



AFTER METHOD

mess in social science research



JOHN LAW

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After Method

'Research Methods': a compulsory course, which is loved by some but hated by many! This stimulating book is about what went wrong with 'research methods'. Its controversial argument is radical, even revolutionary.

John Law argues that methods don't just describe social realities but also help to create them. The implications of this argument are highly significant. If this is the case, methods are always political, and this raises the question of what kinds of social realities we want to create.

Most current methods look for clarity and precision. It is usually said that messy findings are a product of poor research. The idea that things in the world might be fluid, elusive, or multiple is unthinkable. Law's startling argument is that this is wrong and it is time for a new approach. Many realities, he says, are vague and ephemeral. If methods want to know and to help shape the world, then they need to reinvent their practice and their politics in order to deal with mess. That is the challenge. Nothing else will do.

This book is essential reading for students, postgraduates and researchers with an interest in methodology.

John Law is Professor of Sociology and Technology Studies at Lancaster University. He has written widely on social theory, methodology, technologies, and health care.

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Note

Questions of method arising from this book are debated at the Lancaster University Sociology department website. Please visit <http://www.comp.lancs.ac.uk/sociology/>

1 After method: an introduction



If this is an awful mess . . . then would something less messy make a mess of describing it?

‘There is no use in trying,’ said Alice; ‘one can’t believe impossible things.’ ‘I dare say you haven’t had much practice,’ said the Queen. ‘When I was your age, I always did it for half an hour a day. Why, sometimes I’ve believed as many as six impossible things before breakfast.’

(Lewis Carroll, *Alice in Wonderland*)

How might method deal with mess?

Look at the picture above, and at the question posed by the caption. This book is about that caption, and about what happens when social science tries to describe things that are complex, diffuse and messy. The answer, I will argue, is that it tends to make a mess of it. This is because simple clear descriptions don't work if what they are describing is not itself very coherent. The very attempt to be clear simply increases the mess. So the book is an attempt to imagine what it might be to remake social science in ways better equipped to deal with mess, confusion and relative disorder.

No doubt some things in the world can indeed be made clear and definite. Income distributions, global CO₂ emissions, the boundaries of nation states, and terms of trade, these are the kinds of provisionally stable realities that social and natural science deal with more or less effectively. But alongside such phenomena the world is also textured in quite different ways. My argument is that academic methods of inquiry don't really catch these. So what are the textures they are missing out on?

If we start to make a list then it quickly becomes clear that it is potentially endless. Pains and pleasures, hopes and horrors, intuitions and apprehensions, losses and redemptions, mundanities and visions, angels and demons, things that slip and slide, or appear and disappear, change shape or don't have much form at all, unpredictabilities, these are just a few of the phenomena that are hardly caught by social science methods. It may be, of course, that they don't belong to social science at all. But perhaps they do, or partly do, or should do. That, at any rate, is what I want to suggest. Parts of the world are caught in our ethnographies, our histories and our statistics. But other parts are not, or if they are then this is because they have been distorted into clarity. This is the problem I try to tackle. If much of the world is vague, diffuse or unspecific, slippery, emotional, ephemeral, elusive or indistinct, changes like a kaleidoscope, or doesn't really have much of a pattern at all, then where does this leave social science? How might we catch some of the realities we are currently missing? Can we know them well? *Should* we know them? Is 'knowing' the metaphor that we need? And if it isn't, then how might we relate to them? These are the issues that I open up in this book.

I don't have a single response to these questions. The book is intended as an opening rather than a closing. In any case, if much of reality is ephemeral and elusive, then we cannot expect single answers. If the world is complex and messy, then at least some of the time we're going to have to give up on simplicities. But one thing is sure: if we want to think about the messes of reality at all then we're going to have to teach ourselves to think, to practise, to relate, and to know in new ways. We will need to teach ourselves to know some of the realities of the world using methods unusual to or unknown in social science.

For example? Here are some possibilities. Perhaps we will need to know them through the hungers, tastes, discomforts, or pains of our bodies. These

would be forms of knowing as embodiment. Perhaps we will need to know them through 'private' emotions that open us to worlds of sensibilities, passions, intuitions, fears and betrayals. These would be forms of knowing as emotionality or apprehension. Perhaps we will need to rethink our ideas about clarity and rigour, and find ways of knowing the indistinct and the slippery without trying to grasp and hold them tight. Here knowing would become possible through techniques of deliberate imprecision. Perhaps we will need to rethink how far whatever it is that we know travels and whether it still makes sense in other locations, and if so how. This would be knowing as situated inquiry. Almost certainly we will need to think hard about our relations with whatever it is we know, and ask how far the process of knowing it also brings it into being. And as a theme that runs through everything, we should certainly be asking ourselves whether 'knowing' is the metaphor that we need. Whether, or when. Perhaps the academy needs to think of other metaphors for its activities – or imagine other activities.

Such talk is new but at the same time it is not so new. There are many straws in the social science wind which suggest that it is starting to blow in directions such as these. Over the last two decades methods for the analysis of visual materials, performance approaches, and an understanding of methods as poetics or interventionary narrative have all become important. Students of anthropology, cultural studies and sociology have grappled with ways of thinking about and describing decentred subjectivities and the geographical complexities that arise when intimacy no longer necessarily implies proximity. There is also a developing sense that global flows are uncertain, unpredictable indeed chaotic in the mathematical sense. Many now think that ethnography needs to work differently if it is to understand a networked or fluid world. The sense that knowledge is contexted and limited has become widespread, and feminists have talked of situated knowledges while anthropologists have explored writing and receiving culture.¹ Market research, often more imaginative than academic social science, has developed methods such as tasting panels for understanding the non-cognitive and the ephemeral. And never to be outdone, management consultancy has adopted 'soft methods' for intervening in organisations by turning to dramatisations, enactments and performances.

So the world is on the move and social science more or less reluctantly follows. Agency is imagined as emotive and embodied, rather than as cognitive: the nature of the person is shifting in social theory and practice. Structures are imagined to be more broken or unpredictable in their fluidity. But at the same time, within social science, talk of 'method' still tends to summon up a relatively limited repertoire of responses. The collection and manipulation of certain kinds of quantitative data is emblematic for research methods in many parts of social science including much of sociology, economics, psychology, and human geography. The collection and manipulation of certain kinds of qualitative materials is iconographic in anthropology, cultural studies, science studies, and other parts of sociology and human geography. The

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quantitative/qualitative iconography – and its division – is built into many courses on research methods. In the English-speaking world it is unusual, perhaps impossible, to qualify as a degree-level social scientist without following such courses and learning the appropriate suites of methods. Indeed, national recognition of social science courses in the United Kingdom now demands that these include both quantitative and qualitative methods, though many students and teachers dislike such courses and find their content to be at best marginally relevant to the research process.

This book makes a sustained argument for a way of thinking about method that is broader, looser, more generous, and in certain respects quite different to that of many of the conventional understandings. It is therefore, in part, an attack on the limits set by such understandings. But there are various reasons why any such attack needs to be cautious. One is that ‘social science method’ is an encouragingly multi-headed beast. It is already variegated and heterogeneous in its claims, but even more so in its practices. Since I am arguing for greater methodological variety, existing variety is surely welcome wherever it is to be found – which is everywhere. This suggests, then, that the problem is not so much lack of variety in the *practice* of method, as the hegemonic and dominatory pretensions of certain versions or *accounts* of method. I will return to this question, that of the normativity of method, shortly.

Another reason for caution is that standard research methods are often important, not to say necessary. To take one notorious example, it was quantitative epidemiological research that established a plausible link between smoking and lung cancer.² Another example with a more social science flavour would be the many studies, again often quantitative, that have revealed strong relations between poor health and a range of social inequalities including poverty.³ Or between vulnerability to disaster, and age, social isolation and poverty.⁴ There are, to be sure, always complexities and ambivalences.⁵ Nevertheless studies such as these have been the basis for major health education campaigns. And endless other success stories for standard methods, quantitative and qualitative, could be cited.

It cannot be the case, then, that standard research methods are straightforwardly wrong. They are significant, and they will properly remain so. This is why I say that I am after a broader or more generous sense of method, as well as one that is different. But to talk of difference is indeed to edge towards criticism. As I have suggested above, I want to argue that while standard methods are often extremely good at what they do, they are badly adapted to the study of the ephemeral, the indefinite and the irregular. As I have just suggested, this implies that the problem is not so much the standard research methods themselves, but the normativities that are attached to them in discourses about method. If ‘research methods’ are allowed to claim methodological hegemony or (even worse) monopoly, and I think that there are locations where they try to do this, then when we are put into relation with such methods we are being placed, however rebelliously, in a set of constraining normative blinkers. We are being told how we must see and what we must do

when we investigate. And the rules imposed on us carry, we need to note, a set of contingent and historically specific Euro-American assumptions.⁶

Here the problem is not that our research methods (and claims about proper method) have been constructed in a specific historical context. *Everything* is constructed in a specific historical context and there can be no escape from history. Rather it is that they, or at least their advocates, tend to make excessively general claims about their status. The form of argument is often like this (think, for instance, about rules for statistical sampling, or avoiding leading questions in interviews). 'If you want to understand reality properly then you need to follow the methodological rules. Reality imposes those rules on us. If we fail to follow them then we will end up with substandard knowledge, knowledge that is distorted or does not represent what it purportedly describes.' There are two things I want to say in response to such suggestions about the importance of methodological rule-following. The first is counter-intuitive. It is that methods, their rules, and even more methods' practices, not only describe but also help to *produce* the reality that they understand. I will carefully explore the reasons for making this suggestion in due course. However, for the moment let me simply note that there is a fair amount of heavyweight work on the history of science and social science that makes precisely this argument. Perhaps again counter-intuitively, I will also say that if methods tend to produce the reality they describe, then this may be, but is not necessarily, obnoxious. Again I will return to this argument at some length in due course. But what is important now is to note that if these two claims are right then they have profound implications for our understanding of the nature of research.

There is a further and more straightforward point to be made. This is that claims about the general importance of methodological rules also tend to get naturalised in social science debate. *Particular* sets of rules and procedures may be questioned and debated, but the overall need for proper rules and procedures is not. It is taken for granted that these are necessary. And behind the assumption that we need such rules and procedures lies a further range of assumptions that are also naturalised and more or less hidden. These have to do with what is most important in the world, the kinds of facts we need to gather, and the appropriate techniques for gathering and theorising data. All of these, too, are naturalised in the common sense of research. Yes, things are on the move. Nevertheless, the 'research methods' passed down to us after a century of social science tend to work on the assumption that the world is properly to be understood as *a set of fairly specific, determinate, and more or less identifiable processes*.

Within social science conventions, which are the best methods (and theories) for exploring those somewhat specific processes? This is a matter for endless debate. Neo-Marxists discover world systems, or uneven developments, or they theorise regulation. Foucauldians discover systems of governmentality. Communitarians discover communities and the need for informal association and responsibility. Feminists discover glass ceilings, cultural sexism, or

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gendering assumptions built into scientific and social science method. As a part of this, social science common sense also assumes that society changes. Indeed this is one of the rationales for social science: that it can participate in and guide that change. (Witness the health-inequalities finding mentioned above, but also the larger political inheritance of Euro-American social theory.) But, overall, the social is taken to be fairly definite. Such is the framing assumption: that there are definite processes out there that are waiting to be discovered. Arguments and debates about the character of social reality take place *within* this arena. And this is what social science is meant to do: to discover the most important of those definite processes. But this is precisely the problem: *this is not necessarily right*. Accordingly, it indexes the broadening shift that I want to make. The task is to imagine methods when they no longer seek the definite, the repeatable, the more or less stable. When they no longer assume that this is what they are after.

So what are those elusive realities? This is for discussion. I have my own sense of what it is that might be important and this informs my argument. However, I do not want to legislate a particular suite of research methods. To do so would be to recommend an alternative set of blinkers. Instead I argue that the kaleidoscope of impressions and textures I mention above reflects and refracts a world that in important ways cannot be fully understood as a specific set of determinate processes. This is the crucial point: what is important in the world including its structures is not simply technically complex. That is, events and processes are not simply complex in the sense that they are technically difficult to grasp (though this is certainly often the case). Rather, they are also complex because they *necessarily exceed our capacity to know them*. No doubt local structures can be identified, but, or so I want to argue, the world in general defies any attempt at overall orderly accounting. The world is not to be understood in general by adopting a methodological version of auditing.⁷ Regularities and standardisations are incredibly powerful tools but they set limits. Indeed, that is a part of their (double-edged) power. And they set even firmer limits when they try to orchestrate themselves hegemonically into purported coherence.

The need, then, is for heterogeneity and variation. It is about following Lewis Carroll's queen and cultivating and playing with the capacity to think six impossible things before breakfast. And, as a part of this, it is about creating metaphors and images for what is impossible or barely possible, unthinkable or almost unthinkable. Slippery, indistinct, elusive, complex, diffuse, messy, textured, vague, unspecific, confused, disordered, emotional, painful, pleasurable, hopeful, horrific, lost, redeemed, visionary, angelic, demonic, mundane, intuitive, sliding and unpredictable, these are some of the metaphors I have used above. Each is a way of trying to open space for the indefinite. Each is a way of apprehending or appreciating displacement. Each is a possible image of the world, of our experience of the world, and indeed of ourselves. But so too is their combination. What this might mean in practice will be explored below. But together they are a way of pointing to and articulating a sense of

the world as an unformed but generative flux of forces and relations that work to produce particular realities.

The world as a 'generative flux' that *produces* realities? What does this mean? I can only tackle this question bit by bit, and any answer will be incomplete. Nevertheless, in this way of thinking the world is not a structure, something we can map with our social science charts. We might think of it, instead, as a maelstrom or a tide-rip. Imagine that it is filled with currents, eddies, flows, vortices, unpredictable changes, storms, and with moments of lull and calm. Sometimes and in some locations we can indeed make a chart of what is happening round about us. Sometimes our charting helps to produce momentary stability. Certainly there are moments when a chart is useful, when it works, when it helps to make something worthwhile: statistics on health inequalities. But a great deal of the time this is close to impossible, at least if we stick to the conventions of social science mapping. Such is the task of the book: to begin to imagine what research methods might be if they were adapted to a world that included and knew itself as tide, flux, and general unpredictability.

This will take us, and uncertainly, far from a conventional discussion of method, but also from our common-sense assumptions about the character of the world and how we come to know it. And this in turn means that it is also important to avoid some possible misunderstandings:

- First, as I have tried to insist above, I am not saying that there is no room for conventional research methods. Such is not at all the point of my argument.
- Second, and more generally, I am not saying that there is no point in studying the world. I am not recommending defeatism. On the contrary, the task is to reaffirm a reshaped set of commitments to empirical and theoretical inquiry. The issue is: what might social science inquiry look like in a world that is an unformed but generative producer of realities? What shapes might we imagine for social science inquiry? And, importantly, what might responsibility be in such a world?
- Third, I am not recommending political quietism. I shall have a lot more to say about politics below, but the basic point is simple. Since social (and natural) science investigations interfere with the world, in one way or another they always make a difference, politically and otherwise. Things change as a result. The issue, then, is not to seek disengagement but rather with how to engage. It is about how to make good differences in circumstances where reality is both unknowable and generative.
- Finally, what I am arguing is not a version of philosophical idealism. I am not saying that since the world defies any overall attempt to describe and understand it, we can therefore realistically believe anything about it we like. I also discuss this much more fully below, but everything I argue assumes that there is a world out there and that knowledge and our other activities need to respond to its 'out-thereness'. It is a world, as I've

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suggested, that is complex and generative. I will argue that we and our methods help to generate it. But the bottom line is very simple: believing something is never enough to make it true.

As is obvious, this argument strays into philosophy. Like others working in the discipline of science, technology and society (STS) I have explored how science is practised in laboratories, and it is difficult to do this without tripping over the writings of philosophers of science and social science. Again, like many others in STS, I do not share many of the most widespread philosophical and common-sense understandings about the nature of scientific (and social science) inquiry. To a first approximation, STS argues that science is a set of practices that are shaped by their historical, organisational and social context. It further argues that scientific knowledge is something that is constructed within those practices.⁸ Thus though they draw on history and philosophy of science, these kinds of arguments also tread on a lot of philosophical toes. But here we need a health warning. Just as this is not a book on method, conventionally understood, neither is it a text in philosophy of science or social science, conventionally understood. The proof of new ways of thinking about method, or so I take it, lies in their results and their outcomes, rather than in their antecedents. Nevertheless, the arguments that I develop indeed have philosophical antecedents. They draw on parts of the philosophy of science but also on philosophical romanticism and (what is perhaps its contemporary expression) post-structuralism. A few words on these two traditions.

Social science has struggled with the inheritance of philosophical romanticism for at least 200 years (at the same time wrestling with its mirror image, the classical commitment to reason and inquiry, embedded in the Enlightenment project (Gouldner 1973)). I will touch on a few of the relevant arguments later. For now it is simply useful to note that many notable social theorists (to name but a few, Karl Marx, Georg Simmel, Max Weber, Georg Lukács, George Herbert Mead and Walter Benjamin) incorporated important elements of philosophical romanticism in their accounts of the world. This means that in different ways they responded to the idea that the world is so rich that our theories about it will always fail to catch more than a part of it; that there is therefore a range of possible theories about a range of possible processes; that those theories and processes are probably irreducible to one another; and, finally, that we cannot step outside the world to obtain an overall 'view from nowhere' which pastes all the theory and processes together.

A related set of intuitions informs such post-structuralist writers as Michel Foucault, Gilles Deleuze and Jacques Derrida. Instead of assuming that there is a specific external reality upon which we can ground our efforts to know the world, such writers mobilise metaphors such as flux to index the sense that whatever there is in the world cannot be properly or finally caught in the webs of inquiry found in science and social science (or indeed any other form of knowing). And then they talk of 'discourse', 'deferral' or 'episteme' to point to

the methodological efforts to make and know limited moments in the fluxes that make up reality.

Philosophical romanticism and post-structuralism have informed some versions of social science (and especially qualitative) method. They have inspired various empirically grounded styles of investigation in sociology, anthropology, cultural studies, feminism, human geography, and science, technology and society (STS). It is, for instance, possible to go to *verstehende* sociology, symbolic interactionism, to anthropology and cultural studies of difference, to post-colonialism, to actor-network theory, or to parts of feminist technoscience studies to see what these intuitions might mean in methodological practice.⁹ But even so, as I have noted, more often social (and still more natural) science 'method talk' connotes something quite different – that is a particular version of rigour. This is the idea that it is important to obtain the best and technically robust possible account of reality, where reality is assumed, as I have suggested above, to be a pretty determinate set of discoverable entities and processes. That such is what the world *is*: a set of possibly discoverable processes.¹⁰

My aim is thus to broaden method, to subvert it, but also to remake it. I would like to divest concern with method of its inheritance of hygiene. I want to move from the moralist idea that if only you do your methods properly you will lead a healthy research life – the idea that you will discover specific truths about which all reasonable people can at least temporarily agree. I want to divest it of what I will call 'singularity': the idea that indeed there are definite and limited sets of processes, single sets of processes, to be discovered if only you lead a healthy research life. I also want to divest it of a commitment to a particular version of politics: the idea that unless you attend to certain more or less determinate phenomena (class, gender or ethnicity would be examples), then your work has no political relevance. I want to subvert method by helping to remake methods: that are not moralist; that imagine and participate in politics and other forms of the good in novel and creative ways; and that start to do this by escaping the postulate of singularity, and responding creatively to a world that is taken to be composed of an excess of generative forces and relations.

To do this we will need to unmake many of our methodological habits, including: the desire for certainty; the expectation that we can usually arrive at more or less stable conclusions about the way things really are; the belief that as social scientists we have special insights that allow us to see further than others into certain parts of social reality; and the expectations of generality that are wrapped up in what is often called 'universalism'. But, first of all we need to unmake our desire and expectation for security.

Method, as we usually imagine it, is a system for offering more or less bankable guarantees. It hopes to guide us more or less quickly and securely to our destination, a destination that is taken to be knowledge about the processes at work in a single world. It hopes to limit the risks that we entertain along the way. Method, then, may allow us to learn that particular hypotheses are wrong: this is an important part of methodology's self-presentation, and it has

important merits.¹¹ It may also allow us to learn that *particular methods* are flawed. But as a framework, method *itself* is taken to be at least provisionally secure. The implication is that method hopes to act as a set of short-circuits that link us in the best possible way with reality, and allow us to return more or less quickly from that reality to our place of study with findings that are reasonably secure, at least for the time being.¹² But this, most of all, is what we need to unlearn. Method, in the reincarnation that I am proposing, will often be slow and uncertain. A risky and troubling process, it will take time and effort to make realities and hold them steady for a moment against a background of flux and indeterminacy.

There is a beautiful book by David Appelbaum called *The Stop* (1995). This contrasts the quickness of seeing with the groping of the blind person. It seems to us, he says, that the blind person lacks vision. No doubt this is right. But Appelbaum's argument is that the groping, the halting progress with a stick, also has its privileges. The blind person sees what the person with vision does not, because she moves tentatively. Because instead of making use of direct lines of vision to distant objects, she gropes her way across the terrain. But Appelbaum argues that in the groping there is a kind of poise, what he calls a 'poised perception'. This is:

a gathering unto a moment of novelty. It is perception of traces of hidden meaning. It is the perception that belongs to the stop.

(Appelbaum 1995, 64)

Understood in this way, blindness implies a range of sensitivities and sensibilities to that which passes the sighted person by. Blindness is no longer a loss. Or if it is a loss, it is also a gain. I take my lesson here from Appelbaum. This is a book about method – and reality – that is also about the stop. The stop slows us up. It takes longer to do things. It takes longer to understand, to make sense of things. It dissolves the idea, the hope, the belief, that we can see to the horizon, that we can see long distances. It erodes the idea that by taking in the distance at a glance we can get an overview of a single reality. So the stop has its costs. We will learn less about certain kinds of things. But we will learn a lot more about a far wider range of realities. And we will, or so I also argue, participate in the *making* of those realities.

Method? What we're dealing with here is not, of course, just method. It is not just a set of techniques. It is not just a philosophy of method, a methodology. It is not even simply about the kinds of realities that we want to recognise or the kinds of worlds we might hope to make. It is also, and most fundamentally, about a way of being. It is about what kinds of social science we want to practise. And then, and as a part of this, it is about the kinds of people that we want to be, and about how we should live (Addelson 1994). Method goes with work, and ways of working, and ways of being. I would like us to work as happily, creatively and generously as possible in social science. And to reflect on what it is to work well.

Appelbaum writes that 'the danger of method is that it gives over to mechanical replacement' (Appelbaum 1995, 89). 'Mechanical replacement' has nothing to do with machines. Rather it has to do with the automatic. My hope is that we can learn to live in a way that is less dependent on the automatic. To live more in and through slow method, or vulnerable method, or quiet method. Multiple method. Modest method. Uncertain method. Diverse method. Such are the senses of method that I hope to see grow in and beyond social science.

The pleasures of reading

Why do the books fall into two heaps, the novels on the one hand, and the academic volumes on the other? Why do the novels get themselves read at the weekends, or on holidays, or in the ten minutes before falling asleep at night? Why do the work-books get read in the day, at prime times?

Then again, another kind of question. *How* do these different kinds of books get read? Why is it that reading a novel brings pleasure not only for its plot and its characterisation, but also for its use of words? If we reflect on the sheer pleasure of reading a well-crafted novel, one in which the words are carefully chosen, put together just right, then we may ask the question: what is the pleasure in reading an academic book? And how many academic books are really well written at the word-level? At the level of crafting?

How these two kinds of books get read is often, perhaps mostly, very different. If we read novels we read them, often, as an act in itself, for the pleasure of the read, the 'good read' of the airport novel, or the crafted text of a Barbara Kingsolver or a Penelope Lively or a J.M. Coetzee. They are pleasures in themselves, intrinsic. Whereas I guess we do not often read an academic book for the pleasure of the read itself, the pleasure, so to speak, of the journey. Rather we read it for the destination, where it will take us, where we will be delivered. We take pleasure, to be sure, in a well-crafted academic book – the ones that come to mind for me are, perhaps, mostly by historians. But the interest is different.

Perhaps, then, the distinction is between means and ends. Novels are ends in themselves, worth reading in their own right. Academic writings are means to other ends. The textures along the way, the actual writing, these are subordinate to those ends. It may be more agreeable to travel first class than third, but in the end we all arrive at the same destination.

What difference would it make if we were instead to apply the criteria that we usually apply to novels (or even more to poetry) to academic writing? Wouldn't the library shelves empty as the ranks of books disqualified themselves? What would we be left with? And, more

importantly, if we had to write our academic pieces as if they were poems, as if every word counted, how would we write differently? How much would we write at all?

Of course we would need to imagine representation in a different way. Poetry and novels wrestle with the materials of language to *make* things, things that are said to be imaginary. It is the making, the process or the effect of making, that is important. The textures along the way cannot be dissociated from whatever is being made, word by word, whereas academic volumes hasten to describe, to refer to, a reality that lies outside them. They are referential, ostensive. They tell us how it is out there.

How, then, might we imagine an academic way of writing that concerns itself with the quality of its own writing? With the *creativity* of writing? What would this do to the referent, the out-there-ness?

STS

Arguments from the discipline of STS (science, technology and society) will play an important part in the argument of this book. Thus, though I weave together a number of sources, the shifting ground on which I stand comes first and foremost from STS. A few words, then, on STS, and its role in the argument.

STS is the study of science and technology in a social context. The basic intuition is simple: it is that scientific knowledge and technologies do not evolve in a vacuum. Rather they participate in the social world, being shaped *by* it, and simultaneously *shaping* it. Some of the implications of this intuition are uncontentious. Who is going to deny the social significance of genomics or informatics, or try to argue that these are not shaped by social and economic concerns? Other implications are less obvious and much more controversial. Is the structure of current scientific reasoning patriarchal? Is the content of scientific knowledge at the same time essentially social? Does scientific theory and practice necessarily carry and enact social and political agendas? Is the distinction between scientific inquiry and knowledge on the one hand, and other forms of inquiry or experience on the other, a social contingency? Is the knowledge produced by scientists more or less contexted and local rather than possibly universal? Does scientific practice help to produce the objects that it describes and explains? Many STS scholars would answer 'yes' to each of these questions. But as is obvious, all, in greater or lesser degree, run counter both to common-sense and to many versions of the received philosophical wisdom.

So as I deploy the STS arguments (together with related positions developed in such disciplines as anthropology, sociology and cultural studies) these are going to take us to some more or less unfamiliar and sometimes anxiety-provoking territory. But this is precisely my object. STS work over a period of

thirty years has made a series of strong and counter-intuitive claims about the character of science. These have profound potential implications for the conduct of natural science. But if they have implications for natural science, then so, too, they are potentially important for social science. So it is a source of some frustration that those arguments – and their implications – have not been more important in social science and its thinking about method and methodology. And such, to be sure, is the object of this book. I work through some of the STS findings in the context of social science, and in doing so attempt to destabilise some standard versions of social science wisdom. All this means that my argument moves between natural and social science. There are certainly important distinctions between the two, but here, for the most part, I trade upon their commonalities. These, I take it, are instructive and important. And this is where I start.

The argument outlined

In Chapter 2 I offer an account of a laboratory ethnography described by STS writers Bruno Latour and Steve Woolgar. The issue is: how is scientific knowledge produced? Their answer is: in a more or less messy set of practical contingencies. But what is most startling is their additional claim that in its practice science *produces* its realities as well as describing them. This is the cornerstone of my own argument. It runs counter to common-sense, and is also easily misunderstood, since it sounds as if it is a way of saying that ‘anything goes’¹³ and one can believe what one wants. But this isn’t right. If realities may be built, Latour and Woolgar also show that it is difficult to do this. In practice bright ideas are very far from realities. And it is the word ‘practice’ that is the key. If new realities ‘out-there’ and new knowledge of those realities ‘in-here’ are to be created, then practices that can cope with a hinterland of pre-existing social and material realities also have to be built up and sustained. I call the enactment of this hinterland and its bundle of ramifying relations a ‘method assemblage’.

But do those practices narrow down, converge, to make a single reality? In Chapter 3, I follow an account by Annemarie Mol of the practices of medical diagnosis, and argue that they don’t. She shows that different practices tend to produce not only different *perspectives*, but also different *realities* – even for what otherwise might seem to be single-disease conditions. She calls this ‘the problem of multiplicity’. But if there are different realities, then lots of new questions arise. How do they relate? How do we choose between them? How should we choose between them? One possibility is that we need what Mol calls an *ontological politics*. If truth by itself is not a gold standard, then perhaps there may be additional *political* reasons for preferring and enacting one kind of reality rather than another. Such, at any rate, is a possibility.

If realities made in methods are multiple, then do they have to be definite and fixed in form? Chapter 4 answers this question by saying ‘no’. Using two more case studies – the treatment of alcoholic liver disease in the UK NHS,

and a water pump in Zimbabwe – it shows how realities may change their shape or become more or less indefinite. But is this okay? Are the bush-pump or alcoholic liver disease not just definite objects that we haven't quite understood? Is our vagueness a sign of methodological failure? The answer is, perhaps, but I don't think so. Instead I argue that (social) science should also be trying to make and know realities that are vague and indefinite *because much of the world is enacted in that way*. In which case it is in need of a broader understanding of its methods. These, I suggest, may be understood as methods assemblages, that is as enactments of relations that make some things (representations, objects, apprehensions) present 'in-here', whilst making others absent 'out-there'. The 'out-there' comes in two forms: as manifest absence (for instance as what is represented); or, and more problematically, as a hinterland of indefinite, necessary, but hidden Otherness.

But if this is so, then how might we know about the indefinite or the non-coherent? Clearly we cannot know the indefinite without limit. It ramifies on for ever. But at least we can explore the issue, and this is the topic of Chapter 5 where I consider the character of allegory as a method for non-coherent representation. Again I work through cases. I argue that a rundown set of premises can be understood as an allegory for health-service disorganisation because it is tolerant of realities that are multiple, diffuse and non-coherent. Again, following work by Vicky Singleton, I suggest that the UK cervical smear programme is held together as much by inconsistency as consistency – that is by the ubiquitous practice of the allegorical. Finally, I argue that the horrors of a train collision can also be understood as a performative allegory for railway disorganisation – but also of pain and suffering. All of these are modes of knowing, methods assemblages, that do not produce or demand neat, definite, and well-tailored accounts. And they don't do this precisely because the realities they stand for are excessive and in flux, not themselves neat, definite, and simply organised. But this does not mean that they are not good methods.

So method assemblage works in and 'knows' multiplicity, indefiniteness, and flux. But how might we think about this? What *are* methods – or methods assemblages? In Chapter 6 I explore this issue by discussing materials from three very different sites of inquiry: management techniques, sociological ethnography, and religious experience. I argue that all of these are method assemblages because they detect, resonate with, and amplify particular patterns of relations in the excessive and overwhelming fluxes of the real. This, then, is a definition of method assemblage: it is a combination of reality detector and reality amplifier.

Chapter 7 returns to the question of truth and asks what follows if this is no longer a methodological gold standard. If it is no longer the only 'good'. Politics, we have seen, is another, 'good', but there are further possibilities. Others might include the aesthetic (beauty), and the spiritual or the inspirational. I develop this argument by looking at forms of method assemblage where there is little attempt to distinguish between such goods. Using

materials drawn from Australian Aboriginal practices and the writing of Helen Verran and David Turnbull, I show that few Euro-American assumptions about representation and reality hold in Aboriginal cosmology. There is no universal reality. Realities are not secure but instead they have to be practised. And the world is not passive, waiting to be seen by people. Aboriginal cosmology both puts together goods that are usually held apart in Euro-American metaphysics, and it is explicit that all is enactment. To say this is not to say that science and social science practice should follow the Aboriginal model – but it shows once more that the metaphysics of method are, in principle, endlessly variable.

The argument of the book raises a series of more or less radical questions about method, and I review these in Chapter 8. I press for a more generous, and inclusive approach to method, and as a part of this briefly touch on a series of destabilising questions about the character and role of academic inquiry, and about knowledge more generally. This is because the division of labour which founds the academy, between the good of truth and such other goods as politics, aesthetics, justice, romance, the spiritual, inspirational and the personal, is in the process of becoming unravelled. This implies that we need to look not only at our practices but also at our institutions if we are to create methods that are quieter and more generous. Perhaps the model that we need, or one of the models, is that of ‘partial connection’ (Strathern 1991). At any rate, if the argument works at all then we need to find ways of living in uncertainty. The guarantees, the gold standards, proposed for and by methods, will no longer suffice. We need to find ways of elaborating quiet methods, slow methods, or modest methods. In particular, we need to discover ways of making methods without accompanying imperialisms.

INTERLUDE: **Notes on empiricism and autonomy**

Euro-American common sense tends to the reflex that it is important to stipulate the conditions under which science can be properly carried out. This is because scientific inquiry needs to be protected from the distortions that might come from outside. The idea that science needs to be protected in this way is often (though not always) linked to 'empiricism' and to 'positivism'. *Empiricism* is a family of traditions in the philosophy of science which argue that scientific truths grow out of, and are properly generalised from, appropriate empirical observations. *Positivism* is another, closely related, set of traditions which argue that scientific truths are rigorous sets of logical relations or laws that describe the relations between (rigorous) empirical descriptions.

In the social sciences, empiricism and especially positivism are now usually seen negatively. Raymond Williams comments that positivism is a 'swear word by which nobody is swearing' (1988, 239). No doubt this is right. However their basic intuitions are widespread in Euro-American common-sense thinking about science and social science. It is commonly assumed that observations should be unbiased and representative, and that theories should be logical and consistent both with one another, and with observation.

The sociology of science, which was invented by Robert K. Merton (1973a; 1973b) started out on this assumption. There were good reasons for Merton's intuitions. He was writing at the time of Nazi racial science, and Stalinist Lysenkoism (which argued that plants could transmit and inherit acquired characteristics). He argued that these lethal lapses from proper scientific standards were a consequence of the failure to insulate science from political agendas in totalitarian societies. Scientists' capacities for unbiased observation and logical thinking were being eroded by these agendas. Instead science should, he said, be protected by a 'scientific ethos'. First, it should be *universalist*, testing its ideas in terms of: '*preestablished impersonal criteria: consonant with observation and with previously confirmed knowledge*' (Merton 1973a, 270). This meant that the race, gender, politics, or national origins of the scientist were not relevant to truth. Second, it should be *disinterested*. Scientific claims should be assessed independently of local social, economic, political, and personal interests. Third, it should be *sceptical*. Scientists should not take things on trust. (Merton talked of *organised scepticism*.) And finally, it should be *communal*. By this Merton meant that scientists should always publish their results: that science would best advance if it published its findings.

Merton's vision of science throws up some problems. (It is, for instance, difficult to see how scientists are consistently sceptical: in practice if they are to be effective they have to take a lot on trust.) And there are problems, too, with empiricism and positivism (we will encounter some of these below). But this is a convenient place to start because Merton is very clear that anything that interferes with 'empirically confirmed and logically consistent statements of regularities' (1973a, 270) is illegitimate because it detracts from the proper empirical and

logical basis of truth. Merton's theory, then, is that research needs to be *disentangled* from the social and the psychological, and entangled solely with logic, with facts, and with methods for determining the facts.¹⁴

This is a language to which we will return. Different visions of science propose that it should be (or it is) entangled and disentangled with the world in different ways. Empiricism offers one recipe for this. It tells us that science (and social science too) have to be autonomous if they are to work properly. They should be disentangled from the social.

7 Imagination and narrative

The new form of critique I attempt in this book is distinguished by the framing implicit in my new story of numbers, generalizing, and certainty. This implicit set of working images/stories tells realness as emergent: what's real emerges in gradually clotting and eventually routinised collective acting, and not only human acting. I call these framing images and stories 'an imaginary,' although I hesitated in settling on this term, for it can easily be misunderstood.

(Verran 2001, 36–37)

Exploring practice

Method assemblage is the process of enacting or *crafting* bundles of rami-fying relations that *condense* presence and (therefore also) generate absence by shaping, mediating and separating these. Often it is about manifesting realities out-there and depictions of those realities in-here. It is also about enacting Othernesses. If we think this way then reality, realities, take on a different significance. No longer independent, prior, definite and singular as they are usually imagined in Euro-American practice, they become, instead, interactive, remade, indefinite and multiple. But if this is right then it suggests we need ways of exploring the enactment of and the interactions between different realities. There is a need for tools that allow us to enact and depict the shape shifting implied in the interactions and interferences between different realities. There is need for assemblages that mediate and produce entities that cannot be refracted into words. There is need for procedures which re-entangle the social and the technical. There is need for the coherences (or the non-coherences) of allegory. There is a need for gathering.

The implications are profound. The cases we have looked at earlier suggest that methods in natural science and social science barely catch their own performativity and tend to disentangle themselves in theory if not in practice from multiplicity, shape shifting and the indefinite. We have seen that the predominant Euro-American mode is perspectivalist. This means that it is reductionist. It ends by authorising a single account of out-thereness. Then, in the reversal described by Latour and Woolgar (which finds its origins in the

seventeenth-century circumstances portrayed by Shapin and Schaffer), and the layering described by Mol, it explains that it is the unique out-thereness that authorises the chosen narrative and necessarily disqualifies any of the possible alternatives. All these authors, but perhaps especially Mol, propose that we should undo the reductionist reversal. That nature should no longer be seen as the unique author of a single account, but something that is produced along with social and cultural arrangements. But what might such an approach look like?

Such is the topic of the present chapter, and in order to open it up I compare and contrast two very different modes of method assemblage, one drawing on and reproducing Euro-American assumptions of in-hereness and out-thereness, and the other enacting a very different version of presence and absence: that common in Australian indigenous cosmologies. I make the contrast in order to do certain kinds of work, recognising that the division flattens differences within each of the categories.

Guidebook

In the centre of Australia there is that spectacular landmark known alternatively as Uluru, and Ayers Rock. It is no coincidence that it has two names because it is at least two (and no doubt many more) realities. One of these (actually more than one) is or are Aboriginal, and the other is Euro-American. Near the beginning of the first chapter of the Australian National Park field guide to Uluru, a chapter which is called 'A Land of Extremes', we find the following:

Why do these landscape forms exist? The geological history of this country – spanning at least 1000 million years – can help to answer this question. Indeed, thanks to the sparsity of plants and soil over much of the ground, the underlying rocks can kindle a genuine interest in geology. The rock types, colours, varying strata and the changing land forms are all very visible. Because of this the geological explanation for the landscape can be readily appreciated in the [Australian] Centre. . . . The greatest difficulty lies in comprehending how long 1000 million years really is and in visualising how the enormous changes that occurred could happen. Our lives represent such a speck in time!

(Kerle 1995, 3)

Immediately after this paragraph we find the following:

Aboriginal people have a different answer as to how these land forms came to be. For them the answers are in the Tjukurpa (djook-oor-pa) – the religious philosophy which underpins their existence. Like all religious philosophies the Tjukurpa provides explanations for the most fundamental of questions. It defines what is true, what is real and what is right. All the

land forms, all the features and all life were created during the Tjukurpa when ancestral beings travelled widely and left their marks on the surface of the earth. Nothing existed before this. This rich Aboriginal culture is evident in the Centre, both in the landscape and through the more recent celebration of Aboriginal spiritual history in stories and rock paintings.

(Kerle 1995, 3)

The second chapter of the guide, 'A Spectacular Landscape', similarly juxtaposes a Western geological account of the formation of Ayers Rock with a selection of Aboriginal stories. For instance, we learn that the monolith is composed of arkose, which is a sedimentary rock with 'small particles of pebbles of sand, quartz and feldspar with traces of iron oxides, clay, and fragments of other rocks' (Kerle 1995, 24). This rock is grey until it is oxidised by the atmosphere, when it takes on the orange-red hue so characteristic of Uluru. The ribbing which runs more or less vertically down the side of the rock and is particularly prominent on its south side is an effect of the original process of laying down the sediments. This means that the whole rock – it is over three kilometres from end to end – has been dramatically tilted by nearly 90° in the billion or so years since it was laid down. The up-ended strata from which it is composed were laid down over a long period, probably about 50 million years, and the eastern end of the rock is older. The geologists know this because they can see in these rocks what they call 'current bedding': sediments laid down in rapidly flowing currents that have a characteristic shape, because the fast-flowing water has subsequently shaved the top off the sediments previously deposited.

The guide offers a further account about how the various shallow caves round the rock at ground level were formed, and observes that:

The precise mechanism for the formation of these caves is a matter of debate between geologists. One idea is that, in places where the chemical weathering has broken through the toughened skin, the rate of weathering of the underlying arkose (which has not been toughened) is faster. Small pits become hollows and eventually caves.

(Kerle 1995, 26)

Another theory, the guide goes on to note, is that they were eroded by water held in the sand when this was at a somewhat higher level than it is at present.

This detailed account of Uluru is complemented by a geological description of a number of other topographically prominent features in the surrounding area, including the low mountains called the Olgas (which Aboriginal people call Kata Tjuta). Finally, the whole is framed by a geological-historical account of the formation of the area (which is also illustrated by a table of events), tracing more than a billion years of orogenic, erosive, tectonic, fluvial and climatic events as factors that have influenced the landscape to produce its present form.

The geological account is approximately twenty pages long. The Aboriginal account which precedes this is somewhat shorter. It starts so:

There is no single story describing how Uluru, Kata Tjuta or any other landscape feature came into being. Anangu do not look upon Uluru as a single spiritual object. Its formation and the creation of its specific characteristics are the outcome of several stories which are not necessarily connected. Prominent features such as Uluru and Atila (Mount Corner) are regarded as an integral part of the landscape which was criss-crossed by the characters of the Tjukurpa stories.

(Kerle 1995, 14)

Indeed there are many such stories. These include those of Wiyai Kutjara (the Two Boys), of Mala (the Hare Wallaby), Kuniya (the Python Woman), Mita and Lunkata (the Blue-Tongued Lizards), Tjati (the Red Lizard) and Kurpany (the Devil Dingo).¹¹² Here is a sample of one as it is reprinted in the guide. Tommy Manta, one of the custodians and traditional owners of the site, told the story of Wiyai Kutjara, the Two Boys, this way in 1994:

The Two Boys came up from South Australia, and travelled towards Uluru across the south-west corner of the Northern Territory. They stopped for a while at Itarinya, a site on the Uluru side of Pirurpakalarintja, the cone-shaped peak to the west of the park. They were hunting and travelling together, and as they continued on towards Uluru, they heard the sound of the Mala at ceremonies around the rockhole that is now part of Kantju Gorge. The Mala had initially erected the Ngaltawata, their ceremonial pole at this site, but the ground was too boggy and the pole lurched sideways. They pulled it out, and replanted it in the more secure location where it still stands, turned to stone. The Two Boys travelled towards the ceremony to see what was happening. They were uninitiated boys, and had no knowledge of men's ceremonies. They were very curious.

The Mala, meanwhile, were separating into their men's and women's camps to get ready for inma [rituals and song cycles] the next morning. They didn't know it, but already Kurpany was heading towards them from the west intending to destroy them. The men were resting at Mala Wati and preparing their decorations for the Inma, and the women were asleep at Tjuaktjapi.

The two boys began playing in Kantju waterhole, mixing the water with the surrounding earth. They piled the mud up, getting bigger and bigger, until it was the size that Uluru is now. Then they started playing on it. They sat on the top, and slid down the south side of the mud pile on their bellies, dragging their fingers through the mud in long channels. The channels have hardened into stone, and now form the many gullies on the southern side of Uluru.

(Kerle 1995, 18)

But this is (a version of) just one of the stories. For instance, the guide also tells a version of the Kuniya Tjukurpa, the Python Woman narrative. Kuniya, who travels widely across the centre of Australia, comes to Uluru from the east. After a long and exhausting journey she leaves her eggs safely at the eastern end of Uluru (the ring of eggs is visible in and makes the low rocks on the ground at that point), and she moves along the north side of Uluru, leaving serpent-like traces on the rock which are clearly visible. She hunts, but then becomes embroiled in a battle with Liru who has killed her nephew. She is furious, performs a ritual dance, drops sand in a somewhat vain attempt to control and limit the effects of her anger, and then engages in battle, killing Liru but (because she is so angry) also poisoning much of the ground round about. All of which is written into and visible on the southern slopes of Uluru: Kuniya's movements across the rock face, the sand, and the dead vegetation, all of these can be seen in the landscape. As the guide observes:

Evidence of Kuniya's actions as she rushes towards her insulter and destroys him, is clear in the features along the Mutitjula walk. You will not just be looking at rocks and walls; you will be walking in the midst of creation and the record of events which continue today to be celebrated in story, song and ritual dance.

(Kerle 1995, 21)

Two enactments

Here, as is obvious, we have two styles of story-telling – or two very different method assemblages. The guide's sensitivity to the politics of Aboriginal–White relations reflects the special significance of Uluru both to White Australians (as a spectacular natural feature of the country's 'red centre') and to its traditional Aboriginal owners for whom, as noted above, it is a series of sites and continuing events of spiritual and spatial significance. The guide's politics of equal cosmologies also reflects the ownership status of Uluru, granted amidst much controversy back to its traditional Aboriginal owners as freehold in 1985, but (and as a part of the agreement) immediately leased back for 99 years to the Australian National Conservation Agency (together with Kata Tjuta), and open without permit to non-Aboriginal visitors under certain restrictions.¹¹³ I will briefly consider the interaction between White and Aboriginal realities below. First, however, I want to attend to certain important differences between the two world-views – and the two sets of methods assemblages to which these correspond. And, though the guide resides primarily within a Euro-American tradition of representation, its politics of equal time juxtapose the two, and thus throw some of those differences neatly into relief.

If we start with the geological account, then we need to note that this is a popularisation. We are not here in the equivalent of the Salk Laboratory. But to call it a popularisation is to give the game away, for it draws on expert

geological literatures and digests these for a wider audience. This means that its version of manifest out-there-ness takes the same general form as that of the geologists. Some, indeed many, of the details that would be known to geologists are missing, but the overall narrative has the same shape. Realities are thus disentangled from and *independent* of both the Othered knower and the practices of knowing. For instance, current bedding has its own particular attributes. Further, it reveals the sequence in which originally horizontal strata were laid down. Again, over geological time it is no particular problem to summon up the orogenic forces that can tilt strata by 90°. They are known to exist in geological reality. And the as yet unresolved debates about the origins of the ground-level caves in Uluru do not erode the independence of geological out-there-ness, because they are treated as a problem that will, in due course, be resolved by further investigations of reality rather than by negotiations between geologists.

Geological out-there-ness also *precedes* its study – indeed in some of its features by up to a billion years. Nothing the geologists do is going to alter that reality, and the history that produced it. Whatever they learn will be a discovery. Unsurprisingly, at the same time we also discover that geological out-there-ness is both quite *definite* and *singular*. A specific set of more or less complicated forces working over a billion years has produced equally specific forms of geological reality as manifested in Uluru and its surrounding landscapes. This, then, is just another instance of Latour and Woolgar’s reversal, and Mol’s layering. Any idea that method assemblage in geology has had anything to do with generating on the one hand a geological reality, and on the other a representation of that reality, is effaced. In the way the guide tells the geological story, it is reality which explains why one would believe this or say that about the origins and form of Uluru. A single, definite, prior and independent reality explains the statements. These have nothing to do with the social or the cultural.

Though, of course, given its implementation of a politics of equal cosmologies, this is not quite fair on the guide. (Few geological textbooks, or indeed guidebooks offer space for alternative cosmologies, except, perhaps fleetingly, as Whiggish indications of the past errors of scientists or the beliefs of natives.) It may be – but this is only a possibility – that the juxtaposition is a gathering that generates an effect of ambivalence or uncertainty. Perhaps, then, it is allegorical in effect. At any rate, before the geology in the guide there is an account of the Tjukurpa. Postponing certain difficulties (arguably it is not possible to offer an account or a narrative of the Tjukurpa within a Euro-American format such as a guidebook), what does this tell us about Aboriginal method assemblage? And in particular, what does it tell us about out-there-ness in Aboriginal practice? The answer is that each of the features of out-there-ness enacted in Euro-American cosmology is in greater or lesser degree undone in its Aboriginal alternative. It is also, however, that the very distinction between in-here-ness and out-there-ness is being undone at the same time. Let me work through the list in reverse order by starting with *singularity*.

So does Aboriginal method generate singularity? The answer is probably not: at the very best, this is uncertain. Perhaps this may be achieved in strategic, negotiated and explicit enactments of particular Tjukurpas. Perhaps it is sometimes achieved by negotiations in which the different Tjukurpas are mapped on to one another or, better metaphor, woven together to form something like a whole. Such is the basis of the semi-fictional work by Bruce Chatwin, *The Songlines*,¹¹⁴ and the Uluru guide writes as follows:

The story of Kuniya the python woman travels west to Uluru from near Erlunda. . . . If you drive to Uluru from there, the journey will take about three hours. The expectation and excitement of arriving at Uluru often means that visitors absorb very little of the country in between. This is unfortunate as that country is also part of the Tjukurpa. The Kuniya Tjukurpa – her journey, resting places and troubles – is known and sung by Anangu communities through parts of the Northern Territory, South Australia, and Western Australia.

(Kerle 1995, 19)

Kuniya's journey, then, covers (and at the same time creates) much ground – hundreds if not thousands of miles. As a part of this, its narratives also belong to different tribal groups in different places, and the different stories of these groups interweave with one another to produce a kind of continuity. This, then, is a set of overlaps which one might possibly think of as a singularity.

At the same time those narratives also produce differences. The guide points to this in a phrase cited above:

[Uluru's] formation and the creation of its specific characteristics are the outcome of several stories which are not necessarily connected.

(Kerle 1995, 14)

So there are multiple narratives covering the same territories. And then there are differences, even within the Tjukurpa which attend to Kuniya, because these stories are, indeed, different in different places and are intimately and indissolubly related to those places. For instance, Kuniya and her battle with Liru belongs to, is written into, and produces parts of the south side of Uluru. The Tjukurpa – a point which we will revisit below – joins narrative and land form together in a way that cannot be dissolved. And indeed, it joins them just as seamlessly with kinship affiliation (the Tjukurpa belongs to a particular kinship group), consequent social differences, the enactment of narrative in ceremony, visual depictions, and the celebration of the sacred. All are tied up together in a more or less 'local' bundle that does not distinguish 'nature' from 'culture'. And the details of that 'local' bundle (the term 'local' does not really apply, which is why I place it in inverted commas) are likely to be known only to those with appropriate social affiliations that are determined very often not only on kinship but also gender and age-related grounds.

But there is a further consideration. Just as the Tjukurpa varies from place to place, so it is not very fixed in form at any particular location either. It is not like, say, the state opening of Parliament where the form is carefully prescribed. Instead, it varies both between different versions, and between different moments in the same place. There are several reasons for this, but one is that it is a matter for endless discussion and negotiation between those who carry it and their neighbours (Verran 1998). It simply is not fixed. More generally, postcolonial STS scholar Helen Verran describes its relative malleability in the following way (Verran is talking primarily of the Yolngu of coastal East Arnhemland who live many hundreds of miles from the Pitjantjatjara and Yakunytjatjara of Uluru, but there is little doubt that her description is also applicable to the Tjukurpa of the Western and Central Deserts):

The knowledge of sites and their connections is contained in a large corpus of stories and the songs, dances and graphic designs which go along with the ceremonial elaboration of these stories. . . . These are performed in ceremonies where both the complex logic of *gurrutu* (the recursion of kin relations) and particular land sites are re-presented. The words of songs which celebrate this imaginary are not memorised. It is the general picture of the network of places and their interconnections that is memorised.

(Verran 1998, 248)

Narratives and their enactments are not fixed in Aboriginal practice. They are negotiated and renegotiated. The fact that they are negotiable and in need of negotiation is entirely explicit. So too is the fact that those negotiations are strategic in character. The implication is that if singularity is achieved (and the extent to which this is the case is contingent and uncertain) then this is a local and momentary gathering or accomplishment, rather than something that stays in place. Aboriginal Australians, Verran suggests (2002), are theoretically multiple and practically regular – just the other way round from Euro-Americans who are practically multiple and theoretically singular.¹¹⁵ So story forms recur, but there is no need for *singular* forms. Indeed, the extent to which there is anything other than a very space- and time-specific form of the *definite* is limited. Thus Verran indicates (personal communication) that if one asks a native owner about the ceremonies of a neighbouring group and place, then the inquiry is likely to be dismissed with a wave of the hand as being ‘none of my business’. It is important but no comment is possible from a position of ignorance.

Singularity and definiteness, then, are uncertain. Indeed there are multiple possible realities – and indefinitenesses – but this is not experienced as a problem. At the same time, this means that the other features of out-there-ness favoured in Euro-American methods assemblages are equally uncertain. So Aboriginal method, Tjukurpa, only doubtfully generates anteriority and independence. On *anteriority*, let me quote Verran again (*Wangarr* is the East Arnhemland equivalent of the term translated in English as ‘dreaming’):

According to these stories, there was an eternal, simultaneous making of the people in clan groups and of meaningful foci in the land, by eternal beings as they went about their living: hunting, defecating, urinating, having coitus, menstruating, crying, and having babies. This is understood to have occurred in what is known in English as ‘the dreamtime’, *Wangarr* in Yolngu languages. This is often taken, incorrectly, as the far distant past, but a contrast between time as secular and eternal is probably a better way to explain it. *Wangarr* is time of a different sort (something like eternal time) to that in which we live our everyday lives (secular time); it is not time only of the far distant past. It is a time which we can find here and now, and will be able to continue to find in the future.

(Verran 1998, 247)

‘An eternal, simultaneous making . . .’: this takes us into a version of time that is far from that of the geological origin story with its sedimentation, buckling and erosion. It has nothing to do with an historical-geological timeline, which operates through a linear time to produce the present. Instead, in Aboriginal cosmology the past is, as it were, continuously in the present:

Dreamings are Ancestral Beings. In that sense, they both come before, and continue to inhere in, the living generations. Their spirits are passed on to their descendants.

(Sutton 1989)

What was made is also being made now. Which adds a further point, and further helps to explain, the outrage of native owners when they were displaced as they were in the 1940s, 1950s and 1960s in a brutal policy of assimilation.¹¹⁶ Removed from the sites on the land, it was no longer possible for native owners to perform the ceremonies necessary to (continuously re)create the land-and-the-person-and-the-kinship-and-the-religion-and-the-ancestral-beings. Indeed, those parts of Australia (and there are many) from which Aboriginal populations were permanently removed, whether through genocide, forced assimilation, or forced resettlement, very quickly lose their life and their form. The necessary process of eternal and simultaneous making is lost – though there are also places where that which is lost is being regenerated.

So out-thereness precedes particular enactments of that out-thereness in-here. But at the same time, the contrast doesn’t really work because the world is being made and remade in each gathering, each ceremony, each representation (Verran’s term), each condensate. If it is definite, this is for only a moment. If it is singular, likewise. Again, if anything is anterior it is also simultaneous. And independence is similarly uncertain. In short, what is present is not strongly divided from the out-thereness it condenses. This means that Euro-American origin stories, such as that offered by the geologists, which depend on a kind of inertia in out-thereness, make little sense in Aboriginal mediations. Things are not set in place once and for all, or slowly remoulded

by the operation of forces that exist out there by themselves. It is not possible to imagine that they get made, and then hold their shape as time passes. It is not possible to discover and represent them, so to speak, as some kind of operation which is separate from their existence. If they hold their shape at all it is because they are participating together in their continuing re-creation. Which means, by the same token, that out-there-ness is scarcely *independent*. Land, species, naturally occurring phenomena, kinship relations, and the spiritual, all are being made together. And remade. And remade again.

So, just as there is no historical time, so there are no simple distinctions that would allow us to distinguish between an out-there that is spatially distinct from the enactments in-here. The contrast with the Euro-American accounts of historical geology are once again instructive. It seems plausible to suggest that the events which make up the latter are enacted as taking place in a four-dimensional space. Time is one of those dimensions, but the other three are Euclidean. Distances, heights and volumes, as well as the dates of various geological and topographical processes, are described. Indeed, the Uluru guide is illustrated with various isotropic and cartographic representations which show, for instance, the locations of ancient mountain ranges and alluvial fans. But, as Verran shows, Aboriginal enactment is not constituted in the same spatial idiom. It has nothing to do with area, if this is understood in a geographical manner.

This is why I placed the term 'local' in quotation marks above. The term local, it is clear, depends upon (and indeed helps to enact) a version of space as something that contains (small) localities that exist within it. This makes excellent sense in the context of the geographical and other out-there-nesses of Euro-American method assemblages. What is 'local' can, then, be contrasted with phenomena that are 'global', and localities can be distinguished from one another by using Euclidean or other functionally equivalent co-ordinates. But Aboriginal methods do not work in this way. There is no global, no empty space, against which to measure and within which to locate the local. Instead Aboriginal method assemblages enact a spatiality that is indissolubly linked with the Tjukurpa, the telling, the re-enacting, and the re-crafting of the stories of the ancestral beings – events which exist, as we have seen, in an eternal simultaneous past and present. These are practices to which the notion of an empty space is foreign. To imagine an out-there-ness independent of its enactments is almost literally meaningless within Aboriginal cosmology. And this is why the politics of equal time of the guide does not quite catch it: describing an Aboriginal reality out-there is already to insert it within a Euro-American metaphysical project. As, indeed, is my own account above.

Agency and dualism

Euro-American method assemblage enacts – or seeks to enact, or understands itself, as being constituted in – a reality that is independent, prior, singular and definite. Following Latour and Woolgar, but also Mol, I have argued that

this is a misunderstanding. The work that makes this possible – and which also suggests that particular realities are brought into being – is systematically Othered. The uncertainty or the contingency of the realities made manifest in representations disappear. Their character, as enacted, vanishes. But in Aboriginal method assemblage those contingencies do not disappear. Here, as we have seen, everything takes effort, continuing effort. There is endless and necessary preoccupation with process. Nothing becomes autonomous. Everything has to be re-done and re-enacted. There is never closure. Aboriginal method is not, then, a process of mediation which (in its self-imagination) generates a reality that is taken to be independent, prior, and separate from the social. Unlike its Euro-American cousin it is a process of mediation that knows and recognises that this is its very nature. That knows and recognises to itself that process is inescapable. That knows that nothing is fixed. That nothing like closure is available.

There is another and complementary way of talking about this difference. This is to think of it in terms of the distributions of agency. Method assemblage in Euro-America tend to presuppose and produce a series of interrelated dualisms between the out-there and the in-here which afford the independence and anteriority – but also (to say it quickly) the *passivity* – of what is out there. These dualisms – widely discussed in the history of science – come in a number of forms. For instance, it is common to erect a division between the *human* and the *non-human*. These two classes of entities are taken to be different in kind (and there is much fuss, perhaps especially in the social sciences, if the distinction is ignored). It is similarly common to divide between knowing *subjects* on the one hand, and *objects* of knowledge on the other. Again, it is assumed that these are different in kind, and relate together in quite specific ways. In particular, it is assumed that the wise subject can ‘know’ the object and predict its behaviour, so long as it goes about it in the right way by disentangling itself and its methods from various illegitimate and distorting influences. This was an argument that I rehearsed in the first interlude and in Chapter 3. Again, and similarly, Euro-American method assemblage habitually distinguishes between the *social* on the one hand and the *natural* on the other. How it makes the distinction is variable, but as a rule nature is taken to be given, to be governed by general and invariant laws which determine (sometimes probabilistically) the behaviour of its components. By contrast, the social, though it may also be subject to laws of determination, in addition offers the prospect of creativity and human freedom.

These three dualisms (and others that are generally similar in form) interact and tend to reinforce one another. They do so in part because each indexes a further dichotomy. This is the divide between those classes of entities that are taken to be *active* on the one hand, and those that are known to be *passive* on the other. The human, the subject, and the social, these are or should be (mostly) active. Potentially creative, potentially discretionary, potentially autonomous – these have the capacity for action (in the standard social science sense of the term). By contrast, the non-human, the object, and nature, these

are or should be (mostly) passive, acted upon, predictable. In theory how they act can be (more or less, and sometimes statistically) predicted and indeed (or so it is hoped) controlled. It is determined. Discretion and autonomy – these are not attributes that belong to the non-human. There are limits (complexity theory is about the unpredictable character of non-linear behaviour). However, in general it is taken that the natural world and its objects exhibit behaviour (in the passive, acted-upon, social science sense of the term) rather than the capacity to act. Trouble, indeed, is liable to arise when objects take off on their own and they start to show initiative. Either that, or some category error is being perpetrated: the social is not being properly distinguished from the natural. But here is the bottom line: *such patterns of dualist separation are almost entirely absent from Aboriginal method assemblages*. There is no drive to the kind of dualist division discussed by Shapin and Schaffer, and no pressure to what Latour thinks of as the purification of modernity.¹¹⁷ All sorts of characters can be active, are active, are made to be active, in Aboriginal method assemblages. And this, though it is sometimes a source of trouble, is also (or so Verran suggests, and I want to follow her here) a vital source of strength.

To elaborate: Aboriginal method assemblage gathers and generates a rich plethora of actors of all kinds. Shape shifters, the Tjukurpa narratives are filled with them. The ancestral beings are part human, part animal, part natural, part social, part spiritual and part geographical. Expressed so, perhaps it is tempting to think of them as hybrids, but this isn't right either. It isn't right because these method assemblages simply don't discriminate in terms of Euro-American ontological categories in the first instance – so neither do they make hybrids between them. 'Part human, part natural', this is a description located in a Euro-American ontology with its insistence on (apparent) purity. Then again, in Aboriginal enactments, agency and intention may be (and habitually are) located in naturally occurring objects such as rocks, trees, winds, cloud formations, fire, water currents, pools, and storms. We have to go back to Shakespeare, into science fiction or, as Verran notes, into aesthetics to find analogues in Euro-American metaphysics. Such possibilities are not available in the depictions that we have of technoscience. But this is not simply the case for natural phenomena. As we have noted, animals may be agents too. Kuniya the Python Woman, Mala the Hare Wallaby, Mita the Blue-Tongued Lizard. The list is endless. But again it is necessary to go some way back – or divert into literature and perhaps especially children's literature – to find locations where agency is allocated to animals in Euro-American discourse. It is several hundred years, for instance, since animals were held legally responsible for their actions in European courts.¹¹⁸

And the point extends beyond natural phenomena and animals. In the Aboriginal world, agency is also located in ceremonies, in songs, in words, in body ornaments, and in dances. It is located in objects of technology such as motor vehicles or spears. And it is located in objects of art, such as those produced in the contemporary Western Desert tradition of painting:

A painted design or sculpted form may . . . be considered not merely a human being's depiction of an ancestral Crocodile (or Kangaroo or Woman), but an instance of that Dreaming's manifestation in the world. This is why pictures and carved figures can make people sick, give them strength, or cause accidents to happen – or so many Aboriginal people believe.

(Sutton 1989, 49)

Aboriginal paintings, then, or some of them, are further enactments. They are agents. If we wanted to put this in philosophically Romantic language we might observe that Aboriginal method assemblages generate worlds that are enchantments: Aborigines (and their non-human allies, material and non-material) keep up the chanting. Everywhere there is agency. Indeed, it is like Prospero's Isle, but ten times over. And since agency is everywhere, nothing is constructed and left to be. The universe is filled with activity. Weber's gloomy complaints about disenchantment do not apply.

Ontological disjunction

Sometimes the worlds made in Aboriginal method assemblages detach themselves from – or are entirely apart – from those of Euro-America. Here is Geoffrey Bardon talking of the Aboriginal artist Tim Leurah Tjapaltjarri:

Tim often said to me that he did not really wish to know the white Australians, and the painting [Napperby Death Spirit Dreaming] is his perception of his own tribal lands and spiritual destiny in the Napperby cattle-station areas. He appropriates Napperby to himself as his own Dreaming, and by implication takes it away from its white owners.

(Bardon and Tjapaltjarri n.d., 46)

'He did not really wish to know the white Australians.' This kind of separation is visible to Euro-Americans in other places. For instance, there are four fenced-off areas around Uluru, sites of special significance, that are prohibited to ordinary visitors. Signs instruct those walking round the circumference of the rock not to climb over the fences. Again, the white visitor to Kata Tjuta who follows the elliptical curves of the road to that spectacular set of rock outcrops, domes and valleys, discovers that he is not allowed to stop his car in most locations along the way, and notes that he is authorised to walk on only very restricted paths once he arrives. The latter ruling is glossed in part as a matter of safety (the temperatures in the desert are indeed extreme in daytime except in midwinter), but something else is going on too. This is that the visitor is also being steered away, and avoidance is being practised:

Kata Tjuta is a particularly important area, managed only by initiated

men. For this reason there are no Tjukurpa stories that can be told to the casual visitor.

(Kerle 1995, 16)

Space is not, as it were, isotropic: the same everywhere, essentially neutral. It is (as we have noted above) being built differently. Analogous, but less successful, is the attempt (usually more or less vain) by the traditional owners of Uluru to persuade visitors not to climb to the summit of the rock:

Climbing Uluru . . . does provide a magnificent view and a sense of achievement, but it is against the wishes of the Aboriginal custodians because it ignores the spiritual importance of Uluru and can be dangerous.
(Kerle 1995, 165)

Notwithstanding this request and the strenuous character of the climb, something like 10 per cent of those visiting Uluru indeed choose to climb the rock. How many of the remaining 90 per cent take the request of the traditional owners into account is not clear – but there is much discontent amongst tourists when, as sometimes happens after the death of a significant person, Uluru is closed for a few days. But avoidance is not simply a matter of excluding people who are white. As the citation about Kata Tjuta above and the story of the Two Boys, the Wiyai Kutjara Tjukurpa, suggest, there are restrictions on who may know about what within and between Aboriginal groups. Indeed, such is an integral part of, and an enactment of, the meshwork of Tjukurpa, the patchwork of partially connected narrative, spatial, and sacred realities that make up Aboriginal Australia. Others may know in general about the stories, and may participate in some related practices, but they will not know the full extent of the enactments and their realities.

So there are secrets, but – crucial point – these secrets and restrictions are not simply epistemological. We are not dealing here with just another, if slightly more exotic, version of the fact that (for instance) you or I don't know how to design nuclear weapons, or the size of someone's bank balance. It is not simply that some knowledge is secret or confidential. It is not that we are being refused a particular and specific perspective on certain restricted parts of a world that is common to us all. Neither is it simply that we haven't (yet?) put in the effort to master (say) the art of mass spectrometry that will (once we do so) open up parts of common scientific out-there-ness that are currently closed off to us. Much more profoundly, it is that we are *not a part of these worlds at all*. Those who do not own the stories are not any part of the Tjukurpa. They do not belong to it. In a way that is very radical, and therefore somewhat difficult to appreciate from within Euro-American common sense, *we do not exist to those worlds*. Just as *they do not exist to us*.

What does this mean? One implication is that, from the point of view of the different Tjukurpas, those who are not narrated are non-people. If we exist at all, then we hardly exist. But it is important to try to get this right. It would,

for instance, be wrong to imagine it as another kind of racism dressed up in some exotic, Other-centred clothes. The analogy falls because it is not a matter of reclassifying people as non-people, for instance in the same way as did the Nazis when they described the Jews as vermin (Bauman 1989). Objectionable though it may be, the Nazi method assemblage was built on and enacted its own version of Euro-American cosmology. It assumed ontological singularity or universalism – and Jews as a definite category of (non-) people existed in this cosmology. Catastrophically, they did not count as people – and as we know, the Nazis were able to enact that reality on a genocidal scale.

But in Aboriginal enactments of the world something different is going on. It is ontological universalism that is absent, rather than the denial of universal human rights. The latter, as the phrase itself reveals, depends on, and enacts ontological universalism. The problems really arise when there is interaction or interference between different particular worlds which don't have the wherewithal to recognise that they are different. For Aborigines in particular, this has happened in their disastrous encounters with Whites who, in addition to racism have also enacted Euro-American method assemblages which are committed to and presuppose universalism and singularity. As we have seen, the traditional owners indeed note with distaste that many visitors choose to ascend Uluru, while Tim Leurah Tjapaltjarri sought to avoid White Australians and reappropriate his people's land. These encounters (and worse) suggest that Euro-Americans are not entirely invisible within Aboriginal realities – perhaps seeming like ghosts or empty shells (Verran, personal communication). But from the Aboriginal world, a question which is again difficult to imagine from within Euro-American method assemblages presents itself: is communication a good? The putative answer to this question is: no, it isn't, not necessarily. Does it necessarily matter if there are enacted worlds that don't know one another? The putative answer again is no. It *may* matter if the Tjukurpa and the relevant groups overlap with one another. But if they don't, then it doesn't. *Ontological disjunction* is a possibility that might be, and indeed often is, quite appropriate.

The problem, then, is not usually within and between the enactments of different Aboriginal realities (which is not to deny that people have disputes or indeed sometimes come to blows). But this is because, to repeat the more or less inapplicable terms torn from Euro-American enactments of reality, they don't claim universalism, and whatever is enacted is specific and 'local' both to time and to place. The problem, instead, arises when Aboriginal realities overlap, as they have done for at least two hundred years, with those of Euro-America with its enactments of a passive version of spatial and temporal singularity. Leaving aside the self-evident abuses of force, the possibility of ontological disjunction is simply unavailable to the latter.

Thus as we have seen, if the traditional owners disappear and can no longer help to remake their particular worlds, then those worlds disappear. If Aboriginal children are forcibly separated from their families and their locations and removed to the Australian cities in order to enjoy the civilising

benefits of white adoption (which is what happened to the 'stolen generation'), they too potentially become non-people:

By giving each individual a personal dreaming, the community constantly recreates the ancestral world. Past re-embodiments of a single ancestor fade into the collective image of that being; it is a tenet of the religion that on death a person becomes his dreaming. To die and be buried in one's own country ensures this will occur.

(Layton 1989, 15)

Genocide is irreversible, but fortunately Aboriginal practice is otherwise flexible. The problem of the disinherited child (or the visiting anthropologist who is also a non-person) can be resolved by the simple process of adoption – at which point the adoptee becomes real, is practised as real, and is able to participate in and carry the narratives and the realities of the relevant Tjukurpa.

Recognising enactment

Here is the contrast.

Euro-American method assemblage manifests a world in its depictions that is ontologically single, and therefore inhabited by a finally limited number of objects, forces and processes that may be more or less well known. Like the space–time boxes of the geologists. That which is not clear is at least in principle susceptible to clarification. Inquiry thus involves delineating those entities, or correcting misapprehensions about them. The assumption is that final agreement can and should be reached at least in principle (though subsequent corrections may become necessary if error is discovered). As a part of this, the possibility of a practice for knowing which recognises that entities are being endlessly enacted and (as a part of this) are being differently enacted in different locations and in different contexts, is repressed. So this is the tension. *In the midst of representational singularity there is multiplicity*. But this is not seen. The multiple or the fractional, the elusive, the vague, the partial and the fluid are being displaced into Otherness. Necessary, indeed enacted, but Other. Instead what comes into view is a reality out-there that is independent, prior, single and determinate. To the extent that it is important, it is the job of the investigator to try to determine the character of that reality. Once this happens arbitration is possible: different perspectives can be compared, and the correct solution determined. As we have seen, this is *a solution that denies the possibility of an explicit ontological politics*. It enacts such a politics, yes, but it does not see that it is doing so – a benefit, if that is what it is, only possible, as Verran observes, from a location of privilege.

All of this is in contrast with Aboriginal method assemblage. As we have seen, this is capable of enacting an ontological multiplicity that comes close to ontological disjunction. It achieves this because there is no universal or general, and instead everything is relatively specific, relatively 'local', enacted

at particular places on particular occasions. Because there is no overall privilege. This means that that which is not clear is not necessarily waiting to be made clear. Perhaps it is diffuse, of marginal concern, and therefore hardly exists and can be left indefinite. Perhaps, however, it is important, in which case it becomes a topic for discussion and negotiation. Verran:

Aboriginal Australian peoples generally understand themselves as having a vast repertoire by which the world can be re-imagined, and in being re-imagined be re-made. In English this usually goes under the title of 'the dreaming'. I think a more helpful name for this conceptual resource is 'the ontic/epistemic imaginary' of Aboriginal knowledge systems. It is this imaginary, celebrated, venerated and providing possibilities for rich intellectual exchange amongst all participants in Aboriginal community life, which in part enables the eternal struggle to reconcile the many local knowledges which constitute Aboriginal knowledge systems. Many Aboriginal communities know how to negotiate over ontic categories.

(Verran 1998, 242)

Verran thinks of 'the dreaming' (Tjukurpa in the Western Desert and the *Wangarr* for the Yolngu) as an 'ontic/epistemic imaginary' because it is a rich cultural resource for, and an outcome of, (re)telling and (re)making realities.¹¹⁹ Indeed, it is just the kind of resource a group would need if it were serious about its ontological politics (Verran prefers to talk of 'ontic' and 'epistemic' politics rather than of ontology and epistemology because the latter terms tend to imply stable, fixed, and 'philosophical' systems). But (though using my terminology), she is also saying that a group will be serious about its ontological politics and serious about its imaginaries if it is also serious about *negotiating* with other realities, cultures and groups about what there is. If it wants to remake its imaginaries. If it is willing to remake its imaginaries and let them settle into novel forms. Let them, as she puts it, clot in new ways. The implication is that politics gets mixed up visibly with reality-making, and also with the use of metaphors from the 'imaginary'. Verran again:

discussions are likely to be tied up with the ongoing struggle for cognitive authority, waged through pitting metaphor against metaphor. There is often heated, and overt struggle, over whose metaphor is going to prevail. Given time one metaphor will carry the day, and it will have been greatly enriched by the controversy surrounding its being settled upon.

(Verran 1998, 242)

Realities, then, get settled through an explicit negotiation about metaphors for telling and metaphors for being – though they are only settled for the time being. Other metaphors – and so other partially related putative realities – are

waiting in the wings, and next time they will appear again in the process of negotiation.

All of which suggests another resource for starting to undo the refusal to think about practical enactment in Euro-American method. This is that *we keep the metaphors of reality-making open*, rather than allowing a small subset of them to naturalise themselves and die in a closed, singular, and passive version of out-there-ness. That we refuse the distinction between the literal and the metaphorical (as various philosophers of science have noted, the literal is always 'dead' metaphor, a metaphor that is no longer seen as such). That we refuse the dualism between the real and the unreal, between realities and fictions, thinking, instead, in terms of *degrees* of enacted reality, or more reals and less reals. That we seek practices which might re-work imaginaries. That we work allegorically. That we imagine coherence without consistency.

And this is not just a matter of theory, but applies in Australia to the politics of land ownership. The story is a large one,¹²⁰ but in outline, a long-standing Australian law to the effect that Australia was uninhabited when the English arrived was overturned in the 1990s. Under certain circumstances, 'traditional ownership' was recognised – and with this the need for White pastoralists, conservationists and mineral companies, and Aboriginal owners to negotiate about land title. But how to reconcile the two approaches and their different notions of land?

For pastoralists and other Euro-Americans, land ownership rests on and is performed by legal documents which rest on the enactments of survey methods and cartographic method assemblages which in turn condense and enact a spatial reality consistent with Euro-American expectations. We know, by now, what this looks like: space exists, it is out there, intrinsically empty and isotropic, definite, prior and independent. But Aboriginal methods for knowing and making the land are quite different. However, with the Native Title Act, pastoralists and other white people *have* to sit down with the Aborigines and find some way of relating these two traditions and two realities together. And this has been – and is being – worked out in a variety of circumstances, for instance in conversation.¹²¹ Verran's overview of this process ends by suggesting that in these new circumstances pastoralists, and by implication other Euro-Americans, can no longer hold on to the limited reality proposed by the closures of cartography. They will need instead, she suggests, to embrace some, at least, of the skills in epistemic and ontic negotiation of their Aboriginal interlocutors. Big and painful changes, for sure, which will lead to a world of less certainty. But a world in which the politics of ontology is no longer practised by stealth.

INTERLUDE: Hinterland and reality

In this book I have used a range of metaphors for talking about the 'out-there'. These have included: hinterland; manifest absence; absence as Othered, fluxes, relations, and resonances. I have avoided using one of the most common terms in the social science literature: that of structure. I hope the reason for this is clear. The idea of 'structure' usually implies not simply a generic or primitive version of out-there-ness, but additional commitments to independence, anteriority, singularity and definiteness. To talk of 'structure', then, is probably to imply that the real is out-there, in definite form, waiting to be discovered – even if there are major technical difficulties standing in the way of its discovery in practice.

Assumptions of this kind underpin contemporary versions of realism.¹²² The latter argue that scientific experiments make no sense if there is no reality independent of the actions of scientists: an independent reality is one of the conditions of possibility for experimentation. The job of the investigator is to experiment in order to make and test hypotheses about the mechanisms that underlie or make up reality. Since science is conducted within specific social and cultural circumstances, the models and metaphors used to generate fallible claims are, of course, socially contexted, and always revisable.¹²³ Nevertheless the assumption is that out-there-ness is independent and definite. Different 'paradigms' relate to (possibly different parts of) the same world.

The metaphysics that I have been exploring are also realist, but only in the primitive or originary sense. They assume general flux of out-there-ness but nothing more. The position is close to that of Ian Hacking:

There is only one way in which my thesis is contrary to a bundle of metaphysical doctrines loosely labelled 'realist'. Realists commonly suppose that the ultimate aim or ideal of science is 'the one true theory about the universe.' I have never believed that even makes sense.

(Hacking 1992, 31)

For Hacking:

Our preserved theories and the world fit together so snugly less because we have found out how the world is than because we have tailored each to the other.

(Hacking 1992, 3)

Hacking has a constructivist view of scientific experiment. In the particular world in which we happen to live, scientific inquiry has, as a matter of fact, arrived at a set of particular conclusions, and created an empirical reality to match. To arrive at the version of method assemblage argued in this book we need to move from a focus on construction to attend to enactment. This, as we have seen, allows or requires us to add in multiplicity. The possibility – indeed the likelihood

– that tensions appear between different enactments (and knowledges) of reality is made manifest. And with this possibility that realities may be crafted and acknowledged as indefinite gatherings, coherent or non-coherent, ambivalent, allegorical, and within or beyond language. If we wanted to play games with words we might think of calling this position *enactment realism*.

Of course if all the social and sociological method assemblages were co-ordinated in a single place, if they were all brought together, then such an enactment might craft a more or less singular, and who knows, definite hinterland or ‘structure’ across a range of different locations. It would seem coherent. But this ignores everything that we have learned about multiplicity and multiple enactments. Even more importantly, it also ignores the distinction we have made between manifest absences on the one hand, and Othering on the other. For if realities are multiple or fractional, then the resonances and the patterns of the different absences made manifest overlap – but only fractionally. And if there is always absence as Othering, then we can say nothing in general about that Othering. Only in particular, and at particular moments.

In the end this is a matter of metaphysics. If we feel uncomfortable without clear, definite and singular accounts of clear, definite and singular structures, then that is how it is. However, if we are able and willing to tolerate the uncertainties and the specificities of enactment, flux and resonance, then we find that we are confronted with a quite different set of important puzzles about the nature of the real and how to intervene in it. Perhaps, for instance, the ‘great structures’ of inequality are to be understood not as great structures but as relatively non-coherent enactments which nevertheless resonate or interfere with one another to keep each other in place. Latour offers a parable about colonialism written in such terms. The whites who arrived in the colonies, he says, were a rabble. But:

They were stronger than the strongest because they arrived *together*. No, better than that. They arrived *separately*, each in his place and each with his *purity*, like another plague on Egypt.

The priests spoke *only* of the bible, and to this and this alone they attributed the success of their mission. The administrators, with their rules and regulations, attributed their success to their country’s civilizing mission. The geographers spoke *only* of science and its advance, The merchants attributed all the virtues of their art to gold, to trade, and to the London Stock Exchange. The soldiers simply obeyed orders and interpreted everything they did in terms of the fatherland. The engineers attributed the efficacy of their machines to progress.

(Latour 1988, 202)

Perhaps this particular gathering is helpful. Perhaps it is not. But as a style it deserves some thought. And, to be sure, we have visited the possibility already in Chapter 6 in our discussion of ambivalence and allegory. To put it differently, this is the idea that what engineers call ‘loosely coupled systems’ are more robust

than those that display a single and definite logic. Perhaps out-there-ness resonates to produce dramatic patterns without single and definite structures at all. Perhaps things hold together precisely because they don't. Citations: the bush-pump; the cervical screening programme; the Quaker meeting for worship.¹²⁴ In which case the great inequalities and distributions might be better understood not as structures but as non-structures. And we will need, for better or for worse, to find ways of exploring the partial overlaps of hinterlands, the manifest absences, if we want to get to grips with those inequalities.

8 Conclusion: ontological politics and after

Introduction

This book is an account of the state of method. The argument has been that method in social science (and natural science too) is enacted in a set of nineteenth- or even seventeenth-century Euro-American blinkers. This means that it misunderstands and misrepresents itself. Method is not, I have argued, a more or less successful set of procedures for reporting on a given reality. Rather it is performative. It helps to produce realities. It does not do so freely and at whim. There is a hinterland of realities, of manifest absences and Othernesses, resonances and patterns of one kind or another, already being enacted, and it cannot ignore these. At the same time, however, it is also creative. It re-works and re-bundles these and as it does so re-crafts realities and creates new versions of the world. It makes new signals and new resonances, new manifestations and new concealments, and it does so continuously. Enactments and the realities that they produce do not automatically stay in place. Instead they are made, and remade. This means that they can, at least in principle, be remade in other ways.

The consequence is that method is not, and could never be, innocent or purely technical. If it is a set of moralisms, then these are not warranted by a reality that is fixed and given, for method does not 'report' on something that is already there. Instead, in one way or another, it makes things more or less different. The issue becomes how to make things different, and what to make. Within the (always to be tested) limits of the resonating hinterlands of the currently performed patterns of realities there are different possibilities. Method, then, unavoidably produces not only truths and non-truths, realities and non-realities, presences and absences, but also arrangements with political implications. It crafts arrangements and gatherings of things – and accounts of the arrangements of those things – that could have been otherwise. But how to think this? How to move away from the idea that method is a technical (or moralising) set of procedures that need to be got right in a particular way? How to move from the legislations that we usually find in the textbooks on method? Away from the completed and closed accounts of method? Away from smooth Euro-American metaphysical certainties?

In this book I have tried to develop a set of vocabularies for thinking about method, its operations, and its performativity. Following authors in the history, philosophy and sociology of science, I have widened the notion of ‘method’ to include not only what is present in the form of texts and their production, but also their hinterlands and hidden supports. To catch this process of crafting and bundling I have proposed the notion of method assemblage. The argument is that method is not just what is learned in textbooks and the lecture hall, or practised in ethnography, survey research, geological field trips, or at laboratory benches. Even in these formal settings it also ramifies out into and resonates with materially and discursively heterogeneous relations which are, for the most part, invisible to the methodologist. And method, in any case, is also found outside such settings. So method is always much more than its formal accounts suggest.

There is a more formal way of putting this which is to say that method assemblage is a continuing process of *crafting and enacting necessary boundaries between presence, manifest absence and Otherness*. This form of words borrows from the post-structuralist insight that making anything present implies that other but related things are simultaneously being made absent, pushed from view, that *presence* is impossible without *absence*. Thus representations go along with something out-there to represent – and a lot more besides. The same is also the case for objects, which are crafted with a context out-there with which they interact more or less indirectly. This, then, means that method assemblage makes something present by making absence. Formally I treat it as the enactment of *presence, manifest absence, and absence as Otherness*.¹²⁵ More specifically, it is the crafting, bundling, or gathering of relations in three parts: (a) whatever is in-here or *present* (for instance a representation or an object); (b) whatever is absent but also *manifest* (it can be seen, is described, is manifestly relevant to presence); and (c) whatever is absent but is *Other* because, while necessary to presence, it is also hidden, repressed or uninteresting. The issue, then, becomes one of imagining – or describing – possible ways of crafting method, obvious and otherwise.

I have also argued that method assemblage can be understood as *resonance*. This is because it works by *detecting and creating periodicities in the world*. The picture of reality that lies behind this removes us from the most common version of Euro-American metaphysics – the sense that the real is relatively stable, determinate, and therefore knowable and predictable. The alternative metaphysics assumes out-there-ness to be overwhelming, excessive, energetic, a set of undecided potentialities, and an ultimately undecidable flux. Sometimes, however, and in method assemblage, out-there-ness crystallises into particular forms or (a different metaphor) collapses for a moment into decidability. If method assemblage can be seen as resonance then this is because it detects all the periodicities, patterns or waveforms in the flux, but attends to, amplifies, and retransmits only a few whilst silencing the others. The question is: what does standard method assemblage silence? Which possible realities does it refuse to enact in its dominant insistence on that which is smooth? And how might it be crafted differently?

Realities

The largest part of the book is a survey of the character of those possible realities. I have suggested that dominant Euro-American enactments produce and presuppose forms of manifest absence that are *independent* and *prior* to an observer; *definite* in shape and form; and also *singular* (there is only one reality). Along the way I have also noted that Euro-American method assemblage usually assumes *constancy* (there are general and invariant laws and processes, and nothing changes unless it is caused to change), *passivity* in the objects that it discovers (they stay the same until they are caused to change) and *universality* (what is absent is generally the same in all possible locations).

All this is self-evident in Euro-American metaphysics, but attending to the *practice* of its methods reveals, first, that these assumptions are systematically breached, and, second, that the fact that this is happening is repressed or displaced into Otherness. Dependence and simultaneity exist instead of (or alongside) independence and anteriority. Mol's studies of hospital realities suggest that objects that are singular in theory are multiple or fractional in practice.¹²⁶ Object constancy is similarly enacted – and breached. As, too, is universalism. (If there are multiple realities then there are no universals, only the appearance of universals.) In addition, the assumption of definiteness is also violated. Methods, construed in the standard way, are usually committed to clarity and often to precision. But since method assemblage ramifies out into the patterning resonances of a wide hinterland, this includes gatherings that are manifestly allegorical, ambiguous, indefinite, unclear or tacit. And finally, it appears that passivity is only achieved because the active process of producing realities is pressed into Othered absence and the dualist reversals discussed in the last chapter are enacted. That out-there is made into a domain that seems quite removed from what is in-here.

The suggestion is that the realities enacted in Euro-American method assemblages are complex, but also that most aspects of that complexity are denied. It may be that this Othering has its merits. I have noted, for instance, that Latour (1993) insists that (non-)modernity flourishes because it makes complex hybrids, and that this is easy to do, precisely because it *is* also denied. For Latour, then, though the smoothnesses of purity reveal self-misunderstanding, they are also a good. So perhaps there are advantages to what he calls the 'non-modern' constitution, but there are also difficulties that follow from this and related denials. To talk about these it is convenient to consider versions of representational presence, forms of depiction.

Gatherings

Some modes of method assemblage produce conventionally acceptable statements, representations, or depictions of the realities for which they stand. But terms such as 'statement' or 'representation' are specific. This is why I have talked, instead, of presences and gatherings. My aim is to be permissive, and

to say nothing either about the appropriate shape, or the materiality, of whatever is crafted into presence. All that is being said is that matters are relational: what is being made and gathered is in a mediated relation with whatever is absent, manifesting a part while Othering most of it. Much of the book has been a survey of the materialities and shapes of possible presences. My interest has been to extend the list beyond those that are normally taken to be appropriate in common understandings of method. Thus the list of depictions has included the following: *texts*, for instance medical textbooks, ethnographies, scientific papers, spreadsheets, and the traces generated by inscription devices;¹²⁷ *visual depictions*, for instance, photographs of angiographic X-rays, cross-sections of blood vessels, chromatographic separations, or Aboriginal artwork; *maps* of various kinds, including but not limited to those generated by Euro-American cartographic and survey methods;¹²⁸ *human apprehensions*, some of which are conventionally understood to be relevant to method, as with the visual skills of scientists, and some of which are less conventional. Examples have included the sense of disorder experienced by researchers on a visit to an alcohol treatment centre, the sense of horror of those who witnessed the scene of the Ladbroke Grove collision, or the apprehension of spiritual realities in Quaker worship; *bodies*, as in the Ladbroke Grove crash or, one might add, in the physical condition of those suffering from alcohol poisoning or the poor skin condition of those with severe lower-limb atherosclerosis; *machines*, for instance, in the form of inscription devices (which can, as we have seen, be understood as routinised statements), but also in the form of devices that do not (primarily) work to produce traces. Examples have included the bush-pump, and, very differently, the wreckage of the Ladbroke Grove railway accident; *ceremonies*, for instance those of the Kata Tjuta Aborigines (that have not been described here because we do not belong to them and do not know about them), or the Quaker meeting for worship; *demonstrations*, as in the theatre of proof mounted by Robert Boyle, and described by Shapin and Schaffer; *conversations*, like those described by Mol in the consulting room or in the operating theatre; and *allegories*, which I have argued are ubiquitous, but sometimes, on the other hand, also recognise their character as allegorical.

The list is not exhaustive. It is very important that it *not* be seen as exhaustive. Other possibilities, more or less conventional, that come readily to mind include: musical performances; surgery; sport; physical lovemaking; games; model-making; architectures; cities; films and documentaries; prayer; physical exercise; collages and pin-boards; dance; masque; driving; cooking; flânerie; sculpture; natural phenomena of all kinds; gardens; and landscapes. And no doubt a lot more besides. These, then, are all crafted forms of presence. They do not *have* to be understood as allegorical methods of depiction for they also work in other ways, or have other roles. But my point is that it is *possible* to treat them that way. And the character of the list is revealing. It shows us that research methods as conventionally construed in natural and social science are limited in two important respects. First, they are materially restricted. The idea, for instance, that a garden or a religious ceremony or a game or a meal

might be an allegory for, resonate with, and help to craft a particular reality, though just about recognisable from common sense (and a commonplace in an anthropology of symbolism), lies far beyond the limits proposed in standard method. Second, they are also limited because they tend to create and make manifest absences that are taken to be independent, prior, singular, definite and passive and all the rest.

We need to be cautious. There is no particular correlation between material forms of presence and the absences to which these relate. Both are made in mediation, and the argument is not reductionist. In any case, as we have seen, Euro-American method depends like any other on Othered entities and relations that it cannot make manifest. Othering is inescapable. Even so, the limited materialities of standard methods restrict the extent to which other realities can be enacted in at least two ways.

First, certain kinds of realities are condensed at best with difficulty into textual or pictorial forms. For instance, mystical spiritual experience cannot be captured in words. It is, precisely, excessive to the word and can only be gestured at textually. Quaker and Aboriginal lives suggest that spiritual experience also needs to be caught in bodily experiences, or apprehensions, or dance, or in art. Narrative that represents a reality goes only so far. But the argument is not simply important in the context of the spiritual. Many other realities are like this too. Is it possible to *describe* emotional ecstasy, or love, or pain, or grief, or fear? Scarry argues that language is other to pain (Scarry 1985). At best words may point to it ('a stabbing pain'). So here the condensate comes primarily in other forms. The body in pain. Or a piece of music ('our tune'), or a landscape, or bodily actions, or the sight of a loved child. Many realities craft themselves into materials other than – or as well as – the linguistic.

It may, of course, be argued that while love or pain or religious experience are realities, they are not the kinds of realities relevant to social science. The argument deserves attention. There are good reasons for holding religious experience or love separate from academic or policy inquiry. I'll return to this briefly below, though I take it that the argument is contestable. But, in any case, even realities more conventionally relevant to natural and social science are excluded by their dominant methodological practices. We have encountered a number of examples above: the organisation of health care for alcoholic liver disease; the character of lower-limb atherosclerosis. We can catch the argument so: if matters are non-coherent, then to try to *describe* them as non-coherent may miss the point since it insists on generating a form of coherence. Some other allegorical mode might be better. Some other kind of gathering. One that stutters and stops, that is more generous, that is quieter and less verbal.¹²⁹

Second, even within the domain of texts and other inscriptions, academic method assemblage also sets limits to proper form. Some (the article, the research report, the grant application, the review, the book, the seminar) are permissible. So, too, are certain kinds of maps, diagrams, graphs, and photographs. But many forms of text and visualisation are not. On the whole,

for instance, academic method assemblage does not condense in the form of poetry, fiction or theatre (there are, of course, exceptions). Few visual depictions in research follow the conventions of fine art or comic strips or film or advertising. Many textually or otherwise inscribed realities, then, are being ruled out. Academic texts are usually read as more or less technically adequate descriptions of external realities. Unlike novels they are rarely read for themselves. And, though there are exceptions, neither are they commonly read as resonating participants in the enactment of the realities that they also describe.

These restrictions have their place. They make it possible to produce particular realities: presences that (are taken to) describe, mirror, correspond or work in relation to specific and singular realities. Shapin and Shaffer describe the origins of the Euro-American attempt to make and tell the world this way. But the result has been to displace or to repress methodologies and realities that make and depict the world differently. In Euro-America the inscriptions that condense *ontic/epistemic imaginaries* belong to the novel or to poetry or to art and not to serious research method. As do those that condense *non-coherences* (James Joyce?), *overpowering fluxes* (Edvard Munch?), *indefinitenesses* (Mark Rothko? Franz Schubert?), *multiplicities* (Georges Braque?) or *fractionalities* (Steve Reich?). Perhaps all this is fine, representing *inter alia* (as Helen Verran (1998) observes) a modernist division of labour between truth and the aesthetic. On the other hand, it is also costly. It is costly since it Others imaginaries, fluxes, indefinitenesses and multiplicities – even as it draws on them. And, at the same time, it denies the various desirable effects – the various goods – that these might carry and enact.

Goods

So what are the ‘goods’ that method assemblages might generate? In which they might participate?

I have discussed two goods at length above: *truth* and *politics*. If methods are performative they discriminate by trying to enact realities into and out of being. But as we have seen, though this is usually displaced into Otherness, they also enact different realities in different places and on different occasions. This means, as again we have seen, that truth is no longer the only arbiter. No longer, let me stress this, the *only* arbiter. For it is still very important, crucially important, in many crafts. ‘Is this true?’ Yes, this remains a critical question, not one that will go away. It has been a continuing theme throughout this book that method assemblage does not work on the basis of whim or volition. It needs to resonate in and through an extended and materially heterogeneous set of patterned relations if it is to manifest a reality and a presence that relates to that reality. So *truth is a good*. It remains a good. Method assemblages that do not produce presences that have to do with truths may be attractive, there may be other reasons for generating them, but whatever they are, they are not about the out-there-nesses of possible realities.

But truth is not the only good. Enter, then, *politics* which is a second good in this mode of listing. If politics is about better social (and now, we learn) non-social arrangements, and about the struggles to achieve these, then method assemblage and its products can also be judged politically. It does politics, and it is not innocent. In its different versions it operates to make certain (political) arrangements more probable, stronger, more real, whilst eroding others and making them less real. This, indeed, is one of the reasons why I, in common with many scholars in STS, feminism, and cultural studies, would like to open up and broaden the standard reality-setting agendas of Euro-American technoscience. It may or may not be a political good to create (for instance) multiple ontic/epistemic imaginaries. Whether this is so will depend on the circumstances, on the content of those imaginaries, and where one is oneself located. However to propose a blanket prohibition of imaginaries in the method assemblages of truth-making (for instance by exiling such imaginaries to the peripheral realm of aesthetics) is not a good. It is a politics of Othering which presupposes and enforces the dictum that singularity is destiny, that disenchantment is in the nature of things, and that multiplicity is a mistake.

Similar arguments apply to definiteness. Whether realities that are fluid, fractional, multiple, indefinite and active are good or not has to be judged circumstance by circumstance. There is no general rule. These are not political goods in and of themselves. (Compare a train crash with a bush-pump.) But to enact general prohibitions on (the recognition of) realities that display these attributes is to enact a class-politics of ontology that *is* a bad. Greater permeability and recognition of fluidity and all the rest, overall this cannot be a bad. This, then, is the end of political innocence. Truths are not, as the theory of ideology tended to suggest, necessarily in conflict with politics. Truths and politics go together one way or another. Or at least they may go together. And once the performativity of method is recognised this implies responsibilities to both of these goods.

This is an argument that is recognised, albeit in a somewhat different idiom, in a variety of politically radical interventions in contemporary technoscience: for instance in some versions of feminist writing.¹³⁰ But there are other goods too, and sometimes these get lost in the preoccupation with truths and politics. Indeed, we have tripped over one above: that of *aesthetics*. Thus talk of 'beauty', then, or 'elegance', or 'fit', or 'economy' indexes a further set of goods. Again some care is needed. What counts as beauty can neither be determined in general, nor out of context. (Absolutist theories of aesthetics are no better guide to tastes-in-practice than are those of epistemology to truths-in-practice.) But where do aesthetics turn up in an explicit manner in practice? The answer is, not very often in those forms of method assemblage that have to do primarily with the enactment of truths. And, interestingly, to the extent that they do, they turn up more in the exact sciences than in social science. Mathematicians often talk of elegance (though mathematics, of all the science-related disciplines, is the one that most celebrates imaginaries), and similar concerns can be found, for instance, in physics.¹³¹ But, at least at first sight, the idea that

social science truth might somehow be related to beauty seems improbable: the proliferation of more or less ugly jargon seems to be more common. However, overall, in the current arrangement of goods, aesthetics have relatively little to do with truths, social scientific or scientific. Mostly they are delegated to the arts or to consumption. We witness, then, a further refraction of the modern division of labour that separates out the different domains and acts to protect truth from other goods.

But if the argument developed in this book is sustainable, then it is not obvious that this division of labour is a good. It is not that, as if in some contemporary version of fascism, it becomes a self-evident good to celebrate the aesthetic before all else. Beauties will need to live alongside truths, and alongside politics too. As I have noted above, they are, in any case, multiple in their enactments and forms. But their blanket absence from the processes of crafting realities is not a good. It works to exclude ontic/epistemic aesthetic imaginaries. It represses their fluidities, fractionalities and indefinitenesses. And it denies us any grounds for negotiating to enact realities that are true and politically desirable but are *also* beautiful. In short, it denies to reality-making any responsibility for beauty, treating this instead as a category error. Implicitly, then, ugliness is okay so long as whatever is enacted is true. Again there is no general rule. This may sometimes be okay. But it is not necessary to insist that the aesthetic should always be collapsed into the epistemological to argue that the extent of their current separation is a bad.

The divisions of labour and the prohibitions and separations that accompany it reach further. Perhaps *justice* can be elided with politics – or perhaps not. But if not, then this is another good that is rigorously excluded from the enactment of truths. However, if this is the case, then questions similar to those rehearsed above crowd in. Perhaps, for instance, it is worth considering whether some realities are more just than others? Or whether partial-realities that are more just could be rendered more real than they actually are? And similar arguments apply to further versions of the good. For instance, is the *spiritual* a good? Quakers and Australian Aborigines are not the only people in the world who live in a world permeated by the spiritual, and who participate in assemblages that enact its realities. Who know (let us broaden the category) that the world is charged and run through with moments of inspiration. The spiritual and the material – here these cannot be distinguished. But if we note this, and note that inspirations or spiritualities are, or may be, enacted in some worlds, then arguments like those above need to be worked through here too.

First, to imagine that inspirations are real, that they are a good, and that they are relevant goods to living in the world, is not to insist that they are the only goods. (Spiritual reductionism leads to religious fundamentalism which does not seem to be much of a good except, perhaps, to those who try to enact it.) Second, to imagine that inspirations are enacted realities is not to say that specific versions of the spiritual or of inspiration amount to a good in any particular context or practice. There is no general rule. (Fascism works in part

through inspiration and charisma.) Third, to suggest that they are goods that may be relevant to the enactment of truths is not to say that they would, or should, always be so enacted. Such are the kinds of cautionary notes that I need to sound. But their blanket displacement also incurs costs. For instance, spiritualities or inspirations can be understood as manifestations of ontic/epistemic imaginaries. The implication is that at least in their less codified and power-saturated forms they may be capable of making versions of the real that distribute agency more generously and less parsimoniously, allocating it in a manner that is less dualist, less prone to treating the natural as passive, reacted upon, brute.¹³²

And if we escape the brute singularity of the world, the sense that reality is destiny? Then there will be a need to weave together different goods. Perhaps there will be the need to imagine and practise world-making as flows, vortices, or spirals in which links between different partially connected goods are made and remade. In which truths and spiritualities and inspirations and politics and justices and aesthetics are variously woven together and condensed at particular moments, and partially separated at others. A choreography, a dance, a process of weaving, of partial connection and partial separation, which might then spill over too into the last great category excluded by the divisions of labour of modernism, that of the personal, the emotional, the realm of fears and loves and passions.

Haraway notoriously observes that she 'would rather be a cyborg than a goddess'. That is fine, but if we think of method assemblage and goods then this suggests that it is not always necessary to make a choice.¹³³ For there are different goods. But none is entirely separated from the truths of reality, except in convention, in the modernist settlement, in the forbidding conventions of method.

Re-ordering

I started with the desire to subvert – or at least to raise questions about – current social science methods. Current methods, I argued, have many strengths, but they are also blinkered. Along the way I have tried to show that they both presuppose and enact a specific set of metaphysical assumptions – assumptions that can and (or so I suggest) should be eroded. But what of practice? What might alternative methods look like in practice? What would it be to practise methods that were slow, uncertain, that stuttered to the stop, the attention to process, proposed by Appelbaum? What would it be to practise quiet method? Method with fewer guarantees? Method less caught up in a logic of means and ends? Method that was more generous?

The answer, of course, is that there *is* no single answer. There *could* be no single answer. And, indeed, it is also that the ability to pose the questions is at least as important as any particular answers we might come up with. So if the arguments developed in this book make it possible to debate a wider range of methodologically relevant questions, then I will be happy. So what

are the kinds of issues we might debate? Here are some of the more obvious possibilities:

- 1 *Process*. In Euro-American method the bias is against process and in favour of product. Look at any grant application form and you will see that the rules of method are imagined as a means to an end for knowing better or intervening. The practicalities of knowing are bracketed and treated as technique. So the first set of methodological questions has to do with the analysis of practice. Can we, and should we, be looking for ways of attending to the practicalities of making realities? Of attending to the mediations of method assemblage? Of exploring the various ways in which they generate realities on the one hand, and condensates on the other? And if the answer to these questions is yes, then how might we do this? What are the modalities for praxiography?

This, then, is the first root question: should we have a *concern with ontological process*? The answer I have offered in this book is that this is important, indeed vital. Means/ends divisions cut the cake in a particular way. Parts of process, enactment, can be pushed into a means/ends scheme, but other parts cannot. To understand the continuing and uncertain enactment of ontology and to craft it well, we will need to treat with the uncertainties and undecidabilities of process as well as with means and ends.

- 2 *Symmetry*. Euro-American approaches to method tend to set up rules for discovering realities. These rules distinguish between good and bad method. They tell, for instance, how results should be acquired, and the proper ways in which they should be reported. This is a kind of asymmetry. Bad results are derived from bad methods, and good from different and acceptable forms of method. So a second set of methodological questions has to do with symmetry. Can we, and should we, consider *all* practices for producing realities and condensates as possibly appropriate methods? Can we and should we be more generous in our definitions of method? Should we stop ruling whole classes of practices out of court? I have argued that we should: that there are many possibly appropriate methods. I have also argued that if we want to understand our methods then we need to treat them symmetrically, to explore them without, in the first instance, judging their adequacy in terms of our prior assumptions about what is methodologically right and what does not pass muster.¹³⁴
- 3 *Multiplicity*. If we focus on practice then we are led to multiplicity since there are many practices crafting many realities. Truth is no longer the only arbiter and reality is no longer destiny. There are (to put it too simply) choices to be made between the desirability of different realities. The world could always be otherwise. Can we cope with this? My answer has been yes. If realities are being enacted multiply, then I have argued that it becomes important to think through modes of crafting that let us apprehend that multiplicity. We need ways of knowing about and enacting fractionality or partial connection.

- 4 *Reflexivity*. If we attend to practice we are also led to issues of reflexivity. In particular, we need to ask whether we are able and willing to recognise that our methods also *craft* realities. I have argued that it is both possible and important to do this, and that this is not self-indulgent but necessary in a world of multiple 'goods'. But how to do this? One answer is that we need, as I have noted above, to attend to process. In particular, however, I have suggested that we might attend to the way in which method enacts divisions between different forms of absence: absence made manifest, and absence as Othering. How that boundary is made and remade, this becomes a central concern. As does the related issue of our own unavoidable complicity in reality-making.
- 5 *Goods*. The focus on practice and the commitments to symmetry, multiplicity and reflexivity together suggest that truth is no longer the final arbiter. But if this is right, then there are other goods to be taken into account. The question, then, is are we able and willing to recognise the multiplicity of goods enacted in method assemblage? I have argued that this is vital. But how should we think about different goods? How might they be enacted and related, and where? These are open questions. However, I have argued the importance of a number of goods: truth; politics; justice; aesthetics; inspiration and the spiritual. And I have also, albeit briefly, touched on the personal. This, then, is an open agenda. How to craft different goods, where, and in what balance, is for debate. Where, for instance, are we willing to decompose the truths of technoscience in favour of other goods? But there are no general answers. Specific questions and responses are needed.
- 6 *Imaginariness*. If we acknowledge that worlds and realities are multiple, then do we seek, nonetheless, to push towards singularity? Are there merits in the Euro-American insistence on the naturally definite? Or would it be a good to find ways of knowing and reality-making that allow the creation of many possible, more or less real, worlds? In this book I have argued in favour of allegory as a way of knowing the multiple and the ambivalent. I have also talked of 'gathering' as a way of avoiding discourses about coherence or consistency. But this is just a beginning. For instance, it also becomes important to find ways of crafting methods that do not seek to come to universal or general conclusions but do so specifically, location by location. So what would these look like? This is an open question, and there will be many answers.
- 7 *Materialities*. The question here is simple. Should we adopt a more generous and less exclusive approach to what can or should be made present in method? Its materialities? Should materials other than those that are currently privileged be recognised as presences that reflect and help to enact reality? Should we move beyond academic texts to texts in other modalities? And not just texts and figures, but bodies, devices, theatre, apprehensions, buildings? I have responded by saying yes to all these questions and have argued that the realities we know – and help to enact

- in academic texts, though important, are much too restricted. I have suggested that allegory is often likely to demand novel materialities. Once again, however, this is work to be done. There is need for a whole range of materially innovative methods.
- 8 *Indefiniteness*. I have argued that the dominant truth-related method assemblages tend to expect definite results and so enact definite realities. The question is: is this a good, or is it too restrictive? My response has been that it is too restrictive. Instead, I have argued that our methods should sometimes, perhaps often, manifest realities that are indefinite, and that as a part of this, it is important to appreciate that allegory, non-coherence, and the indefinite are not necessarily signs of methodological failure.
 - 9 *Re-enchantment*. Euro-American method assemblages are dualist in effect, removing independent agency from the world of the real. The questions here are: should this dualist-inspired production of the real be weakened or abandoned? Are ‘natural’ realities possible agents? In this book I have argued that it is time to undo that dualism. Or, more precisely, I have argued that it is time to undo the Othering that underpins it, an Othering that conceals the enchanting complexities that generate the appearance of dualism. The flux and the resonances or patterns that can be made and detected in that flux are themselves a mode of enchantment. But somehow, in our common methods, we not only determine the location of agency but we also attempt comprehensive and systematic disenchantment.

Ending

These, then, are issues of *ontological methodology*. Their particular form reflects my own concerns and agendas. Enactment, multiplicity, fluidity, allegory, resonance, enchantment, these have been some of my keywords as I have explored what I have called method assemblage. But my object has been to provoke debate about methods rather than imposing a new orthodoxy. It is like this. If realities are enacted then many of the methodological certainties of the social and the natural sciences are undone and we need debate about what follows. Concern with the truth will not and should not go away. But the distinction between truths and other goods is at best pragmatic. All sorts of assemblages resonate to produce truths in one way or another. And our methods are implicated in other goods, political, aesthetic, spiritual, inspirational, or personally passionate (the list is not complete).

So what might one hope for method in a world where there are so many versions of the good? Again there will be no general ‘best’. But I want to conclude by suggesting that it might be helpful to distinguish between what one might think of as ‘procedural’ and ‘organisational’ issues.

Procedural issues concern *how to conduct studies well*. About which goods to build into particular studies and in which forms. About how to reflect and enact particular commitments to (for instance) truth, or elegance, or politics,

in an investigation. What is it to investigate a railway accident well? What are the approaches, the methods, that might be crafted to know about safety or pain or confusion? Procedural concerns, then, might look like a greatly broadened and at the same time much more modest version of our current methodological debates. They would be greatly broadened because they would reflect not only on how to make truths, but also on how to make other goods. Why did the trains collide? Yes. But what does it mean, 'why'? What realities are being made manifest or Othered in this or that mode of inquiry? Why do we make realities in this way or that? Is there a place for that that cannot be spoken? Which are the *goods* being made manifest or Othered? Which might we press? Or how might they be related? Indeed should they be related?

Debates of this kind would simultaneously be both broader and more modest than our current discussions of method. They would be more modest because they would arrive at *particular* conclusions in *particular* locations for particular studies. And there would be an allergy to general rules of methodological, political, aesthetic, or any other kind of hygiene. To any general constitutions. Not because there are not different goods or because it is not worthwhile going after them or linking them together, but because there is no longer any general way of moving effortlessly from place to place without attending to specificities. There *is* no general world and there *are* no general rules. Instead there are only specific and enacted overlaps between provisionally congealed realities that have to be crafted in a way that responds to and produces particular versions of the good that can only ever travel so far. The general, then, disappears, along with the universal. The idea of the universal transportability of universal knowledge was always a chimera.¹³⁵ But if the universal disappears then so too does the local – for the local is a subset of the general. Instead we are left with situated enactments and sets of partial connections, and it is to those that we owe our heterogeneous responsibilities.

Alongside such procedural questions there are also issues of *organisation*. For what I have been describing marks the beginning of the end of the modern constitutional settlement with its divisions of labour – divisions of labour that try to distinguish, as we have seen, between the truths of technoscience, the aesthetics of the arts, the rights and wrongs of politics or justice, the spiritualities of the religious, and the emotions and embodiments of the personal. There are, of course, very good reasons for making distinctions between these. The argument that truths are created more easily when they are detached from the political, may well be right. The division of labour also has the advantage that truths sometimes turn out to be politically subversive.

Thus to question the modernist constitution with its insistent division of labour is not to advocate collapse to some undifferentiated utopian social and technical order. The call is not to move towards a society without a division of labour. There is no perfect place, and surely we do not need a society in which every inquiry reflects a simultaneous commitment to truth, politics, beauty and all the rest of the possible goods. This would be the call for a totalitarianism run riot, and since out-there-ness is lumpy and fractional, it makes little

ontological let alone political sense. Matters are much more complex, and single recommendations no longer apply everywhere. There *is* no universal.

The problem, rather, is how to think well about the modes of relating between sites and specificities. These are not split off from one another by acts of God or cartographic men. Science and politics and aesthetics, these do not inhabit different domains. Instead they interweave. Their relations intersect and resonate together in unexpected ways. There are sets of partial connections and interferences. The issue, then, is about how to think and act these well – which is why I call it an organisational question. For it appears that the walls of the disciplines in the academy are very permeable, not only reflecting the ever-present requirement that truths should also be useful, but in the much wider and more creative sense that I have tried to condense in this book.

What does this mean in practice? The answer is that I do not know. But one thing is indeed clear. In the longer run it is no longer obvious that the disciplines and the research fields of science and social science are appropriate in their present form. It is no longer obvious that a division of labour is desirable, a division of labour that rests on the parcelling out of patches of truth to different specialists who are then divested of the need to practise other goods. After the subdivision of the universal we need quite other metaphors for imagining our worlds and our responsibilities to those worlds. Localities. Specificities. Enactments. Multiplicities. Fractionalities. Goods. Resonances. Gatherings. Forms of craftings. Processes of weaving. Spirals. Vortices. Indefinitenesses. Condensates. Dances. Imaginaries. Passions. Interferences. These are some of the metaphors for imagining method that I have sought to bring to life in this book. Metaphors for the stutter and the stop. Metaphors for quiet and more generous versions of method.

Glossary

- Absence:** the necessary Other to presence, which is enacted along with the latter, is constituted with it, and helps to constitute it. In method assemblage two forms of absence are distinguished. Manifest absence is that which is absent, but recognised as relevant to, or represented in, presence. Absence as Otherness is that which is absent because it is enacted by presence as irrelevant, impossible, or repressed. See also Otherness.
- Actor-network theory:** an approach to sociotechnical analysis that treats entities and materialities as enacted and relational effects, and explores the configuration and reconfiguration of those relations. Its relationality means that major ontological categories (for instance 'technology' and 'society', or 'human' and 'non-human') are treated as effects or outcomes, rather than as explanatory resources. Actor-network theory is widely used as a toolkit in sociotechnical analysis, though it might be better considered as a sensibility to materiality, relationality, and process. Whether it is a theory is doubtful. In the course of its development it has taken a wide range of different and sometimes inconsistent forms. It has at different times been criticised for its relative lack of interest in major social asymmetries such as gender, its refusal to base its explanations on generally accepted ontological categories, its tendency to a centred managerialism, the flattening character of its network metaphor, and its lack of concern with Otherness. The extent to which these complaints are appropriate to either early or contemporary work within the tradition is a matter of judgement.
- Allegory:** the art of meaning something other than, or in addition to, what is being said. The art of decoding meaning, reading between the literal lines to understand something else or more. The craft of making several things at once, what is described and what can also be read into that description. Ubiquitous, but often repressed into Otherness in contemporary standard understandings of representation.
- Anteriority:** out-there-ness considered as prior to the process of knowing it. One of the assumptions made in standard versions of realism.
- Condensation:** crafted presence that may take a range of material forms.
- Constructivism:** the claim that scientific statements or truths are constructed in a way that to a large degree (in some versions totally) reflects the social

circumstances of their production. Though there is some overlap, the programme of social constructivism is distinguished from the enactment approach of the method assemblage. Construction usually implies that objects start without fixed identities but that these converge and so gradually become stabilised as singular in the course of practice, negotiation and/or controversy. Enactment does not necessarily imply convergence to singularity, but takes difference and multiplicity to be chronic conditions.

Crafting: the enactment and condensation of presence in method assemblage.

There is no implication that crafting is necessarily a human activity.

Critical realism: a contemporary and politically radical version of realism.

Building on the realist suggestion that empirical and experimental investigation is unintelligible in the absence of an external world, and human capacity to intervene in that world and monitor the results of their action, it argues that the world is composed of objects, structures and causal or other powers, and that it is the job of the scholar to offer revisable theories or hypotheses about these. A distinction is made between the empirical (what appears in experience), the actual (actions that occur when powers or structures are activated), and the real (that which is there, those structures and powers, whether or not this is visible or activated). This means that empirical appearances, though important, may be misleading. It also means that the real may or may not be revealed by the actual, and there is no secure way of determining what is real. Distinguishing between the intransitive (roughly such objects of knowledge) and the transitive (the theories or terms used in knowledge), it notes that the transitive is socially located and variable, whereas the intransitive is not. No claims are made about the veracity or authority of the transitive domain, because theories or terms may be refuted and replaced by alternatives. In the terms proposed in this book, realism and critical realism are committed, at least in general, to the singularity, anteriority, independence, and probably to the definiteness of the real, as well as its primitive or originary version.

Cyborg: a trope from Donna Haraway's feminist material semiotics. This is a set of partial connections between two or more parts that cannot be reduced to one another but nonetheless relate to one another. Those parts may be material (between machine and human, or human and animal), political (as between different political or social identities and commitments), or they may exist in a tension between reality and fiction. The cyborg is a politically generative trope. It enacts possible novel realities by operating on and within material semiotic relations.

Deconstruction: see post-structuralism.

Deferral: an expression of the post-structuralist proposal that to make present is also, and at the same time, to make absent. Deferral is the removal and effacement of necessary absence into the future.

Definiteness: the assumption that out-there-ness or absence is definite in form. One of the assumptions made in standard versions of realism.

Difference, problem of: the simultaneous existence of different objects that

are said to be the same. This arises, as Annemarie Mol shows, because if objects are enacted in practices, and those practices are different, then so too are the objects that they produce, even if the practices in question are said to relate to, or be aspects of, the same object. Problems of co-ordination or separation then arise in the relations between the practices/objects.

Discourse: in its Foucauldian version, a set of relations of heterogeneous materiality, that recursively produces objects, subjects, knowledges, powers, distributions of power. Discourse is productive. At the same time it sets limits to what is possible or knowable.

Enactment: the claim that relations, and so realities and representations of realities (or more generally, absences and presences) are being endlessly or chronically brought into being in a continuing process of production and reproduction, and have no status, standing, or reality outside those processes. A near synonym for performance, the term is possibly preferable because performance has been widely used in ways that link it either to theatre, or more generally to human conduct.

Ends: see means and ends.

Enlightenment: a philosophically classical commitment to knowledge as the product of reason, empirical inquiry, and as a tool for social improvement. Historically, a period and a movement in eighteenth-century Europe.

Episteme: in Foucault's archaeology, a set of strategies laid down, permeating and producing the social body, which produce possibilities but also set limits to the conditions of possibility. See also discourse.

Excess: that which cannot be contained within narrative or linguistic discourse, but is probably also necessary to it. A version, or a way of talking about, Otherness.

Fallibilist method: an approach to method that both treats its theories, truth claims or propositions as refutable, and seeks to refute them on the grounds that in the longer run this is the best way to increase the power, scope, or veracity of knowledge. Associated with the work of Karl Popper, and now with realism and critical realism.

Feminist technoscience studies: a diverse body of empirical and theoretical work on the character of technology and science inspired by feminist theory and politics. Major themes or traditions of work include:

- (a) So-called empiricist feminism which might seek to describe gender inequalities in science and technology.
- (b) Epistemological critique, which explores the gendering built into scientific method and scientific findings which result from the social shaping of science.
- (c) Standpoint epistemology, which argues that truth, or at least a workable version of knowledge, is most likely (or indeed only possible) from subordinate viewpoints, and perhaps particularly those of women or feminists.
- (d) Material semiotics, which explores and seeks as a liberatory project,

to interfere with the relations, simultaneously material and semiotic, that are enacted as partially connected patterns of practice, knowledge, subjectivity, objectivity and domination, by diffracting these in order to make a difference. Material semiotics privileges partial perspective, split vision and situated knowledge, arguing both that there is no escape from location and that identities, locations of knowledge, politics, and action are heterogeneous and irreducible rather than being coherent.

Flux: the sense that whatever is out there is not a structure with a discoverable shape, but is excessively filled with and made in heteromorphic currents, eddies, flows, vortices, unpredictable changes, storms, and with moments of lull and calm.

Fractionality: a metaphor for expressing the idea that objects, subjects and realities (and so their hinterlands) are more than one and less than many. The idea that hinterlands partially intersect with one another in complex ways. A way of avoiding two equally unsatisfactory alternatives: on the one hand the idea that multiplicity and difference imply ontological (and political) pluralism in which there are no interactions between multiples and realities proliferate without restraint, in a version of relativism; and on the other, the converse commitment to ontological singularity in which the world is taken to be singular and consistent.

Gathering: a metaphor like that of bundling in the broader definition of method assemblage. It connotes the process of bringing together, relating, picking, meeting, building up, or flowing together. It is used to find a way of talking about relations without locating these with respect to the normative logics implied in (in)coherence or (in)consistency.

Hinterland: a bundle of indefinitely extending and more or less routinised and costly literary and material relations that include statements about reality and the realities themselves; a hinterland includes inscription devices, and enacts a topography of reality possibilities, impossibilities, and probabilities. A concrete metaphor for absence and presence.

Idealism: see philosophical idealism.

Imaginary: a 'repertoire by which the world can be re-imagined, and in being re-imagined be re-made' (Verran).

Indefiniteness: see definiteness.

Independence: a commitment to the idea that whatever is out-there is usually independent of our actions and perceptions.

In-hereness: whatever is made present (for instance a representation or an allegory) that relates to and stands for whatever is made absent but depicted or connoted.

Inscription device: a system (often including though not reducible to a machine) for producing inscriptions or traces out of materials that take other forms. It may be understood as a particular modality for mediating out-there-ness and in-hereness.

Interference: the pattern that derives from the intersection of two wave-

forms. In Haraway's material semiotics, a metaphor for the vision, necessarily split, that replaces representation or mirroring by recognising that it is situated and, indeed, split. At the same time action that makes a political difference. See also cyborg.

Manifest absence: see absence.

Material semiotics: see actor-network theory, feminist technoscience studies, cyborg and interference.

Materialism: see materiality.

Materiality: a way of thinking about the material in which this is treated as a continuously enacted relational effect. The implication is that materials do not exist in and of themselves but are endlessly generated and at least potentially reshaped. This is to be distinguished from materialism which, as the antonym of idealism, claims that what is real is material, and that the ideal is derived from material arrangements. Materiality makes no *a priori* distinction between the material and the ideal.

Means and ends: a hierarchical organising strategy that enacts and subordinates process or practice to the achievement of a valued goal. Therefore a mode in which most continuing processes of enactment are either Othered or are treated as techniques.

Mediation: the process of enacting relations between entities that are, as a part of that process, given form.

Metaphysics: in philosophy, untestable and often implicit assumptions which are enacted in and frame, experience or argument.

Method assemblage: generally, the process of crafting and enacting the necessary boundaries between presence, manifest absence and Otherness. Method assemblage is generative or performative, producing absence and presence. More specifically, it is the crafting or bundling of relations in three parts: (a) whatever is in-here or present (for instance a representation or an object); (b) whatever is absent but also manifest (that is, it can be seen, is described, is manifestly relevant to presence); and (c) whatever is absent but is Other because, while necessary to presence, it is also hidden, repressed or uninteresting. Presence may take the form of depictions (representational and/or allegorical) or objects. Manifest absence may take the form of a reality out-there that is represented, or the relevant context for an object. Method assemblage is distinguished from assemblage in the priority attached to the generation of presence. The definition by itself is symmetrical, telling us nothing about the form taken by presence, absence, or the relations between these. A further provisional definition of method assemblage is offered in Chapter 2. Here it is treated as the enactment of a bundle of ramifying relations that generate representations in-here and represented realities out-there. This is a special case of the more general definition above.

Modalities: conditions or contexts added to statements about reality that in one way or another tend to qualify them, sometimes undermining their authority.

- Multiplicity:** like difference, the simultaneous enactment of objects in different practices, when those objects that are said to be the same. Hence the claim that there are many realities rather than one. This arises because practices are endlessly variable and differ from one another. The additional claim that practices overlap in many and unpredictable ways, so there are always interferences between different realities. Multiplicity is inconsistent with singularity, but also with pluralism.
- Object:** a crafted version of condensed presence that takes the form of a process or entity deriving from and re-enacting an ordered form of absence. See method assemblage.
- Ontological politics:** if realities are enacted, then reality is not in principle fixed or singular, and truth is no longer the only ground for accepting or rejecting a representation. The implication is that there are various possible reasons, including the political, for enacting one kind of reality rather than another, and that these grounds can in some measure be debated. This is ontological politics.
- Ontology:** the branch of philosophy concerned with what there is, with what reality out-there is composed of.
- Ostension:** the process of defining a term by pointing to the object or event to which it refers.
- Otherness:** that which is neither present, nor recognisably or manifestly absent, but which is nevertheless created with, and creative of, presence. More strongly, that which is both necessary to presence, but necessarily pressed into absence or repressed. See also absence.
- Out-there-ness:** the apprehension, common in Euro-American and many other cosmologies, that there is a reality outside or beyond ourselves. This may be specified and strengthened in a number of ways. See: primitive out-there-ness; independence; singularity; and definiteness.
- Performativity:** the claim that words have effects on reality. More generally, the claim that enactments produce realities.
- Philosophical idealism:** a branch of philosophy which claims that what is real is non-material – for instance taking the form of the ideal or the spiritual – and that the ideal acts to produce the appearance of the material.
- Pluralism:** the idea that views or, more generally, realities, may co-exist in different locations without interfering with one another so long as appropriate ground rules can be put in place to regulate their relations and secure their independence. Hence a version of singularity (since ground rules would need to be shared by all). Therefore to be distinguished from multiplicity.
- Post-structuralism:** a middle and late twentieth-century philosophical movement which attacks what it takes to be a metaphysics of presence by arguing that attempts to bring everything to presence (for instance in the form of transparent representation) are flawed. This is because presence necessarily demands absence: the two are created or come into being together. One implication is that however complete representation may

seem to be, it will reveal traces of Otherness, absence, or whatever is necessary to presence that has also been repressed. (Deconstruction is the analysis of texts and other presences to reveal traces of absence or Otherness.) A second implication is that the process of making present also produces that which is Other or absent. A third implication is that whatever is outside presence is unruly and excessive, perhaps to be sensed as flux. A fourth implication is that particular enacted versions of reality set limits to what they are able to know or create. Terms such as 'discourse', 'deferral' or 'episteme' point to such limits. Though the texts of post-structuralists are frequently taken to be abstract and philosophically demanding, many writers associated with or influenced by the approach (though they may resist the label) are also empirical or historical in a relatively straightforward way (for instance Foucault, Latour, Haraway, Mol).

- Primitive out-there-ness:** the sense that there is a reality out there beyond ourselves. No particular claim is made about the character of that reality.
- Realism:** an approach to the philosophy of science that argues that empirical and experimental investigation is unintelligible in the absence of an external world, and human capacity to intervene in that world and monitor the results of their actions. See also critical realism.
- Relativism:** the idea that anything is as good as anything else, and there are no grounds for judging between them. This comes in at least three variants. Epistemological relativism says that the knowledge in your culture is just as good as the knowledge in my culture. There are no grounds for claiming that my account of out-there-ness is any better than yours. Ethical relativism says that ethics are situated and local, and there are no grounds for claiming that my ethical standards are any better than yours. Political relativism takes the same form again: there are no reasons for preferring my politics over yours. We should live and let live. Relativism is closely related to pluralism, and is well understood as the other to singularity. It is to be distinguished from multiplicity, and the generation of fractionality in practices, where different realities, knowledges, ethics and politics are partially connected and interfere with one another.
- Representation:** a crafted version of condensed presence that depicts and re-enacts manifest absence, while claiming or implying that its depictions are relatively direct expressions of manifest absence. See method assemblage.
- Romanticism:** in philosophy the idea that the world is so rich that the stories we might tell about it are irreducible either to one another, or (in some cases) to a single set of overall processes at all. The simultaneous claim that it is important not to lose that richness. Historically, a reaction to the rationalism of the Enlightenment.
- Singularity:** the idea that there are definite, limited, and therefore single, sets of processes in the world, that the world is a single thing.
- Stop:** a version of deconstruction, in which a smooth narrative that has been

brought to presence displays a break or an interruption that opens up the uncertainties of Otherness.

Symbolic interactionism: a predominantly American tradition in sociology based in the analysis of practice, and treating knowledges and identities as being produced, and irremovable from, particular practices. Strongly influenced by philosophical romanticism, it is relatively sceptical about Enlightenment or classical claims that knowledge can be formalised and transmitted apart from practices and cultures.

Symmetry: the principle that the same kind of explanation or account should be given for all the phenomena to be explained. In the context of science this means that the truth or falsity of scientific ideas should be ignored, and all should be explained in the same general terms. In the present book the principle is applied to method. Method assemblage is a way of thinking about all methods in the same terms, whether or not these fit normative rules about social science method.

Universalism: the idea that true knowledge derives from universal criteria that can and should be applied in all relevant contexts. Hence the idea that true knowledge does not vary between context.

View from nowhere: a way of talking about the idea that we can step outside and so obtain an overview of the world that is detached from any particular location or practice.

Notes

- 1 The literatures are extensive, and I cannot possibly survey them here. Indicative citations would include Clifford and Marcus (1986) and Haraway (1989) on poetics, Ashmore (1989) and Latour (1996) on reflexive methods and multiple narratives, Haraway (1997) and Rose (2001) on visual methodologies, Butler (1993) and Thrift (2000) on textual and embodied narrative, and Clifford (1997), Hine (2000), Thrift (2000) and Urry (2000) on geographically distributed methods.
- 2 See Doll and Hill (1950).
- 3 For an introduction see Nettleton (1995, 160ff).
- 4 See Klinenberg (2002).
- 5 For some of the possible complexities, worked out for the example of the UK cervical screening programme (It looks like a success, but is it? If it is a success then how is it so?) see Singleton (1998). I discuss this further in Chapter 5.
- 6 I will use this term as an index of a more or less hegemonic set of claims about method, notwithstanding the divergences in practice. For an account of its considerable difficulties see Ingold (2000). There are many studies that explore the construction and social correlates of social (and natural) science. I consider the division of labour between truth and politics briefly below (see Shapin and Schaffer (1985) and Haraway (1997)). See also the work by Theodore Porter and Ian Hacking on the contingency of the relations between quantification and scientific (including social scientific) inquiry (Hacking 1990; Porter 1995).
- 7 The power but also the limits of auditing are considered in Michael Power (1997).
- 8 This formulation ignores important differences within the STS literatures. Some of these are considered in later chapters.
- 9 For recent exemplary cases see, for instance, Campbell (1987) in *verstehende* sociology, Becker (1982) in symbolic interactionism, Said (1991) in postcolonialism, Latour (1996; 1998) in (so-called) actor-network theory, and Haraway (1991b) in feminist technoscience studies.
- 10 Symbolic interaction offers us an exemplary case of an approach to method largely romantic in inspiration which then cut its cloth to fit the much more definite and determinate picture of the world imagined by post-World War II sociology in the United States. Consider, for instance, the assumptions built into the method of grounded theory. For an admirable historical and philosophical overview see Rock (1979).
- 11 It is systematised in this mode in particular by Karl Popper. See Popper (1959).

- In a more contemporary context realism and critical realism present themselves as fallibilist methods. See, for instance, the description in Benton and Craib (2001).
- 12 Latour says similar things about theory when this is imagined as something that can be rapidly displaced with ease. Not so, he says. In practice it takes a huge amount of work. See Latour (1988).
 - 13 The slogan is similar to Paul Feyerabend's much misunderstood philosophy of science. His commitment to methodological anarchism derives from his assumption that a proliferation of methods would generate the best and most rigorous science. See Feyerabend (1975), and for its translation into social science, Phillips (1973).
 - 14 I draw the notion of entanglement and disentanglement from Michel Callon. See Callon (1998a).
 - 15 See in particular, Knorr Cetina (1981) and Lynch (1985).
 - 16 This account draws on Alpers (1989), Bryson (1983), Law and Benschop (1997) and Rotman (1987).
 - 17 The use of mirrors and optics of all kinds was almost certainly crucial from the fifteenth to the nineteenth centuries in the development of European fine art. See Hockney (2001).
 - 18 See, for instance, the illustration from Jan Vredeman de Vries at <http://www.kb.nl/kb/100hoogte/hh-im/hh046.html> (from the web page of the Koninklijke Bibliotheek *Nationale bibliotheek van Nederland*.)
 - 19 As, for instance, in the Annunciation by the Master of the Barberini Panels in the National Gallery of Art in Washington DC. See <http://www.nga.gov/cgi-bin/pimage?362+0+0+gg4>.
 - 20 Raphael. *Marriage of the Virgin*. 1504. Oil on panel. Pinacoteca di Brera, Milan, Italy.
 - 21 For instance, 'idealism' is an ontology that says that in the first instance there is nothing material. Everything, including the material, is produced by the spirit, the mind, or the process of knowing. 'Materialism' is an ontology that says, contrariwise, that everything is material. 'Spirit' or 'mind' are expressions of the material. The latter is well known in social science, in part through the Marxist tradition. Notoriously, in his historical materialism Marx stood (the idealist) Hegelian dialectic on its head.
 - 22 I write 'usually' because we also appreciate that sometimes our actions affect parts of that external reality – and this is especially the case for social reality. Philosophical realists distinguish, for instance, between the transitive and the intransitive. For a convenient survey see Sayer (2000).
 - 23 In Chapter 7 I will consider a cosmology, that of Australian Aborigines, where this appears to be the case.
 - 24 Sometimes, indeed, claims that were previously unqualified may be 'modalised' and start to lose their authority.
 - 25 An attractive version of this argument presented in a slightly different idiom is to be found in Collins (1975). I return to this in a later chapter.
 - 26 This is also the case for instruments which work well in one location, but fail to do so in another. For a nice case see Collins (1974).
 - 27 The sociologists of science sometimes call this 'black-boxing'.
 - 28 See Stengers (1997).
 - 29 See, for instance, Foucault (1970; 1972; 1979).

- 30 See, for instance, Rose (1999).
- 31 The point also applies to Latour and Woolgar's own claims. They too are caught up in (and helping to produce) an obdurate hinterland – which includes the Euro-American common-sense experience that out-there-ness is obdurate, anterior and all the rest. Accordingly, their position is internally consistent.
- 32 The development of quantitative data collection and related tests of significance are the subject of a considerable literature. See, for instance, Hacking (1990) and Porter (1995). Timekeeping is the subject of a large literature: see the classic Thompson (1967), and for a convenient summary Thrift (1996).
- 33 See Osborne and Rose (1999) and Law and Urry (2004).
- 34 This is a mild way of putting what can be a much stronger point. Feminist technoscience studies have in particular pressed for the enactment of interfering research programmes with appropriate theoretical and methodological tools. Donna Haraway's work on a non-militaristic, non-sexist, non-racist cyborg is particularly well known. See Haraway (1991a).
- 35 The importance of symmetry was first emphasised in these terms by Bloor (1976), though it is implicit in the work of such historians as Kuhn. I return to the topic more fully at the end of Chapter 5.
- 36 See, for instance, Deleuze and Guattari (1988) and Deleuze and Parnet (1987).
- 37 These include (in translation) the following verbs: to fit up, adapt, adjust, reconcile, bring into accord, settle, dispose, arrange, combine, unite, compose, constitute, form, co-ordinate, organise, lay out, prepare, distribute, deal out, chain, tie down, link up, connect, order, array, settle, place, put, set, lay, put out, join together, gather, assemble, muster, collect, bring together, and/or unite. The small French–English dictionary is the *Concise Oxford French Dictionary* (Chevalley and Chevalley 1963), and the larger French dictionary is the large Robert (1974). I am grateful to Michel Callon for discussion of the difficulties of the term 'assemblage' in English.
- 38 Cooper (1998, 111); and the translator's introduction to Deleuze and Parnet (1987, xiii).
- 39 Perhaps it sounds as if it has to do with the action of assembling – for instance as in school, army or prison musters, or perhaps the process of gathering together things on a list, as if one were packing before travelling.
- 40 Libraries have been written about this, and we need only the sketchiest account here. Good places to start in a review of these debates include: Kuhn (1970), Lakatos and Musgrave (1970) and Barnes (1982).
- 41 This is a crucial Kuhnian lesson – though it comes from other authors and other literatures too. See, for instance, Polanyi (1958) and Ravetz (1973).
- 42 This has several radical implications. One is that since there are scientific revolutions, discontinuities in the history of science, it is not so very easy to show that science progresses. Perhaps it merely changes. Indeed Kuhn got into a lot of trouble with his critics because he claimed that since scientific revolutions are discontinuities this means that science itself advances discontinuously. Thus most previous accounts of scientific change assumed that in general and over time science increased its predictive power, the scope of its theories, and its empirical base. This argument was made in a variety of different ways, but usually assumed that science created generalisations of increasing power and parsimony, and/or falsified those that turned out to be empirically inadequate. But this (usually) implies some kind of empirical yardstick for measuring the

- scope of scientific theories. Sure, scientists – or whole groups of scientists – might get hold of the wrong end of the stick, and fool themselves into thinking they'd discovered phenomena that weren't actually there. But overall, and in the long run, it was assumed that good observation would out, so long as the process of inquiry was disentangled from the malign effects of political and economic interference. On falsification, see Popper (1959).
- 43 Thus it turns out that if patients start regular walking under the appropriate supervision of physiotherapists, many report that the onset of pain is increasingly delayed, and sometimes it is not necessary to operate at all. See Law and Mol (2002).
- 44 Interestingly, when walking therapy works (which it usually does only with the support and discipline of physiotherapy) it does not appear to reduce stenoses. So why does it work? Perhaps it opens up alternative 'collateral' vessels which bypass the diseased arteries. Perhaps it alters the biochemistry of the blood. No one actually knows.
- 45 The Salk scientists do too, in practice. As we have seen, they live in uncertainty. But unlike the medical professionals, they set themselves the convergent goal of determining a single reality.
- 46 The approach is common in the sociology of scientific knowledge (SSK). See, for instance, Collins (1975; 1981a).
- 47 He brilliantly developed this through a series of studies, starting with Goffman (1971).
- 48 As this suggests, the turn to the performativity of enactment has been a powerful if not dominant force in a number of theoretical traditions for several decades. It would be possible to write a genealogy of this opening as it has struggled first to imagine (or enact?), and then to come to terms with, the epistemological, ontological and theoretical implications of the idea that the real is enacted in practices, rather than being reflected through them, as it is in perspectivalism. Louis Althusser (1971) works uncomfortably in the space defined by these two possibilities. Michel Foucault (1979; 1981) is much clearer about the performativity of discourse, as are STS writers such as Latour and Woolgar, and such feminist theorists as Judith Butler (1993) and Donna Haraway (1997). Any serious attempt to imagine the performativity of enactment also has to handle the related question of materiality or 'the real' and its relations with discourses or other linguistic expressions. In Foucault, discourse extends into and is carried through certain kinds of materials – an opening explored more fully for the case of embodiment by Butler.
- 49 For a more extended discussion see Law (2002a).
- 50 For further discussion of non-coherent hierarchies or (more generally) intransitive relations see Law (2000).
- 51 This argument is developed at greater length in Law (2002a).
- 52 For critical radical commentary on such identity politics see, for instance, Haraway (1991a) and Harvey (1993).
- 53 In his book *We Have Never Been Modern*, Latour (1993) argues that what is sometimes called modernity is productive precisely because it insists on purity. It insists, for instance, that things have single and definite shapes, or that natural realities are clear and quite distinct from those of the social. His argument is not that that modernity actually achieves this purity. Rather it is that by imagining reality to be pure it allows the fecund production of

- impurities – swarms of heterogeneous multiplicities. Latour argues that we have never been modern. We just think that we are.
- 54 See Lacqueur (1990).
- 55 The argument is developed in Mol (2002), Hirschauer (1998) and Hirschauer and Mol (1995). Hirschauer's work attends to the issues for sex/gender as these arise for transsexuals, a difficult context far from the abstractions of theory. It is also developed, in a slightly different idiom, in Cussins (1998a; 1998b; 1998c).
- 56 See Haraway (1991b, 194–195) and (1997).
- 57 For commentary see Moser (2000).
- 58 For details of those publications see Law and Singleton (2003; forthcoming).
- 59 In order to preserve anonymity, all proper names and locations in what follows are pseudonyms, other than those of national organisations.
- 60 Dr Warrington, a consultant gastro-enterologist, was interviewed on 19 March 1999. Quotations are reconstructed from notes.
- 61 Dr Warrington, 19 March 1999.
- 62 Dr Warrington, 19 March 1999.
- 63 The quote is not from Sister Fraser but her senior colleague, a Nursing Officer. Interview on 10 December 1998.
- 64 Sister Fraser was interviewed on 10 March 1999. Quotations are reconstructed from notes.
- 65 Sister Hart was interviewed on 3 March 1999. Quotations are reconstructed from notes.
- 66 Dr Bowland was interviewed on 11 June 1999. Quotations are reconstructed from notes.
- 67 For a fine study of the distribution of responsibility between individuals and social arrangements, and the individualisation of responsibility, see the related case of the 'problem' of drink driving by Gusfield (1981).
- 68 This is an instance where the purification described by Latour and discussed in the last chapter seemed to impede the proliferation of impure forms.
- 69 Excerpt from letter sent to the initiating hospital consultant dated 7 October 1998.
- 70 From interview notes with the staff at Castle Street Centre, Sandside, 10 June 1999.
- 71 Interview, 17 June 1999.
- 72 Related metaphors for fluid objects have been developed in a number of other contexts. See, for instance, Mol and Law (1994), Law and Mol (2001) and Law (2002c).
- 73 And there are other analyses that have a similar shape. See, for instance, my own account of technological decision making briefly discussed above, and more fully in Chapter 7 of Law (2002a).
- 74 Materiality, not materialism, since the argument is not reductionist.
- 75 See, for instance, Butler (1993).
- 76 Cussins (1998a; 1998b; 1998c); Moser (2000; 2003); Moser and Law (1998; 1999; 2003); Moreira (2000; 2001a; 2001b).
- 77 This relational metaphysics is laid out systematically in Latour (1988) and (1998). For further commentary see Law and Mol (1995).
- 78 Routine is what gets hidden because whatever is in front of it (presence and manifest absence) includes it and hides it. In STS this is sometimes known as black-boxing (Rip 1986). Examples such as the workings of a personal

- computer, hidden while all goes well, explain why the black-box metaphor is appealing. Insignificance is not so different but is less discrete. Repression indexes a lively and important tradition running from Freud through versions of post-structuralism (for instance in the writing of Lacan and Lyotard) to a range of radical interventions in cultural studies that have often explored how subordinates (for instance blacks or women) are Othered to produce versions of white male superordination. See, for instance, Hall (1992), Said (1991), and Haraway (1989).
- 79 For representation, on the face of it to talk about something other than what one is talking about is at best roundabout, perhaps a metaphorical flourish, and at worst it is simply misleading.
- 80 These skills, to be sure, work the other way round. The powerful treat the representations of the less powerful allegorically too, doubting, cross-examining, checking and auditing. Trust is in short supply in both directions. On the self-defeating character of the audit process, which can be understood as a futile attempt by the powerful to convert allegory into representation, see Power (1997).
- 81 Though arguably sociology has been important in the enactment of the social. For hints to this effect see Porter (1995), Osborne and Rose (1999) and Law and Urry (2004).
- 82 For discussion of economics see Callon (1998b).
- 83 Those not caught up directly in the relations enacted in these claims do not necessarily take those claims at face value. Remember, however, that economic realities are not simply statements but are also relations that extend into practices and materials that ramify off in all directions. 'Belief' is not usually what is at stake.
- 84 Their worry is no doubt compounded by the suspicion that lack of public support affects the depth to which public bodies are willing to reach into their pockets to fund scientific research. Thus, surely, is one of the explanations for the so-called 'science wars' controversies in which social scientists have been accused of undermining the epistemological foundations of natural science.
- 85 The Minister in question, John Selwyn Gummer, was responding to fears about new-form Creutzfeldt-Jakob Disease at the beginning of the BSE scare in the UK, in a dramatic televisual attempt to persuade the nation that beef was indeed safe. This took place on 6 May 1990 (see <http://news.bbc.co.uk/1/hi/uk/369625.stm>). It is appropriate to note that his politics are now much greener than they were at that time.
- 86 These examples together with the larger argument about the public understanding of science are drawn from Brian Wynne's work. See, for instance, Wynne (1996).
- 87 See Singleton and Michael (1993), and Singleton (1996; 1998).
- 88 This is an argument that she has developed in work on the UK campaign to reduce death from sudden infant death syndrome, or SIDS. Official statistics suggest that the campaign has been remarkably successful, following a 'back to sleep' campaign to persuade mothers to place their infants on their backs before they go to sleep. Singleton's data reveal that this injunction is interpreted and enacted in many different ways in practice.
- 89 An argument like this is developed by Frederic Jameson in his analysis of the 'post-modern' architectures of San Francisco, which, he argues, may be

- understood as tools for what he calls 'cognitive mapping' that are appropriate to the non-coherent but global realities of capitalism. See Jameson (1991). For further discussion of 'knowing in tension', see Law (1998).
- 90 Ladbroke Grove Rail Inquiry, Transcript of Proceedings, morning of 10 May 2000, page 5. This was available at <http://www.lgri.org.uk/10mayam.htm>, now saved at <http://www.archive.com>.
- 91 The details are drawn from the following documents: Second Health and Safety Executive Interim Report, 'Train Accident at Ladbroke Grove Junction, 5 October 1999', 3 November 1999, <http://www.hse.gov.uk/railway/paddrail/interim2.htm>; Third Health and Safety Executive Interim Report, 'Train Accident at Ladbroke Grove Junction, 5 October 1999', 14 April 2000, <http://www.hse.gov.uk/railway/paddrail/interim3.htm>; Ladbroke Grove Rail Inquiry, Transcript of Proceedings, morning of 10 May 2000, formerly at <http://www.lgri.org.uk/10mayam.htm> (now saved at <http://www.archive.com>).
- 92 Many of the details including transcripts of the inquiry were available at <http://www.lgri.org.uk>. Regrettably, this website was closed in the summer of 2002, though most of the pages can be retrieved from the excellent facility at <http://www.archive.com>. See also Cullen (2001).
- 93 Much of the debate and cross-examination in the inquiry concerned the relative significance or plausibility of different possible causes. A straightforwardly allegorical reading of many of these interventions is irresistible. The protagonists were trying to ensure, as plausibly as they possibly could, that important contributory causes did not end up in their own backyard.
- 94 This is from Cullen (2001, 7) and is the terms of reference for Part 1 of that Inquiry. 'HSE' is the acronym for the Health and Safety Executive.
- 95 An issue about which I have learned much in discussion with Ingunn Moser who writes on disability and interferes in disability politics. See Moser and Law (1998; 1999); Moser (2000; 2003).
- 96 Thus Haraway's account of the cyborg is similarly allegorical, as is the concern with absence, Otherness, and intertextuality witnessed in the heritage of Foucault and Lacan, cultural and postcolonial studies and parts of feminist theory.
- 97 See Chapter 6.
- 98 Barnes distinguishes between a legitimate interest in the prediction and control of nature, and an illegitimate and concealed interest in social control and rationalisation. Science is generally, he says, and preferably, under the direction of the former. However, even the latter may produce cultural forms that are relevant to natural prediction and control. The origins of knowledge tell us nothing about its utility and validity. For this reason he does not distinguish between 'ideology' and 'knowledge', but talks instead of 'ideological determination'. See Barnes (1977).
- 99 The sociologists of scientific knowledge were here following a line of argument that has its hinterland in both social anthropology and the *verstehende* tradition in sociology.
- 100 This ethnography is reported more fully in Law (1994).
- 101 This argument has been elaborated into a much larger metaphysics in Lawson (2001), which, however, does not entertain the divergent possibilities of difference, multiplicity and fractionality.

- 102 For references see Pinch (1980; 1981; 1985).
- 103 See, for instance, the work of Knorr Cetina (1999), Pickering (1995) and Traweek (1988).
- 104 There is a tradition in the philosophy of science that formalises this. See Hesse (1963; 1974). The empirical studies in the sociology of scientific knowledge also show that what counts as 'right' and 'wrong' is often, perhaps always, negotiable – though, as Latour and Woolgar suggest, this may become so expensive as to be impossible. Collins's work is related to that of Latour and Woolgar, but there are also differences. Collins is particularly keen to show that descriptions of reality are located and grounded in cultures or forms of life, and is happy to describe himself as a relativist, a claim carefully avoided by Latour and Woolgar. The differences are debated in Collins and Yearley (1992) and Callon and Latour (1992).
- 105 This is a distinction that crops up in different but somewhat related ways in a range of different literatures. It resonates, for instance, with the distinction between classical and romantic thought described by Alvin Gouldner (1973). A similar theme is explored by Karl Mannheim in his essay on conservative thought (1953). Rather differently, Mary Douglas's anthropology distinguishes between more bureaucratic or ritualised settings, and those that are more entrepreneurial. See Douglas (1982). The present book, as I suggested in an earlier chapter, locates itself in a similar divide.
- 106 The study is reported more fully in Law (1994).
- 107 The numberings for *Christian Faith and Practice* refer to paragraphs, not pages.
- 108 See Pickering (1995).
- 109 See Shapin and Schaffer (1985), and Shapin (1994), together with Shapin (1989).
- 110 For further commentary on this see Haraway (1997).
- 111 See Alpers (1989), Haraway (1991b).
- 112 Additional references come from Robert Layton (1989).
- 113 See Kerle (1995, 136); the details are discussed more fully in Ayre (2002).
- 114 See Chatwin (1998).
- 115 Verran develops her argument so: 'the beginning of a *galtha* workshop emphasizes the multiplicity of practitioner groups and their differing contributions to the necessarily messy reality of a place, the opening scenario of a science practical hides differences between the many and varied practitioner groups that constitute the environmental sciences, invoking instead a virtual, singular place. These different assessments then switch when we proceed to what is actually done during the workshop. While for Yolngu it is important that multiple possible "doings" be channeled into one communal act of place, scientists need to perform, report, and make known a multiplicity of actual doings. I am suggesting, then, that the normal ontologies of these two knowledge traditions advance different ways of managing the multiplicity/singularity tension that comes with doing any ontology of place' (Verran 2002, 165).
- 116 Aboriginal people originally congregated in stations as a means of living acceptably in or close to their own country. In the 1970s a law was passed which required White station owners to pay 'award wages' (minimum wages) to Aborigines for their work. This led the station owners to turn Aborigines off their lands and into mission settlements.

- 117 The implicit reference is to Latour (1993).
- 118 For an entertaining and partially fictional essay which explores this (and much else) see Julian Barnes (1990).
- 119 For further discussion of the 'imaginary' see Verran (2001; forthcoming).
- 120 For details see, for instance, Verran (1998) and Sharp (1996).
- 121 See Margaret Ayre's remarkable study (2002) of nature conservation and management in East Arnhemland. And David Turnbull's account (forthcoming).
- 122 See, for instance, Baskhar (1979), and for recent accounts in the context of social science, Sayer (2000) and Benton and Craib (2001).
- 123 Realists refer to this as the 'transitive' dimension of inquiry, in contrast with 'intransitive' natural phenomena.
- 124 For an account of the difficulties of tightly integrated systems see Charles Perrow's exemplary text, *Normal Accidents* (1984). For further discussion of non-coherent coherence see Singleton and Michael (1993), Singleton (1998) and Law (2002a).
- 125 It is the emphasis on presence that distinguishes *method* assemblage.
- 126 It may be that this repressed multiplicity is necessary to achieve the appearance of singularity, though under certain circumstances the contrary argument can also be made.
- 127 As we have seen, the argument is developed by Latour and Woolgar. But see, also, Latour (1990).
- 128 David Turnbull's exemplary work on cartography deserves careful study. See Turnbull (1993; 1996; 2000).
- 129 Here I am commenting on academic or other forms of writing that seek to describe realities. As is obvious, the argument does not necessarily apply in this form to non-referential forms of writing such as novels or poetry.
- 130 We have encountered it, for instance, in the writing of Donna Haraway. See Haraway (1991a; 1991b; 1997; 2003).
- 131 There are interesting accounts (of particular versions of aesthetics) in the physics described by Traweek. See Traweek (1988; 1999), and different aesthetic styles are implied in Turkle's work on computer use. See Turkle (1996).
- 132 Donna Haraway's recent work on people and dogs as companion species, though written in a very different idiom, makes an argument that is connected to this. See Haraway (2003).
- 133 This is the last line of her 'Cyborg Manifesto'. See Haraway (1991a, 181). Her argument is (necessarily) situated, in part by her erotic and political commitment to a refigured version of science in a context where it was easy to see science as inhumane and fundamentally flawed. For a further part of the relevant feminist political and spiritual context see Starhawk (1989).
- 134 It is also the case that symmetry is always a moving target. Thus the argument from symmetry assumes that everything can be made manifest. But Othering is a limitless domain. Only particular assumptions can be made manifest. The issue, then, is one of openness or attitude to the hidden realities of Othering, rather than enumerating a complete list of repressed asymmetries.
- 135 The argument is developed by such writers as Latour. See, for instance, Latour (1987).

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