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Heterogeneities

John Law

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All that is Solid ...

At the end of the twentieth century, and in a thousand ways we celebrate the ultimate success, and the ultimate defeat, of the Enlightenment project. That one might know all, that one might control all, that was the dream. But the dream turned into a nightmare when perfect knowledge and control led to the Holocaust, when it led to global environmental catastrophe, when it led to mass starvation in the South(1). When, with its glittering array of wealth, it also made horrors and unpredictabilities. And it turned to nightmare, too, when the all-knowing eye turned upon itself. When it asked the question: what is the basis of perfect knowledge? And found the only answer: that there is no final answer. That there are no intellectual foundations. That what we know, powerful though it is, rests upon foundations of sand. Of uncertainty(2).

Such, then, is the diagnosis. Knowing is limited. It is not foundational. And its effects are ambivalent. Good, bad. Good and bad intertwined. All that is solid, as Marx said, melts into air. Socially. Intellectually. Materially. Morally. Politically.

Let us meditate.



Minimalism

There is a style of music, some of you will know it, called minimalism. The American composers Steve Reich. Philip Glass. John Adams. In Europe, composers such as Louis Andriessen. In some ways this is 1960s music. New age. Let it all hang out. But only in some ways. For this is also an ordering music. But the ordering does not have much to do with European classicism – because one searches in vain for an overall form. There are no movements. Least of all are there themes, second themes, inversions, recapitulations, resolutions. We are far from Schubert.

And instead?

Well, it is something like this. There are little motifs. Small phrases. Which repeat and repeat and repeat. Which are, yes, juxtaposed with one another. Except this: they don't repeat. Not exactly. For as we move through the music they shift. They shift minimally, each time. As if in a form of translation. And as they shift they also leave us in tension. This is because the movements, the translations don't resolve. They are always incomplete. They are always waiting for something more. But no, it turns out that they are not going anywhere. For in the music of minimalism there is no terminus, no end point. 'A plateau' write Deleuze and Guattari, 'is always in the middle, not at the beginning or the end.'⁽³⁾ So it is with the music of minimalism. There are no great Mozartian vistas. No overviews. No resolutions. Minimalism is always in the middle. There is, except in the most straightforward sense, no beginning and no end. Instead there is tension and incompleteness. There is the sense of, no the need for, more to come. No privileged places. Perhaps, then, this is a music, yes, of surfaces. Of displacements. Of minimal and endless transformations. Of discomfort. Of continual movements to find some kind of stable place. That never find a stable place. Of continuing incompletenesses. Of continuing. Of incompletenesses. Yes, I repeat, of tensions.

Architecture or Minimalism?

So how do we respond to the triumphal failure of the Enlightenment project? To the uncertainties into which we lobbed at the end of the twentieth century? This is the question. Our question, My question.

I find myself, now, in tension. For I want to talk about heterogeneity. I want to go somewhere by talking about the heterogeneity of materiality, of Otherness, of the heterogeneity of objects and subjects. And most of all I want to talk about the irreducibility of the heterogeneous. But here is the tension. To talk in those terms is to make, is to desire to make, an architecture. It is to desire to make, in words, a story, perhaps a grand narrative, that mimics the beauties of a Mozart. Whereas I would prefer to follow Steve Reich and acknowledge the irreducibility of tension. The irreducibility of heterogeneity.

But for the moment no doubt it is necessary, as the Enlightenment philosophes insisted, to make 'progress'. Goodness, how these terms hang around! How the imperatives of academic and organisational production insist that we make progress! That we bring things to the point! that we discover (if only for the moment) what is sometimes called 'the bottom line'!

All right then, let me make a gesture and fix the difference. Let me distinguish between architecture on the one hand and minimalism on the other. So what would the difference be?

Architecture, yes, would be a structured order. It is an order, a noun, which one could hope to grasp. It is probably designed. It is an order that might be seen (yes, this is a crucial point) from one place, a single location. That might be taken in. So it is the world of the architect, of the landscape gardener. It is the Masonic world of God the great designer, of Man the great natural philosopher⁽⁴⁾. It is a world filled with plans and blueprints. Of fundamental laws. It is a world of layers, of foundations. Of depths. Of origin stories⁽⁵⁾. Of search, of success and failure, of progress, of redemption⁽⁶⁾. It is, yes, a world of order. Of putting to rights. Of homogeneous spaces, of sizes and scales, of transitive relations⁽⁷⁾. Of trees. Yes, that is right, of arborescent organisational trees⁽⁸⁾. Of that which may be seen and said in as many words⁽⁹⁾. Of that which may be got right. Of means and ends. Of aims and objectives. Of goals and milestones. Of strategic plans. Of that which has no tension because it has achieved its aim. Or of that which has tension only because it has not yet been achieved – or



might achieve – perfection. The imperfection of technical inadequacy. But the hope of technical redemption.

Whereas minimalism?

Minimalism is ordering. Yes, I make use of a verb rather than a noun(10). Minimalism is ordering. Minimalism is an effort at patterning that has some kind of shape, a shape that can, in one way or another, be discerned. That can, in one way or another, be performed. But it is an ordering that comes with a series of built-in qualifications or restrictions, the qualifications or restrictions that are built into and performed within minimalist music. Let me mention three of these which are, respectively, epistemological, aesthetic and political in character

One: minimalism is an ordering which exists in tension.(11) For yes, there is patterning. But as I have already said, it is patterning which is, as it were, always falling over itself, never coming to rest. Which means that it is a process. And (very important this) that it is a process that acknowledges that it is a process. Indeed an endless process. Top-heavy if it stands still, it keeps its balance to the extent that it does, by keeping on the move. By displacing itself, like a tightrope walker. By translating itself each time into something different, something a little different that resolves the instability. But only for a moment. Because it makes the next instability. The next incompleteness. This, then, is a principle of epistemology. It means that to know well is also to know that what one knows is untenable. That it has no foundations. Very precisely, it means that to know well is to know, to make patternings, and to also know that that process of patterning, the pattern that it performs, will not travel well. That it will only work for a moment. To know well is to be, yes, a modest witness.(12)

Two, minimalism is an ordering which accepts, recognises, that this uncanny sense of having two left hands, two left feet, is a state of being that is tolerable, that is more than tolerable, that is acceptable. No, more than this. It is a state of being that may even be beautiful. Which means that pleasure or beauty lie in dis-equilibrium, in being, constantly on the verge of falling over. That beauty does not demand (let me put it negatively) a bottom line. That desire is not something that needs to be fulfilled. That aesthetics do not demand firm foundations. An architecture. An overall view. A point of origin. And ending. This, then, is the second point, which is a point of aesthetics. That beauty lies, may lie, in the uncanny rather than that which is well made. Stable.(13)

Which means, three, that minimalism accepts or recognises, embraces its own incompleteness, not simply as a technical matter to be remedied, but as a part of being. Yes, Jacques Derrida has a word for it: he talks of *différance*(14). And the ordering of minimalism depends on, is constituted in, deferral. It depends on, is constituted in, the recognition of deferral, with the fact that as it makes its patternings it is also tripping over its own feet into the future. Which is, perhaps strangely enough, not simply a matter of high theory, but is also a political or an ethical point. He or she who sits in the middle of a web and glorifies in perfection and the completeness of the architecture of that web is (and I use the word advisedly) evil. I cite the Holocaust(15). But also, and perhaps more pressingly in present circumstances, I cite the absence of irony that pervades the modernist organisation with its self-validating apparatus of strategic plans and systems of accountability(16). Whereas he or she who acknowledges incompleteness becomes, instead, a political ironist. Can never take the claims of architecture at face value. And resists the attempts of her own minimalisms to turn themselves into architectures.

To talk in this way of knowing in tension, beauty in disequilibrium and ethics in incompleteness is to mingle the epistemological, the aesthetic and the political. Which means that it is not simply one way of trying, just for a moment, to catch something important of the orderings of minimalism. But also that it undoes another of the purifications wished on us in the game-plan of Enlightenment architecture, the game-plan with its laboured divisions between that which is true, that which is beautiful, and that which is good(17). Truth, beauty and good, minimalism these run together. And they could never hope to do otherwise in such an uncanny world. A world that is overbalanced – or is it underbalanced?(18)



And Heterogeneity?

So all that is solid melts into air. And how do we respond? How, in particular, do we respond to the heterogeneities which spring up everywhere. The impurifications? How do we think about them?

Yes. It is time to think about heterogeneities. And I will list three of these, so long as we recognise this list as the ironic pattern that it is, its essential incompleteness, the fact that it is top-heavy.

- One: there is heterogeneity/materiality.
- Two: there is heterogeneity/alterity.
- Three: there is heterogeneity/fractionality.

Well, that will do to be going on with. Let me say something of each.

Heterogeneity/Materiality.

Here the story is well enough known. Or it should be. For it turns out that we live in, perform in, are performed in, and recursively form part of, a world that is materially heterogeneous. For some reason social theorists tumbled to this only decades after social practitioners – and many still don't seem to see it(19). But never mind. For it turns out (we now discover, and for this we need, I think, to thank some of the post-structuralists, actor-network theory and feminist work on corporeality(20)) that relations are not simply social. Simply social? What a peculiar idea! No doubt the idea that this might be possible was one born of the purificatory rituals of nineteenth century social thought: witness the writing of Emile Durkheim as it sought to make a purely social space fit for a sociology. However, heterogeneity/materiality reminds us that social relations aren't simply social. Instead they are inserted into other materials. Or (let's make this symmetrical) the relations of other materials are inserted into what we sometimes call 'the social'.

As you can see, the moment we start taking this seriously, the terms 'social' or 'material' don't work so very well. They make distinctions that are problematic – and are indeed at best outcomes rather than distinctions that have been given in the order of things. For relations are, yes, materially heterogeneous. They take the forms that they do, if they do (and they do so only contingently and often enough precariously) because they are performed, held in place, in a variety of different media: words; bodies; texts; machines; buildings. All mixed up. Materially heterogeneous.

Heterogeneity/Alterity

So much for heterogeneity/materiality. But what of heterogeneity/alterity? Perhaps this is the province of post-structuralism with its stories of the author and the Other. Of the mutual dependence of the Author and the Other. Of the way in which they make one another, bring one another into being. Or, more pressingly, of the dependence of the Author upon the Other, the way in which the Author helps to make the other (or the other the author) even when the author can no longer see its other.

The stories of heterogeneity/alterity come in at least two forms:

One: the Other as distorted mirror: For instance, there are stories about woman as alterity, as the dangerous dreamings of the masculine imagination, an alterity that is back to front. Or stories about the creations of the Western author who imagines the Oriental Other. Edward Said tells us about this(21). Lazy, feckless, idle, despotic, sensuous, the Orient is made in the imaginings of the West as that which the West is not, or (more probably) that which wishes it were not, but (no doubt) suspects that it is. Embodied. Non-agential. Immoral. Non-purposive. So the Orient is the (distorted) mirror. Things as back to front. The left hand that faces the right hand. But there is something more. For in these power-asymmetrical imaginings of the Orient, the West (or so Said insists) imagines that Other in some measure into being. So here there is the making the Other as the dark secret, the dark mirror, of the author. But at the same time its refusal – a refusal that grows out of its fascination.



So that's one version of heterogeneity/alterity. Here is another.

Two: the Other as figure: Here the Other is not known because it could not be told. Because it could never be told. Because it is extra-discursive. Which means that it lies outside discourse, escaping or breaching the possibilities for telling, the rules of syntax. But (another move) also that it constitutes the grounds for discourse. Enables telling, while refusing to be told itself. The grounds, for instance, for the formation of a subjectivity. The larger part of the knowledgeable iceberg, the part that is under water. Discourse, for instance, as a partial telling, a purification of what cannot be told precisely because it is discursively impure. Because it is excessive (22). Because it is not conformable. Because it cannot be reduced to a set of linguistic – or for that matter pictorial – rules.

Here is a sexist example: a form of male subject, one not so dissimilar from Picasso, sees this impossible woman. Yes, sees it, sees her, even finds her erotically arousing, though she is not conformable, is not a representation from somewhere and sometime in particular. Figure, here, which cannot be reduced to the telling. Or even to singular seeing. The move of grounded untellability. Dream world. An excess which is, to be sure, a form of overbalancing, of shifting, of tensions. A possible source of the minimalist need to appreciate the pleasures of falling over while standing upright.

Heterogeneity/Fractionality

Then there is heterogeneity fractionality. This is the idea that something that seems to be singular is in reality not singular. Which is, or so it turns out (and perhaps this reflects heterogeneity/alterity) something that it is exceedingly difficult to say, and to say well. But let's try.

Is an organisation fully described by a single model? Well, we know the answer, don't we? Since Gareth Morgan at least, we know that organisations may be described in multiple ways(23). And in case you think that organisations are special in this respect, then let me tell you that philosopher Annemarie Mol makes an analogous argument for the disease condition arteriosclerosis(24). Arteriosclerosis may, she says, be described in a variety of quite different ways. But so what? In and of itself this isn't very strange. It leads, more or less, to the old question in epistemology: which description is better? Yours or mine? Which is more accurate? Which corresponds more closely to reality?

But no. Something different is being said. Something different or more. There are two moves here.

- One: it is not simply that we have different images of disease, images of organisation. It is also that we have different diseases, different organisations. Let me repeat that. Listen to it carefully. We have different diseases, different organisations. A series of them. Alongside one another. So to speak a multiple reality, not one that is singular. Which means, yes, that we have what Annemarie Mol calls 'the body multiple'. Or, no doubt, in organisation theory, what we talk of as 'the organisation multiple'. And which also means, in terms of the categories of philosophy, that differences, different stories or images have not simply to do with epistemology but also with ontology. Not simply with different knowledges but different realities.(25)
- And two? Well, yes, it is to do away with the happy pluralism carried in this way of talking. For, having just conjured up the prospect, now I need to undo the idea that what we previously thought of as a single organisation is really a series of quite separate parallel organisations. Or what we had thought of as a single disease is better thought of as several different and unrelated diseases. For (here is the second move) these different diseases, these different organisations, do not inhabit entirely separate worlds. They do not happily co-exist in parallel universes. Instead they support, undermine, and in general interfere with one another in complex and uncertain ways. To use the terms coined by Donna Haraway and developed by Marilyn Strathern, they are partially connected.(26)

Which is why I want to talk of this third category of heterogeneity, heterogeneity/fractionality.(27) Why 'fractionality'? In one sense the answer is trivial. In mathematics a fractal is a line that occupies more than one dimension and less than two.



Applied in a rough and ready way to social science and the objects of its study, a fractional object (an organisation, a disease) is thus one that is more than one and less than many. So it may be that the words sound trivial. But I don't think the idea is trivial, not at all. Difficult point. This is because heterogeneity/fractionality, just as much as heterogeneity/alterity, may be easy to say, but also presses up against the conditions of possibility as these are defined in the structures of architecture. And those conditions?

Well, we have been there already. Most of all there is the idea that there is a world which contains objects. And, in particular, the idea that this world is singular, that it is a single container. While heterogeneity/fractionality is pressing up against this constraint and it is saying: no, difficult though this may be to think, the world is not singular. The world is not even multiple, a set of parallel universes. The world is more than a singularity, but it is less than a multiplicity. It is a fractionality of complex and partially connected space/times. Which is, I guess, extra-ordinarily difficult to think. And not so easy to study either.

Heterogeneity and Minimalism

So I have distinguished between the structures of architecture and the unstable tensions of minimalism. And I have distinguished three forms of heterogeneity. We may, of course, ironise and picture them as a small and homogenising grid.

	Architecture	Minimalism
Materiality		
Alterity		
Fractionality		

The question, then, is what happens to the heterogeneities in these two regimes?

Here are some preliminary responses:

- If architecture is about centering and foundations, about knowing and controlling, then this means that it recognises, indeed embraces, heterogeneity/materiality, but builds, or seeks to build, heterogeneous materials as part of an overall architecture. To put it a little differently, it seeks to build materially diverse structures that may (or such is the aspiration) be devised and controlled from a single place, a centre.(28) So this is a process that is goal oriented, functionalist, and ruthlessly centering which – this is the melting into thin air, and the source of the Marxist complaints about alienation – re-engineers all its components. And re-engineers them. And goes on re-engineering them, in one regime or another, holding none of them sacred, until the centre holds, for a moment, in a manner which is more or less durable. Such, then is heterogeneous engineering.(29) It is the making of distributions, a mirror or an embodiment of the control project of the Enlightenment or modernity.

Which distributions also work to perform one of the versions of heterogeneity/ alterity. For this is where the Other becomes the mirror image of order, that which is told and performed into being as an exemplification of the evils of dis/order (30), what Lee and Stenner call 'belonging by banishment'(31). The exclusion and the naming as impure. Other. Different. Inverted. Perverted.

And what of heterogeneity/ fractionality? What of the partially articulated, topologically complex organisation, disease, or technical object? The entity of the world that is more than one and less than many? It turns out, or so I suggest, that within architecture this is unknowable. Unperformable. It is unknowable and unperformable because that which is centering or foundational could not imagine that which might exist apart from itself. Totally (which is the case of alterity as excess). Or partially (which is what is implied in fractionality).

- So how, then, does it deal with what does not belong to it? Or that which is not other? The answer (I can only do this in outline here) is that it moves up or down a level. It does meta. It makes a hierarchy. It creates a 'larger context' for itself – yes, a context that is singular. It creates a flat space: a larger homogeneous world, or container. And then it



locates itself, along with the entities which do not belong to it, within that flat space. Within the container. Which is, of course, a description of pluralism. Pluralism: this is the nearest that architecture is able to come to fractionality. The making of a pluralist space in which various actors, endowed with more or less the same attributes, work within a larger, topographically homogeneous, context. Which is, to be sure, an abstract way of talking of a variety of singular contexts which make up, which are said to make up, the modern world. Which make up, for instance, the possibility of liberal democracy with its citizen voters, the forces of the market with its commercial and industrial concerns, or the global community with its jostling nation states. I am saying, then, that pluralism is the dream of singularity, the architect's aspiration, displaced, moved one step up. It is the architect's answer to the uncertainties of Otherness, the uncertainties of that which is only partially connected.

So much for architecture. But what of the top-heavy and ever-incomplete processes of minimalism?

- This is closest to architecture if we think of heterogeneity/materialism. 'Heterogeneous engineering'. Yes, wrote Leigh Star, no doubt we are all heterogeneous engineers. Except that it is the managers, the ruthless architects or gardeners, who expect to be able to make their plans stick. To execute them. And who expect, just as important, to be able to order the world in their terms with their bulldozers, their spreadsheets and their bulk carriers.(32) Whereas a minimalist version of heterogeneity/materialism lives with uncertainty, incompleteness, the knowledge that much will escape. It is, as it were, making do, a matter of bricolage, of displacement. And, no doubt, of sensitivity to hurt, to the crunches and clashes of materialities and their orderings.
- But this is an attitude which spreads over into heterogeneity/alterity, and then into heterogeneity/fractionality. For as I have suggested, a minimalist attitude is necessarily ironic. It knows, it recognises, its incompleteness. It knows that it cannot tell everything, order everything. It knows, yes, that it will fall over if it tries to say it all. If it tries to centre it in one place. It knows (alterity) that it makes the Other in addition to what it seeks to make. It knows, then, that its ordering efforts are riven with disorderings and ambivalences. That it cannot, therefore, take anything that it says in as many words about the ordering of the world at face value. Which means that it needs to take a distance from its orderings, even as it orders them. And it knows (fractionality) that its orderings are incomplete. That they are partially connected, benevolently or viciously, with other orderings, orderings that cannot be grasped from any one place, from within any one ordering. This, then, is not liberalism: it is not a doctrine of flat spaces or of conformable containers which hold separate but homogeneous entities. It is, rather an irreducible complexity of partial connections, which may be performed in one way, or another, but cannot, as it were, be ordered, told, or performed from any particular place.

	Architecture	Minimalism
Materiality	Heterogeneous Engineering	Incompleteness
Alterity	Banishment	Irony Ambivalence
Fractionality	Pluralism	Irreduction, Partial Connection

Heterogeneity, Politics and Attitude

I've talked of two attitudes in the face of uncertainty. First there is architecture. This is the term which I have used to describe the self-defeating programme of the Enlightenment with its control agenda, its centering, its homogenisation, its desire for completeness, stability, foundations. And I have contrasted this with minimalism. This is an attitude to knowing and being which performs an ironic knowledge of incompleteness, of deferral, of instability, of movement, of displacement rather than accretion, of sensitivity to process.



Setting them up in this way has certain problems: the division is, no doubt, insufficiently ironic. Too clear. But it has the virtue that it allows us to tell stories about attitudes to three forms of heterogeneity: materiality, alterity, and fractionality. The differences in attitude are all important, all interesting. But it is heterogeneity/fractionality that interests me the most. And this is for political reasons. For heterogeneity/fractionality poses some very serious – but also novel – questions about the politics of distribution. Let me briefly rehearse these.

Politics, well there are enough definitions of politics to fill a dictionary. But for the moment I'll just say that politics is about distributions. And perhaps especially hierarchical distributions. Some of these distributions are well recognised within the architectures of the Enlightenment. One thinks, for instance, of the ethnicities, the genders, the socio-economic classes. And, with the ramifying activities of the modern project, these distributions have started to become materially heterogeneous. There are arguments now, about the division between human and non-human. Or between nature and culture.⁽³³⁾ So architecture is not insensitive to distribution. Indeed, it is one of the great complaints of the architects of modernism that what is sometimes called 'postmodernism' with its minimalist retreat from the hubris of grand narrative, refuses to treat the great sociological distributions with suitable seriousness.

But this is, at best, only half the story. For – this is an important point and it is where I want to end – distributions are also performed in the interferences of heterogeneity/fractionality.

In his *Irreductions*, Bruno Latour tells a story about colonialism.⁽³⁴⁾ When the colonists arrived, he said, they were barely on speaking terms. The soldiers despised the merchants. The missionaries detested both the soldiers and the merchants. The cartographers had no time for the missionaries. The civil servants could not abide the cartographers. The engineers were continually frustrated by the civil servants. There was no overall coherence. Indeed no architecture. It was, to use a term invented by Donna Haraway, an 'established disorder'. Or perhaps (after Annemarie Mol's 'body multiple') a 'colony multiple'. For each of the professions made its own orderings. And then they intersected with one another. Of course, their interactions were not always disastrous. Sometimes they were even mutually supportive, including and depending on one another. But often enough the interferences were undermining. Erosive of the architectures of particular professions.

What, then, of distribution? The answer Latour gives is that this loose coupling of domination, what I have called heterogeneity/fractionality, is incredibly difficult to overturn. If you knock down the merchants in a general strike this doesn't affect the soldiers very much. If the missionaries get lost, this doesn't really undermine the engineers. If the civil servants riot, then the cartographers are still in business. The very fact that it is not a single system in fact tends to make it stronger. Pace Lenin, there is no weak link because colonialism is not a chain.

Let me say this as plainly as I can. Whatever else one might want to say of it, colonialism is no doubt a vicious form of distribution, of domination. But its strength as a distribution lies in the fact that it is not a single form of distribution. That it is not an architecture. That it is more than one thing. But also (this is crucial) that it is less than many. That it is, in short, a consequence of the working of heterogeneity/ fractionality. A consequence that is obdurate.

The question, then, is not so much to do with colonialism. This serves simply as a quick and convenient illustration. It is rather to do with the relation between heterogeneity/ fractionality and distribution. The argument is that the minimalist attitude does not refuse the existence of distribution. It is, on the contrary, that there are forms of distribution that cannot be seized within the architectural attitude. Within the schemes of the Enlightenment. There are forms of distribution – as I have sought to indicate, obdurate forms of distribution – which cannot be drawn together. Will resist the attempt. Will turn themselves into Others that are condensed outside the possibilities of discourse. Which means that the best that we can do – and it will be an important best – is to adopt the top-heavy and incomplete attitude of minimalism. And to find fractional ways of telling and knowing these distributions.

To think like this is, of course, to demand new skills. Ways of knowing and telling that are heterogeneous. That are comfortable not so much with the bricolage of architecture, but rather with the necessary uncertainties of minimalism. Forms of knowledge that do not banish that which cannot be assimilated or told, but imagine and perform themselves instead in irony and ambivalence. Forms of knowledge that do not flatten differences into pluralism, but rather understand these – and themselves – to be partial connections in a fractional world. Such are



the skills and knowledges appropriate to a post-architectural world, to a world made in uncertainty.

Footnotes

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1. The paradigm texts here are (Bauman: 1989; Beck: 1992).
2. This thesis is developed most starkly in (Lyotard: 1984b).
3. See their (Deleuze and Guattari: 1988).
4. For discussion of the origins of modernity see (Hetherington: 1997a).
5. For an fine ethnographic and political account of the character of origin stories that leaves the reader with little faith in imputed origins see (Haraway: 1989).
6. Which tropes are explored in (Haraway: 1997).
7. The complex topologies of spatiality have been explored in (Hetherington: 1997b; Hetherington: 1997c; Law: 1997b; Law and Mol: 1998; Mol: 1997; Mol and Law: 1994).
8. See (Deleuze and Guattari: 1988).
9. For discussion of allegory as a specific economy of representation, see (Law and Hetherington: 1997).
10. The character of ordering as a verb is discussed at some length in (Law: 1994).
11. The character of knowing in tension is explored in (Law: 1997a).
12. The term is drawn from (Haraway: 1997) where it is connected to the question of situated knowing (Haraway: 1991c). There is a call for a somewhat similar 'modest sociology' in (Law: 1994).
13. It is necessary, at this point, to enter at least three political cautions. First, this is not a version of the often-condemned fascist-tinged aestheticisation of politics. Second, neither is it to recommend all forms of instability. The difficulties arising from instability have been often enough commented on in a political context: perhaps most relevantly here by Leigh Star (Star: 1991). Distributions are performed in top heavy minimalisms, and these may or may not be desirable.
14. See, in particular, (Derrida: 1978).
15. This is explored in book length by (Bauman: 1989).
16. Speaking of modes of representation in the context of sociological theory, Law and Hetherington write in the following terms: 'It is a sociology that sticks to what is safe. It is a sociology that is parochial and suburban - a sociology that tends its garden - by distributing other representational possibilities out of existence.' This is the essence of representational, or more generally architectural, self-validation. It is allied to the disciplinary politics of regionalism. And then to functional attempts to limit uncertainty to matters of technique. See (Law and Hetherington: 1997).
17. For the notion of the labour of division see (Cooper: 1989). For arguments about the purifications of modernity see (Latour: 1993).
18. I thank Bob Cooper for this suggestion.
19. There is a well-established tradition in the history of technology which presupposes that successful technical system building is materially heterogeneous. See, in particular, (Hughes: 1983).



20. The references here include actor-network theorists: (Callon: 1986a; Callon: 1986b; Callon and Law: 1995; Latour: 1983; Latour: 1987; Latour: 1990; Latour: 1996; Law: 1986; Law: 1987; Law: 1992); and feminist work on corporeality and technics by (Haraway: 1989; Haraway: 1991a; Haraway: 1991b; Haraway: 1997; Lock: 1993; Martin: 1994; Stone: 1995; Traweek: 1988; Traweek: 1995).
21. See his (Said: 1991).
22. See this discussion in (Lyotard: 1984a), but also (Bataille: 1985).
23. See his notorious (Morgan: 1986).
24. For the case of arteriosclerosis see the exemplary work of Annemarie Mol: (Mol: 1995; Mol: 1997; Mol and Elsman: 1996).
25. There is a step, one which I cannot go into here, which has to do with the performative character of telling and other forms of representation. For extended discussion see both Law and Mol (Law: 1997b; Mol: 1997).
26. See (Haraway: 1991b; Strathern: 1991).
27. This notion draws on work by Haraway and Strathern (see previous note) and is developed further in Mol (Law: 1997b; Law: 1997c; Mol: 1997).
28. Such, at any rate, is what the great entrepreneurs, the system builders described in the history of technology, sought to do. Actors like Edison knew that large technical systems were, are, a heterogeneous mix of people, electrical components, laboratories, bankers and political influence. They knew that if they were to build a power system that they need to put these all in place. See (Hughes: 1983; Summerton: 1997).
29. This term was coined by Law (Law: 1987). For revisionist criticism see (Law and Mol: 1997).
30. The relationship between order and disorder has been carefully explored in (Cooper: 1986).
31. The argument is developed in (Lee and Stenner: 1997). See also (Strathern: 1996).
32. She develops her argument in her well known (Star: 1991).
33. This argument is explored in (Law: 1991).
34. In one of the Intermediaries in Irreductions Latour sketches out a picture of colonial domination in these terms. See (Latour: 1988).

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