

In *The Mangle of Practice* (1995), the renowned sociologist of science Andrew Pickering argued for a reconceptualization of research practice as a “mangle,” an open-ended, evolutionary, and performative interplay of human and non-human agency. While Pickering’s ideas originated in science and technology studies, this collection aims to extend the mangle’s reach by exploring its application across a wide range of fields including history, philosophy, sociology, geography, environmental studies, literary theory, biophysics, and software engineering. As Pickering argues in the preface, the mangle points to a shift in interpretive sensibilities that makes visible a world of de-centered becoming. This volume demonstrates the viability, coherence, and promise of such a shift, not only in science and technology studies, but in the social sciences and humanities more generally.

“Andrew Pickering is a major figure in the field of science studies. In the original, widely cited and widely admired but still controversial *The Mangle of Practice*, he developed a number of important concepts that are strongly resonant for many members of the current generation of scholars, researchers, and theorists in the social sciences and humanities. This new, very substantial, highly readable collection will be illuminating for readers interested in science studies, post-humanist approaches to ethical-pragmatic issues, and/or new directions in ontology.”—BARBARA HERRNSTEIN SMITH, author of *Scandalous Knowledge: Science, Truth, and the Human*

“Andrew Pickering’s ‘mangle of practice’ is one of the key contemporary interpretive frameworks that question the society/nature dichotomy. His proposal makes distinct contributions not only to science studies but to all disciplines engaged in post-humanist projects of knowledge production and committed to bypassing the sterile dichotomy between rationality and relativism. Applying Pickering’s mangle to problems ranging from natural resource management to the dynamics of police work, this timely collection demonstrates the power and flexibility of Pickering’s proposal.”—MARIO BIAGIOLI, author of *Galileo’s Instruments of Credit: Telescopes, Images, Secrecy*

“This excellent collection offers cutting-edge theorizations of cultural practice, showing how science and society work with and against each other across a broad cultural landscape. It is especially welcome that the essays explore, often profoundly, a number of phenomena—practices—which have rarely if ever been addressed previously, but which are shown here to possess unexpected complexity and significance.”—ARKADY PLOTNITSKY, author of *Complementarity: Anti-Epistemology after Bohr and Derrida*

ANDREW PICKERING is Professor of Sociology and Philosophy at the University of Exeter. KEITH GUZIK is Assistant Professor of Sociology at Bloomfield College in Bloomfield, New Jersey.

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THE MANGLE IN PRACTICE

Science, Society, and Becoming

ANDREW PICKERING
and KEITH GUZIK, editors

NOTES

1. The theme of posthumanist decentering runs through one wing of science and technology studies (in sharp contrast to the “humanism” of the other wing)—see, for example, the canonical works of actor-network theory and Donna Haraway’s thoughts on cyborgs. My conviction that this decentering needs to be understood as a temporalized dance of agency is not so widely shared or expressed. But our concern in this book is not to make a sharp distinction between mangle-ish approaches and others; instead, we wish to demonstrate that the analyses of *The Mangle* can indeed be extended further into a wide range of studies and arguments.
2. My own post-Mangle research has included macrohistorical studies (of science, technology, and the military in the Second World War, and of the intersection of science and industry in the nineteenth century), various theoretical inquiries, and, most recently, the history of cybernetics (Pickering forthcoming). All of these, too, constitute extensions of the reach of the mangle.
3. Turner (1994) remains the *locus classicus* on the implausibility of traditional approaches to understanding practice.
4. These examples are intended to be evocative rather than compelling. For full scholarly documentation and analysis, see *The Mangle*.
5. Thus one sense of the “new” in the term “new ontologies” is “new to me since writing *The Mangle*,” but the ignorance might not be exclusively mine. It might exemplify a centrality of nonmangle-ish approaches that is taken for granted within the academic institutions in Britain and the United States that I have long inhabited.

New Ontologies

ANDREW PICKERING

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 recognized as open-endedly becoming, taking on emergent forms in an intrinsically temporal “dance of agency.” In this chapter 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 twentieth-century Dutch painters, Piet Mondrian and Willem de Kooning, and to read their paintings as “philosophical objects” that point toward rather different conceptions of being in the world.

Mondrian’s later geometrical abstracts—a vertical and horizontal grid of solid black lines filled in by patches of primary color—are very well known and instantly recognizable.¹ 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, we have to imagine them as products of Mondrian’s mind; that is, as abstract representations first planned out mentally—the black lines will go here and here on the white background laid out on a Cartesian grid and then the patches of primary color 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 but rather as both detached from it and *dominating* it from outside as freestanding human agents in a passive material world. This is one ontological vision.

De Kooning's paintings often owe little to seeing the world and translating it into paint—they are just as “abstract,” in this sense, as those by Mondrian. Yet 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 color, chance juxtapositions. Then he would allow himself to be *carried away* (Gomart and Hennion 1999) by these effects, adding more paint, smudging it around, and so on. His painting was a continual back-and-forth movement 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 work by de Kooning was only ever finished when someone took the canvas from him; otherwise he was always liable to find some new effect in the painting and then go back to work on it.

As philosophical objects, then, de Kooning's paintings conjure up a different ontology from those by Mondrian. If Mondrian's works evoke a dualist movement of human detachment from the world, then de Kooning's speak of a constitutive engagement with it. And if Mondrian's works couple this detachment with the asymmetric human domination of passive matter, then de Kooning's emphasize a much more symmetric interplay of the human and the nonhuman. That is, 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 decentered production of which de Kooning was at once the author and the discoverer, both active and passive in turn. This is the first key contrast I want to emphasize between the two painters and their works. The second contrast has to do with temporality. Mondrian's paintings do not thematize time. One can imagine a Mondrian as the materialization 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 color, there on some already-laden surface—then that had to happen, and so on, on a unique trajectory that led up to this image. Fur-



FIGURE 1 Willem de Kooning, “Untitled VI,” 1977.
(The Menil Collection, Houston. Copyright 2007 by the
Willem de Kooning Foundation / Artist Rights Society
(ARS), New York)

thermore, as I said, the endpoint 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 a trial-and-error search process that is open ended and forward looking. De Kooning thematizes, as I would say, an ontology of becoming.*

The works of these two painters thus 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, or are equally matched rivals that we can choose between. To get beyond this idea one has only to recognize that Mondrian did not always paint in the form of the geometrical abstracts for which he is now best known. Some of his earlier paintings look rather like those by de Kooning (though the historical influence went the other way). My point here is that Mondrian's style of painting itself changed in time and became 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 work itself conjures up an ontology in the manner of de Kooning. 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 works by Mondrian (the Cartesian paintings I began with) do not themselves thematize this notion. In evoking a world of timeless dualist detachment, Mondrian's works draw a veil over the basic ontological situation from which they themselves emerged, while de Kooning's works thematize 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 Mondrian has to be seen as thematizing a certain stance in the flow of becoming, a particular tactic of being in that flow that resists a recognition of the flow by attempting to step outside it, and that can be associated with dualist projects of the 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, and a very specific way of living in the flow of becoming, we tend to mistake it for the world itself.²

...

So much for art; what about philosophy? The line of thought sketched out above is reminiscent of Martin Heidegger (1977a; 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 be-

comings 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 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. This is where my ontological remarks are leading. But a discussion of two painters is not sufficient to ground them, so now I turn to a real-world example.

...

I want to talk about the Mississippi River; to do so I draw 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 midwestern region of the United States drains through it into the Gulf of Mexico. Prior to European settlement, the lower reaches of the Mississippi were marked by levees formed by natural embankments of sediment deposited on either side of the waterway. The levees, averaging about three feet in height, usually served to contain the river, though sometimes the river would overflow and inundate an enormous floodplain. It appears that the region's human inhabitants during this period in history were able to live with the periodic flooding. 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, thereby 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 project was the 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, and when the 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 New Orleans to the walled cities of the Middle Ages, except that the enemy is water and not the humans beyond the walls. Further, 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? I think of de Kooning first, inasmuch as the basic story, here of the engineering architecture of the river and New Orleans, is one of open-ended becoming. Nobody intended that the upshot of struggles with the river should be boats passing overhead. Instead it just turned out that way in a decentered interplay of the river and the people, an interplay isomorphous with de Kooning's relation to his paints. But added onto this decentered emergent process, and structuring it, we also find 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.

For the past century and a half, the responsibility for controlling the Mississippi has been assigned to the U.S. Army Corps of Engineers, which describes its work as a battle with the river—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; in so doing it would reach the Gulf a couple of hundred miles west of its present destination and thus leave 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 Corps of Engineers has accordingly been fighting the Atchafalaya for decades by reengineering its intersection with the Mississippi.

In 1963 a massive 250,000-ton sill or weir was set in place to control the runoff from the Mississippi into the Atchafalaya and to prevent it exceeding its prior rate of around 30 percent. In the floods of 1972 and 1973, the control structure held—but just barely. 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 washed away: turbulent flows had excavated holes as big as football stadiums around it. Despite massive repairs, the structure would never again meet its design specifications. The original control project had cost \$86 million; after 1973, a new auxiliary structure consisting of six gates, each 62 feet wide and together weighing

2,600 tons, was added at a cost of \$300 million. 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-centered, 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 decentered 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—and then the nonhuman agent takes its turn by rising still higher and flooding New Orleans. In response the humans do something else—building the weir between the Mississippi and the Atchafalaya—to which 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.

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

A second point can be made more briefly. The Army Corps of Engineers has not acted blindly in its struggles with the river. Plenty of *science* has entered into its strategies. The Corps of Engineers would like to get out of the thick of things by finding the timeless hidden essence of the river and hence dominate it, first conceptually and then materially. For example, throughout the nineteenth century and up until 1928, the 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 lower the overall level—and thus bringing to an end the continual raising of the levees. The idea seems plausible, but, as I said before, it failed to work. Now the science of hydrology is different, and now the Corps of Engineers has a fifteen-acre scale model of the entire Mississippi drainage area on which to test its ideas. But even this model cannot solve the problems of practice. The best material for the realistic simulation of riverbeds seems to be walnut shells, and yet because they rot underwater nuggets of coal are used instead.

The moral of this part of the story is twofold. First, science is itself caught up in the flow of becoming; the contents of science change emergently. And, second, like one of Mondrian's paintings, scientific knowledge 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.”

...

So where are we now? My argument is that we live in the thick of things, in a symmetric, decentered process of the becoming of the human and the non-human. But this is veiled from us by a particular tactic of dualist detachment and domination that is 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 chapter are thus as follows: Is it possible to draw back the veil and to live in the presence of decentered becoming? 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 question is that doing so would make a big difference, de Kooning's paintings look very different from Mondrian's. All we need to do once we have 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 Corps of Engineers should stop fighting the river and let New Orleans go. The inhabitants of New Orleans might not like to hear this, but, in fact, the idea is not as crazy as it sounds. It seems unlikely that even the Corps of Engineers can stop time forever. The Mississippi is going to flow into the Atchafalaya sooner or later. It can either do it amid death and destruction in the so-called hundred-year flood (one estimate [Nordheimer 2002] was 45,000 people killed, 400,000 trapped on roofs and 700,000 homeless evacuees), 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 to do so through the use of 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 U.S. environmental thought (Nordheimer 2002, for example, does not even entertain the possibility), and I take this as evidence that the shift to an ontology in the manner of de Kooning, stripped of the Mondrianesque veil, can make an enormous difference in the world.³ But now I want to take a different tack.

...

Heidegger wrote as if “enframing” is a unitary and all-encompassing mode of being, which 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 we 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 we should seek to unite them in a counterhegemonic 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 decentered 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. Again, I could start with art. I am not an art historian, but I know that de Kooning was not an absolute historical singularity. We might think, for example, of the tradition of “abstract expressionism” in which Jackson Pollock loomed very large. I am sure we could multiply 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 decentered and emergent production of artworks. 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. We could think of Hinduism as operating a different dualism from that of Mondrian—a dualism between gods and men—which at the same time dissolves any detached dualism between men and nature. Or we 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 that immediately evokes an ontology of becoming without any Mondrianesque 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 and to be as fluid as the flow. This brings us back to New Orleans.

In terms of philosophy, Heidegger was no more alone than de Kooning. He was a representative of what the English and Americans call “Continental philosophy,” a marginalized tradition running from Hegel through Alfred North Whitehead (an honorary “continental”) and on up to Gilles Deleuze. More accessible to noncontinentals, 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 at length. 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 in 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 science in the manner of de Kooning, but here I will give just a couple of examples.

First engineering, and we can stay with water (see also Asplen, this volume). In 2002 an article in the *New York Times*, entitled “Dams and Politics Channel Mighty River,” stated the following: “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.”⁴

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 midwestern region 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 that includes destroying entire ecosystems and wiping out enormous populations of fish and birds. As one University of Illinois geography professor is quoted as saying, “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. 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.”⁵ 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 totalizing 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.

Gilles Deleuze and Félix Guattari (1987) sketch out a history of sciences in the de Kooning style rather than that of Mondrian, which they refer to as “nomad” or “minor sciences” to distinguish them from the “royal sciences” that underpin the stable and enduring state-form of social organization.

I will mention here one more example of a nomad science, my favorite one—namely, the weird science of cybernetics that flourished for twenty years or so after the Second World War. There are many ways of describing cybernetics. 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"—one that was impossible to know and control fully (Beer 1959, 12). 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.

I cannot here go into the details of the weird and wonderful material technologies of cybernetics (see Pickering forthcoming; see also Pickering 2002a, 2004a, 2005a, 2007), but I do want to emphasize the social range of the field. The distinctive ontology of cybernetics fed into distinctive approaches in areas of human endeavor as various as brain science and artificial intelligence, robotics, information theory, and theoretical biology, on the one side, and psychiatry, management, politics, arts, and spirituality on the other. Cybernetics thus showed that bringing to consciousness a decentered and temporalized 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 outward 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 the New Age movement and water engineering.

...

What kind of politics might go with a decentered 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 gestalt

shift in our ontological awareness would inevitably lead to shifts in our ways of conducting ourselves in the world, and 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 decentered 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 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 (see Pickering 2003).

One last remark. The politics I have in mind is not a matter just for theory, talk, and social organization. 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 standardized Newtonian time on the landscape and our cities and our lives in the nineteenth century. In such a technologically reconfigured and geometrized 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 truly is a big job. I am glad the river engineers are already doing the politics of ontology for us.

NOTES

1. Copyright restrictions prevent us from reproducing Mondrian's work here; representative works can be viewed at the Artchive Web site: www.artchive.com/artchive/M/mondrian.html.

2. 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.
3. This chapter evolved in a series of conference presentations beginning in 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 immediate focus in the United States was on returning the displaced population to New Orleans as quickly as possible. If I were to rewrite this chapter I would lay more emphasis on catastrophic disaster as a corollary of enframing, and I would contrast this with the robustness of, for example, the adaptive approaches to the civil engineering of water discussed below.
4. B. Harden, "Dams and Politics Channel Mighty River," *New York Times*, May 5, 2002, A1.
5. K. Pringle, "Movement Afoot to Undo Some of Draining's Damage," *Champaign Urbana News Gazette*, March 3, 2002, E1, 7.

PART ONE STUDIES