NEW ONTOLOGIES

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In *The Mangle of Practice* (1995) I offered an ontological vision of the world and our place in it, a vision in which both the human and the nonhuman are recognised as open-endedly becoming—taking on emergent forms in an intrinsically temporal 'dance of agency.' Here I seek to enrich and extend that vision (see also Pickering 2003). To see what is at stake, I find it useful to begin with a contrast between the work of two 20th-century Dutch painters, Piet Mondrian and Willem de Kooning, and to understand their paintings as 'philosophical objects'—objects that point towards rather different conceptions of being in the world.

FIGURE 1: *Composition with Red, Yellow and Blue*
Piet Mondrian, 1921 (Haags Gemeentemuseum, Netherlands)

First, Mondrian. His later geometrical abstracts are instantly recognisable: a vertical and horizontal grid of solid black lines, filled in by patches of primary colour. How do such paintings encourage us to think about being in the world? They speak to me first of a certain dualism of people and things, a clean split between the painter and his work. We can understand this as a *detachment* of the painter from the world. Even the usual tenuous connection of *looking* at the world—the artist gazing at a landscape and somehow representing it in paint—is missing. Looking at these paintings, one has to imagine them as products of Mondrian's *mind*, as abstract representations first planned out mentally—the black lines will go here and here on the white background, laid out on a Cartesian [*sic*] grid; the patches of primary colour will go there and there—and then imposed on paint and canvas. A Mondrian thus encourages us to think of ourselves not so much in relation to the world as both detached from it and *dominating* it from outside, as free-standing human agents in a passive material world. That is one ontological vision.

FIGURE 2: Untitled VI
Willlem de Kooning, 1977 (Menil Collection, Houston)

Now de Kooning. His paintings often owe little to seeing the world and translating it into paint—they are just as 'abstract,' in that sense, as Mondrian's. But still, his smeary canvasses speak powerfully of a dense, embodied, material *engagement* with the world. One cannot imagine a de Kooning as the translation of a preconceived mental image into paint on canvas. One has to think of them along the lines in which they were, in fact, executed. de Kooning may have had some initial idea of where he was going in a given work, but he never held to it. Applying the paint thickly, he would look for emergent aesthetic effects—swirls, vortices of colour, chance juxtapositions. Then he would allow himself to be *carried away* (Gomart and Hennion 1999) by

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these effects, adding more paint, smudging it around, and so on. His painting was a continual back-and-forth between perceptions of emergent effects and attempts to heighten them, leading in an open-ended fashion to canvasses that no-one, including the artist himself, could ever have planned or anticipated in advance. It has been said that a de Kooning was only ever finished when someone took the painting off him; otherwise he was always liable to find some new effect in it and go back to work on that.

As philosophical objects, then, de Kooning's paintings conjure up a different ontology from Mondrian's. If Mondrian's evoke a dualist move of human detachment from the world, de Kooning's speak of a constitutive engagement with it. And if Mondrian's couple this detachment with the asymmetric human domination of a passive materiality, de Kooning's emphasise a much more symmetric interplay of the human and the nonhuman: a de Kooning painting is somehow irrevocably *a joint product of the human and the nonhuman*, of de Kooning, the paint and the canvas—a decentred production of which de Kooning was, one might say, at once the author and the discoverer, both active and passive in turn. This is one key contrast I want to emphasise between the two painters and their works. The second has to do with *temporality*. Mondrian's paintings do not thematise time. One can imagine a Mondrian as the materialisation of an almost timeless Platonic image, an image one can hold clearly in one's mind and unleash in the world whenever one is so disposed. In contrast, one can only imagine a de Kooning painting appearing in the real time of embodied practice: *this* had to happen—the application of this quantity of this colour, there on some already laden surface—then *that* had to happen, and so on, on a unique trajectory that led up to *this* image. Furthermore, as I said, the end-point of this trajectory was by no means given in advance—not in de Kooning's brain, nor in the tubes of paint, nor anywhere else. de Kooning's paintings thus show us how *genuine novelty can genuinely emerge in time* in the thick of things, in the intersection of the human and the nonhuman, in an open-ended, forward-looking, trial and error search process. De Kooning thematises, as I would say, an *ontology of becoming*.

So, the works of these two painters can stand for two different ontologies. One entails a dualism of the human and the nonhuman, a detachment from and domination of the latter by the former, and an erasure of time; the other entails an immediate symmetrical engagement between the human and the nonhuman and an intrinsically temporal becoming in that engagement. Mondrian's ontology is, I think, very familiar to most of us. Over the past few centuries it has become, to borrow Arthur Fine's phrase, *the natural ontological attitude*.

But I also want to say something stronger than that. My suggestion is not, in fact, that here we have two ontological understandings that are somehow on a par with one another, equally matched rivals that we should choose between. To get beyond that idea one has only to recognise that Mondrian did not always paint the geometrical abstracts for which is now best known. Some of his earlier paintings look rather like de Kooning's (though the historical influence went the other way). The point to grasp now is that Mondrian's style of painting itself changed and became in time, in relation to his struggles with paint, brushes and canvas (and, no doubt, with various artistic and philosophical traditions, his own evolving aesthetic experience and personal biography, and so on). Viewed over time, then, the trajectory of Mondrian's paintings itself conjures up a de Kooning-esque ontology. *Both* painters, then, lived in the thick of things, symmetrically engaged with the material world in processes of open-ended becoming; it is simply that later Mondrian's (the Cartesian paintings I began with) do not themselves thematise that. In evoking a world of timeless dualist detachment, *they draw a veil* over the basic ontological situation from which they themselves emerged, while de Kooning's thematise those ontological conditions of existence.

My fundamental thought, therefore, is that the ontology I associate with de Kooning is, let me say it, a true ontology—one that reminds us of how being in the world always has been and always will be—while the Mondrian-esque style has to be seen as thematising *a certain stance* in the flow of becoming, a particular tactic of being in that flow which resists a recognition of the flow by attempting to step outside it, and which can be associated with dualist projects of domination of matter and the denial of time. And a general point I want to make here is that we have been dazzled by Mondrian. Instead of seeing dualist detachment and domination as a move, a tactic, a ploy, a very specific way of living, in the flow of becoming, we tend to mistake it for the world itself.[1]

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[1] Barbara Herrnstein Smith notes an irony here and throughout, in that I seek to undermine one dualism (of people and things) by constructing another (a modern ontology that is dualist; a nonmodern ontology that denies that duality). This does seem to be my style, I must admit, but I have no interest in maintaining the purity of the latter dualism. No doubt one can find examples of all sorts of stances in the flow of becoming; one can muddy the waters endlessly. My aim is to challenge a taken-for-granted dualism of people and things by going to the opposite extreme and pointing to what I hope are striking, memorable and important examples of their reciprocally transformative coupling and intertwining.

So much for art; what about philosophy? The line of thought just sketched out is reminiscent of Martin Heidegger (Heidegger 1977; see also Steiner, this volume). In his well-known essay, 'The Question Concerning Technology,' Heidegger took the de Kooning line: the contours of the material world endlessly emerge and become; likewise the contours of humanity; and, in fact, these two becomings are irrevocably entangled with one another. However, according to Heidegger, 'modernity' is marked precisely by the taking up of Mondrian's stance in this flow of becoming. In the mode of 'enframing' we humans seek to step outside nature, dominating and controlling it, challenging it forth as 'standing reserve' for circuits of production and consumption. At the same time we challenge ourselves forth as specific kinds of beings, as standing reserve for those same circuits. Heidegger saw enframing as a tremendous danger to humanity, and at the least we can say that it is obsessive. It would be nice if we had other ways to go on in the world more readily available. That is where my ontological remarks are leading. But a discussion of two painters is not sufficient, I fear, to ground them, so now let me turn to a real-world example.

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I want to talk about the Mississippi River, drawing my inspiration from John McPhee's wonderful book, *The Control of Nature* (1989). The Mississippi is one of the world's great rivers. All of the rain that falls in the midwest of the US drains through it into the Gulf of Mexico. Prior to European settlement, the lower reaches of the Mississippi were marked by natural embankments of sediment about three feet high—levees—deposited on either side of the waterway. The levees usually served to contain the river, though sometimes it would overflow them and inundate an enormous floodplain. It appears that the human inhabitants could live with that. But then came the European settlers, who began to establish fixed towns—most notably New Orleans as the river's major seaport. With the growth of these towns, the containment of the river became a matter of increasing importance, giving rise to one of the world's great projects of the domination of nature—nothing less than the control of the Mississippi itself. One aspect of this was an artificial raising of the levees to confine the river within its banks. What interests me most about this strategy is that it never worked. As the levees rose, the river rose as well; flooding continued; the levees had to be raised further, and so on, back and forth, right up to the present. As a result New Orleans became a walled city, surrounded by a ring of earthworks thirty feet high. McPhee compares it to the walled cities of the Middle Ages, though the enemy now is water, not the humans beyond the walls. Relative to the streets of New Orleans, massive cargo

boats on the river now pass *overhead*. As McPhee says, if the levees weren't in the way, the water traffic would present a surreal spectacle reminiscent of an elevated railway.

Who should we think of here? de Kooning first, inasmuch as the basic story is one of open-ended becoming, here of the engineering architecture of the river and New Orleans. Nobody intended that the upshot of struggles with the river should be boats passing overhead. It just turned out that way in a decentred interplay of the river and the people, an interplay isomorphous with de Kooning's relation to his paints. But imposed on that decentred emergent process, and structuring it, we find, second, a dualist Mondrian-style impulse to impose on the river a detached and timeless human conception of how it should be. This, I think, is how Heidegger understood enframing.

It is worth continuing the story. For the past century and a half, responsibility for controlling the river has been assigned to the US Army Corps of Engineers, which describes its work as a battle with the Mississippi—a battle in which the levees are central and whose outcome is far from certain. It turns out that the Mississippi wants to move. It is now thirty feet above one of the lesser rivers it feeds into, the Atchafalaya. Left to itself, the entire Mississippi would spill into the Atchafalaya, reaching the Gulf a couple of hundred miles west of its present destination, and leaving the existing lower reaches of the Mississippi a mere trickle. This would be a catastrophe for cities like New Orleans that rely on the river water in all sorts of ways, and the Army has accordingly been fighting the Atchafalaya for decades, reengineering its intersection with the Mississippi.

In 1963 a massive 250,000 ton sill or weir became operational, designed to control the runoff from the Mississippi into the Atchafalaya and to prevent it exceeding its prior rate of around 30%. In the floods of 1972 and 1973, the control structure held, just. If it had failed, the Mississippi would have changed course irrevocably. After the flood, inspections revealed that the structure had suffered massive damage. Part of it had just gone: turbulent flows had excavated holes as big as football stadiums around it. Despite massive repairs, it would never meet its design specifications again. The original control project had cost $86M; after 1973, a new Auxiliary Structure was added at a cost of $300M, consisting of six gates, each 62 feet wide and together weighing 2,600 tons. McPhee quotes an engineer on the new project as saying at the time 'I hope it works' (52).

Here, then, we have a continuation of a human-centred, atemporal, detached, control project—trying to keep the Mississippi to its historic course. The Army Corps of Engineers actually speaks of 'stopp[ing] time in terms of the distribution of flows' (21). But this project has always itself been embedded in a decentred and open-ended becoming of the human and the nonhuman, a 'dance of agency,' as I would call it, between the engineers and the river. The human agents, the engineers, try something—raising the levees, say—then the nonhuman agent takes its turn—rising still higher and flooding New Orleans. Then the humans do something else—building the weir between the Mississippi and the Atchafalaya—and the river does something else—ripping and tearing away at it. And so on, forever. Again we find Mondrianesque control situated as a tactic of being in de Kooning's world.

That is one of the main points I wanted to make by discussing this example. I am not talking just about painting; I want to talk about *how the world is* in general—and the Mississippi is perhaps a big enough example to sustain the argument.

My second point can be made more briefly. The army has not acted blindly in its struggles with the Mississippi. Plenty of *science* has entered into its strategies. The Army would like to get out of the thick of things, find the timeless hidden essence of the river, and hence dominate it, first conceptually and then materially. For example, through the 19th century and up until 1928, management of the Mississippi was based on the principle of 'levees only' (41). The idea, supported by the best contemporary scientific hydrology, was that cutting off outflows from the Mississippi would speed up the flow of water within the river, thus encouraging it to dig into the riverbed and lowering the overall level—and thus bringing the continual raising of the levees to an end. Sounds plausible but, as I said before, this strategy failed to work. And now the science of hydrology is different. Now the Corps has a fifteen acre scale model of the entire Mississippi drainage area on which to test out its ideas. But even this cannot solve the problems of practice. The best material for realistic simulation of riverbeds seems to be walnut shells—the trouble is that they go rotten underwater, so nuggets of coal are used instead . . .

The moral of this part of the story is twofold. First, *science is itself bound up in becoming*; the contents of science change emergently. And, second, that like one of Mondrian's paintings, scientific knowledge nevertheless helps to conceal becoming from us. It portrays and draws our attention to a timeless and constant world—here invariant representations of water flows—somehow subsisting behind the visible world of change and becoming. From the ontological

perspective I am developing here, *science itself thus appears as a veil*, clouding our perception of how things actually are. As Heidegger put it, science is at best in the domain of the 'correct' rather than the 'true.'

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So where have we got to? The argument is that we live in the thick of things, in a symmetric, decentred process of the becoming of the human and the nonhuman. But this is veiled from us by a particular tactic of dualist detachment and domination, backed up and intensified, as I have just added, by science as our certified way of knowing. The questions I want to address in the remainder of this essay thus become: is it possible to draw back the veil and to live in the presence of decentred becoming? and, if so, what difference might it make? The answer to the first question is obviously, yes, we can draw back the veil, de Kooning did it, and the answer to the second is, doing so would make a big difference, his paintings look very different from Mondrian's. All that one needs to do once one has seen that is to think how this painterly contrast might echo through other aspects of being.

But how would that go? At this point, I have to say something about my second example, the Mississippi, and one line of thought seems inexorable. The US Army Corps of Engineers should stop fighting the river and let New Orleans go. The inhabitants of New Orleans might not like me saying it, but, in fact, this idea is not as crazy as it sounds. It seems unlikely that even the US Army can stop time forever. The Mississippi is going to flow into the Atchafalaya sooner or later. It can either do it amidst death and destruction in the so-called hundred-year flood (in 2002 the estimate was 45,000 people killed, 400,000 trapped on roofs and 700,000 homeless evacuees: Nordheimer 2002), or we could let it happen at a time of our own choosing—a time of drought, say, when the water level is low, and when the inhabitants of the region have prepared themselves for it. We could do it gracefully; we could go with the flow; we could start afresh with a new geography. This would be a different and, I think, better way to live in nature than grim and desperate projects of domination and control.

Even imagining letting the Mississippi go its own way is, as far as I know, a completely radical proposal in the history of US environmental thought (eg Nordheimer, *op. cit.*, does not even entertain the possibility), and I take this as evidence that the shift to a de Kooning-style ontology,

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stripped of the Mondrian-esque veil, can make an enormous difference in the world.[2] But now I want to take a different tack.

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Heidegger wrote as if 'enframing' is a unitary and all-encompassing mode of being. This is why it is both so dangerous and so hard to escape from. But Heidegger was wrong. Dualist detachment has certainly run rampant since the Scientific Revolution and the Enlightenment. It permeates all sorts of practices and their products. This, no doubt, is why it now comes naturally for us to mistake the correct for the true, and why we find it hard to latch onto the world in any other way. But Mondrian has never been more than hegemonic. In the shadows of Mondrian one can always find de Kooning. And if we want to resist the ontology of dualism and domination, it seems to me that we have only one option. We have to throw in our lot with the de Koonings—the strands of our culture that have in one way or another sought to live in the presence of becoming. We should not do so uncritically—these traditions, above all, should move and become in time—but, above all, we should seek to unite them in a *counter-hegemonic formation*. The ambition should be not to eradicate Mondrian—no-one wants to dispense entirely with rational planning or modern science. But we should aim to bolster de Kooning to the extent that the world becomes sufficiently full of explicitly and self-consciously decentred practices and their products that an ontology of becoming becomes the natural ontological attitude, exposing dualist detachment for what it is: just one tactic of being in the world that we have at our disposal.

But then, I should give some instances of these marginal traditions that I want to unite in the cultural foreground.

We could start with art again. I am not an art historian, but I know that de Kooning was not an absolute historical singularity. One thinks, for example, of the tradition of 'abstract expressionism' in which Jackson Pollock loomed very large. I am sure one could multiply

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[2] This essay evolved in a series of conference presentations since the year 2000 and this section on the Mississippi was overtaken by events while in the hands of the Duke University Press readers, though in 2005 it was Hurricane Katrina coming in from the Gulf of Mexico rather than floodwaters descending from the midWest that devastated New Orleans. I still feel like saying I told you so. I also note that the focus in the US is on returning the displaced population to New Orleans as quickly as possible. If I were to rewrite the paper now, I would lay more emphasis on catastrophic disaster as the corollary of enframing, and I would contrast this with the robustness of, for example, the adaptive approaches to the civil engineering of water mentioned below.

instances indefinitely here. I think of the surrealist, Max Ernst, producing haunting images by tracing out the knots in the floorboards of his hotel room—another angle on the decentred and emergent production of art-works. And, of course, we don't have to confine ourselves to Western traditions. We could think, for instance, of images of the Indian god Shiva, who dances the world into and out of existence, reminding us directly that we live in a symmetric and open-ended relation with nature.

To move in this direction also immediately reminds us that in an ontology of becoming art shades very directly into religion and spirituality. One could think of Hinduism as operating a different dualism from Mondrian—a dualism between gods and men—which at the same time dissolves any detached dualism between men and nature. Or one could think of Shiva as immanent in nature, and of becoming as that which itself is to be worshipped and wondered at. Either way, we are in an enormous artistic and spiritual field which immediately evokes an ontology of becoming without any Mondrian-esque superstructure. Buddhism comes to mind, too, as an exploration of how to navigate the flows of becoming. The trick is to let go of attachments, to be as fluid as the flow. We are back to New Orleans.

Philosophy. Heidegger was no more alone than de Kooning. He was a representative of what the English and Americans call 'continental philosophy,' a marginalised tradition running from Hegel through Alfred North Whitehead (an honorary 'continental') up to Gilles Deleuze. More accessible to non-continentals, there is the North American tradition of pragmatist philosophy, and William James above all, with its insistence that we should not mistake our detached representations for the world itself; that representing is instead a navigational device in a world that is always 'boiling over.'

I could go on with this list for a long time. I could mention, for example, the philosophical-spiritual-social-medical tradition that runs from premodern alchemy and Paracelsianism through Jean-Jacques Rousseau and his 'noble savage' (Giedion 1948) up to the contemporary New Age movement. But it might be more important here to pay attention to developments closer to the heartland of enframing, in science and engineering. Heidegger thought that there was just one kind of science which intrinsically backed up the conversion of the world to standing reserve. He was wrong about that, too. One could write a big history of de Kooning-esque science, but I will give just a couple of examples.

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First engineering, and we can stay with water (see also Asplen, this volume). An article recently appeared on the front page of the *New York Times*, entitled 'Dams and Politics Channel Mighty River' (Harden 2002). Here are the opening sentences:

> Scientists know what is ailing the great rivers of America. They also know how to cure it./From the Columbia . . . to the Everglades . . . they have been empowered . . . to take control of ecologically imperilled rivers that have been harnessed for decades to stop floods, irrigate farms and generate power./Instead of demolishing dams, they are using them to manipulate river flows in a way that mimics the seasonal heartbeat of a natural waterway. Scientists have discovered that a spring rise and a summer ebb can give endangered fish, birds and vegetation a chance to survive in a mechanized river.

Here, then, we have a recognition within science and engineering that a detached domination of nature is not the one best way of proceeding in the world; that it can indeed be better to go with the flow—of water, time and the seasons. Closer to home for me, much of the midwest of the United States was under water a hundred years ago. It was drained and converted to farmland by straightening the rivers and digging drainage ditches to feed them. Now, to quote my local newspaper, there is a 'movement afoot to undo some of draining's damage,' damage which includes wrecking entire ecosystems and wiping out enormous populations of fish and birds. 'Even letting a short section of a ditch or channelized stream "do what occurs naturally" and not maintain it can be very beneficial to fish and other wildlife.' 'This is science in its infancy,' one University of Illinois geography professor is quoted as saying, 'It's a mixture of science and trial-and-error. We're good in ways we can command and control a stream. We're not good at figuring out ways to make it a complex system in which nature can function.' (Pringle 2002). It is clear, then, that even water scientists and engineers can act, in the real world, like de Kooning instead of Mondrian. We don't need to endorse Heidegger's totalising fears of science and technology. But we should pay attention and latch onto this other kind of water engineering in the thick of things, if we want to disturb the hegemony of dualist ontology.

Deleuze and Guattari (1987) sketch out a history of sciences in the de Kooning rather than the Mondrian style, which they refer to as 'nomad' or 'minor sciences' to distinguish them from the 'royal sciences' which underpin the stable and enduring State form of social organisation. I will mention one more example of a nomad science, my favourite one, the weird science of cybernetics that flourished for twenty yeatrs or so after World War II. There are many ways of describing what cybernetics was. The most insightful for present purposes follows the conception of one of the leading English cyberneticians, Stafford Beer. Beer's basic starting point was explicitly ontological. He insisted that the world was what he called 'an exceedingly complex

system' (Beer 1959)—one which was impossible to know and control fully. So cybernetics began from de Kooning rather than Mondrian, acknowledging from the start that human detachment from and domination of the world is, at best, a fallible strategy. What was left for cybernetics, then, was a kind of engineering in the thick of things—the development of technologies that would be light on their feet, a form of adaptive engineering based upon open-ended forward-looking searches through spaces of possibility that could not be exhaustively foreseen in advance.

I cannot go into details of the weird and wonderful material technologies of cybernetics (Pickering 2002, 2004a, b, 2005a, forthcoming a, b, c), but I do want to emphasise the social range of the field. Cybernetics' distinctive ontology fed into distinctive approaches in areas of human endeavour as various as brain science and artificial intelligence, robotics, information theory and theoretical biology, on the one side, and psychiatry, management, politics, the arts and spirituality on the other. Cybernetics thus showed that bringing to consciousness a decentred and temporalised ontology can make a big difference in the world, restructuring and reconfiguring great swathes of culture and practice—it was a nomad science. If we want to challenge the hegemony of Mondrian, beginning with science and engineering and extending ourselves outwards over diverse regimes of culture, I think a critical recovery of cybernetics might be an important part of the process and a source of inspiration that goes beyond New Age and water engineering.

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I began this essay by talking about politics and I should end by returning to it. What kind of politics might go with a decentred ontology of becoming? Actually, the political message as far as I can understand it has already been given. We should strive to elaborate, articulate and assemble these de Kooning-esque traditions that presently live in the margins of our culture, with the goal of contesting the hold of Mondrian on our imaginations. Such a shift in our ontological awareness would inevitably lead to shifts in our ways of conducting ourselves in the world. I have tried to show how this goes via specific examples, from painting, philosophy and engineering to the New Age movement, non-Western spiritualities and cybernetics. My expectation is that if Mondrian's spell could be broken. the world in general would then strike us in our everyday lives as what it is, a place of decentred human and nonhuman becoming, and we would surely live very differently were that to be the case, self-consciously in the flow of becoming rather than denying it. Here a second sense of the politics of ontology surfaces. If we succeeded in breaking the spell

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of Mondrian, it seems to me that we would be left with a *politics of experiment*. The cyberneticians were right; there would be nothing left to do but imaginatively and critically explore the open-ended spaces of the world's possibility. The experimentalism of the 1960s is where I would look for inspiration. though I will not go into that now (Pickering 2003).

One last remark. The politics I have in mind is not a matter just for theory, talk and social organisation. If dualist detachment and domination is still our natural ontological attitude, it is because since the Industrial Revolution we have remade the material world to make it so. Wolfgang Schivelbusch's (1986) beautiful history of the railways dissects the imposition of a Cartesian grid of straight lines and of a standardised Newtonian time on the landscape and our cities and our lives in the 19th century. In such a technologically reconfigured and geometrised world, we very easily fall into a perception of space and time in themselves as abstract categories, detached from the flux of experiences and ready to hand for the construction of yet more detached representations. To renew our ontological faculties, we need to remake the world again, *materially* as well as representationally (Pickering 2005b). This material transformation really is a big job. I am glad the river engineers are already doing the politics of ontology for us.

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