

Pinboards and Books: Juxtaposing, Learning and Materiality¹

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Introduction

Learning is specific. Learning is material. Learning is relational. Learning is performative. Learning is a set of tensions. Learning could be otherwise. Learning is political. Learning is allegorical. And learning is about ontics. All of these I learn from reading Helen Verran's contribution to this book.

Verran has been in places of learning to watch children, teachers and elders wrestle with the multivalence of the world. She's watched the practices, the rhythmic enactment, of number, and the creativity involved in making routines that do the realities of number differently, reducible neither to Western nor Yoruba notions of number. She has been in places where practices are clotted that make it possible to go on with numbering and with connectivities of place and time and kinship in ways that are simultaneously novel, specific and respectful².

Respect is central here. Verran respects the people involved, but just as important somewhat and less usual, she also respects the material practices – practices that involve cups of water, peanuts, beam balances, chalk, songs, video cameras, places and computers. She has respect for the heterogeneous specificities of the material, cognitive and social arrangements clotted together in practices that are also forms of learning. This goes together with a kind of modesty. Her own writing is modest, but so too are the practices that she witnesses. In these, Western notions of number or space are not taken to be right, immutable, or given. But neither are those of the Yolgnu or the Yoruba. Instead the disrespects (and horrors) of the colonial and the postcolonial are edged to the margins, and learning becomes the difficult crafting of sets of practices that would allow people to go on together numbering and re-doing landscape, place, kinship and person.

This is not easy. On the contrary, it is filled with tensions. How to imagine these conflicts? How to work with them? How to persuade two badly-behaved children (or computer programs!) to work together? For the practices we look at (our own too) never cohere very well, and if learning practices hold, then they hold, tensions and all, only for the moment. If they look shiny, gleaming and streamlined, then we can be sure that we aren't understanding them very well. We can be certain that we are missing out on the bits that do not fit, and that we haven't understood the effort that goes into the choreography that is holding them together.

Like Verran, I come from the discipline of Science, Technology and Society (STS), I have been schooled to attend to materially heterogeneous practices³ and tensions⁴, and I have learned that practices are productive: that they make things. Coming to terms with the last point – the productivity of practices

² See Verran (1998; 1999; 2001; 2002),

³ STS set out, thirty years ago, to show that science is a set of practices involving social negotiations and material (for instance laboratory) arrangements. This approach has been developed in different ways. For an 'actor-network' version see Latour (1987; 1998), for a feminist variant, Haraway (1989), and for a sociological version Collins (1985). For a fine recent literature review see the parallel text in Mol (2002).

⁴ Law (1998).

– is difficult when we are looking texts or numbers that describe or represent the world. Surely (this is our first intuition, at least in the West) descriptions just describe? But STS says that words or texts don't just describe, but in the describing they also do: they are performative⁵. This means that the descriptions in learning help to bring what they are describing into being and to make it stronger. In teaching, telling is also doing.⁶

So what are we doing when we teach? One answer is that we are redoing our covert assumptions. But thinking about this is difficult because covert assumptions are self-evident. They form part of the ground of our being, just how things are. For philosophers such assumptions are 'metaphysical', and they include presuppositions about number, place, space, and time. Is there a future? Of course, we say. Might we be able to influence it? Perhaps. Can we change the past? No, obviously we can't: the arrow of history passes through time in one direction only. These are examples of metaphysical assumptions, and mostly we don't think about them at all.

Singularity is a further metaphysical assumption. What's at stake here is whether the world is a single reality, or whether it is multiple. Is it a single space-time box, or are there lots of spaces and times? Is 'it' a 'universe', or are 'they' a 'pluriverse'?⁷ This gets very difficult to think because most of the time we simply take it for granted that there is a single world. I may be here, and you may be there, but we assume that we are part of one universe: we are bodies different places inside a single space time box. Thinking differently (as, for instance, do the Yoruba) is nearly impossible, and if we try to do so then we are liable to look stupid or eccentric.⁸

Alongside this we also know that Yoruba people don't see this single world in the same way as (say) the English, but usually we think of this as a matter of perspective. We tell ourselves that we're all looking at the same thing, but that since we're doing so from different points of view what we see looks different. (We see the trunk of the elephant and they see the tail, but 'overall' it's an elephant). The idea that we might be in different worlds doesn't occur to us, and we explain our differences as a matter of perspective.⁹ In short, we don't question the metaphysics of singularity.¹⁰

⁵ In philosophy a word is 'performative' if it is also an action. The classic example is the phrase 'I do'. Said in the right context by the right person, this is also an action – that of marriage.

⁶ The idea that science and social science do not simply describe, but also help to create the world that they are describing has been developed in a number of versions. For a review and a bibliography see Law (2004).

⁷ I take the term from Latour (2004), who in turn draws it from William James.

⁸ On multiplicity, see Mol (2002) for a health-care case, and Law (2002) in the context of a military technology. In what follows I also talk about fractionality, or the 'fractiverse': realities that are partially connected and overlapping with one another (though often in tension). For a further anthropological exploration of the fractional, and the importance of partiality and partial connections, see Strathern (1991).

⁹ This argument is developed in greater detail in Law (2004).

¹⁰ There is also a long history of racism here. If the Yoruba see things differently then why might this be? We have been told at different times over the last 150 years: one, that they are mentally less well endowed than the fortunate English; or, two, that they haven't yet had the benefit of a western education; or, three, in newer versions of liberalism, we have been told that 'both perspectives', Yoruba and Western, are equally valid and that they simply have different standpoints (this is called relativism). No doubt liberalism is better than racism, but what's important here is that the ontic move is the same in both. Like its absolutist cousins,

Verran moves us from this perspectivalism. If learning practices are performative then they also make realities and they do so quite specifically and locally. Children brought up with Yoruba practices of calculation improvise novel routines in a classroom when confronted with a European curriculum. This is because they need to go on working together and get through the day collectively. In practice they live various partially overlapping realities and they weave these together in a kind of choreography: the curriculum; buying and selling in the street market; the need to make a lesson work; the tricky business of handling the teacher's supervisor (Verran); and so on. She is saying that these children and their teachers are living in a pluriverse rather than a universe. Or, perhaps better, we might say that they are living in a fractiverse in which the bits and pieces overlap in the practices despite their tensions. (Fractiverse: a world that is more than one and less than many; that is more than one but is not just a bunch of separate and disconnected bits and pieces).

So the metaphysics generated in these practices are different and variable, and this is what ontics is about. Ontics is a politics that:

- one, respects the material practices of learning and appreciates that different practices do different metaphysics. It notes that metaphysics (assumptions about the nature of the real) are not given; that there are, indeed, different metaphysics;
- two, it inquires as best it can what those metaphysics are, and makes presuppositions about time, space and singularity explicit;
- and then, three, it asks how we might do better metaphysics by straining towards what Verran, following philosopher Annemarie Mol, calls an ontological politics. This is a politics that is explicit about the goods and bads of different metaphysics.¹¹

In practice, then, as we start to wonder about metaphysics we are faced with a not very coherent ontic choreography that is both obdurate and extremely difficult to change. This, I should warn, has nothing whatsoever to do with a glib social construction, and it uses the (very different) method of deconstruction or decomposition sparingly.¹²

Metaphysics and Method

In her chapter Verran describes an open-source software project intended to allow those using it to paste together bits and pieces, songs, other texts,

relativism still deals in perspectives. It still assumes that there really is a single world out there, and it still assumes that if we differ, then this is because we are looking at that world in different ways.

¹¹ On ontological politics, see Mol (1999).

¹² I need to say that this is not a version of social constructivism. It is not a way of saying that people construct worlds, tools, or metaphysics, nor (especially) that they can reconstruct them as they wish. This is because it is the practices (including the people) that come first. It is their materiality, their embodiment, their diurnal and organisational periodicities, their architectural forms, that are central. And those practices are often pretty obdurate. In this way of thinking practices make the world: cups of water, or software and shady places out of the strong sun are busy acting here, along with people. So it is not simply a matter of personal exploration or construction, and it is not even a matter of social construction: 'society' does not drive anything. Rather it is a matter of materially heterogeneous ordering and re-ordering – where, however, that re-ordering is always in tension. See, in a very different context, Lin (2006).

pictures, and video clips, and burn a CD that enacts a reality, a version of place, fit for their own purposes.¹³ As I read it, her interest is in helping to choreograph a set of juxtapositionary practices (involving computers and other digital technologies) that re-enact place sufficient for the purposes at hand and that do so in a thoroughly practical way that doesn't hide – and might even help to make – tensions. It is also to organise the practices for the moment: such that what it is that gets set alongside whatever else is pretty open and can be easily revised; such that it can be used in different ways for different purposes; such that differences as well as similarities are rehearsed; so, in short, that place can be done differently by different people. Note that there is nothing pure here. Respectfully, she looks at the heterogeneous materials at hand, and wonders about how they might be put together in order to learn – and enact – something. ('Learning', 'enacting something', and 'juxtaposing', these are almost indistinguishable in this way of thinking). If this is successful then a new family of Yolngu practices has been choreographed in a novel material form that enacts places/spaces/persons and realities far removed from those of dominant Western metaphysics.

Dominant Western metaphysics: this is the opening I want to take, because in this chapter I want to suggest three things.

- One, that such metaphysics are no more ubiquitous in a country like the UK than they are in Nigeria or East Arnhemland. (I accept that I might need to qualify this claim, but I treat it as a seriously defensible working hypothesis). In other words, I assume that the UK is metaphysically multiple, and that spaces and times are enacted differently within different practices.¹⁴
- Two, that there are moments when this becomes particularly visible, or at least difficult to repress, even to those who are caught up in those dominant metaphysics.
- And three, that the kind of project Verran is describing is just as relevant and pressing for the North as it is to the South. If the Yolngu need to find good ways of working together with the Balanda to make practices that respect non-dominant metaphysics, then many people in the UK also need tools for learning that don't simply code up and re-enact a dominant metaphysics. They (I should be writing 'we') need tools that do juxtapositions in other ways.

So how we might imagine choreographing respectful, materially heterogeneous, and ontically open-ended practices for collective and

¹³ This is challenging in practice but also raises metaphysical questions. What are the implications of some degree of computer literacy for the enactment of Yolngu realities? What are the implications of mobilising this as open source? What, more generally, are the technoscientific agendas being smuggled in here, and how far are Western metaphysics helping to shape the choreography of this project? And how much does this matter anyway? Verran, let me remind us, isn't committed to a pristine understanding of Aboriginal knowledge traditions. Postcolonial studies have taught us that there is no pristine, (purity is the Orientalist vision, admittedly enacted, of the Other), and in Verran's writing there is nothing pure. Yolngu people do not – and neither did they ever – live in some kind of pristine state. Instead, like all the rest of us, they live in the present in sets of rather ramshackle practices and are trying to find ways of going on together.

¹⁴ This argument has been widely explored. For a recent summary see Chapter 1 in Mol (2006).

community learning? The answer is that there is no general answer. There could be no single technology for 'proper juxtaposition'. Modesty, remember, is the name of the game. So just as Verran is not suggesting that the Yolngu should abandon everything else that they do in favour of computers, I don't want to recommend any one method for enacting non-dominant versions of Northern metaphysics. My plea, however, is for sensitivity to ontological fractionality (the fractiversal). I am interested in heterogeneous procedures for putting elements together in ways that respect their tension. And I am interested in this in the context of a serious crisis in the UK in 2001 – a major outbreak of foot and mouth disease.

Interlude: Foot and mouth disease

'In August 2001 I was asked by the Prime Minister and the Secretary of State for Environment, Food and Rural Affairs to conduct an Inquiry into the Government's handling of the outbreak of Foot and Mouth Disease (FMD) in Great Britain during 2001 in order to draw out lessons and make recommendations.'¹⁵

This paragraph comes from the introduction to a major public 'Lessons to be Learned' Inquiry into that outbreak, and it is written by the chair of that inquiry, Iain Anderson. The report describes the outbreak and how the UK government might handle an outbreak of the disease better next time. It has to do with learning about foot and mouth. My question is how might we learn collectively about foot and mouth disease? I need to tell you briefly about this disease and the 2001 UK outbreak before I continue.

Foot and mouth (hoof and mouth in North America) is a highly infectious disease caught by pigs, cows and sheep. It isn't usually lethal (though young animals may die of it) but it makes pigs and cows pretty sick. Sheep often contract it sub-clinically, and tend to suffer less than cows and pigs. People can't catch it though they may act as passive carriers, but the condition is important to husbandry because animals permanently lose weight and produce less milk. Foot and mouth is endemic in most of the South, but not in Europe, North America, and various parts of the Pacific rim. WTO rules and rigid border controls police the movement of animals and meat from infected parts of the world to those that are not, and it is usually excluded.

However, in 2001 foot and mouth came on a large scale to the UK. By the time it was detected in late February it was widespread, and six and a half million animals were slaughtered in the attempt to eradicate it (the last case was in September 2001). This cost the UK national Treasury £3bn, and the UK economy £8bn. It also cost many farmers their livelihoods, and it devastated the tourist trade (the country was 'closed' to tourists in the spring because of fear of spreading infection). The disease led to fear, isolation, depression, and anxiety for many country-dwellers. It led to television pictures of millions of animal carcasses being burned on giant pyres. Some good things emerged too (rural economic diversification and

¹⁵ Foot and Mouth Disease 2001: Lessons to be Learned Inquiry (2002, 5).

some serious attempts to think about the future of rural Britain), but predominantly foot and mouth led to suffering, hurt and loss.¹⁶

Learning about Foot and Mouth

In the aftermath the British state thought it should learn how to manage the disease better next time, and sponsored three major inquiries, each of which produced a report with accompanying evidence. The major 'Lessons to be Learned' Inquiry (from which the above quotation is drawn) was written by a retired senior Unilever executive with a strong science and technology background. This inquiry collected evidence through documents, submissions, interviews with key players, and public meetings.

So how does the report arrive at its conclusions? The answer is that it offers the reader a story. This can be understood as an updated version of a Judaeo-Christian narrative about struggle, adversity ('unprecedented challenges') and eventual triumph¹⁷. The report also picks through that narrative, tells us what went right and what went wrong, and how the government might do better next time ('better preparation'). My judgement is that it is very well researched, very well compiled, very well written, and that it's beautifully produced. All in all, it's a first class piece of work: we learn a lot.

Now some qualifications. It's extremely well done for a particular audience (the government). It may be less good for other audiences. (There isn't so much in it for critics of hi-tech agriculture, vegetarians, fair trade enthusiasts, or those suspicious of the powers of government). So we need to remind ourselves that it is framed by sets of assumptions, metaphysical and otherwise, for instance: that we shouldn't have foot and mouth in the UK; that it is right or at least necessary to stratify world trade; that high-tech agriculture is a good; that meat eating is not a problem; that the state has a duty to keep foot and mouth out; and that the state has the capacity to do so if it exercises its powers wisely.¹⁸

So the report is an ordered narrative: it carries and enacts assumptions. But, and practically, it is also a set of practices of juxtaposition. To see this think of it for a moment as a physical object. It's a book with a cover. It's 187 pages long, printed in different colours, and it contains lots of nice photos. Then it's divided into chapters, and the chapters have titles (for instance, '7 Silent Spread', '8 The Immediate Response', '9 The Disease in the Ascendent' (sic)). Each chapter is broken down into sections with subtitles (for instance, 'The Abattoir', 'The Ban on Animal Movements', 'The Longtown Connection'). Each of the chapters contains text, pictures, graphs, tables, and/or maps. And the whole report starts with a series of short chapters: (1) a Foreword, (2) an

¹⁶ This epizootic has been widely described and discussed. The major UK government sponsored though independent report, which I discuss below, is Foot and Mouth Disease 2001: Lessons to be Learned Inquiry (2002). A summary and sociological account with further references is available in Law (2006). For an historical account of foot and mouth in a UK context see Woods (2004). For an argument about possibly positive effects see Law and Singleton (2006).

¹⁷ On the importance of such Judaeo-Christian narratives for technology and science see Haraway (1997).

¹⁸ Abigail Woods (2004) is particularly interesting on the historical contingencies that have produced not only a foot and mouth free UK, but also the refusal to vaccinate as part of a control strategy.

Introduction and Summary, (3) one page of Lessons to Be Learned, and (4) a list of its Recommendations.¹⁹

A comment: most of us find it surprisingly difficult to focus on the organisation of a book. After all, the structure of books is pretty conventional. Like wallpaper, it is almost invisible and not very interesting, a simple means to a narrative end. Instead we tend to think that what we should be attending to is its contents, the story. Of course we need to attend to contents, but here's my pitch: we also need to attend to the materialities of learning. Since this 'Lessons to be Learned' book is indeed about learning, this means that we should be attending to its particular materialities²⁰. And if we do this then we can see that a book is a system of juxtapositions, a set of techniques for arranging elements to produce reality-effects. Some of these are linear (the flow of the sentences) but some are not. This means that it's like the TAMI software described by Verran. A book draws things together²¹, it puts them in relation to one another (though it does so less flexibly than the TAMI software). And as it puts them into relation with one another it enacts the significance of its components, and (here is the point of this detour) it does so in very particular ways.

The Metaphysics of State Learning

So what are these? I've touched on some of these already. I've said, for instance, that the UK government and state is the inscribed audience for the report. But there are metaphysical assumptions built into the report too. For instance, it seems to me that the report is also doing three great realities: one, space; two, time; and three, since it is doing only one version of space and one version of time, it is also doing singularity. In addition, I also suggest that it is enacting this metaphysical trinity with little sense of ontic tension.

A few words on each.

First there is space – but I need to make a detour to get there.

Everything about the organisation of the book is hierarchical. The order of precedence, of importance, runs so: (1) title; (2) contents; (3) the executive summary sections (there for the busy reader); (4) the chapter subheads; (5) the contents of the chapters; and then (even further down the pecking order) (6) the appendices; and finally, (7) the 'Annexes on CD ROM'. (The latter contain evidence collected by the Inquiry that aren't bound into the book itself. They both belong and they don't). Here's my claim: this book (any book) is a hierarchical system of juxtapositions. It makes some things big and some small, whilst others drop out of the picture altogether. So what about the report? Unsurprisingly, the hierarchy is one of administrative relevance. But this hierarchy is also spatial. Give or take, the space done in the book is the space of the UK state. Events elsewhere are of limited importance (they only appear if they impinge on the state). So a state-spatiality is being enacted: it

¹⁹ It can be downloaded from the internet in .pdf format, so you can check it out for yourself.

²⁰ See, for instance, Law (2002), where the anatomy of a brochure for a military aircraft is explored.

²¹ I take this well-chosen phrase from Latour (1990).

extends as far as the blighted-but-willing-to-learn-British Isles, but not much further. This is metaphysical commitment number one²².

Second, there is time. I already suggested that the narrative makes sense as a version of Judaeo-Christian struggle. Like the pilgrimage of John Bunyan's Christian, it is all about adversity and eventual triumph. The journey starts on February 19th 2001 with the discovery of foot and mouth in an abattoir in Essex, and it ends on February 5th 2002 when the EU Standing Veterinary Committee lifts the final restrictions on the export of animals. So there are twelve morally charged months here with milestones and setbacks, major decisions and turning points. This time is progressive – indeed arguably teleological. It leads and is intended to lead us to a better future in the form of a well-run state free from foot and mouth. But if it is teleological it is also, as I've already suggested, chronological. The clock ticks in the chapter headings. Dates turn up in the text. 'On the morning of Thursday 22 March the situation was dire.'²³ Matters are ordered through the calendar. This is how we know what follows what, and all this is both enacted and mimicked in the organisation of the book. For the narrative pushes, progressively and chronologically through the chapters, first things first and later things later (see the chapter heading above). Time is being done by both narrative and organisational means.²⁴ And this is metaphysical commitment number two: time passes and there is only one time.

Third, there is singularity. So we have a progressive version of chronological time, one time, and we have state space, one space. If we put the two together then the book – its narrative and its organisation – enacts a single space-time box. The dimensions of this box? Forgive the repetition: it is the space of the state, mostly the UK, and the time of the state and its struggle with foot and mouth (February 2001 to February 2002). So what follows from this?

- First, some things are important in this box (crucial decisions) and some are not (the statements of vegetarians). Narrative and organisation tell us what to attend to and what to ignore or play down.
- Second, there are different perspectives on the events inside the box. (How important were epidemiologists in determining the policy of slaughter? Answer, it depends). Other stories are possible.
- But third and crucially, all the events take place and have coordinates (time, location) inside the box. Every time we learn about an event it is located in time and space. This means that every time we learn about an event it reinforces the reality that there is a single space-time box. This is a universe and not a fractiverse.

Contrast this with TAMI which will work on a surface, or on a set of surfaces. Of course there is a lot beneath those surfaces, a lot of code has gone into making them, but for the user there isn't much of a hierarchy. Verran tells us

²² There is considerable body of work that treats the spatial as constructed or enacted. See, and fairly differently, Thrift (1996), Massey (1999), and in the context of science and technology, Law and Mol (2001).

²³ Foot and Mouth Disease 2001: Lessons to be Learned Inquiry (2002, 100).

²⁴ As with space, there is an extensive literature on the creation and ordering of time. See, for instance, Adam (1990). For a fine piece that weaves multiple spaces and time together see Ingold (1993).

that it has 'a flexible single screen drag-and-drop interface, organising digital objects by media type.' We also learn that it gives priority to visual navigation. And the CD that the user can burn depends on what she chooses to put together. In other words it is a flexible set of techniques for juxtaposing bits and pieces that doesn't try to say which of these are important and which are not. Neither does it come with any kind of overall story or narrative. Space and time have to be done, and they are not given. Correction: spaces and times (both are plural or fractional) have to be done, and they are not given. TAMI's structure of juxtapositions tells us neither what they are nor what they should be. There is no authorised ordering of the data files, and these may be chosen and assembled in different ways by different users to generate different spaces and the times. Unlike the Lessons to be Learned Report, it helps to make pluriverses or fractiverses, not universes.

Pinboards

I'm being too hard on the Report because it also shows us things that don't quite fit. Of course there are always aporias. They go with organisation: that which does not fit and is repressed tends to pop out at unexpected moments²⁵. But one of the reasons I like the Report despite its talent for state-learning and state-singularity is that it also knows that there is indeed lots that doesn't fit.

'My job', writes Anderson, 'was not to write a comprehensive history of the epidemic. Nor was it to conduct research into the mass of veterinary and epidemiological data that now exists. That said, and precisely because I do not want the rich vein of material we have assembled to be lost, I decided to publish (on CD-ROM and the Internet) the submissions along with notes of interviews.'²⁶

So the repression isn't total. It is allowed that there are different perspectives (still the same space/time box, still the singularity). The stories on the CD-ROM will reveal those perspectives. Perhaps it will even prove possible to write a history that is comprehensive (there's that space-time box again). That said, many of the stories on the CD-ROM don't fit well, even in the most straightforward and perspectival way. But despite the fact that I am grateful to Anderson for the CD, I don't want to do a perspectival version of difference here. Instead I want to see what happens if we stop pressing those stories into a single state-shaped space-time box. I want to see what happens if we work with the intuition that the dominant Western metaphysics of space-time singularity isn't ubiquitous even in the North.

Here's the question, and it's a version of Verran's: how might we learn about our own metaphysical tensions? Our other spaces and times? How might we do ontics on ourselves and our practices? How might we work towards an ontological politics? What would this learning look like? What might its practices be? What are the techniques for crafting self-conscious and not very

²⁵ It can also be argued that that which doesn't fit is essential to the coherence that that which does. This insight – Freudian and then post-structuralist – has been explored empirically in Singleton (1993) and Law (2004).

²⁶ Foot and Mouth Disease 2001: Lessons to be Learned Inquiry (2002, 5).

coherent fractiverses? How, in short, might we learn respect for the different metaphysics being done in and around foot and mouth disease?

No doubt there are lots of possibilities. In any case, as Verran also notes, we need to beware of technological reduction. Software does different things, lots of them, and the book is no different. Books are (mostly) organised hierarchically, but how those hierarchies get used is not given. Neither do books necessarily generate seamless narratives nor hide their non-coherences²⁷. But that said, the TAMI project is suggestive because it seeks to afford flexible juxtapositions. It also knows that it is doing things, that it is performative. It is a set of practices that carry different kinds of spaces and times in tension, all mixed-up on the surfaces of the screen. Non-coherences are being made and made visible by the user and her software at the same time as the coherences. Metaphysical commitments to particular spaces and times are made visible, variable, uncertain and revisable. TAMI is a set of learning surfaces.

Let's stick with this insight – that one way of learning to do ontics is to make surfaces of tense juxtaposition – and then give the imagination room to work. How might this be done? Here are some possibilities: public notice boards (but no censorship); collections of artefacts (again no censorship); bits and pieces lying around in a landscape; the rooms in a house²⁸; streaming images across a screen; multiple computer windows²⁹; CDs (like TAMI and the 'Lessons to Be Learned Inquiry'); linked electronic files (TAMI, and on a grander scale, the Internet); exhibitions³⁰; Heterogeneous meetings (a foot and mouth meeting with poets and artists and historians and sociologists); and then, very prosaically, the making of pinboards³¹.

The rationale for pinboards is that somewhat but not entirely random stuff gets stuck on them. Here, for instance, are some of the things on my personal pinboard: family photos; pictures of friends; a card from Freiburg; a photocopied street plan of Lancaster; a wedding invitation; a torn-out newspaper article; a photo from my study window in spring; a newspaper cartoon about nuclear waste; a National Health Service name tag (a memento from a brief stay in an excellent 'socialised medicine' hospital); a reminder to phone the dentist; a list of possible topics to be covered by a book that will never see the light of day; a passport photo that didn't get used.

These bits and pieces, all juxtaposed (and 'personal' of course) are partially connected. Physically they lie on a surface, there are lots of them, and they overlap too. (There isn't much space on the pinboard. Things are jostling together.) But (this is important) they are partially disconnected as well. (What does a card from Freiburg have to do with a reminder to phone the dentist? Not much except that I put them both there). Again, some of them are 'coherent' (though the term sounds a little strange). For instance there are connections between some of the friends (this is a 'work network') even

²⁷ See, for instance, Moser (2000; 2003).

²⁸ See, for instance, Frederic Jameson's (1991) ruminations on the Westin Bonaventure Hotel, and Frank Gehry's house. Or Law and Singleton (2005) on the architecture of an alcohol advice centre.

²⁹ Turkle (1996).

³⁰ XPERIMENT! (2005; 2006).

³¹ I have explored this technology previously in Law (2002).

though they may not know one another. Other relations aren't very coherent, or there are tensions. One friend dislikes another, for instance, and my father's picture is close to the anti-nuclear cartoon. (He worries about global warming but shares James Lovelock's view that nuclear power is the only way in which it can be tackled).

My pinboard isn't of general interest, and I mention it only because it illustrates the permissive possibilities of working on a surface, flexibly, and without a very strong system of classification about what it is that goes (or doesn't go) with what. It's about juxtaposition and difference, there is no obvious hierarchy or narrative, and (if I may put it in this way) fluidity is being done in many dimensions. The paradox is that a two-dimensional but otherwise unstructured surface is potentially quite permissive about the character of relations between the pieces arrayed upon it. Its two dimensions produce not two dimensions but many.

Selecting Items for a Pinboard

How might this work for foot and mouth?

In thinking about this chapter I made a foot and mouth pinboard:



This process was interesting but first I want to say that it took considerable time and effort. Choosing what to put on the pinboard and where to put the chosen bits and pieces – neither of these were trivial exercises. Nor should they be. Some thoughts, then, on what it was that got on to the pinboard and why.

Purpose: Remember first that I created this pinboard as a tool for learning in a particular way in a particular place. It is not a view from nowhere. Specifically, it was created as a way of learning about and re-enacting the multiplicity of foot and mouth times and spaces. I wanted to tug against the predominant singularity of the 'Lessons to be Learned' report. This meant that I needed to look for documents – pictures, poems, snippets of text, graphs or maps – that enact different versions of time and space. My aim was to create a space of metaphysical tension on the pinboard, and use this to try to teach myself and others about ontic differences rather than similarities. So this was my first basis for selecting the bits and pieces that have ended up on it, and it

obviously excludes a great deal. For instance, I did not need dozens of official, state-related documents in this particular pinboard. (I might need them for another project, and it would be possible to show tensions between these too, but that is, indeed, another project). Neither did I need multiple documents from, say, the daily round of farming: a few would serve.

‘Context’: Second, I needed to locate documents that enacted different realities. I emphasise the word ‘realities’ because finding documents about foot and mouth is pretty easy (there are tens of thousands on the internet). The more important issue in creating this pinboard was to work out where they came from, the practices in which they are embedded, and the kinds of work that they might be doing in relation to those practices. And this was my second basis of selection. I chose documents that represented or re-enacted practices that I took to affect significant numbers of people and animals (for instance, farmers, epidemiologists, walkers, traders, vets, and sheep) that had, somehow or other, been caught up in foot and mouth disease. I know that there are other groups too, and perhaps they should also be there. Indeed, there is a strong case for putting ‘weird’ realities alongside those that are better established, since there might be good reasons for enacting those realities and trying make them stronger³². (I’ve done this to some extent anyway: sheep and walkers?). The root point, however, is that we need to remember that this pinboard was indeed created at a particular moment and for a particular purpose: it does not see it all. (But then, no representation ever sees it all. All representations are ‘partial’, incomplete and oriented in one way or another. Nothing is ‘unbiased’.³³) Nevertheless, the bits and pieces that I have pinned on it stand for and re-enact what I take to a series of realities important to foot and mouth in 2001: those of different people and animals strongly affected by the disease.

Modality: Third, I wanted to locate documents in different styles. I’ve suggested that the ‘Lessons to be Learned’ report takes the form of a journey through time and space by the state and its agents. It describes foot and mouth 2001, and then it is intended to teach the state how to do better next time. It distinguishes (and wrongly, given its performativity) between the reality of foot and mouth 2001 on the one hand, and its description of that reality on the other. But there are quite other styles of knowing about and enacting foot and mouth 2001. For instance, photographs, poems, graphs, maps and notice-boards were made for a range of different reasons, and they often had quite different effects. They ‘taught’ differently, transporting, transforming, evoking or warning, in ways that frequently had little to do with representation, description, or the planning of future government action. So this was my third basis for selection. I wanted different modalities or styles of enacting foot and mouth – styles that were not always representational, and would contrast not only with the style of the ‘Lessons to be Learned’ report, but also with one another.

³² For an essay that makes this important political point in a different idiom, see Haraway (1991a).

³³ Objectivity is partial. I learn this lesson from feminist Donna Haraway. See Haraway (1991b).

Items from the Pinboard

Since I can't take you to the pinboard and let you look at it carefully, I want to talk you through a handful of the items that appear on it.

At the Mart: 'The buzz had gone ...'

The first item comes from a man who manages a livestock market. You need to know that in order to prevent further spread of the disease, all movements of livestock were stopped four days after the first discovery of the disease in the UK:

'The buzz had gone ... snuffed out like a candle – the mart's car parks empty of farmers and their vehicles, the unloading docks empty of drivers and their wagons and trailers, the alleyways and the pens empty of yardsmen and the livestock they handled, the rings empty of auctioneers and their vendors and buyers together with the livestock they were trading, the offices empty of clerks and their customers and the concourse and the cafeteria empty of the mart crack. When will the distinctive, and sorely missed, sights, sounds and smells of Borderway return?'³⁴

This appears in a book published by the local BBC radio station in Cumbria. I don't know who bought the book, but it's a safe bet that its circulation was predominantly local. My assumption is that it is embedded in the local farming, agricultural, tourist and trading communities (those are its hinterland), and it witnesses the suffering and loss of those communities (this I take to be its purpose). It gives a voice to those who work in the mart without necessarily expecting that improvement or change will follow. In terms of modality, like the Lessons to be Learned report, it's quite straightforwardly representational: it describes the silence at the Borderway Mart.

In the report: '... families tended to become confined to their farms ...'

Here's a second snippet. It comes from a report published by the regional Cumbria County Council of what happened and how it might be done better next time (purpose). This suggests that its hinterland is a local version of the that of the 'Lessons to be Learned' inquiry: it wants government, local and central, to do better next time. Like the snippet from the mart, it is also representational (modality) since it tells how farms cut themselves off from all contact in the hope of avoiding the disease, and it touches on the consequences of that isolation:

'... families tended to become confined to their farms even before this became enforced by the FMD restrictions. Children were sent to stay away or kept off school. Diversified off farm businesses were closed or kept in operation by the 'away posting' of one member of the family. Visits to family, friends or social venues virtually came to a standstill.'³⁵

Poetic evocation: 'Each farm an island, cut off from the main ...'

There is an excerpt from a poem called 'The Shipping Forecast' by James Crowden. It is taken from a book of poems, photographs, and personal

³⁴ Hebdon (2001).

³⁵ Cumbria Foot and Mouth Disease Inquiry (2002, 76).

witness of foot and mouth in Devon by photographer Chris Chapman. As is obvious, the modalities are poetic and evocative, and the book witnesses and evokes suffering and protest, too, together with the devastation caused by the cull of animals. It is a long, long, way from the learning and the reality of central government and its policies. Like the second snippet, Crowden's poem is also about isolation (which is one of the reasons I include it), and the evocations are complex (John Donne) but predominantly draw on the imaginary of the sea.

'Each farm an island, cut off from the main,
Vortex of hedgerows, green seas, treacherous
Tangle of uncharted reefs, destiny unfathomed.

Flotsam and jetsam, man and beast, live cargo
Cast adrift, ride out the storm as best they can,
Hatches battened down in byre, barn, linhay and leaze.

Invisible currents swirl ever closer,
Rage beneath the surface, till the tidal wave,
At any moment. Mayday. Mayday.'

On the fells: '... I must have climbed High Pike a thousand times ...'

The next snippet comes from a short piece written by Chris Bonnington, a well-known British mountaineer who lives on the edge of the English Lake District:

'... I must have climbed High Pike a thousand times in the last twenty-five years and I never tire of the views across the Eden Valley to the east and the Solway firs to the north-west. We haven't been on those fells for six months and I miss them grievously ...'³⁶

It is taken from the BBC Radio Cumbria book mentioned above, so it witnesses descriptively, but it is also doing other work. In particular (and this is why I include it) though Bonnington is careful to add that farmers have suffered more severely than walkers, it evokes the loss of walking in the fells, and everything that this walking stands for. I shall return to this below.

The Vet: from 'Silence at Ramscliffe'

Five is a picture by Chris Chapman, again from the Chapman/Crowden book mentioned above. It is clear that it witnesses and evokes – it does not describe. I include it because it takes us to another world, that of the vet: this is its hinterland. It shows a calf suckling on the fingers of a vet. In a few minutes the calf will be dead, slaughtered as part of the contentious policy to cull animals on farms contiguous with those that had been infected³⁷:

³⁶ Bonnington (2001, 32-33). He adds that his grief is small compared with those who have lost their stock and their livelihoods.

³⁷ Mercer (2002, 94), photo by Chris Chapman.



The Vet: "This is not what I trained for ..."

Six is a snippet from a longer poem by Temporary Veterinary Officer, Peter Frost-Pennington. It comes from the BBC Radio Cumbria book, and it was widely broadcast on local radio during the spring and summer of 2001. For many it evoked the emotion, the fear and the loss of those months. Frost-Pennington wrote it early in the morning in the middle of the outbreak before going off to supervise the slaughter of yet more animals. I include it because, again, it evokes the world of the vet.

'This is not what I trained for.
I hope that familiarity will never make me immune from the trauma of killing
But I do hope – for the animal's sake – to be good at it.'³⁸

The Pyre: 'The flames turning the night sky orange ...'

The next excerpt comes from The Guardian newspaper. I've chosen it because I don't have copyright permission to include a photo of one of the pyres (pictures of these appeared on the television and became iconic for many townspeople of the horrors of foot and mouth 2001) which is what I would otherwise have done³⁹. But The Guardian (which is a heavyweight national left-leaning UK newspaper with a daily circulation of about 350,000) catches what many were thinking as they watched those news reports.

'The flames turning the night sky orange, the stench of burning flesh – no wonder the talk in the countryside is of apocalypse. "We are on the threshold of Armageddon," warns the National Farmers Union man in Devon, girding himself for another night of slaughter, another bonfire of the carcasses.

It is, to be sure, a medieval image, those piles of animal corpses being put to the flame – the pictures in the papers looking more like tapestries than photographs.'⁴⁰

The Notice: 'Caution: Electric Fencing: Re-Heafing Scheme'

Finally, I include a photograph of a notice in the middle of the Lake District hills:

³⁸ Frost-Pennington (2001, 8).

³⁹ An example of such a photograph may be found at such a photograph may be found at The Guardian's website at <http://www.guardian.co.uk/gallery/image/0,8543,-10604142447,00.html>.

⁴⁰ Freedland (2001).



This is my own photo, and I took it because I'm interested in what it tells us about hefted sheep. These are upland sheep that know their territory and do not stray from their 'historical grazing areas or 'heafs'' as the notice puts it – except that this knowledge was lost when the flocks were slaughtered. Perhaps the electric fence will teach their successors where they should or shouldn't go. Such, at any rate is the hope. In the meanwhile the notice warns walkers of the dangers of electric shock.

The Items Juxtaposed

The foot and mouth pinboard includes all these items, and a lot more. Like the items above, all of these have a context: they re-enact practices that affected significant numbers of people and animals. They have different purposes. And they come with different modalities. These are the major explicit grounds on which I made my selection. But if we move from selection to juxtaposition, then what do we learn when we see them side by side on the surface of the pinboard?

I experimented for some considerable time in order to see what patterns and tensions might be made visible or enacted. The process was flexible, and there was no right answer. The bits and pieces might have been arranged very differently, but in the form that I'm presenting here, I think that the pattern of juxtapositions helps to re-enact a range of features of foot-and-mouth 2001.

- Time: the array generates elements of chronology. Roughly, but only very roughly, time moves from the top left to the bottom right. There are elements of narrative time too (the arrows), but time is very rough and ready, and the surface is not a time grid.
- Metrication: the array generates a distinction between quantity and quality. Roughly (again there is no grid) the left of the pinboard is more about quantification and metrication. Numbers and formalisms disappear as we move to the right. Cartography is on the left too, and genetic maps.
- Science versus the less articulate: science and technology appear on the left, more or less. And less articulate or articulable practices are found on the right (the spiritual in various forms, veterinary practice, the

unsentimental care of the vet, the culture of sheep). This distinction redoes a tension important in 2001.

- The disease is many things: The array is indeed just that, an array. It is spread out. It does difference and it does so quite intentionally. So I've put the clinical version of the disease just above the middle of the pinboard: in some sense this clinical version of the disease fans out in different directions. But this isn't quite right either, since the disease is lots of things: the epidemiological maps, the isolation of farms, the practice of the vets, the slaughter, the pyres, the absence of the weekly mart, and prohibition of the fells to walkers. The array re-enacts this multiplicity. The pinboard redoes foot and mouth 2001 as a disease multiple – or a disease fractional⁴¹.
- Things that don't fit: But/and there are a lot of things that don't fit. 'Farms', the daily round before the disease strikes, lie early in any narrative (which is why they are the top), but they have little to do with quantification (so they would be better on the right). The spiritual is spread between the fells (top right) and a prayer (bottom middle). Like the disease, farms are everywhere. Perhaps this is a problem, and they should be made more coherent. But why? In practice in 2001 farms and farmers were (forgive me) all over the place, multiple, and tugged in different directions. The farm multiple is re-enacted on the pinboard – and this too is deliberate.
- Tensions: So the pinboard also does tensions, though it doesn't bring out some of those tensions as well as I would like. The sometimes strained relations between walkers and farmers? The different versions of epidemiological modelling? The fights between the vets and the modellers about strategies for culling? None of these are re-done very thoroughly on this particular pinboard, though I do try to mark the clash between the formalisms of epidemiological modelling and the local knowledge of topography with a line of red crosses, a hostile no-man's-land between scientists on the one hand and many vets and farmers on the other.⁴²
- Power: This pinboard is not very good at re-doing power either. Where, for instance, is the power of the state? How is that being redone here? One response is that much if not all of the array can be understood as the doing of state power. Another response (I haven't done this) is that it would be possible to add in more arrows, say in a different colour to show, and separately from narrative or chronological time, what it is that influences what. Though we'd need to add in feedback loops too, since this is a system of partial connections. A third response is that power is not what it is about: that tensions and heterogeneities are ways of resisting smooth versions of power and its asymmetries. Perhaps if we part it from narrative and chronology then power itself is multiple, dispersed, and all over the place. None of these responses is

⁴¹ I adapt Mol's (2002) phrase 'the body multiple', (which is also the title of her book).

⁴² Multiple versions of reality are done in science and technology. For a particularly illuminating study of BSE and new version CJD see Hinchliffe (2001).

entirely satisfactory but one thing is certain: the pinboard is not primarily about power.

- Non-coherence: but what I think the pinboard does do, and does effectively, is to erode metaphysical singularity. This, of course, is why I set it up in this way. It is, I think, a learning surface that re-enacts non-coherence and multiplicity: it re-creates a fractiverse. There are lots of bits and pieces to this foot and mouth puzzle and they overlap. Quite often they affect one another, and they are not in isolated compartments. But neither can they be caught in a single narrative and drawn together. This is why I have made this pinboard without a physical centre (the gap below the cluster of bits and pieces about the disease symptoms). If we take the absence of a centre and the differences between the patches seriously then we are forced to attend to ontics.

Forced to attend to ontics. Forced to attend to our metaphysical differences.

Pinboard Items Re-Visited

To show how we might learn about ontics through this logic of unhierarchised juxtaposition in a little more detail, look again at the items in the list above. I took them off the pinboard and pushed them into this linear text, one after the other, for a very particular reason. This is because they do different times and different spaces. The argument runs so:

- The space and the time of the mart is weekly, it is seasonal, and it is cyclic. It is a space/time of rhythm that reaches out into the networks of commerce and sociality. Think of it perhaps as a pulse, a pulsating system of circulation. (The working farm, too, similarly extends into socialities on a daily, weekly and monthly basis, before withdrawing. Again and again.). Thump, thump, thump, a heartbeat, a pulse, this is a world of extensions and contractions. It is also a space/time rhythm that is disrupted for the farm, once is under siege. Suddenly, then, the distances become infinite, and much of the rhythm is frustrated. Two kinds of space time, administrative and rhythmic, intersect and interfere with one another, though administration tends to win.
- The spaces and times of the walker are different. Partly this is a matter of (different) embodiment: out in the morning, back in the evening; a thousand meters up, and down again, testing the body and experiencing the pleasures and wearinesses of exercise. The pinboard exhibits don't do that for us well, but I think they redo – or hint at redoing – pilgrimage. Bonnington doesn't say this (others are explicit) but for many walking in the fells is in part (only in part) spiritual in character, a way of getting out of the mundane and even out of the body. Walking in the fells and the dales does a place out of place, and a time out of time. This is philosophical Romanticism, to be sure, but it is also real. 'I miss them grievously', writes Bonnington, because (I'm saying) he can't walk on them, and this means that he has no time out of time. Here there is more tension and interference with the

administrative space-time box – and it is a tension that is being done on the pinboard.⁴³

- Now the vet. Veterinary spaces and times could hardly be more different. There is no sentimentality, none whatsoever, but what there is, is care. This is what the picture on the pinboard re-does: the vet caring for the calf whose death he will shortly supervise. Frost-Pennington's poem does this too. He is not immune to the trauma but he hopes 'for the animal's sake ... to be good at it.' Elsewhere in his poem Frost-Pennington is also clear: the killing is necessary. So spaces and times are being done doubly here. There is clinical time and space, focused on the animal, the caring, the excellence in killing. This lasts for ten minutes and it is face to face. But the time and the space of public health is also being done: killing will save other animals. For Frost-Pennington (we don't know about the vet in Chris Chapman's photograph) it is necessary and it is a collective good, even if it is spread over months and across the country as a whole.⁴⁴
- The pyre. In the quotation from The Guardian journalist Jonathan Freedland redoes another reality and another version of time and space. Ignoring the reality for those close by (choking fumes, an indescribable smell and huge grief) many watched their television sets in awful fascination and found the burning to be medieval ('[m]ore like tapestries than photographs') while the visually-minded thought of Hieronymus Bosch. I want to say that this is the apocalypse, it does a time of ending, and the burning at the end of the world: it does eschatology. This has nothing to do with the administrative space-time boxes of the 'Lessons to be Learned' report, even if it was administration that led to this holocaust.
- And finally the hefted sheep. Time here unfolds over seasons, years, decades and even centuries. The sheep have wandered, but they have not wandered everywhere. Call it a culture, it has been passed on, ewe to lamb, ewe to lamb, ewe to lamb. Now note this too: the space of the landscape is being done by the sheep: it depends on their sheep care. A year or two without the grazing and saplings start to grow, and after a decade a forest is already growing. So sheep time, its annual cycle, is also a landscape time, generational. It is the landscape of Wordsworth, the landscape of Romanticism. Two times and spaces are being done here, quickly redone by the photograph of the sign. Two eroded times that are in conflict with administrative space-time.⁴⁵

This is my argument: these exhibits re-do different times and different spaces; they enact not singularity but multiplicity; they disrupt our metaphysics; taken

⁴³ There is a large literature on romanticism and British Lakeland landscapes. For a summary see Macnaghten and Urry (1998).

⁴⁴ The clinical attitude is very far removed from sentimentality. For an alternative discussion of respect between people and animals see Haraway (2003).

⁴⁵ I want to refer, as I already have, to Ingold's (1993) piece on the temporality of the landscape. Taskscape, landscape, there are many times and many rhythms and periodicities. Hills without trees. Sheep. But then, of course, we need to add the annual rhythms of farming (bringing the sheep down to clip and dip them).

together they press us into ontics. In short, we learn in ways that are quite unlike that of the ‘Lessons to be Learned’ report.

My question was how might we learn differently about foot and mouth disease. The pinboard I have made is an experimental surface for juxtaposition with a logic which is not like that of the book. I hope that I have shown that it isn’t intrinsically hierarchical. And I hope that I have also shown that it isn’t structured as a narrative. Instead it is lumpy, heterogeneous, and not at all smooth. What some might regard as a problem – its rough edges, its refusal to reduce, its relative lack of transportability – I take to be virtues. For the problem of foot and mouth is not so very far removed from the problems confronting children in a Nigerian classroom. There are different assumptions about time and space embedded in foot and mouth practices. But somehow we have, as Verran observes, to go on together. We have to learn to work collectively in better ways, moment by moment, and step-by-step. There are no final resolutions. Foot and mouth will always be contentious. But if we are to do this well then we need tools for provisional and respectful association. We need to create techniques for laying out differences that help us to open up the character of our metaphysical commitments and to reveal the different framing assumptions about time and space. Even in the North we need techniques that do the ontic as uncertain, rather than closing it down by insisting on its singularity. There is nothing very remarkable about the pinboard, but if we use it right it counts as one such technique. It is a set of learning surfaces.

Afterword

This chapter is about learning technologies. Following Verran I have argued that these are material systems of juxtaposition. Such techniques, I’ve suggested, do not determine how they are used, but they do have structuring propensities. Books tend to come with a narrative order and carry hierarchies that give aid and succour to specific and rather closed metaphysics. Other techniques do not necessarily carry these agendas. In their associations and dissociations they may detect, recreate, and amplify poorly sensed tensions and difficulties. They may be better at heterogeneity and non-coherence. They may help to loosen the grip of the taken-for-granted. But none of this is easy.

First, it takes patience, effort, and a great deal of work to patch practices together in this way. In particular, it takes work to do so respectfully. For this is not a matter of facile ‘construction’. I have argued that the pieces on the pinboard have a hinterland. Like the images and songs in the TAMI system, they belong to and re-do, practices done elsewhere. They extend those practices. They translate them. But they also belong to them.

Connection/disconnection, what appears on the surface of the pinboard is not free-floating. It is not a trivial matter, not at all. To do it well is also a matter of respect.⁴⁶

Second, it is deeply uncomfortable. How could it be otherwise, to take the different metaphysics seriously and to wonder how some of them might be

⁴⁶ It is like a choreography. Building tension-ridden worlds respectfully is very hard work. So much is at stake. See Cussins (1998).

patched together for a moment? This is a zone of tension that has nothing to do with comfort. I borrow from STS scholar Vicky Singleton and her work on non-coherent health care, and suggest that it is a place of ambivalence⁴⁷. There are lots of criss-crossing goods and bads and no easy solutions. And, finally, third, there is no 'finally', no bottom line. Perhaps this is the hardest lesson of all. Learning is always provisional, it is always subject to change, and it is always specific and local. I return, then, to the need for modesty. The pinboard forces us to modesty because it is very particular and because it doesn't cohere well. It forces us to modesty, too, because it doesn't transport well. Beware of the techniques for learning that hold out the promise of effortless travel. If they travel at all it is because they propose a metaphysics that is seamless and singular, but the world is not like that. In practice it is bumpy and heterogeneous.

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⁴⁷ Singleton (1998; 2005), Singleton and Michael (1993).

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