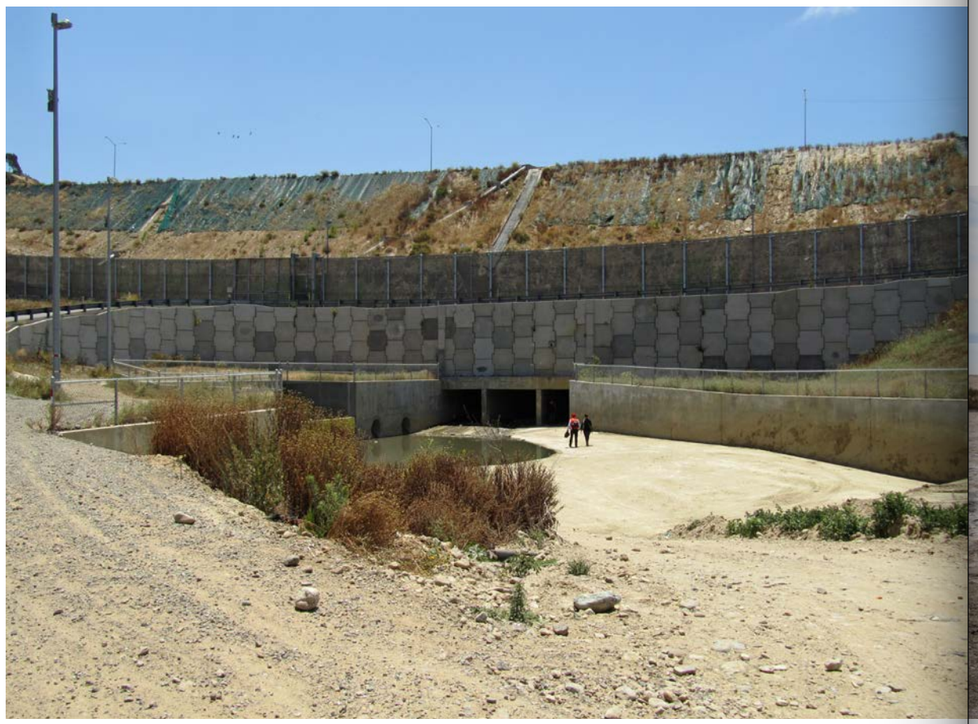
But scarcity is by no means a new framework for grappling with the gradual loss of ready access to natural resources. From Thomas Malthus's late eighteenth-century *Essay on the Principle of Population*[2] to the Club of Rome's 1972 *Limits to Growth* report[3] and resurgent concerns over the diminishing resource base for humans, the concept of scarcity points to a conclusion shared by all diagnoses of resource crises—namely, that we will inevitably be compelled to accept rationing of some sort if we are to survive on a limited planetary surface. In the 1960s and 1970s, visionary architects such as Paolo Soleri and Mike Reynolds transformed the intellectual and ecological paradigms of resource scarcity into experiential spatial laboratories with their designs for eco-cities that leave only a small footprint on the Earth. These concepts were formulated in a time that saw the emergence of neighborhood action initiatives, free-thinking groups, and eco-communes intent on producing new narratives of self and relatedness and radicalizing political and environmental thinking.

The current revival of the scarcity model is different in the sense that it is taking place in the context of post-millennial concerns over climate change, peak oil, and the loss of biodiversity—one in which resource depletion has become increasingly entangled with the affective regime of late capitalism and its expansion of commodity space. An infinitely exploitable resource, symbolic and affective commodities are the key currency that is now employed to mitigate the late-capitalist crisis of the political economy. They are designed to bail us out of a growing ecological debt and to help us reorient our attachment to the ecologies we inhabit.

The nature of this complicity is epitomized by the current race for rare earth elements, minerals that are critical components in modern electronic devices and "green" technologies ranging from hybrid cars and flat-screen displays to low-energy light bulbs and generators used in wind turbines. Because rare earths are scattered in small quantities in the soil, mining them is cost-intensive and ecologically harmful. The process of extracting rare earth oxides and metals has left fractured and extremely inhospitable mining landscapes, of which the Bayan Obo Mining District in Inner Mongolia is a blatant example. Here, the environmentally taxing aspect of this enterprise is cunningly mitigated by displays of rare earth compounds in on-site showrooms whose minimalist-luxurious appeal outshines that of iconic artworks such as Damien Hirst's well-known installation *Pharmacy* (1992), with its cabinets full of mysterious substances, or his recent sculpture of a diamond-encrusted human skull (*For the Love of God*, 1997). These parallels are anything but accidental. As the art world's fusion of market and aesthetic assets into long-term value suggests, resource value has in a sense become dependent not only on the idea of scarcity but on its ostentatious celebration. Scarcity has been transformed from a threat into a stage-act.

In his book on *Assemblage Theory and Social Complexity*, Manuel De Landa describes how resource distributions never exist in an abstract space, but are in fact always related to concrete spatial entities such as communes, markets, or interpersonal networks.[4] Resources can be seen as the emergent properties of such entities, be they physical resources like oil, water, cotton, or rare earth metals, or conceptual ones like solidarity, mutuality, legitimacy, or trust. Obviously, there is a connection between these tangible and intangible assets—a connection we need to explore further to fully understand the nature of the crisis in which we feel immersed. We are not sure whether this connection lies with a certain attachment to the ecologies we inhabit or whether these feelings have now entered new and complex circuits of cross-contamination, but what is clear to us is that there is a loose thread running through the various fields of crisis, one that has to do with a changing relationship between the individual and the collective—between *individual forms* of understanding loss and a *collective structure* that is needed to cope with the consequences of crisis. With the formation of new spatial entities—global social movements, networked activism, distributed collaborations, general assemblies, online communities—new modes of collective operation are only just beginning to discern possibilities for alternative resource ecologies against the backdrop of the current spectacle of resource depletion.





Left page: The highly engineered Tijuana River Estuary forming part of the US-Mexican border control structures, California, USA, 2011

Right page: San Gorgonio Pass Wind Farm, California, USA, 2011
Abandoned shorefront in Bombay Beach, a trailer community on the Salton Sea, California, USA, 2009

COOPERATIVE OF THINGS

While the many different approaches to emerging eco-systematic assemblages cover fairly distant sites and quite specific local constellations, one characteristic they tend to share is that of a conflictive confrontation between on-site conditions and translocal dealings—a conflict that not only stems from antagonistic self-interests, but is underpinned by wider philosophical concerns about how we can make sense of our collective being in the world. This urge to find a different theoretical framework, a framework better suited for the complex interplay of human and non-human forces, has surfaced in parallel to a growing recognition that the current crisis cannot be overcome by purely readjusting the settings of old-school economic operations. It is here that the call for a new ecological understanding fuses with the call for a new political economy.

At the heart of these contentions lies the demand to break with capitalism's tendency to externalization. The affected parties are pressing increasingly hard for current resource exploitation to take into account all the elements the market economy has so far succeeded in excluding from its cost and profit calculations. One important strand of research into the possibilities of a more inclusive understanding and use of resource environments has been the recent focus on cooperative structures. Elinor Ostrom's 2009 Nobel Prize in Economics for her research on economic governance[5] and the United Nations International Year of Cooperatives 2012, among other things, have drawn attention to the capacity of cooperatives to stake out a middle ground between the extremes of over-regulation through centralized authorities, on the one hand, and total liberalization of a privatized market, on the other.

Within this ideological struggle around the limitations of man's dominion over the world, a new stream of thinking has been gaining in popularity: the discourse on the social life of things. Promoted by radical thinkers from liberal institutions and philosophical circles exploring the idea of speculative realism, it has the air of a radically new vision in which *thingness* might become a promising object of critical enquiry. Indeed, it seems vital to recognize that the conceptualization of natural resources as commodities is only one of many options in the life cycle of objects which, over time, appear in different constellations and are thus put to use in different ways and according to different value regimes.

While the patterns of argumentation and rhetorics deployed by speculative realism seem to offer scope for transgressing the limitations of human-centered interactions with the material world (and resource exploitation is a key example of such interaction), we also have to be careful not to throw out the baby with the bath water. It is, of course, significant that the rise of this new doctrine coincides with the recent cycle of crises in the market economy, exemplified by the 2008 credit crunch that saw Western hegemony run out of answers to the global challenges of prosperity, equity, and resource distribution. Could it be that this recurring focus on the independence of the life of things merely serves as means of obviating human responsibility for what is happening to the world we live in? Moreover, the vehemence this new narrative has taken on in the art world raises the question whether the new aestheticization of objects and their material qualities might actually conceal a certain fetishization of tradable objects, precisely in times of volatility. Does this rehabilitation of the thing let a purified market of exchange back in through the backdoor, as it were—one that is again managing to exclude all potential externalities from its calculations? Are we witnessing the building of an unholy alliance between the connoisseur art critic and the stockbroker who prefers to operate on the speculative market of measurable material quantities rather than dealing with the messiness of relationalities between humans, things, and their interactions?

In discussing the creation of the urban commons, David Harvey, the seminal voice of countergeography, is certainly very clear about the commons being not a thing but an issue of social practice,[6] which in turn allows for many things to be conceived in a multitude of ways. The challenge for any kind of critical engagement with these questions is therefore to stop discriminating between the ecologies of things and their lives, on the one hand, and the manifold human relations that develop around them, on the other. The point here is to expand the imaginary of possibilities. Perhaps it is time to start thinking about a cooperative of things.

GEO-ENGINEERING: CLIMATES OF CONTROL

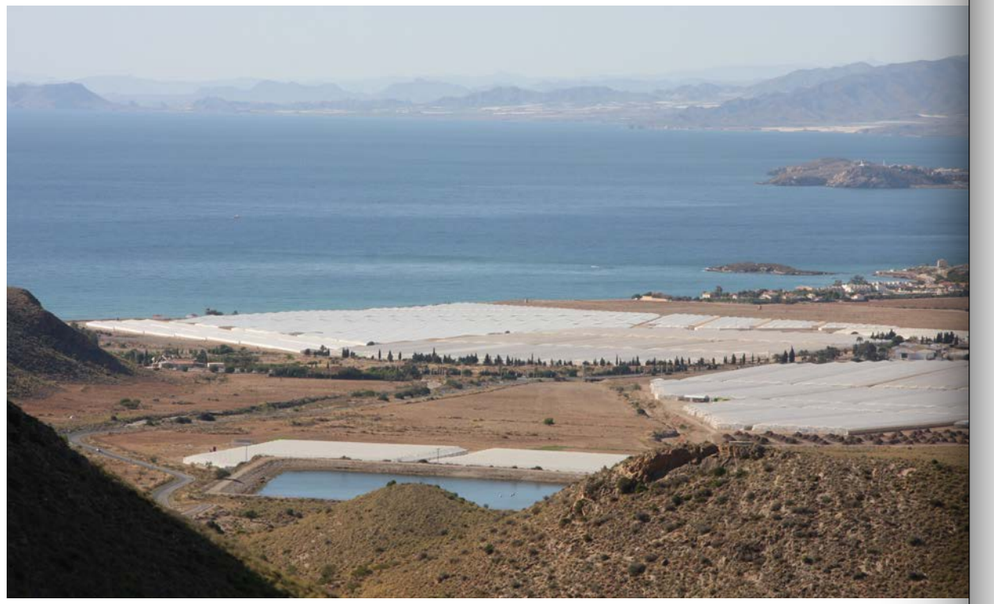
Control over resources has undoubtedly become the driving force behind development planning and government policies regulating our relationship to the environment. While the threat of resource depletion may be an important motivation for this orientation, it is also fuelled by deep-seated fears of environmental insecurity due to changes in the scale and magnitude of environmental degradation. Against the background of slowly evolving problems such as air pollution, global warming, and climate change, on the one hand, and dramatic, major accidents such as oil spills and industrial fires and explosions, on the other, "risk management" has become a buzzword frequently used in connection with the development of programs for increased environmental control.

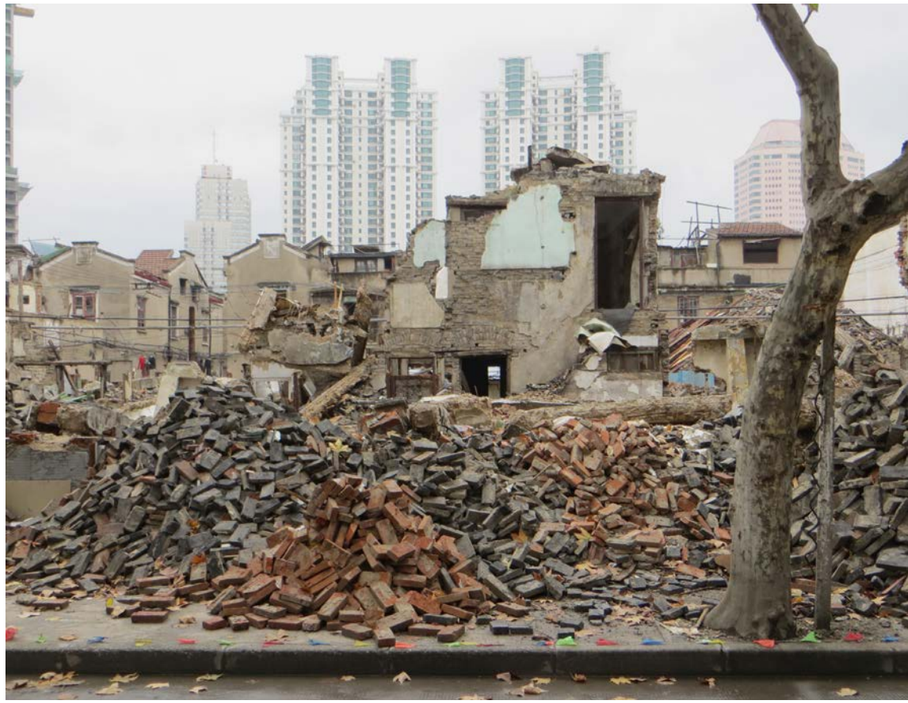
When environmental disaster strikes, its root causes can be many, but they are all ultimately linked to the changing nature of the relationship between politics and economics. If economics can flourish outside politics by simply following its rogue nature, as some have argued, then this is further enhanced by the economic turn of politics itself: The market-state and its political agents still tend to turn a blind eye to disaster because all too often they actually benefit from it. Both the state and the market are only too willing to gamble on catastrophe in order to take in uncontrolled extra revenue or advance specific agendas that involve radical measures of social and economic engineering by exploiting the public's disorientation.

On the other hand, the more visible environmental disasters become, the more they tend to trickle down into the collective consciousness and remain in memory as an open wound waiting to be healed somewhere in the distant future. In this sense, environmental insecurities are also provoked by what Zygmunt Bauman, in his characterization of modern existence, has termed "a life of continuous emergency"[7]—the permanence of sudden disruptions that throw life as it is being lived off course, detracting man from the unrestricted accumulation of value, and thus generating anxiety.

In this situation, the scientific calculation of risks and the engineering of cost-effective solutions to mitigate the effects of deteriorating ecosystems are increasingly used to patch up the scars left on the cultural and natural landscape. So far, therapeutic interventions have focused on the manipulation of Earth or climate systems, such as weather-control projects or even more radical terraforming strategies, to counter global warming. Experiments with cloud seeding and solar radiation management are well underway as part of policies designed to commandeer and control the climate of the Earth. Under its new National Plan for Addressing Climate Change (2013–2020), China has divided the country into different regions and command centers for strategic weather modification. And in their own attempt to counteract "anthropogenic climate change," the United States have likewise intensified their research into aerosol geoengineering, providing multi-billion dollar budgets to fund the experiments involved. Given the politico-economic advantages to be gained from such operations, weather modification is likely to become an element of many national and international security policies in the near future.

Though military or any other "hostile" use of environmental engineering was banned by a UN convention tabled in 1977,[8] support for weather modification technologies as a means of controlling the world's climate is currently on the rise. This support is informed by environmental discourses centered on the human capacity to "improve" environmental benefits. In the process, nature is being redeveloped in accordance with the needs of rapidly growing populations, atmospheric self-regulation "restored," and large sways





Left page: Greenhouse industries in the Region of Murcia, Spain, 2010

Right page: Urban restructuring in Shanghai, China, 2012
Remnants of subsistence farming in Pudong, Shanghai, China, 2012

of wasteland "returned" to nature. A particular cultural perspective on nature is thus being imposed on the re-engineered territories as well as on local communities—one not dissimilar to the anthropocentric, self-centered attitude toward the environment displayed by arcane methods of rainmaking practiced in the Western world during the early twentieth century. While it may seem that there is still no need to consider alternative possibilities of how we want to relate to nature, it is worth noting that such possibilities are not even made part of the political debate in the first place. On the contrary, dissenting perspectives on the environment and their potential to generate resistance are increasingly integrated into government plans for environmental engineering from the outset.

On a recent trip to China, we found this shift in policy confirmed by the new political leadership's decision to introduce impact assessments for all state projects that might have adverse environmental consequences—assessments whose focus lies on the likelihood of projects prompting protests or social unrest. In this approach to resource ecologies, resources are not conceived of as the object of planning but as planning itself. They are turned into a mechanism aimed at the manipulation of social and political climates, the regulation of civic anxieties, and the creation of order based on narratives of technological mastery and environmental control. An alternative and more desirable approach to environmental politics would be to introduce democratic processes that address our options for relating to the environment and the resources emerging from these relationships. However, establishing such an approach ultimately requires a profound cultural shift away from the idea that any environmental problem can be solved by skillful engineering, whether of a technological or political nature.

URBAN RESOURCES AT THE CROSSROADS

The acceleration in the mining of mineral resources over the last decades has been staggering. Between 1984 and 2011 the world production of mineral raw materials (iron, ferro-alloy and non-ferrous metals, industrial minerals and mineral fuels) has risen from 9.4 billion to 16.6 billion metric tons, representing an aggregate growth rate of 77 percent. In 2008 total global resource extraction—metal ores, fossil fuels, industrial and construction minerals, and bio mass combined—amounted to 68 billion tons. It is important to understand the parallel trend of increasing global urbanization as not merely mirroring this development, but as a key driving force behind global resource extraction and consumption. Indeed, the most pronounced increase in resource extraction concerns the area of construction minerals. While this is the least well-documented area of resource exploitation, and data is sometimes patchy and varied, calculations indicate a growth of up to 135 percent over the last thirty years.

The manner in which the indispensable growth paradigm of the capitalist economic system is kept afloat by a relentless process of urbanization is epitomized not least by the rapid transformation of Chinese society and the country's built environment—not only in the prosperous cities of eastern China, but also in its inland provinces. In twenty years, the degree of urbanization has almost doubled from around 26 percent to more than 51 percent. This figure is still significantly below that of other industrialized countries, but the pace of growth and an insatiable demand for steel, cement, and other construction minerals are making China's urbanization a unique challenge for local and translocal ecologies. Today, the number of urban residents in China stands at 679 million people—nearly a fifth of the world's urban population—and it is expected to hit the one billion mark by 2030.

There is nothing to indicate that this trend will slow down any time soon. Nor are there any plans to introduce changes to the economic circuits of production connected to urbanization. On the contrary, this pattern is predicted to continue: it is estimated that a further 400 million farmers will leave their villages and settle permanently in urban areas offering non-agricultural jobs. As a result, it is expected that the number of Chinese cities with more than one million inhabitants—currently around one hundred—will more than double over the next ten years alone. This urban explosion will require the construction of hundreds of thousands of high-rise apartments to house new arrivals as well as a vast infrastructural building program. Again, the workings of this economic model are expressed in a growing demand for mineral resources. Chinese per capita demand for cement is now the highest in the world, amounting to almost 60 percent of total global cement consumption.

While the stress this acceleration of urbanization puts on global ecologies in terms of resource demands is apparent in the consumption of resources during the construction of cities as well as in their reliance on a continuous supply of further resources to provide for their populations, cities also tend to obscure a significant aspect of their environmental impact because they are commonly perceived as stable structures. In contrast to other fields of economic activity in which consumed resources are released quickly into the environment—with the result that their contaminating effect has only slowly come to be recognized—cities hold back the outcomes of their resource implementation. Taking a much more long-term perspective on the life cycle of resources, one of the key questions we have to ask is how all these shiny new cityscapes, which are currently springing up in China and around the world, can be recycled one day. Already we are seeing the excesses of speculative urbanism, which leaves behind acres of crumbling, uninhabited concrete monuments. Indeed, it seems that the urban boom not only consumes vast amounts of land and resources in the process of construction but might in fact use up even more in the moment of dissolution.

However, while the explosion of urbanization and the mushrooming of mega-cities may be a prime cause of extensive mineral resource exploitation, these cities could also constitute a site of change. The pioneering urbanist Jane Jacobs famously argued that cities were at the heart of changing attitudes toward the relationship between nature and humanity because they provide an arena for new inventions.[9] She reasoned that rural land use is not a separate line of descent but part of urban development and the land-management issues associated with it. Just as it is in cities that decisions are made on resource exploitation, techniques, and policies, it is cities that provide the framework for the inventions that can beneficially alter our relationship with the natural environment.

Central to the question of how the world will go about regulating its resource budget are thus considerations about how we continue to develop the urban realm. In other words, any changes in resource politics depend on changes in urbanism and on the design and production of our urban environment as well as on the procedures and protocols put in place to sustain these environments as hubs of creativity and communality. This extends not only to basic resources used in the construction of cities such as brick clays, sand, gravel, and crushed natural stone, but also to key elements of the services that keep the urban organism running such as food and water. What happens to entire landscapes full of resource deposits is thus directly dependent on the rhythms of urban demands and politics.

This is particularly evident in the case of food supplies, due to the paradoxical nature of urban consumption: expanding cities constantly consume rural land while generating increased demand for such land to keep their populations alive. It is no wonder, then, that the nexus of urban construction, its underlying demographic and spatio-economic logics, and its agri-cultural scope of action have taken center stage in current contestations on how best to organize ourselves in socio-economic terms.

Searching for a more ecological approach to urban life in the Guattarian sense (one that pertains to the inextricable connections between human subjectivity, the environment, and social

relations)[10] thus not only entails a rethinking of "urban dynamics" in a narrow sense—of the ways in which cities are organized, and constructed—but a reconceptualization of how they stand in relation to their surroundings, the network formed by other cities, and all areas around and between them.

Jacobs has already put forward this argument as part of her attempt to reorient our perspective away from the assumption that cities have descended from rural spheres and toward a clearer understanding of the ways in which rural life is in fact shaped by urban development. In the prologue to *The Economy of Cities*, she challenges the dogma of agricultural supremacy, insisting that cities preceded the development of rural agriculture: "It was the fact of sustained interdependent, creative city economies that made possible new kinds of work, agriculture among them."[11]

A key feature of urban growth over the last five decades has been its contiguity with the increasing prevalence of urban informality. In many cases, informality provides vital lifelines for keeping patterns of expansion on track, either through the direct supply of cheap services, materials, and labor or through opening up avenues to resource exploitation to such a degree that the underlying paradigm of growth and profit is kept afloat. But informality is also often seen as a threat to the urban system, as a chronic disease that will dissolve the urban order from within. There is an almost paranoid belief that no matter how much ecological stability informal urbanization can create in its wake, it will always remain inferior to the formal city.

The question we want to raise is how the unwanted realm of informality could indeed constitute a force that dissolves the prevailing form of urbanism from within—a process which, rather than negating urban life as such, can produce a new model of the city, a truly creative hub that reproduces a multi-facetted landscape of self-empowered urban resource circulation rather than the top-down instrumentalization of resources in a system of profit-oriented consumption. Returning to the notion that cities are at the heart of the resource economy as well as key sources of change, it seems that we are seeing a rhizomatic emergence of new informal urban agricultures in which social and cultural nourishment are given the same attention as harvests and yields. In Detroit, a city badly hurt by an ignorant abstract economy, resistant communities are reclaiming burned-down streets for agricultural cultivation. In Johannesburg, a network of urban gardens is providing food security for immigrant communities while cultivating their diverse knowledge. In China these new formations are developing around so-called urban villages, former rural settlements that have become engulfed by urban sprawl and are fostering a range of informal adaptations to the new metropolitan form of socio-spatial organization. The juxtaposition of neatly cared-for rows of vegetables and endless duplications of high-rises seems to represent a crossroads in thinking about sustainable futures. But the question is: Are these instances the last flickers of a disappearing world order or the burgeoning buds of a new urban ecology?

1 Quoted in Thomas W. Patterson, "Hatfield the Rainmaker," *The Journal of San Diego History* 16, no. 4 (Winter 1970), http://www.sandiegohistory.org/journal/70winter/hatfield.htm.
2 Thomas Robert Malthus, *An Essay on the Principle of Population* [1798] (Oxford: Oxford University Press, 1993).
3 Donella H. Meadows, Dennis L. Meadows, Jørgen Randers, and William W. Behrens III, *The Limits to Growth: A Report for the Club of Rome's Project on the Predicament of Mankind* (New York: Universe Books, 1972).
4 Manuel De Landa, *A New Philosophy of Society: Assemblage Theory and Social Complexity* (London: Continuum, 2006).
5 Elinor Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action* (Cambridge, MA: Cambridge University Press, 1990).
6 David Harvey, *Rebel Cities: From the Right to the City to the Urban Revolution* (London: Verso, 2012).
7 Zygmunt Bauman, *44 Letters from the Liquid Modern World* (Cambridge, MA: Polity Press, 2010).
8 United Nations General Assembly, "Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques," Dec. 10, 1976, http://www.un-documents.net/enmod.htm.
9 Jane Jacobs, *The Economy of Cities* (New York: Random House, 1970).
10 Félix Guattari, *The Three Ecologies* [1989] (London: Continuum, 2007).
11 Jacobs, *The Economy of Cities*, 36.

WANDERING SUBJECTS: ECOLOGICAL KNOWLEDGE COMMONS

EMILY ELIZA SCOTT

World of Matter is a research endeavor involving an international group of artists and theorists who have come together to pursue questions concerning the aesthetic and political ecologies of raw materials, or "resources," as traders call them, over the course of many months. Our self-initiated organization—reflecting a broader trend in contemporary art—operates somewhere between institutions, between different disciplines, between academic and non-academic, art and non-art arenas. More specifically, World of Matter is one of a handful of artist-initiated research platforms established to probe complex, cross-disciplinary ecological subjects through the development of structures for sustained investigation, exchange, and production. These groups do not only address (political) ecological matters, but also forge "ecological" modes of knowledge-making.

In 2008 the theorist Irit Rogoff argued that the "notion of 'conversation'" was "the most significant shift within the art world over the past decade." Our own discussions have coalesced at intensive, bi-annual research meetings since early 2011, and in the form of a multimedia web platform, joint writing projects, symposia, and exhibitions. Dialogue has been the basis and adhesive for our community formation; and our community—like our research subject—spans and links diverse, transnational geographies.

The "knowledge commons" that we've built is intended as a catalyst for further inquiry and debate. We especially hope that it will be taken up as a tool for education, activist work, and increased critical awareness in light of the ever more privatized nature of both actual resources and knowledge about the powers that control them. "Militant research" endeavors like our own question the power dynamics that often characterize traditional educational institutions and media, whether news sources, documentary films, government agencies, or the higher education system. The notion of pedagogy directly taken up by many politically engaged artists today differs from education in its emphasis on learning as an active, practice-based, two-way process as opposed to a hierarchical transfer. At the root of many of these practices is a belief in the exponential capacity of knowledge itself. The artist Stephan Dillemuth, in a recent issue of Texte zur Kunst devoted to the topic of artistic research, succinctly notes that, "As opposed to other resources that are exhausted when used, the opposite is true of knowledge. The more knowledge is used, the more knowledge is produced. Its dissemination increases its fertility." Collaborative research platforms such as World of Matter enact the concept that knowledge is an inherently sustainable resource. Moreover, they point to the vital connection between commons as a shared good (whether material or immaterial) and common-ing as an act or process.