
King, Katie. Forthcoming. "Feminism and Writing Technologies." Manuscript, University of Maryland at College Park.


5. Interview with Andrew Pickering

**Participant: Casper Bruun Jensen**

**CBJ:** First, I would like to ask a background question about your peculiar scholarly trajectory or perhaps production as a theorist. As I have understood it, you were trained as a physicist, and maybe even worked as one? How did you get into contact with science studies, and with what purposes in mind? How did the "identity change" from physicist to a sort of SSK constructivist take place? Was it a drawn-out process? Do you consider yourself to be marked by your training in physics or natural sciences in general at this point in time?

**AP:** Yes, Casper, peculiar. In my first incarnation I was a physicist. I did a Ph.D. at University College London and a couple of years as a postdoc in elementary particle theory. Then I drifted around London for a wonderful year and, through some improbable but fortunate coincidences, returned to the academic life at the Science Studies Unit in Edinburgh. I had met Harry Collins (in Bath) along the way and was intrigued by his constructivist stories about gravitational waves. At the same time, I thought there was something missing from them. My early work in Edinburgh was an attempt to find out what that was—and eventually, of course, the answer was a positive account of what scientific practice looked like. My earlier work in particle physics formed the bridge to science studies; all of my work at the Unit focused on particle physics, culminating in my book *Constructing Quarks* in 1984. I felt that supplied answers to the questions that Collins had raised, though he was cruel enough to describe it as "product differentiation," i.e., nothing new. There is a second connection between incarnations that becomes
increasingly obvious in retrospect. Elementary particle physics is, as it name states, a predominantly reductive field, concerned with (a) identifying the fundamental constituents of matter, and (b) exploring calculable, time-reversible interactions between them. Technically, particle theory is good at weak-coupling regimes, in which interactions between particles can be calculated perturbatively. In contrast, I was fascinated as a physicist by the mysteries of strong coupling and emergent properties. I tried to solve the problem of quark confinement, the inextricable binding of quarks to form non-quark-like objects: hadrons—protons and neutrons, etc. (Needless to say, I failed.) Much later, in 1995 in *The Mangle of Practice*, I found myself writing about “temporal emergence.” I think of gravity’s rainbow—the arc of the V2 rocket in Thomas Pynchon’s novel. In science studies, I have returned to the same mysteries that drew me into science as a schoolboy, but now the object is different.

CBJ: You anticipated my next question by invoking your theoretical development from SSK, what Collins called “product differentiation,” to your work in the mid-90s on *The Mangle of Practice*. How did this further development take place? There seems to be a connection here to your idea about certain mysteries of emergence that has fascinated you. Did you experience a dissatisfaction with SSK’s abilities to handle such problems? How do you understand the relationship between your earlier work on *Constructing Quarks* and your new work on *The Mangle of Practice*, as a natural development or as incompatible?

AP: 1983–84 was an interesting year. Our first child, Lucy, was born in July 1983, a week before I handed over the final manuscript of *Constructing Quarks*. I was on the dole again, this time in Edinburgh, and had to sell my Triumph Spitfire (which was unspeakably rusty anyway). I was rescued from unemployment by the offer of an Exxon Fellowship in the STS Program at MIT. I (well, we—me, Jane, and Lucy) went there in September 1984 and I started meeting occasionally with Thomas Kuhn, who pressed me along the following lines. “Andy,” he would say, “you Strong Programmers are good on negotiations between scientists; what about their negotiations with nature?” Back home we had held this question at arm’s length, fearing that once we started talking positively about nature the battle with traditional philosophers of science would be lost. (Barry Barnes and David Bloor were clear that nature was the source of “causal inputs” to knowledge production, but liked to speak as if they could be “factored out.”) At MIT, Leo Marx helped me to begin answering Kuhn’s question by insisting that it was time I read pragmatism. Harvard University Press had William James’s *Pragmatism and the Meaning of Truth* on sale, and I was instantly taken by it. Not only was James a great writer, but he had found a way of talking about knowledge as engaged with our doings in a non-human world without slipping into the kind of naive realism which my earlier studies had convinced me was nothing more than a block to serious thought. In the summer of 1985, I messed around, trying to translate what I got from James into what I knew about science. Then I joined the Sociology Department at the University of Illinois, where I enjoyed having a real job for the first time in my life. Then I spent 1986–87 on leave at the Institute for Advanced Study in Princeton. There I returned to thinking about a study of quark-search experiments that I had begun in the late 1970s and started to see the production of scientific facts as a delicate, reciprocal, and uncertain process of alignment of the material and the conceptual, of experimental setups and their performances on the one hand, and theories and models on the other. Simon Schaffer passed through Princeton at that time and seduced me into promising an essay for a volume on *The Uses of Experiment* that he was putting together with David Gooding and Trevor Pinch, so I wrote up my thoughts as “Living in the Material World” (stolen from Madonna’s hit single). That essay was a key point of transition for me, and led more or less directly to *The Mangle*. It answered Kuhn’s question about negotiations with nature, but in a “pragmatic realist,” rather than naive or correspondence realist, fashion. Everything I had learned about the social construction of knowledge could continue to stand (hence a continuity with *Constructing Quarks*), but now one could appreciate in detail the constitutive engagement of knowledge with the material world too (hence what I regard as a productive elaboration). At the same time, I could see how the analysis I set out there could be a model for an understanding of scientific practice in general—a topic that was beginning to interest many people. But, still, I was intensely puzzled by what I found myself saying. I was talking about an essentially temporal process whose course and end-point emerged in real time, rather than being “explained” by anything that endured through it. I had never seen anything like that in the theoretical literature I knew. I only started to feel confident about it in writing *The Mangle*. So “Material World” was part of the loop back to the mysteries of emergence, but I didn’t recognize that at the time.

CBJ: As a follow-up on these questions on your theoretical developments I would like to ask a sort of two-pronged question on earlier and current affiliations. The first has to do with hard scientists, the ones you have worked on, such as Morpurgo, as well as other readers. So the question is: How have your works been received among such people? Has the reception changed and in what sense? If there have indeed been changes, how much have they related to your own changes in conceptualizing science from socially constructed to “mangled” and how much have they changed due to the recent “science wars”?
AP: I think scientists generally accept my empirical, historical writing as accurate and perspicacious. They don’t like the arguments that I base upon them. The reaction to Constructing Quarks was typical: read chapters 2 to 13 (the history); don’t even look at chapters 1 and 14 (the theory and conclusions). In a sense I asked for that; the last page or so sums up the argument in a rather provocative fashion. On the other hand, when my book took on a new life in the “science wars,” I was unpleasantly struck by the fact the spokespersons for “evidence and argument” were content to mock a couple of decontextualized sentences from the end of a 400-page book while completely ignoring the evidence and argument that led up to and put me in a position to utter those sentences. Nothing in my thinking has changed as result of “epistemological” critiques of my work; we in science studies are the serious scholars on that terrain; even Nobel laureates in physics can be complete amateurs, recycling their unexamined prejudices. I also note that as much as I have figured in the “science wars,” it has been as the author of Constructing Quarks, not The Mangle of Practice. The “science wars” operates a kind of binary opposition: naïve realism vs. its presumed opposite, social constructivism. The Mangle fits even less well into that binary space than Constructing Quarks, so the “science warriors” are even less capable of demonizing it.

CBJ: And then I would like to redo this question, only emphasizing the changes in relations and alliances you have found in and outside science studies. Originally I guess, the entire English social constructivist milieu must have strongly influenced you, whereas now it is hardly noticeable in your writings. Instead there is an increased engagement with Latour and ANT, not to mention people like Gilles Deleuze and Manuel De Landa. How and when did such changes take place?

AP: In Edinburgh, Latour’s work was looked upon as a thinly disguised version of Barry Barnes’s “interest model”; knowledge is understood as a scientific construct, and social interests are the relevant explanatory variables. There is, 1988, indeed, much in Latour’s early writings that will bear that construal. In 1988, however, I taught a seminar on the sociology of scientific knowledge, and I recall we began to go through Kuhn’s Structure of Scientific Revolutions. Having at that stage taught the Structure a couple of times already, I changed course in midstream to look at Latour’s then new book Science in Action. Whereas as a researcher I felt at liberty to be as negative about the work of others as I liked, as a teacher it seemed incumbent upon me to make the readings sound as interesting as I could. I therefore went through Science in Action in class looking for novelty and originality, rather than for traces of what I already understood. I certainly found it. I was most struck by Latour’s idea that the social is not a stable explanatory variable; that whatever human or social variables one cares to appeal to—interests, say—are just as much at stake and liable to transformation in the production of knowledge as knowledge is itself. The social is thus itself part of the delicate and uncertain business of making alignments in practice as the material and the conceptual. This was another key step, for me, leading from “Material World” to The Mangle. I have continued to admire and learn from Latour ever since.

Deleuze and De Landa. These are both post-Mangle. Writing that book, I had not found little outside theoretical inspiration in thinking about the temporality of practice and emergence more generally (though I took Latour to be interested in this too). Only in the last couple of years have I realized that what I experienced as solitude was actually just ignorance. We could talk more about that; now or later.

CBJ: What I want to do now is take your clue seriously and ask some questions about your newfound inspiration in places ordinarily marginal to science studies scholars. After this series, I would like to ask some questions from a more philosophical point of view, and I want to end asking you about your current development of something of a normative position, and in what directions your current work is taking you. Let’s start off with a few related critical questions. You mention Latour and ANT as main inspirations in The Mangle of Practice. It is certainly feasible to see your work as intimately related. But from a “strict” ANT point of view it seems as if you withdraw from the most radical ontological conclusion: a symmetry or monism between non-humans and humans. In its place you put a kind of dualism dependent on a vague notion of human intentionality as goal-directedness. It could seem that this is a very loose way of differentiating humans from non-humans as ontological entities?

AP: I’m against the idea of an exact symmetry or identity between humans and non-humans, or between cats and dogs, or mathematical equations and love letters. I think monism is the wrong way to go, and I think the metaphor of the “seamless web” should be stamped out. I like the Latour of Irreductions, and I like Deleuze and Guattari’s emphasis on irreducible multiplicity. To talk about multiplicity is to talk about differences, an open-ended list of differences. The important thing is to stay on the level of specific visible differences, and not disappear into the realm of hidden differences that define once and for all the essence of this or that. My claim is that to understand some passages of human practice it is important to recognize that we sometimes have future goals in view. To understand others, such as repetitive practices (and their drift in time) it is
not. When speaking of goals, it is important to realize that they themselves are situated and liable to mangle, just like, say, the configuration and performance of laboratory apparatus or bodies of knowledge; they don’t run the whole show. I don’t think we need to make a special big deal about goals. If I was talking about cats, I might find it relevant sometimes to point out that they have fur and that, say, snakes don’t. So what?

CBJ: The second question of this series also has to do with your investigation into sciences and ontologies of becoming. You propose that the concept of the mangle of practice could work as a TOE (theory of everything) and as you well know this is an extremely provocative suggestion. In “On Becoming,” you qualify this statement in the following way: “...there is a hole in the middle of the metaphysics; it does not tell us what the entities are, how they relate to each other, or how they come together in assemblages.” So, the provocative question back to you would be: What does it offer, aside from a loose idea of perpetual change? Where, when, or why does it benefit us to think of becoming?

AP: It wasn’t a qualification. I made the remark about the hole because I realized the mangle—as TOE wasn’t quite the same kind of TOE as the physicists typically have in mind. Theirs is reductive: a TOE identifies hidden building blocks of the universe and their relations, and imagines that it can theoretically construct the visible universe in its entirety from them. The mangle refers to a visible ontology (whatever it might be in any specific situation) and a universal pattern of becoming in time. What’s the benefit of thinking about becoming? Well, if the world continually becomes, shouldn’t we be able to think, talk, and reason about that? Shouldn’t we worry that so many academic discourses instead make it impossible to conceptualize becoming?

CBJ: In direct continuation of the last question, I would like to return to another passage from the appendix to “On Becoming.” You write that “I believe therefore, that one should not take any specific science of becoming literally; the effect of doing so seems inevitably to be a) a narrowing of the imagination—the impulse to pick out just those becoming that fit in with the theory in question and to ignore others, and b) to take us away from the world again—one begins to see all sorts of amazing happenings and performances in the world as exemplifications of one or a few ‘abstract diagrams’ or whatever.” I take this to be a critical comment on any sort of hopes for general typologies or patterns (as you also criticize Peter Galison for in The Mangle). More explicitly, I take the criticism of abstract diagrams to be a comment on Manuel De Landa’s use of this Deleuzian concept. But my question would have to do with reversal. Why is it imperative, or at least prioritized, to always think of change? Is nothing ever to be gained by, like De Landa, exploring patterns of stability as well as change? Wouldn’t he counter your argument by claiming that the mangle of practice, as you analyze it, is just one particular “abstract diagram” which is especially unlikely to stabilize, but that there are many others. He could even claim that it is through his Deleuzian ability to find many more abstract diagrams that he gains some purchase on The Mangle, since he is trying to fill out the hole in metaphysics that you refuse to try to do. How do you understand such arguments, and how do you explain your rigorous focus on emergence against stability?

AP: Well, first, I stick by the passage you quoted. I think De Landa and Deleuze’s abstract diagrams narrow our imaginations and take us away from the visible world into some invisible, behind-the-scenes realm. I repeat, I think we should stay with the visible. But still, they take us behind the scenes in a different way from the reductive sciences; they offer us simple models of a degree of emergence that might otherwise be hard to grasp and imagine. I certainly find that attractive in their writings. The second answer is more tentative. I note that all the sciences I know have their own specific exemplary objects in the realm of the visible: thermodynamics and steam engines, organic chemistry and synthetic dyes, cybernetics and autonomous weapons systems (and other monstrous objects too). It seems possible to me that one can arrange these objects on a spectrum marked out by the violence of their becoming. A dilute gas is a pretty good exemplar for a time-reversible physics; a self-guided anti-aircraft gun for early cybernetics; biological morphogenesis for newer wave theories of self-organization; and so on. But still, even morphogenesis has a repetitive aspect. Intricate processes of self-organization produce a pretty predictable product, traveling from a simple embryo to an adult organism. My argument in The Mangle was that the development of scientific culture lacks even that kind of repetitiveness. It just becomes. So I want to draw attention to that end of the spectrum which the sciences of self-organization have yet to approach (and which perhaps they cannot approach and still call themselves “sciences”). Coming from my angle, perhaps repetitive phenomena invite further thought, but I’m not sure where to take that idea. . . . Another point worth making here is that much of the scientific and mathematical work that Manuel draws upon has to do with emergent properties of large numbers of simple and identical objects. I have not yet found it useful to think about culture in that way. In my studies of Giacomo Morpurgo’s quark-search experiments, for example, it seemed to me that one needed to think about open-ended extensions of material and conceptual forms and their alignment in the real time of practice. I argued that the trajectory of such extensions and alignment was a temporally emergent phenomenon, but
I can see no point in imagining some abstract diagram in phase space complete with attractors and basins of attraction behind the history as I documented it. In fact, I can't see any point of purchase for that analogy. In still unpublished work on the nineteenth-century history of the organic chemistry and the synthetic dye industry, I claimed that the emergence of mauve, the first synthetic dye, from a specific chemical recipe was an emergent phenomenon. After the fact, of course, the chemists eventually came up with a behind-the-scenes explanation of what was going on, but it was a traditional reductive explanation, nothing to do with Manuel's abstract diagrams.

CBJ: Finally, I would like to ask one more question on the relation between your theories and those of Manuel De Landa, since you are both so influenced by what you call sciences of becoming, such as artificial life, cybernetics, far-from-equilibrium chemistry, etc. Whereas you are interested in emergence you are wary of "taking any specific science of becoming" literally, for the reasons discussed above. De Landa on the other hand is quite happy with an analysis based on a sort of scientific reading of Deleuze, in which highly abstract notions such as "attractors" or "phase-spaces" are used to specify an ontology. I know you (and I) are inspired by the types of analyses De Landa is making, but how do you respond to the sort of taken-for-grantedness with which he appropriates scientific concepts? This sounds about as far from a skepticist SSK background as one can get! Where are the lines of convergence and divergence?

AP: Manuel is faithful to what I call the representational idiom. He thinks the point of knowledge is to mirror the world. And in this sense he is a very traditional realist. He thinks these abstract diagrams really capture the hidden truth of the world. I am not a correspondence realist. I think that contemplating such structures is at best an aid to the imagination, a kind of mental gymnastics that can help some people to think becoming. And I think imagination is important because how we imagine the world to be and how we act in it hang together. That goes with my performative story of knowledge in relation to practice.

CBJ: There's no doubt that Manuel is a realist, albeit of a particular (Deleuzian) kind. But the way he understands realism and representation also seems to get him a certain purchase (which you don't like). He is able to propose mechanisms on a high level of abstraction as "virtual but real" and use these in an explanatory sense. Contrarily, one of the problems with the notion of the mangle as it has been perceived is that, used as a TOE, it may capture everything (such as theoretical, material, and social aspects of reality) but in a very vague sense; the vocabulary is limited to notions such as dialectics of resistance and accom-modation, tuning, etc. Do you see any ways of making the conceptual vocabulary more specific and powerful? I guess this is a sort of retake on the discussion about temporal patterns and abstract diagrams earlier. But there seems to be a certain tension between achieving a conceptual fit that is neither so loose as to explain everything and nothing, or one that is too rigid.

AP: It's not a choice, Casper. My analysis of the mangle of practice didn't come before my empirical studies of practice. I worked through various case studies trying to understand them in as much detail as I could, and the mangle was what I ended up with—this in a positive sense, as a compact and graspable account of how the new grows out of the old without being at all reducible to it. But also in a negative sense. It seems to me that my studies undermine many explanatory schemas that are often taken for granted in academic life. In the book (The Mangle), for instance, I showed at probably excessive length how all sorts of stories that give explanatory priority to the social fail in relation to the examples I discussed. But the same goes for Manuel's abstract diagrams. They don't, actually, achieve any purchase on my examples. I can't see that they have anything to do with my empirical studies (see my earlier remark on analyses of systems made up of many identical elements vs. the cases I discuss). Neither, it must be said, has Manuel ever indicated to me that he can see any connections. So one has two options. Either ignore my examples and focus on others that can be made out as, say, the workings behind the scenes of strange attractors or whatever. This is the usual strategy followed in making a science. Or refuse to be dazzled by conceptual structures and stay with the visible, which is my path. The traditional view of "theory," which De Landa shares, I think, is as a kind of labor-saving device. Theory tells us what there is in the world, so one doesn't have to look very carefully. The mangle, in contrast, beyond serving to develop a certain sensitivity to becoming in time in fields of multiplicity, tells us nothing about ontological substance. It returns us to specifics: What is there in this situation? How does it go? It throws us back on the empirical world, into the thick of things—unlike traditional theory, which takes us away.

CBJ: The next question also relates to your understanding of concepts, this is from Evan Schinger. One thing that enforces some philosophers is your handling of concepts (agency, say). How do you understand the relationship between concepts and the history of concepts? You seem to pick conceptual names at will without considering how, for instance, the concepts of "time" or "real" are deeply sedimented in long metaphysical histories that mediate how "entities" are understood. My own addition is that this concern could be applicable, for example, to your loose understanding of human agency as "goal-directed."
AP: Oh, I'm fed up with questions like that. It's like trying to have a conversation with Pavlov's dogs. Some branches of the humanities and social sciences have elevated certain definitions of words like “agency” to ridiculous heights and inscribed them into their very essence. Agency goes with will, therefore only humans can have it (and hence a pure humanist philosophy and social science). Therefore my references to material agency must be simple conceptual mistakes, therefore end of any thought of post-humanist de-centering. And it turns out that all the key terms one might want to use in thinking about people and things, their interrelation and their becoming, are poisoned like that. The question then is, what to do about it? Since one cannot, as far as I can see, just make up new non-poisoned words, my strategy is to develop everyday (not academic) language in a different way. As it happens, for example, people have long been capable of talking about the agency of things as well as people; I give examples of such usage in the book. It is, as a matter of fact, only the Pavlovian philosophers and social scientists (which, I insist, does not mean all philosophers and social scientists) who have any difficulty with this. And then, to pin down my sense of words like “agency,” I give examples of how I would apply the word in relation to detailed empirical studies. I think this is the primary way in which words get their sense. I do not think one can tie them down with definitions. This is one important thing I learned at the Science Studies Unit in Edinburgh—they call it “finitism”; I think of it as an example of the general phenomenon that I call “open-endedness” or “openness” for short. Of course, to get even clearer for the benefit of overconditioned academics, I suppose I could start writing a history of philosophy and the social sciences, noting when and how words like “agency” started to acquire the peculiar senses that I want to get away from, and seeing how the disciplines might have taken a different turn. But that would be a major enterprise in itself and, at the moment, I find myself more interested in the world than in the history of philosophy.

CBJ: Another thing that "enrages" some philosophers is your relativistic stance on "big questions," not least moral, ethical, political, normative ones. People such as Andrew Feenber are concerned because the focus on difference and specificity prevents normative conclusions of any broad kinds to be made. For example, he fully supports David Noble's analysis which you criticize; he suggests that while accommodations and tunings might have taken place in this organization, stepping back a bit one can clearly see repressive capitalist mechanisms at play. Since these relate to the larger societal picture, they should be foregrounded and evaluated, not hidden behind a cloak of minor site-specific differences. Again, this seems to me to be a rehash of our pattern talk, but translated into a normative register. How do you understand such accusations?

AP: So much rage... Again, I say that it's not a choice. I admire David Noble's work enormously. I have long been fascinated by his book Forces of Production. As history, it's just great. But we come back to the negative aspect of The Mangle. There I showed that Noble's theoretical analysis of the "limits" of capitalism was hot air. If I did not reject it on principle; I demonstrated that Noble's analysis amounted to empty (but seductive) retrospection on his empirical material. If Feenber wants to defend hot air on principle, I can't stop him, although I don't think that's what academics should do. If he wants to engage with my arguments, let him do so, and we'll see where it takes us. In this connection, I always think of Stephen Turner's wonderful book The Social Theory of Practices. Turner quite straightforwardly portrays great swathes of behind-the-scenes social theorizing as "an opaque end to thought and reflection."

CBJ: Nevertheless you have approached the normative lately, from a peculiar angle. You use the styles of the painters Mondrian and de Kooning as exemplars of, respectively, stasis and becoming. In recent provocative analyses of, for instance, the Mississippi delta you use this as a demarcation criteria for thinking of the future of New Orleans. You go as far as to suggest that one might consider "letting go" of New Orleans in order to let beautiful new waterscape emerge. A first "enraging" position might claim that this was a very unfortunate aestheticization of politics. But even going along with your idea, it seems that Mondrian and de Kooning are extremely slippery markers of a politics of becoming. For instance one could make analyses to show the co-production of stasis and becoming and how this foregrounds change and stability depending on the level of abstraction at which one is analyzing. Normative issues seem to be involved even in deciding at which level to approach phenomena. How could a performative-normative analysis be strengthened?

AP: You Danes always push me on this. I'm grateful for it. I think it's a fascinating and important issue. But I can't give you a straight answer. I'm still trying to think through the issues, as, I think, are many people. I also don't suppose I should rehearse the entire conference paper which has provoked you to mention Mondrian, de Kooning, the Mississippi, and New Orleans. But I could say a couple of things. First, I don't think one should be too quick to buy the idea that one can make a clean split between aesthetics and politics. Do we really want a politics that ignores desire and pleasure, pain and fear? What would it be? Free-market economics? And again, have we got a choice? Your colleague, our friend, Randi Markussen tells me that there is a real example of the situation I only imagined with respect to New Orleans happening right now in Marup in the north of Denmark. An ancient church is slowly slipping into the
sea as the coastline erodes, and people are really arguing about what should be done about this—try to fortify the church and the coast? Let the church go? One could say that this is, at once, a political argument, an aesthetic argument, an economic argument (think of tourism), and a philosophical argument (hinging on whether we should affirm or deny becoming). Or one could say that it is simply a political argument in the best sense of that phrase, as encompassing dimensions that are usually abstracted from one another (politics, aesthetics, economics, engineering, ontology). Perhaps the key contribution of a politics of becoming might be to encourage such an enrichment of our sense of what “politics” is. Second, traditional politics depends on this “abstraction” you keep going on about. It depends on stepping out of the thick of things, finding some structure behind the scenes and projecting it into the future. Think of Marxism, class struggle, and the coming revolution. Perhaps it is inevitable that we conduct our affairs like that. But I think that we should be much more suspicious of our abstractions than we are in routine politics. Think of the horrors perpetrated in the last few years in the name of free markets and competition. And, on the other hand, perhaps we should try, some of the time at least, staying in the thick of things. A politics of becoming would be a politics of experiment, desperately interested in the visible world, material and social, continually trying this and that without pretending to know the outcomes in advance. It would also be a politics of the imagination, continually searching for other ways to imagine the space in which such trials take place (beyond, for example, the grim field marked out by terms like capital, markets, and risks).

CBJ: I am happy you should mention the Danish church, since this is actually a project Randi is doing with me! I am going to wrap this up with two short ones. First, there is no doubt you are struggling with redefining academic analyses in a way that is compatible with your views of the world as becoming. You often mock the disciplines for their inability to cope with such changes. How could they cope? How could, say, the universities align themselves to match the complexity of a world of becoming? How can one be post-disciplinary? Is there a way of creating disciplines of becoming? Second, insofar as you are a representative of this way of working, can you tell us a bit about your current projects (I think there is something about cybernetics) and where you think of them as going? Do you work to provide more examples of the mangle of practice (à la Collins product differentiation?) or do you have something else up your sleeves?

AP: The shorter your questions get, Casper, the longer the answers they invite. But to keep things finite: yes, I think the world is a good place to look for inspiration, even for those of us interested in theory, and the place I’m looking now is the history of cybernetics, concentrating on the work of a fascinating bunch of Englishmen from the 1940s onwards—especially Ross Ashby, Stafford Beer, Gordon Pask, and Grey Walter. (I’m also interested in later work on related themes like self-organization, as discussed earlier.) No, I’m not primarily interested in the history of cybernetics as another process of open-ended mangling, though I’m sure it is one. It’s more that I’m drawn to mangle-ishness of cybernetics. Conceptually these people have inhabited a space very similar to the mangle (did I talk about the two big paradigms earlier?) and I’m interested in understanding their ideas and exploring their relation to my own. I can find theoretical inspiration in that. But unlike desk jockeys like myself, the cyberneticians did things in the real world. They built, or tried to build, real cybernetic machines (artificial self-organizing neurons and brains!); they tried to reorganize management and even entire economies. I’m extraordinarily impressed by that (my earlier incarnation as a physicist reasserting itself, no doubt). What would a mangle-ish engineering look like? Situated robotics à la Rodney Brooks, perhaps. I’m also very impressed by the social configuration of cybernetics. People have said that cybernetics was a “universal discipline” in that it could provide a framework for all the traditional disciplines. It was more radical. Cybernetics did not float above the disciplines like a kind of umbrella; it rather implied a substantive reconstruction from below (centered on specific cybernetic exemplars or “monsters” as I like to call them) that effectively dissolved the boundaries between disciplines. One can, of course, see this sort of convergence happening in the universities today, within the second big paradigm I think I talked about. Worse than that, however, cybernetics was not centered in the universities at all. The cyberneticians wandered with ease through all sorts of institutions that we tend to think of as completely different—the universities, certainly, but also business, the military, the arts, politics, religion. Exploring the history of cybernetics is a way, then, of stretching my own imagination. I could never have invented such a striking conceptual, material, and social formation. It might be a model for the third millennium—open-endedly extended, of course.

CBJ: Andy, thank you very much for your interesting discussions and clarifications.

AP: Casper, thank you; talking to you always makes me think.

NOTE

The interview with Andrew Pickering was carried out over email from November 10, 2000 to January 23, 2001. The exchange was carried out between Pickering and Casper Bruun Jensen, while Evan Selinger was instrumental and inspirational in formulating many of the questions.