Social Chaosmos:

Michel Serres and the emergence of social order

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A thesis submitted in partial fulfilment of the requirements of Staffordshire University for the degree of Doctor of Philosophy

June 2011

Contents

Abstract

This thesis presents a social ontology. It takes its problem, the emergence of social structure and order, and the relationship of the macro and the micro within this structure, from social theory, but attempts a resolution from the perspectives of contemporary French philosophy and complexity theory. Due to its acceptance of certain presuppositions concerning the multiplicity and connectedness of all life and nature it adopts a comparative methodology that attempts a translation of complexity science to the social world. It draws both this methodology and its inspiration from the work of Michel Serres. After explaining this methodology, it presents a critique of the work of those prominent philosophers of multiplicity who have written on the social: Alain Badiou, Gilles Deleuze and Felix Guattari, and Manual DeLanda. Having argued for the need of a 'non-unit' of social organisation, it then unsuccessfully surveys the work of Michel Foucault and Gabriel Tarde in search of such a 'non-unit'. It produces one by extracting elements from different theorists and then proceeds to offer a novel explanation of how these *expectations* first emerge from the 'social noise' and then go through a complex process of self-organisation to produce social structure. Apart from complexity theory, this explanation draws on the temporal ontologies of both Serres and Deleuze. In doing so, it argues that the social replication necessary for this self-organisation cannot be achieved through direct imitation. Instead, it draws on an idea from Stuart Kauffman and argues that this is achieved through autocatalysis. Finally, it argues that social structures and what is perceived to be social order are the effect of the codification, to varying degrees, of these emergent *expectations*. It concludes that this structure is at its most creative when on 'the edge of chaos', when at a point of *social chaosmos*.

1 General Introduction

1.1 Micro / macro problem: Theory

All problems related to social theory, and, by extension, the whole of the social sciences, lead to one central problem, that of social order.[1] Dennis H. Wrong opens his exploration of this problem by suggesting that if the most fundamental question in philosophy is Leibniz's "Why is there something rather than nothing?" then its corollary in social theory is "Why do human beings maintain a regular social life rather than only minimal and occasional contacts with one another" (Wrong, 1995: 1)? The problem of order, he goes on to say, "has come to be widely recognized as a major, often *the* major, perennial issue of social theory" (1995: 37).

Approaching the problem from a slightly different angle, Niels Albertsen and Bulent Diken point out that "social theory has a basic problem related to the nature of its object of investigation, 'society'", and quote John Urry in saying that (in 1997) it is still "strange that sociology has devoted rather little attention to its central concept, that of society" (Albertsen & Diken, 2003: 1). They go on to argue that the concept of society has no "clearly definable general use". In their investigation into "what 'the social' *is*" [my emphasis] they take their point of departure from classical theory "in three central images of thought: unity, purity and order". Classical theory, they argue, has hitherto defined 'the social' through these three concepts. They point out, however, quite correctly, that no such theory, that no notion of the social, no description or definition of society, is capable of possessing either unity, purity (homogeneity) or order. No unity because no society, particularly in modern times, can be seen as a centred whole with clear-cut borders. No purity because no social group withstands the test of homogeneity. No order

because classical theory's attempts to "detect the 'laws' of social change [that] illuminate why and how 'the social' maintains a stable order and cohesion" have failed. They call for "a deconstruction of social theory in terms of [these] three images of thought and [for] a reconstruction in terms of other concepts such as differentiation, heterogeneity and ambivalence" (2003: 1-2). This is interesting for three reasons. Firstly, because by pointing out the failure of these rather absolute terms and calling for the use of terms that are effectively their negative, they are only highlighting the central importance of the general concept, the general concept from which they all derive. A problem that focuses on either unity or the lack of unity is still a problem concerning the concept of unity. Secondly, because all three terms actually conflate into the central problem of order. For there to be any recognizable sense of unity within any multiplicity there must, by definition, be some semblance of order (some repeatable pattern of organisation that is capable of being identified as such) – otherwise no amount of unity would be discernable. To highlight this further, simply note that Wrong's book *The Problem of Order* is subtitled *What Unites and Divides Society*. And thirdly, because their approach brings out the link between the problem of social order and that of social ontology.

John Searle has recently suggested "that there is a line of research that is more fundamental than either the philosophy of social science or social and political philosophy." This line of research is social ontology, "the study of the nature of human society itself" (Searle, 2010: 5). It would appear, therefore, that there has been little progress in this area of research; that we still seem to be in the same situation as that described by Urry in 1997. We are still unable to state with any certainty what 'the social' *is*, what it is that we are theorizing about. Yet despite this lack of understanding by academics, politicians talk and act as if they fully understand the concept. They propose

policy, and spend vast amounts of money on 'social problems' trying to 'put right' a phenomenon for which no adequate explanation has yet been produced. Social theory, with the exception of current research focussed on flows and mobilities, seems to have lost a sense of direction and purpose. Nicholas Gane, who, between 2002 and 2004, interviewed nine leading social theorists for his book *The Future of Social Theory* (2004), points, in an interview with David Beer, to a boom time for social theory in the late 1980s / early 1990s, a "point at which Marxism (centre stage for so long) entered a state of decline", a time when "[s]ociology, or at least social theory, was opening itself up to continental philosophy". But, he asks, "[w]hy was it that by the end of the 1990s social theory along with postmodernism had also started to fade from view?" (Beer & Gane, 2004: 2). Finding an answer to this question was the purpose of his book. What is needed, he says, are new concepts, and for old concepts to be rethought in different ways. What is needed, I argue, is not just a radical rethink of how we conceptualise social theory but a radically new theory that explains the very existence of the social – a social ontology that will provide a solid foundation upon which such a social theory can be constructed.

Attempts to provide such a foundation from within social theory have, to varying degrees, been less than successful. Barry Barnes notes that "All fields of empirical enquiry face a macro/micro problem in some form...how the properties and propensities of 'macro' things are related to those of 'micro' things" (2001: 339). He adds that "it is clear that there is now an unprecedented level of interest in the nature of human agency, and that the macro/micro debates have largely become debates about the relationship of agency and structure" (2001: 344). Some theorists have taken a more traditional perspective on social order, one that sought totalities, continuities and regular causal connections, the predictable characteristics of social

interactions that were thought to have been exemplified by rules, values and norms. From such a perspective, some type of macro entity or social structure influences its constituent membership in such a way that this membership behaves as agents of that structure, and reinforces its existence. But, as Albertsen and Diken (2003), and many others, have pointed out, classical social theory has failed to detect the homogeneous presence of these 'laws' of social order. In this sense at least, attempts at a structural account of society have failed.[2] In opposition to such a structural perspective, other theorists have taken an interpretive perspective and argued, to varying degrees, that any sense of social order is effectively a construct formed in the minds of interacting social subjects. The various theories that could fall under such an umbrella are vast, but if, for the sake of brevity if nothing else, I can be allowed to generalize, they do not so much deny the existence of society as, due to their focus on the micro rather than the macro, fail to offer an account of it. The danger with such accounts is, at the extreme, that human social behaviour is reduced to some form of rational choice theory whereby individual social actors behave according to the dictates of self-interest and the social is regarded as a mere epiphenomenon. According to such accounts the "powers of human beings to engender shared understandings across cultures, and coordinated action for the indivisible good of collectives, is simply unintelligible" (Barnes, 2001: 342).

Anthony Giddens is explicit in confronting this 'pernicious dualism'.[3] In *The Constitution of Society* he offers an introduction to his theory of structuration, the basic premise of which is that this dualism (structural and interpretive accounts of society) "has to be reconceptualized as a duality – the duality of structure." He explains that "the basic domain of study of the social sciences, according to the theory of structuration, is neither the experience of the individual actor, nor the existence of any form of societal totality, but social

practices ordered across space and time" (Giddens, 1984: 2). According to this argument neither structure nor individual social action exists independently; it is social action that creates social structure and it is through social action that structures are produced and reproduced, but social structure makes social action possible. This social structure is made up of rules and resources. The rules need not be written down; they may only exist in the minds of individual actors, but they carry many of the social conventions, norms or 'ways of doing things' that hold social groups together. In formulating his concept of social rules he acknowledges the influence of Wittgenstein and illustrates their use through the example of language.[4] People use the basic structural rules of language without necessarily being aware that they do so. He also likens social rules to formulae that allow the reproduction of social practice, such that "to understand the formula is not to utter it…it is simply being able to apply [it] in the right context and way in order to continue the series" (1984: 20). This approach, particularly the relationship it establishes between the structural rules of language and the ordering of social practices across space and time, together with its arguing for the non-independence of structure and agency, was a definite move in the right direction. But there are problems. Critics of this theory point to the lack of detailed explanation as to how this might actually work and how it can account for the emergence of new forms of social phenomena, and for its similarity to more traditional structuralist explanations. For example, Margaret S. Archer has said that "The theory of structuration remains incomplete because it provides an insufficient account of the *mechanisms* of stable replication versus the genesis of new social forms" (quoted in Barnes, 2001: 346), and Barnes comments that his account looks "very like the outmoded functionalism of Talcott Parsons, wherein the reproduction of the status quo was similarly linked to 'forms of normative regulation'" (2001: 346).

Barnes notes that "the 'internal' arguments between macro- and micro-sociologists and social theorists have not been dominated by metaphysical and ontological issues" (2001: 342). Perhaps it is time that this changed, at least as regards ontology. What is needed is a radical re-conceptualisation of what society *is*; what is needed is a social ontology that explains the relationship between the agency of individual social actors at the micro-level, and the observable social patterning, the ordering of social practices across space and time, what might generally be regarded as 'social order' at the macro-level. This needs to be achieved, I will argue, using such concepts as those of 'differentiation, heterogeneity and ambivalence' suggested by Albertsen and Diken (2003), but most importantly, through the deconstruction of any notion of conceptual unity. If any one idea can be said to be absolutely central to this thesis, it is this: that when examined closely, no concept used to explain or describe any aspect of the social can be understood as a unity; that all such concepts are actually multiplicities of (usually) less complex concepts that form open relationships to a whole network of concepts. This idea is a presupposition accepted by this thesis; I can find, when examined closely, no exception to it; I have been unable to falsify it. At a pragmatic level, in our day-to-day dealings, we may use these concepts as if they were unities. This does not usually pose a problem. But if we want to construct a social ontology, such an approach masks the underlying complexity and dynamism of the social process. This point is crucial at both the micro and macro level. Barnes quite rightly points out that "Whilst individuals, and situations, and encounters, are by no means unproblematically 'there', they give rise to fewer practical-epistemological problems...than institutions and social systems do."[5] These "macro-objects are the harder to see, and indeed they often have the standing of invisible theoretical entities and not of objects that can be seen at all" (2001: 341-2).[6]

For epistemological problems read ontological problems. From a reductionist perspective it is all too easy to deconstruct any notion of such macro entities, for whilst arguably the effects of their existence can be experienced, their actual existence cannot. We find it very difficult to think of multiplicities without thinking of a unified concept – something that can be delimited and enveloped. It is much easier to focus on the actions of individual social actors, for at least their behaviour can be observed and recorded – it can be delimited, enveloped and *analysed*. But such actions are just as much the creation of false unities. They too hide the background complexity and dynamism, and this concealment has hindered the development of an effective social ontology – one that explains the relationship between the micro and macro, that explains how social order is actually produced (or more accurately, how it emerges).

1.2 Micro / macro problem: Praxis

However, the problem is not only theoretical. Wrong, writing in 1995, reviews the "wars, revolutions, and rebellions" of the twentieth century and argues that fear of either widespread social disorder or of a "totalitarian excess of order" have "contributed to recognition of the problem of order as a central if not *the* central issue of social theory" (Wrong, 1995: 240-1, author's emphasis). Our actual practical experiences of the lack of social certainty, our insecurities, together with our often reactionary attempts to mitigate them, have had a direct input into the debate. He cites contemporary controversies concerning multiculturalism and diversity and the power and influence of new communication technologies as contributing to these fears. I would suggest that such social phenomena as multiculturalism and the rapid development of communication technologies simply accentuate a problem that has always

existed, but one that we would rather close our eyes to: that life, social life, *is* (in a very profound sense) uncertain.[7]

What Wrong could not have predicted, of course, was the 'war against terror' that resulted from the events of September 2001. These events not so much brought new issues to the fore as made those that already existed more acute. In 2006, Gordon Brown, the then Chancellor of the Exchequer and Prime Minister in waiting, gave a speech at the New Year Conference of the Fabian Society. In it he raised a question that has been lurking around the political agenda for some time, a question that seems to slip out of the shadows of public debate anytime events or newspaper headlines conspire to question our sense of social identity, a question that has been fuelled by the near paranoia that has resulted from this 'war'. He asked: "…what is it to be British?" One particular statement encapsulates the political reality of the circumstances of asking such a question: "Britishness", he said:

> is not just an academic debate – something just for historians, just for the commentators, just for the so called chattering classes. Indeed in a recent poll, as many as half of British people said that they were worried that if we do not promote Britishness we run a real risk of having a divided society.[8]

He correctly points out that a large number of the voting public are genuinely concerned that their sense of social identity and unity is under threat. The Chancellor's naive but political response was to call for "…a distinctive set of values which influence British institutions".

Whilst this call for 'British values' may have voter appeal (or appeasement), its academic kudos is somewhat less. As Albertsen and Diken point out (2003), and as I shall be arguing later in this investigation, any attempt to define a 'distinctive set of values' fails to achieve any sense of unity, homogeneity or order. It seems that throughout the centuries, certainly from Hobbes onwards, at times of heightened uncertainty (for Hobbes of course, it

was the horrors of the English Civil War),[9] when what we understand and are accustomed to in terms of our social relations appears to be under threat, we fear the loss of (false) certainty. We fear that whatever it is that forms our social relations is about to disappear. This seems totally natural and to be expected. The problem is, of course, that we still have not worked out what these social relations actually are: we do not actually know what it is that we fear losing. The traditional responses, both in terms of norms / values and economic / power relationships, whilst all contributing to our understanding, have all failed, either individually or collectively, to provide an understanding that actually works. We all have a sense of order that is there to be threatened or lost, but we have very little understanding of what this sense of order is or how it came about.

Let me take this problem to a deeper level of practicality. This research project is the result of both a theoretical study of philosophy and practical experience of working within the social sector. At the time of the election of Tony Blair and the 'New Labour' government of 1997 I was employed in the careers service. With the onset of the social inclusion agenda the careers service was transformed into the Connexions Service and tasked with offering seamless and universal services that would support young people in all the issues they face. More specifically, apart from the very noble aims of interagency cooperation and the removal of the bureaucratic face of government services, the service was expected to make interventions into the lives of young people that changed those lives. For example, three of the eight governing principles of Connexions were:

- Raising aspirations – setting high expectations of every individual
- Inclusion – keeping young people in mainstream education and training and preventing them moving to the margins of their community

- Extending opportunity and equality of opportunity – raising participation and achievement levels for all young people; influencing the availability, suitability and quality of provision and raising awareness of opportunities[10]

The problem was, that no one actually explained *how* you set high expectations of every individual, *how* you keep young people in approved education, *how* you raise participation and achievement levels. It is of course one thing to set expectations of someone in the sense that they fully understand what is expected of them, but how do you make an intervention into that person's life such that that they take ownership of that expectation, that they believe that that is what should or will happen to them?[11] We will see later (5.3) that Wrong (1995) makes much of the ambiguity and subtlety of his take on social 'norms', what he terms expectations. This ambiguity arises from the breadth of meaning we attach to them. Such meaning ranges from what a society, school or parent expect of their citizens, students or children to what those individuals actually believe will occur in any given situation; from clear cut statements of intention, through what is taken to be 'normal' in any social situation, to blind habits that guide and constrain social action. It occurred to me (at the time) that it was probably only when expectations were somehow translated from some sense of the objective (social) to the subjective (psychological) that the 'desired' action would occur. But how does such a translation come about? No one told me.

To return to the problem of the relationship between the macro and the micro: The Government's vision was based on a macro view of British society, and largely a statistical view at that. It was decided that in order for the UK to thrive economically at the world level that 50% of young people needed to progress into Higher Education and this would require a general raising of expectations, the raising of the numbers of young people generally engaged

in learning, and the general removal of barriers that prevented this. There appeared, however, from my perspective at least, to be no understanding of the relationship between such a macro view of society, and its translation into actual interventions into people's lives at the micro level. The thinking appeared to be that if you simply set out your macro vision, and spent sufficient money (and a large amount of money was spent) then somehow this would translate into the necessary social action. Such thinking was not in accord with my (then) intuitive understanding of how social structure emerged *from* the micro *to* the macro. What I wanted to understand, both at a theoretical / philosophical level and at a practical level concerning my actions as a practitioner, was: How do such structures emerge? What actually is the relationship between the micro and the macro?

I was fortunate enough later, before I had completed this research project (but nevertheless was sufficiently advanced with it that I was confident in the direction it was heading), to undertake, in conjunction with my project supervisor, a more practical piece of research that would effectively test my theoretical findings. This HEIF4[12] funded project was developed to work with a local social sector organisation that made interventions to promote social change. It was our hypothesis that such organisations tended to develop both the overall aims / outcomes of their interventions and the actual practices that bring them about. However, despite policy and practice decisions being evidence based (normally based on reports of what has worked in similar situations elsewhere) we believed there to be a lack of understanding as to the precise mechanism that links practice to outcomes, in particular regarding *the object of intervention*. By object of intervention we meant that actual 'thing' that the practitioner works to amend, change or influence in some way. Reflecting my on-going research we suggested that such practice actually intervenes on people's *expectations*; a term we took to refer to embedded

sets of complex relations that undermine any simple understanding of cause and effect. We further suggested that these expectations display many characteristics of complex systems, including self-organisation. This project was carried out with a local regeneration scheme, and a summary report is attached to this thesis as an appendix.

1.3 General approach to problem

Whilst this thesis takes its central problems from social theory its approach is philosophical. Its premise is that social theory provides a theoretical framework that can be used to study and interpret social data (sociology) and enable interventions to be made (social policy). This thesis will not, without further research and development, be able to provide such a framework – though it not only could be so developed, the attached appendix records my own initial tentative research steps towards such a goal. Rather, in line with the call from Searle (2010) for a line of research more fundamental than the social sciences, and that from Albertsen and Diken (2003) for research into what the social actually *is*, this thesis claims to be social ontology. It takes its basic assumptions from outside of social theory. These assumptions (or presuppositions) are:

1. That the general approach taken by philosophers of multiplicity is, in principle, valid; that life, and particularly social life, cannot be understood as homogenous and that the notion of unities within it is deeply problematic.
2. Rather, that life displays all the characteristics of dynamic systems and can only be understood using concepts taken from complexity science; in particular that what we take to be order is not the solid and certain order that we would like it to be, but rather is emergent, fluid and creative.

3. And, in line with the above, that within life and nature a deep connectivity exists; that social life and humanity cannot be understood as in any way separate or distinct from life in general - life from which it has emerged – and that in its turn, life in general cannot be understood as radically distinct or separate from the material nature it has emerged from.

As such, the target audience of this thesis are those social philosophers who have an interest in social ontology, and who will be in a position to provide the necessary critique that will enable its inevitable failings to be overcome, and those social theorists who will be in a position to provide the more applied research that will be required to translate this thesis into a theory that has a more direct practical application to social phenomena.

I justify this philosophical approach broadly in line with the distinction made by Deleuze and Guattari between philosophical concepts and scientific functions (Deleuze & Guattari, 1994). For them, these concepts and functions are differentiated by their relationship to chaos, with the latter attempting a certain stability, certainty and predictability, whilst the former are at home with fluidity and uncertainty. Whilst certain social theorists have started working from the perspectives of fluidity and complexity (Bauman, 2000 and Urry, 2003 for example) there is still a tendency within social theory to align itself to the sciences, as a social science. In order to attempt the social ontology that this thesis aims for I would suggest that a clear distinction needs to be made between a scientific approach and a philosophical one. In saying this I in no way wish to be critical of science in general or social science in particular, but feel that aligning this thesis too closely to them would restrict the scope such a fundamental reappraisal needs. In short, a philosophical approach has a far greater degree of freedom to challenge certain presuppositions.

It is central to my hypothesis that the work of Michel Serres provides both the methodology and several key ideas that will allow the problems at the heart of this thesis to be addressed from the direction outlined above. However, whilst I shall draw on Serres extensively, this project is neither a direct study of either him or his body of work. I am not attempting an exposition, analysis, evaluation or critique of his work, though of course, elements of these may result. My aim is to use aspects of his work to solve a problem that he does not address, at least not directly. In line with this methodology I shall also draw on the work of several other contemporary philosophers and social theorists, together with complexity theory, in an attempt to discover a certain self-similarity of description that can be mixed together. It is my hope that the resulting 'tatters' (as Serres would describe such a product or mixing) will provide a sufficiently effective description of the emergence and dynamics of social structure.[13] The only test of this description will be that it works – that it can be *applied* to social issues and problems!

In Chapter Three I shall outline the methodology of Serres and make the case for why it, in general terms, will be adopted for this project. This will involve explaining both his comparativism and his empiricism, and making links between these and the emergent science of complexity. In the course of doing this I will demonstrate why, in view of the considerable links between Serres' approach and that of complexity science, I do not just adopt the latter as my basic approach to the problem. Part of the reason I shall give for not taking such a direct approach will be that there are two particularly key ideas offered by Serres that will prove invaluable, namely *noise* and 'thinking the multiple'. Both of these ideas will also be introduced at this stage. The other part of the reason for keeping Serres at the centre is that in applying complexity science to the social, in translating from a general field (or even, at times, from a

biological one) to a social field, ideas used by a number of contemporary French philosophers will be needed, and whilst Serres is only one of these he does provide a necessary counterfoil to Gilles Deleuze at a crucial stage of my argument.

The two key ideas noted above, *noise* and 'thinking the multiple', are discussed by a number of contemporary philosophers in ways that attempt a direct application to the social. As I've already stated, I cannot think of any aspect of society, of any social phenomenon, that can be understood as a unity; that cannot, when examined closely, be found to be open, multiple and complex. If we accept this, an obvious place to commence this research would be with those philosophers who have made such an inroad into the problem. In Chapter Four, therefore, I shall examine the positions adopted by Alain Badiou, by Gilles Deleuze in his collaborations with Felix Guattari, and by Manual DeLanda in their differing attempts to explain social multiplicities. Whilst I will argue that each, for different reasons, falls short in their attempt, I will be able to draw sufficient from these arguments to establish a tentative first hold on the task ahead.

This first hold will take the form of a search for a 'unit' of social organisation; or rather, as I will be seeking to avoid unities in favour of multiplicities, whilst at the same time accepting the need for a certain something that is the subject of organisation, a 'non-unit' of social organisation. This will be my task in Chapter Five. In researching such a candidate 'non-unit' I shall concentrate on two main writers: Michel Foucault and Gabriel Tarde, though I shall approach Foucault from two perspectives and the actual term I adopt comes from a third person, Dennis Wrong. I shall start by exploring Foucault's understanding of power relations in the hope of uncovering exactly what it is that is the subject of these relations. I shall then explore Tarde's *The Laws of*

Imitation. There has been quite a lot of academic discussion as to the existence of a social replicator (a meme) that mimics much of the organisational capacities that the gene does in biological replication. Tarde has been closely linked to this line of research, with one academic (Marsden, 2000) going as far as to bestow the title 'forefather of memetics' upon him. Such a replicator would appear to be an obvious candidate as such a 'non-unit', and not least because of the strong links between Tarde and Deleuze, though I shall argue that such an approach poses serious difficulties. I then return to Foucault to concentrate on the role statements play in his discussions on discourse, and to blend them with Wrong's understanding of expectations to produce an actual candidate 'non-unit' that can be taken forward into the next section. I adopt *expectation*[14] as the name of my non-unit.

In chapter six I first of all explore the relationship between Deleuze's notions of difference and repetition, and Serres' understandings of *noise* and time, in order to offer an explanation as to how *expectations* could emerge from the social *noise*[15] and undergo preliminary self-organisation. Having previously discovered problems with the notion of a social replicator, a certain something that is passed from individual social actor to individual social actor, and consequently with Tarde's argument for imitation as a direct cause of social repetition, I then find a solution in the work of biologist Stuart Kauffman – the notion of auto-catalytic sets, or a method of indirect repetition that could also be described as indirect imitation. I conclude by arguing how these emergent expectations, to varying degrees, go through a process of codification to become norms, laws and institutions (each of these being a manifestation of the process). For this last section I return to the collaborative work between Deleuze and Guattari, but without adopting a straightforward Deleuzian solution.

2 Literature review

2.1 Philosophy

There is only a limited amount of Serres' work available in English translation, and none of it refers directly to the problems being addressed by this project – in fact it could be argued that none of his work addresses any problem directly. For an understanding of his methodology the two most useful texts are *The Five Senses*, an extended essay on empiricism in which he is explicit in recognising the limited value of abstract thought and analysis, and *Conversations on Science, Culture and Time*, a series of 'conversations' with Bruno Latour, where the second 'conversation' is devoted to method.

The Natural Contract is the closest Serres comes to directly addressing the social. In this book Serres argues that whilst we live according to a social contract, what we lack is a contract with the planet Earth. This makes numerous references to 'bonds' and 'cords', but otherwise has no direct bearing on this thesis. The text, other than the two above on methodology, which does have a major bearing on this thesis, is *Genesis*. In it he offers up the challenge to 'think the multiple' and writes at some length on time and multiplicities. *The Birth of Physics*, a reflection on Lucretius' *On The Nature of the Universe* and Greek atomism, together with the mathematics of Archimedes, is useful for his thoughts on dynamics and the fluidity of life and existence. *The Troubadour of Knowledge*, which focuses more on epistemology (to the extent that any of his texts have a single focus) is of more limited relevance. Serres' earlier work, published in the *Hermes* series, has not been translated, but ten essays from this series have been and published in English as Hermes: *Literature, Science, Philosophy*. These essays generally reflect his interest in fluidity and the second law of thermodynamics

and are good examples of his comparative methodology. Of particular interest is the postface on dynamics by the leading exponents of complexity science Ilya Prigogine and Isabelle Stengers.

There is a very limited amount of secondary material available in English. The most relevant of this material to this thesis is that by David Webb. His two journal articles ('Michel Serres on Lucretius: Atomism, Science and Ethics' and 'Thinking Multiplicity without the Concept: towards a Democratic Intellect) together with his introductions the English publication of *The Birth of Physics* and Peter Hallward's interview with Serres ('The Science of Relations') are all directly relevant and very informative.[16] The collection of essays edited by Niran Abbas (*Mapping Michel Serres*) are interesting as background reading to Serres but none are directly relevant to this project. Steven D. Brown's journal article, 'Michel Serres: Science, Translation and the logic of the Parasite' is also interesting, but, again, is not directly relevant to this project. Steven Connor has also written many insightful papers on Serres, though from the perspective of modern literature and literary theory rather than social theory or ontology.

Alain Badiou (in *Being and Event*) and Gilles Deleuze & Felix Guattari (in *Anti-Oedipus* and *A Thousand Plateaus*) are both philosophers of the multiple: they not only explore 'the multiple' and multiplicities, using very much the same language as Serres does, but, in their different ways attempt to apply these explorations to the social. The sections related to codification in the Deleuze & Guattari texts are particularly insightful. Deleuze's seminal *Difference and Repetition* text provides vital technical insight as to how the *expectations* (as I go on to describe them) actually emerge. Michel Foucault's exploration of discourse, and particularly of 'statements', in *The Archaeology of Knowledge* is directly relevant to the notion of *expectations*, a concept that is absolutely

central to the results of this thesis. Foucault's works on power relations (particularly *Discipline and Punish* and *The Will to Knowledge*) are also directly relevant to this thesis. Also of importance is W.B. Gallie's 1956 paper 'Essentially Contested Concepts'.

Also of interest are several writers who straddle both philosophy and politics. The Frankfurt School's general criticism of modern science as inherently positivistic and its dependence on logic of identity, together with their separation of philosophical truths from scientific truths, provides further background to the general methodology of this thesis. Of prime importance here is Theodor Adorno's *Negative Dialectics*. In *The Theory of Communicative Action* Jürgen Habermas discusses the concept of the lifeworld. Of interest here is Habermas' understanding of the lifeworld as the immediate milieu of the social actor, as the world and horizon of his consciousness and communication, a world the structure of which he can modify. Of similar interest, therefore, is the earlier book of the social phenomenologist, and pupil of Husserl, Alfred Schutz – *The Phenomenology of the Social World*. For Schutz the lifeworld is the world of everyday life, the world as taken for granted. A serious problem with this book, however, is Schutz's attempt to reconcile objectivity and subjectivity in the social sciences by recourse to ideal types – a solution that is overly abstract for the methodology adopted by this thesis.

Two books by Ernesto Laclau, *Hegemony and Socialist Strategy: Towards a Radical Democratic Politics* and *New Reflections on the Revolution of our Time*, are of interest in a context wider than the necessarily narrow one adopted for this project. The former (written jointly with Chantal Mouffe) is interesting for its understanding that no social structure is entirely closed, for the centrality it gives contingency in the social process, and for the role it

ascribes to sedimented practices. The latter makes an interesting link between the constitution of social identity and power.

Two books by political philosophers at Johns Hopkins University are also worth noting. In *A World of Becoming* William E. Connolly directly engages with a view of the world as composed of open, complex and multiple interacting systems, and does so in a language and way of thinking very sympathetic to Deleuze, but without offering any insight into the actual being of these systems. He argues, quite correctly, that we need to find ways to adapt to the complexities of the modern pluralistic world, without attempting an explanation of how these systems have emerged and interact. Jane Bennett, in *Vibrant Matter*, approaches the world of human experience from a very similar perspective but tries to incorporate the active participation of nonhuman elements into the process. Whilst outside of the focus of this thesis this is a very interesting direction of research.

2.2 Social theory

Albertsen & Diken's research paper 'What is the Social?' is an invaluable and concise summary of one aspect of the central problem of this thesis. Brain Fay's *Contemporary Philosophy of Social Science* is interesting from a multicultural perspective and very much supports many aspects of Serres' philosophy but does not provide any great insight into the problems being addressed by this thesis. Nicholas Gane's *The Future of Social Theory* is a collection of interviews with the world's leading social theorists and provides innumerable links. David Weissaman's *A Social Ontology* discusses aspects of the problems without adding anything new. Dennis H Wrong's *The Problem of Order* also discusses aspects of these problems but attempts resolutions that

do not easily fit with the approach taken by this thesis. It does, however, of a basic outline of expectations that is developed by this thesis.

Sage Publication's *Handbook of Social Theory* surveys many aspects of contemporary social theory and contains Barry Barnes' paper 'The Micro / Macro Problem of Structure and Agency'. This paper gives a very concise overview of the problem. It notes the centrality of Anthony Giddens' *The Constitution of Society* to this debate. Giddens' book is probably the most prominent attempt from within social theory to bridge the macro / micro problem, but is ultimately unsuccessful because of its lack of an explanation as to how new social rules come about.

Many texts dealing with the problems outlined above refer to Gabriel Tarde as a forgotten 'great' of social theory, lost in the shadows of Auguste Comte. He is also referenced in many passages by Gilles Deleuze, who acknowledges his influence. Tarde is also referenced in several texts in relation to memetics (particularly in Marsden's paper 'Forefathers of Memetics: Gabriel Tarde and the Laws of Imitation' and Susan Blackmore's *The Meme Machine*). Memetics can be traced back to Richard Dawkins' *The Selfish Gene* in which he proposes the possibility of a unit of social replication that behaves in a similar manner to the gene in biological replication. A facsimile of the 1903 edition of Tarde's *The Laws of Imitation* has recently been published and is an essential source.

Manual DeLanda's *A New Philosophy of Society* was published in 2006. He approaches his work from the general perspective of complexity and emergence, which is broadly in line with the approach taken by this thesis, and he has written on the work of Deleuze and non-linearity. Despite the promise offered by this background his book is disappointing and contributes nothing positive to the task of this project. Another recent publication is John

Searle's *Making of the Social World*. Searle's position reinforces the general point that such a social ontology as being proposed by this thesis is needed, and the need for such an ontology to conform to the basic facts of a materialistic understanding of our world. On the other hand, he argues in the opposite direction regarding Serres' critique of abstraction and analysis.

The works of two other thinkers are of direct importance to this research project. G.H. Mead's *Mind, Self & Society* contributes to an understanding of the difference between consciousness and self-consciousness, and the social dimensions of the latter. The works of Claude Lévi-Strauss, particularly his *Structural Anthropology*, provides invaluable background information and understanding regarding a comparative methodology in a (near) social context.

In *Liquid Modernity*, Zygmunt Bauman argues that the modern social world is characterised by the continuous fluidity of things; not just actual human locations, but particularly inter-human bonds. In this respect he is very much aligned against a more traditional scientific understanding that seeks stability and attempts explanations in terms of solidity, and very much in line with Serres' general approach. He does not, though, offer a sufficiently fundamental exploration of exactly *what* flows, the precise nature of these inter-human bonds and how they emerge. This book is Bauman's attempt to move forward from his analysis of the postmodern condition he offers in *Imitations of Postmodernity*. However, some concepts contained in this earlier text, particularly the 'privatisation of fears', may still be of value in attempting to apply to results of this thesis to practical social problems, like the recent social unrests and the current 'economic crisis'.

Two current and prominent themes within social theory, technology and globalisation, are worth noting. Whilst not falling within the narrow ontological focus of this thesis, they do offer interesting directions for further research. Nicholas Gane notes the importance of the first of these in his introduction to *The Future of Social Theory.* Here he makes the obvious point that modern technology is blurring the boundaries between human subjects and impersonal objects. Despite Bruno Latour's well publicised reservations about his previous work on Actor Network Theory (*Reassembling the Social: An Introduction to Actor-Network Theory* and 'On Recalling ANT') in a later work on the sociology of mobilities, inspired by Gabriel Tarde ('Gabriel Tarde and the End of the Social'), in working on the mobile connection between things he still seems to place the analysis of objects at the centre of his research. In this respect the work of Scott Lash (*Another Modernity, A Different Rationality* and *Critique of Information* for example) is also worth exploring. In his move beyond postmodern theory he focuses on an analysis of technological forms of life. Jane Bennett's *Vibrant Matter* (discussed above) is also, of course, relevant in this context.

John Urry's *Global Complexity* provides an excellent study of globalisation. He offers an explanation of the way in which social relationships are networked across the globe, and the way in which entities (power relations and ideas) flow across time and space, by drawing on the concepts of complexity, networks, emergent systems, information processing and local / global attractors. It does not, however, offer a sufficiently detailed explanation of what a flow of ideas or power relations actually involves. Also of background interest in this respect are two books by Saskia Sassen (in *Globalization and its Discontents* he analyses the global mobility of people and money, and in *Cities in a World Economy* he analyses inequalities in the world economy) and

What is Globalization? by Ulrich Beck (in which he analyses what he terms the 'transnational realities' that lead to increasingly fluid life forms).

For an exploration of the relationships between power and government inspired by the work of Foucault see Nickolas Rose's *Powers of Freedom*. In line with Serres' frequent use of literature, see Judith Butler's article 'Bodies and Power, Revisited' and her *Contingency, Hegemony, Universality* (with Laclau and Zizek) for an exploration of the boundaries between social theory and literary theory. Finally, for an exploration of the contemporary sociological implications of a highly inter-connected society and how such an understanding of the social as presented by this thesis could be used to analyse or offer a critique of the notion of a 'big society', see Robert D. Putman's now infamous article 'Bowling Alone: America's Declining Social Capital'.

2.3 Complexity Science

The main problem in offering a review of texts available under the general title of complexity science is that it is very much an emerging body of knowledge with no coherent theory, and that it lacks clear boundaries. It is, therefore being researched and applied in a very wide range of academic disciplines, including information theory, biology, health, philosophy, economics, business, town planning, architecture and sociology, with each researcher attempting to apply a broad range of concepts to their particular area of specialism.

Gregoine Nicolas and Ilya Prigogine are highly respected complexity scientists, and their book, *Exploring Complexity: An Introduction*, is an excellent and authoritative starting point for a general introduction to this emerging science.

Also of value as background texts are Roger Lewin's *Complexity* (an excellent introduction to the subject), Steven Johnson's *Emergence* (a very good introduction to the concept of emergence that highlights the value of a comparative methodology by making explicit the similarity of emergent forms between ants, brains and cities) and the classic by James Gleick: *Chaos*. Gleick's latest book, *The Information*, offers a very readable introduction to information theory.

For a good introduction to the self-similarities of nature being discovered by scientists working in the field of complexity see *The Collapse of Chaos: discovering simplicity in a complex world* by Jack Cohen and Ian Steward. Philip Ball's *The Self-Made Tapestry* is another invaluable source of information regarding this self-similarity of form across nature, but has the additional value of providing some truly inspirational photographs by way of illustration. The two books by Fritjof Capra, *The Web of Life* and *The Hidden Connections*, also provides much background information as to the connectivity of life, as does Mark Buchanan's *Small World*, though this latter text does so from much more of a social perspective than the biological / environmental perspectives of the former.

Of texts directly related to philosophy, that by the philosopher Paul Cilliers (*Complexity & Postmodernism*) is probably the most informative. Also of value (and more straight-forward in their approach) are the online journal articles by Francis Heylighen ('The science of self-organisation and adaptivity') and Francis Heylighen, Paul Cilliers, and Carlos Gershenson ('Complexity and Philosophy'). For an attempt to apply many of the concepts of complexity science to the work of Deleuze, see Manuel DeLanda's *Intensive Science & Virtual Philosophy*. Also of value as a more general text is DeLanda's much cited *A Thousand Years of Nonlinear History*.

Of texts directly related to biology, the two books by Brian Goodwin, *How The Leopard Changed Its Spots* and *Nature's Due* are by far the most cited, particularly when being applied to philosophy. They both apply many of the features of complexity science to biology and discuss at length the self-similarity of process and form across the biological world. The two books by Stuart Kauffman, *The Origins of Order* and *Investigations* are much the same, but, particularly the former, by way of a more in-depth biology. The latter of these is more philosophical in its approach, with its title being a direct reference to the work of Wittgenstein.

There are also a number of texts, in addition to those mentioned above under social theory, that apply complexity theory to the social sciences. Of note amongst these are Edgar Morin's *On Complexity* (an exploration of the relationships between systems theory, complexity and the human sciences), D.S. Byrne's *Complexity Theory and the Social Sciences: an introduction* (as its name suggests, a good introduction to the ways complexity theory is being directly applied to the social sciences), and Graham Taylor's *The New Political Sociology: Power, Ideology & Identity in an age of Complexity*.

3 Methodology and Michel Serres

3.0 Introduction: the methodology of Michel Serres

If the general presuppositions outlined in 1.3 regarding the multiplicity and fluidity of the social world, together with a deep sense of connectivity throughout nature and life in general, are accepted, even if only tentatively, then a comparative methodology similar to that used by Serres is the most appropriate to the task of this thesis. This is in part because Serres' approach is from the direction of the multiple, and from the perspective of fluidity and non-linear dynamics. It is also, in part, because this comparativism has the aim of bringing to the surface those deep similarities that cut across the boundaries of traditional areas of academic research. But it is also because this comparativism is more than just the comparing of two otherwise distinct domains and noting their similarities, and it is much more than just the application of one theoretical approach (complexity science, for example) to a new domain (the social world). It concerns its translation. Translation accepts that, despite the similarities, the direct application of one language into a different context, a transliteration, loses meaning and subtlety. Translation requires sensitivity and creativity, and Serres is acutely attentive to this problem.

But such an approach has its limitations. The initial translation, in the case of this thesis from complexity science to the social world, has to be approached with caution (and even though partial translations have been attempted before, this, as far as I can ascertain, is the first attempt at a thorough translation such that the problems earlier outlined are resolved). If it was possible for a straight application to take place it would be reasonably obvious

if had been successful – the pieces would fit together like a jig-saw puzzle. But as it is, the theory produced by this thesis will require further acts of translation (from the philosophy to social theory, from the theoretical to the practical, and from the general to the local) before it can applied directly to social phenomena, and only then can its validity be assessed. In many ways it is related to social theory in the same way that theoretical physics is related to experimental physics, in as much that the latter devises experiments that test the claims of the former. The problem with such an analogy, of course, is that even though 'complexity' is referred to as science, it is not science in the traditional sense of the term that claims accurate predictions can be made. It is, if anything, the science of uncertainty. This inherent uncertainty will pose further problems for any further translation.

This thesis, then, derives its methodology and its inspiration from Michel Serres. Serres was not the first person in the history of philosophy to think in terms of multiplicity. He had two main influences from this history: ancient atomism and the mathematical models of Leibniz. The results of the former of these on his thinking led to the publication of *The Birth of Physics*, and the latter to *Le système de Leibniz et ses modèles mathematiques* (which, unfortunately, is not available in an English translation). In relation to Leibniz, it is interesting to note that Hideaki Hirando (1997) suggests that the fractal geometry promoted by Mandelbrot drew on Leibniz's notions of self-similarity. Serres explains that he was himself a "structuralist in the mathematical sense of the term" before abandoning this perspective in favour of a "second mathematical revolution" inspired by information theory and algorithms (Hallward, 2003b).[17] All these intellectual sources, together with his seafaring experiences (where the complexity and uncertainty of the weather is so significant) seem to have produced a thinker particularly sensitive to the complexity and multiplicity of life and nature.

This thesis is not, however, an exposition or critique of Serres' work – though these may be produced along the way. Its hypothesis is that his methodology could provide a way, a map as it were, into the terrain of this investigation.[18] However, to the first time reader unfamiliar with his work, Serres can appear an enigma. Bruno Latour, the sociologist whose contribution to the development of Actor Network Theory (Latour, 2005) was inspired by his reading of Serres, reflected the common reaction to his work back to him during a series of interviews in 1991: "Your books aren't obscure, but the way to approach them is hidden. You map out a path, you go everywhere – the sciences, mythology, literature – but at the same time you often cover up the traces that led you to your results" (Serres & Latour, 1995: 1); and asks: "Why, in the space of one paragraph, do we find ourselves with the Romans then with Jules Verne then with the Indo-Europeans then, suddenly, launched in the *Challenger* rocket, before ending up on a bank of the Garonne River?" (1995: 43). The aim of these interviews, said Latour, was to "go behind the magician's curtain, that we may...see the underlying design of a body of work that doesn't appear to have one" (1995: 1). There is, though, no underlying design as such. In line with Wittgenstein, whom he read in England, Serres' 'philosophy' is "not a body of doctrine but an activity", a body of work that consists "essentially of elucidations" or demonstrations (1995: 69); his work *is* a methodology; one that, whilst implying a general ontology and epistemology does not, in itself, address the detailed understanding that this project seeks. It does, though, provide the methodological framework on which such an understanding can be constructed.

Serres, in stating that his philosophy "is not a body of knowledge nor a discipline among the usual sciences" explains that this is so because "it insists

on a balance between everything and nothing", and uses an image of a double cone to elucidate:

> Philosophy works on a two-layered cone, occupying its apex. I see the encyclopedia on the first layer and, on the second, nothing – learned unknowing, the suspension of judgement, solitude, questioning, doubt, incertitude, reconstruction starting from zero. (Serres & Latour, 1995: 90)

Serres' methodology is comparative, not hermeneutic and not dialectic. Whilst these latter methods take unities as their subjects of either interpretation or conflictive understanding, the former takes multiplicities (this will be discussed in detail in sections 3.3 and 3.4). This comparativism is made possible by a particular understanding of time (or to be more accurate times) that gives birth to the multiple; this is an understanding of time that will become integral to this thesis (6.1). It produces a freedom of thought that is able to respond to the deep patterns in life and nature in a way that the other methods cannot – for they are either born from, or give rise to, conflict. Serres' methodology itself is born of an abhorrence for violence and conflict and is "driven by a strong disinclination to 'belong' to any group" (1995: 20) and a desire to invent and follow his intuition. Intuition, in the sense used by Serres, is the vital creative element to any serious piece of research. After all, even in the physical sciences the original hypothesis formation is largely intuitive, prior to testing by experiment. As Russell has pointed out, "the opposition of instinct and reason is mainly illusory. [It] is what first leads to the beliefs which subsequent reason confirms or confutes." (1953: 19)

In working on a problem Serres attempts to demonstrate the self-similar patterns that exist across space, time, cultures and academic disciplines; patterns that a growing number of scientists are actually discovering in their respective fields.[19] These patterns though are not fixed, solid, transcendent statues,[20] rather they are patterns constructed from a turbulent and fluctuating dynamic. But they are also patterns that reflect the underlying

fluidity and complexity of life and nature; patterns that, because of their fluid and turbulent nature, need to be redrawn afresh each time a problem is tackled. Hence the image of the double cone that he uses to illustrate his comparative method. The first layer of the cone is everything the philosopher has read or studied; insight drawn not only from philosophy, but from any or as many 'disciplines' as possible. The second cone is akin to standing in front of a blank canvas and relying on your intuition to recall those aspects or elements of your insight that throws light, that illuminates the problem in hand, that guides the images that emerge from the brush in your hand. This comparative methodology discloses traces of patterns that only 'exist' as virtual patterns or forms, and can only be disclosed by the rapid movement of a messenger (making connections) or a thief (stealing or collecting fragments) – hence Serres' use of the god Hermes as a motif.[21] Thus "comparativism and the complexity of things and time require swift movement and a new style" (Serres & Latour, 1995: 72), a methodology that presupposes leaps and speed, a methodology where "the most elegant demonstration is always the shortest one" (1995: 69), a methodology that because of the distances leaped and the speed of travel produces work that can leave the reader disoriented and dizzy, but a methodology that can demonstrate the deep self-organising and self-similar patterning found in all aspects of life and nature. And once such a self-similarity is acknowledged to exist, it is a methodology ideally suited to the translation of ideas from one area of research to another.

In this chapter I intend to do a number of things: 1. Explain Serres' comparative methodology in greater detail than that outlined above. I will make links between this methodology and work being undertaken by a number of other academics, and explain the relevance of these links to the aims of this thesis. This, methodologically speaking, is comparativism in

practice – and such a practice permeates this thesis. 2. Make a connection between Serres' body of work and complexity science.[22] Even though Serres does not directly refer to 'complexity theory' a great many of the concepts he uses are to be found within this emerging science – not least of which is that of *emergence* itself, a notion that will be central to this thesis. 3. Introduce two key ideas: *noise* and 'thinking the multiple'. The first of these is central to an understanding of emergence as used in this thesis, as applied to the social, whilst the second is quite simply a point of focus and a guide, a constant reminder not to retreat to the safety of unities. 4. Outline Serres' empiricism. This is essential in so far as it will quite literally keep this thesis grounded; it will imbed the emergence of the social form in the ground, in our connection to our world, our environment (the given) through our senses; it will reject, in any definitive sense, any abstract, Ideal or transcendent explanation of the social.

3.1 Serres: key ideas

Of the various ideas used by Serres, perhaps two are central to this thesis: *noise* and 'thinking the multiple'. The first of these is closely related to Serres' understanding of time.[23] The time or times that need to be understood are non-linear. I use the plural because it is important, in order to understand what time means for Serres, to drop any notion of a singular time – systems and structures are pluritemporal. This is not to deny the existence of linear time, both in the form of reversible mechanical times and unidirectional thermodynamic times, but to claim that these forms are emergent out of a non-linear time born itself from chaos, or *noise*, or total symmetry. As an entry point into explaining this claim, it is worth briefly noting two statements made by Serres. During his interview with Latour he claims that "Hegel's error was in reversing [the] logical evidence and in claiming that contradiction

produces time, whereas only the opposite is true: time makes contradiction possible" (Serres & Latour, 1995: 49-50). In *Genesis* he states that "[f]or a long time I believed that history was producing [*noise*] before thinking that it was producing history" (Serres, 1995a: 83). In the former statement, Serres argues that Hegel confuses time and history. Historical time, chronological time, Bergsonian abstract time, is the time we are used to – it is the time of the narrative of events, born, no doubt, from contradiction. Time for Serres, however, is the background *noise* from which these events emerge; it is, as I shall proceed to explain (in section 5.1), the emergence of rhythm, of pattern, from that in which no rhythm or pattern can be distinguished. Thus the emergence of any pattern (order) is the emergence of a time sequence.

Serres uses the word *noise* in the way it was used in Old French, to mean fury, uproar and wrangling, as well as sound, as in the French phrase *chercher noise* – to pick a quarrel with. For Serres, *noise* (italicised to differentiate it from the word meaning just sound in English) is metaphysical and he suggests that background *noise* "may well be the ground of our being" (1995a: 13). It is the pure chaos, the pure undifferentiated, totally symmetrical fury, the pure multiplicity out of which everything emerges like Aphrodite out of the sea: "Noise cannot be a phenomenon; every phenomenon is separated from it, a silhouette on a backdrop..." (1995a: 13). *Noise* or chaos, in this sense then, lies in contradistinction to any notion of chaos in the sense inferred by Hobbes' war of all of all against all – as war, despite the conflict, already implies a significant amount of organisation:

> The primal state, the primitive state, before any contract, is a pre-ordered state, undecided, undeclared, unprepared for, not stabilized in institutions. No, it is not war, it is noise; no it is not war, it is the multiple in a fury. (1995a: 83)

And for the same reasons it lies in contradistinction to the conflict that arises out of a dialectical process. In this sense it could be linked to the emergence

of any complex system – from the undifferentiated plasma immediately following the 'big bang' to the undifferentiated cells of an early embryo.

These points are important for an understanding of both emergence and self-organisation. "Classes", states Serres, "are a *result* of fury" – fury being a synonym for *noise* (1995a: 82, my emphasis). All patterns, any notion of order – classes, genera, concepts, unities, entities – emerge out of *noise*. I will return to and elaborate on these essential ideas later (in sections 5.3 and 6.1), but for the purposes of these introductory remarks let me say 'simply' that *noise* is pure multiplicity (and a link can be made to Lucretius and atomism here):[24] a grouping composed of a multitude of elements or atoms that is, in a sense, unthinkable, in as far the perfect symmetry of the laminar flow prevents any differentiation, and thus any sense of either space or time. No atom has any relationship to any other atom – all is chaos. Emergent patterns will be formed from those elements that form quasi-stable relationships with other elements:

> All at once, I am speaking of time, of physical time, and the flux is no longer a metaphor, I am speaking of the flux, the laminar flow that is sown, here and there, with turbulence...I am speaking only of pure process now. It is the time of worlds and things, of history, of the group and of knowledge...(1995a: 95-96)

From this turbulence all things, all classes are born, born from these first relationships between certain elements, born from these first codes: "Life, invention, violence...a processual flux codes a classing" (1995a: 95-96). Fury becomes a classifier, a giver of form. This is emergence in a nutshell; and the relations that produce the emergent forms are internal and self-organising.

Serres offers a critique of the way we think, of the ease in which we grasp hold of these forms, these Ideas,[25] and think of them as unities, whilst forgetting the multiplicities from which they have emerged, and which, apart from the superficial disguise we give them, they still are. In the opening

section of *Genesis,* Serres offers “a new object for philosophy.” This new object is the multiple as such. His aim, he says, is “to raise the brackets and parentheses...whereby we shove multiplicities under unities”. He warns of the dangers of subsuming “multiplicity under unity”, and asks a profound and challenging question: “Can I possibly speak of multiplicity itself without ever availing myself of the *concept*?” Space, all space, any space, whether it is biological, geo-physical, socio-political or epistemological, is composed of the multiple; but, Serres, points out, “we are fascinated by the unit; only a unity seems rational to us.” (1995a: 2-7) Even our attempting to think the multiple as such seems to require our use of conceptual unities. We only seem to attach the status of being to the groupings of the world, he says, when we subsume them beneath a unity. The problem is that when we attempt to delimit such a multiplicity, when we try and draw a line, a boundary around and between the fragments or crowds within such a multiplicity, we try and capture what we like to think of as a pre-existing a unity, a being that has been awaiting our discovery. The problem is that such beings simply do not exist, and inventing such unities prevents us from understanding the emergence of social phenomena. We need to avoid this seductive call of the Sirens; we need to avoid the rocks by awakening from the trance, by reminding ourselves to ‘think the multiple’!

3.2 Serres: comparative methodology

But it is not just the emergence of pattern, of classes, that causes Serres to refer, in his interview with Latour, to time being folded and crumpled, a gathering together, a percolation; it is a certain invariance of these classes across space and time, a sense of their repetition. It is this gathering together that makes his whole methodology possible, and it is also this that allows his ‘philosophy’ to emerge from the *noise* of philosophical history.

This emergence of patterns that exhibit a strong degree of invariance across space and time is being described by a growing number of scientists. Stuart Kauffman (1993 & 2000) and Brian Goodwin (2001 & 2007), for example, are both biologists who strongly support a theory of evolution, but who also strongly argue that current theories, as passionately promoted by people such as Richard Dawkins (1989), place far too much emphasis on the role of a replicator (the gene) and differential selection whilst ignoring the role of self-organisation in biological systems. Goodwin describes what he regards as a remarkable phenomenon, one only implied by Kauffman:

> similar patterns of activity can arise in systems that differ greatly from one another in their composition and in the nature of their parts. It does not matter much whether we are dealing with chemical reactions, aggregating slime mold amoebas, heart cells, neurons, or ants in a colony. They all show similar types of dynamic activity – rhythms, waves that propagate in concentric circles or spirals that annihilate when they collide, and chaotic behavior. The important properties of these complex systems are found less in what they are made of than in the way the parts are related to one another and the dynamic organization of the whole – their relational order. (Goodwin, 2001: 77)

He explains this phenomenon in biological systems through what he calls morphogenesis, the development of an organism's distinctive form through a process of progressive self-stabilising symmetry breaking or bifurcation - the transition from a state of high symmetry / low complexity to one of lower symmetry / higher complexity: the emergence of forms / classes possessing lower symmetry / higher complexity out of Serres' higher symmetrical / less complex *noise*. In contradistinction to more orthodox theories of evolution, where individual species go through independent incremental chance variations, and where it is therefore difficult to explain how chance can give rise to such similar and complex structures as eyes, this application of self-organisation to evolutionary theory provides a picture of a dynamic process that produces self-similarity of structure both in terms of scale, as in fractal patterns, and across species. At the risk of gross over-simplification, this is so

because a biochemical process, triggered by genes responding to the immediate biochemical environment in a cell, only have a limited number of options, of which only a very limited number are stable. This means, Goodwin argues, that pattern is bound to arise. Kauffman (1993) refers to this limited number of stable states as the *adjacent possible,* whilst Serres refers to them as *the multiplicity of the possible*, the "intermediary between the phenomena [that] rustles in the midst of the forms that emerge from it" (Serres, 1995a: 23-4). Of the many examples Goodwin uses to explain this process, one is the emergence of tetrapod limbs from fish limbs: whilst the latter are simpler structures than the former, he explains, this is only so because the former have gone through two additional symmetry breaking processes. And concerning eyes: they "have arisen independently many times in evolution because they are natural, robust results of morphogenetic processes" (Goodwin, 2001: 168). Goodwin argues for the assimilation of theories of natural selection with our emerging understanding of the intrinsic dynamics of complex systems such that evolution is understood as the evolution of generic forms.

Serres' understanding of time appears to be deeply influenced by an intuitive grasp of complexity theory, even though he refers to chaos theory:

> which says that disorder occurring in nature can be explained, or reordered, by means of fractal attractors...But in this, order as such is harder to perceive, and customary determinism has a slightly different appearance. Time does not always flow according to a line...nor according to a plan but, rather, according to an extraordinary complex mixture, as though it reflected stopping points, ruptures, deep wells, chimneys of thunderous acceleration, renderings, gaps – all sown at random, at least in a visible disorder. (Serres & Latour, 1995: 57)

It is important at this point to add a few brief points of explanation concerning the differences between chaos and complexity theory, and attractors and state space. Chaos theory emerged from the work of many mathematicians (including those who made contributions to quantum theory) and challenged

the mechanical predictability of the Newtonian scientific paradigm, but whereas quantum theory refers essentially to the very small, chaos theory often referred to large systems, famously, through the work of Edward Lorenz and his *butterfly effect*, to systems such as weather systems. The basic point was that due to features such as sensitive dependence on initial conditions, the sheer complexity of such systems and the non-linear relations between their 'elements', it was impossible to predict how a system would behave – a large element of uncertainty was injected into science. Whilst I am reluctant to make too much of this distinction, because many of the effects and explanations found in chaos theory also feature in complexity theory, it is worth noting that for many scientists complexity restores a certain order to how we understand and describe complex systems, but an order that, whilst retaining uncertainty, nevertheless appears throughout nature. If a distinction is needed it is that complexity theorists are trying to understand how this order emerges, not just why there is so much uncertainty. I hope that it will become obvious that whilst Serres uses the phrase 'chaos theory' he is, in effect, referring to the features of complexity theory;[26] that he had an intuitive grasp of such a theory before it had been named as such. I mention complexity theory now simply to introduce one of its aspects – it will be discussed in greater detail in 3.3 below.

One of the famous features of the work of Lorenz was the computer-generated pictures of strange attractors – pictures that almost took on a cult status at the time. An attractor is a 2D representation of nD state space, a graphic representation of a complex system that otherwise, due to its very high number of dimensions, is incapable of being 'seen' by an observer. At any 'moment in time' any complex system can, theoretically, be recorded though ascribing a numerical value to a very large number of variables.[27] With the rapid development of computers Lorenz and others became able to 'plot'

successive states of such a system. If a system was in a mechanic state, in a state when each successive state could be predicted, the attractor produced something like a simple circle or eclipse; if the system was in a chaotic state, when each successive state could, with equal probability be any of the N dimensional possible states, the attractor would exhibit no discernable or recognisable pattern at all. What Lorenz et al discovered, and what became known as strange attractors, were representations of system states such that whilst no successive state repeated any previous state, and could not be predicted from that previous state, when viewed as an attractor a very discernable pattern was obvious. There are strong similarities between such patterns and the state of a dynamic system that Kauffman (1993 & 2000) terms *the edge of chaos*. Goodwin (2007) describes, in a later work, how "a complex process such as the weather revealed a new type of pattern called a strange attractor, in which there is never a repetition of activity although the process stays with certain bounds", the attractor, and adds that such "unexpected, orderly patterns from disorderly elements are known as emergent properties" (Goodwin, 2007: 34-5).

Goodwin proceeds to describe what he terms "fractal patterns in space". Noting that mathematically "fractals are defined as self-similar structures on all scales" he points to the self-evident self-similarity between the patterns extended in space between river systems, a lightening bolt, the root system of a plant, the branching structure of trees, and the human circulatory system. "These can all be understood", he says, "as patterns that use minimal energy to achieve the most efficient flow through a system" (2007: 43). Mark Buchanan (2003), in his work on uncovering nature's hidden networks, focuses on the order hidden within fractal river systems. "Scarcely anything can look less planned and lacking in design than the drainage basin of the Mississippi, or any other great river network", he says, but adds that "this

random, haphazard appearance disguises a hidden order. If every river network is unique, they are also in many respects deeply similar, indeed, even identical" (2003: 100-1). He points to a constant relationship, a power law, between the distribution of the number of streams in any area and the area they drain, a pattern, he claims, that scientists have uncovered "in every river network they have ever studied", a phenomenon that he says "points to some deep organizing tendency behind the apparent disorder of all these networks" (2003: 102).

Whilst Serres claims that he derives his structuralist background from mathematics, the similarities of his comparative methodology to that of Claude Lévi-Strauss' cannot pass without comment. In a passage that seems in total accord to what we are discussing, Lévi-Strauss describes his goal as:

> to grasp, beyond the conscious and always shifting images which we hold, the complete range of unconscious possibilities. *These are not unlimited*, and the relationships of compatibility or incompatibility which each maintains with all the others provide a logical framework for historical developments, which, *while perhaps unpredictable, are never arbitrary*. (1963: 23, my emphasis)

In the same way that Goodwin argues that in biology there are only a limited number of stable forms available, Lévi-Strauss appears to be arguing the same for human culture and that whilst each of these forms will be different according to context, and thus unpredictable, there lurks beneath the surface appearance a self-similarity of structure. In his essay on social structure Lévi-Strauss argues that the traditional boundaries between different disciplines should be overridden, that "social time and space should be characterized according to scale" (1963: 289), and that "structures of the same type may exist on quite different time and space levels" (1963: 290). This characterisation according to both scale and space is the fractal patterning, a fractal dimension, or possibly two dimensions, referred to by Goodwin, and links to the emphatic call, from Serres, Kauffman, Goodwin (and, as we shall

discover, Paul Cilliers amongst many others) for the boundaries between academic disciplines to be broken down.

Whilst not dismissing the links between his methodology and that of Lévi-Strauss, Serres explains to Latour that he felt closer to Georges Dumézil, for the simple reason that the latter "had a Greco-Latin, Indo-European basis for his research, which was familiar to me, while I never had any kind of mastery over Native American mythology" (Serres & Latour, 1995: 36). He adds that he considers that Dumézil "applied an authentic structuralism to the humanities" (1995: 36) and elsewhere refers to the three invariant classes or anthropological classifications of social functions that Dumézil describes in many of his own writings:

> The structural system of Georges Dumézil's comparative method lead to classification. They help identify among Indo-Europeans of every branch the invariability of three classes or social functions: sovereignty, struggle, and production. Jupiter, Mars, and Quirinus, under different names, in diverse places, remain the gods of these peoples, in their religion, their philosophy, their history, and their assembly. We do not contest these findings...(Serres, 1995a: 81)

Whilst not contesting the apparent universal presence of these three social classifications – Jupiter, the ruling, sovereign or sacred function; Mars, the armed or military struggle function, war; and Quirinus, the function of production, commerce and exchange – he does stress a vitally important mode of their presence, that "the invariance of these classes is not of the essence" (1995a: 82). The forms of these three classes or structures are not ideal in the Platonic sense; they did not exist in some manner prior to the structures they gave birth to. Rather they are emergent from their background conditions, they are islands of order within a sea of disorder, they are themselves born:

> ...born of the *noise* from which those three gods, these three concepts, these three objects, these three theoretical classes, these three social groups are born. History is not born of provinces, but of circumstances. (1995a: 100)

That these circumstances or environmental conditions consistently allow for the emergence of the same basic form is explained by the arguments already given concerning progressive symmetry breaking and the availability of only a limited number of 'adjacent possible' states of which even fewer are stable. This is probably the key concept in understanding the methodology of Serres.

Following this methodology the boundaries between areas of knowledge open up. For the philosopher at least, a single field of enquiry begins to replace not only the separate academic disciplines, but also those areas that may have been dismissed as being outside academic enquiry (or, if they were the subject of enquiry in their own terms they were kept outside the fold because of the irrelevance of their subject matter to rational thought or modern science). With Serres, mythology would be a prime example. But, in the terms being described here: "There is some mythology in science and some science in mythology" (Serres & Latour, 1995: 158). Serres describes Dumézil's comparative methodology in exactly the same manner as his own, as moving quickly in both space and time, "circumventing the intermediate steps", even questioning, in the fabric of his folded space-time, whether these intermediate steps exist at all (1995: 69). For Serres, being modern means being "ancient in most of our actions and thoughts" (1995: 138). At the beginning of *Statues* he compares the *Challenger* rocket accident to the Carthagian sacrifices to Baal and concludes that "a certain number of contemporary actions, behaviors, or thoughts repeat, almost without change, extremely archaic modes of thought or behavior." (1995: 138) Or, as Lévi-Strauss comments: "a myth always refers to events alleged to have taken place long ago. But what gives the myth an operational value is that the specific pattern described is timeless" (1963: 209). In *Myth and Meaning*, he

describes the above movement between different codes or meanings, in his case between the domains of music, literature, art etc, as one of 'translation':

> The problem is to find what is in common to all of them, It's a problem, one might say, of translation, of translating what is expressed in one language – or one code... – into expression in a different language. (2001: 6)

Translation is a word used by Serres to describe exactly the same movement, and as explained earlier, it also describes the methodology of this thesis.

3.3 Serres: complexity science

Anyone familiar with complexity theory would struggle not to notice the similarities between many of its main features and many of the concepts used by Serres. But this raises a possible objection to the methodology of this thesis. In *Complexity & Postmodernism* Paul Cilliers produces both a very clear description of complexity theory and a model of how to understand emergent and self-organising systems. So if, as I am proposing, complexity, emergence and self-organisation are central to an understanding of social order, why not develop a social ontology directly from this model? Why refer to the work of Serres at all? In other words, as the social has all the characteristics of a complex system, why not just use complexity theory as such as a basis for this project? Whilst no doubt Serres was fully aware of much of the science that developed into complexity theory, and it is worth bearing in mind that it is still not possible to agree on a precise definition of such a theory, it was not being widely described as such until after Serres had written most of the books that feature in this project. *The Birth of Physics*, for example, was written between the years 1970 and 1977. It could be argued that in this book Serres was attempting to bring the importance of the ideas it contained, reprised from the works of the ancient atomists, their expression by Lucretius, and the mathematics of Archimedes, to the attention of the

thinking world, but, that in line with his view that philosophy “is not a body of knowledge nor a discipline among the usual sciences” he felt it was not for him to work them into a theory, and that such a task fell outside his methodology. Arguably, the fact that people such as Cilliers are attempting to develop such a theory testifies to the foresight of Serres, but may place a question mark against the value of focusing on his work for our present task, as the baton has been passed on. And whilst his work champions many of the elements of such a theory, it also has some, potentially, serious omissions. According to Cilliers’ account of complex systems, for example, one serious failing of Serres would be his dislike and avoidance of conflict – a vital element of such systems: “you cannot escape the agonistics of the network” (1998: 138).

My reply to such an objection is in line with my earlier comments regarding translation. It is not simply a question of using or applying complexity theory to the social – an act of translation is required. Serres’ work is able to provide at least three key ingredients that make such a translation possible. First, his attempt to *think the multiple* provides a nuanced but vitally important focus to our methodology. In this respect, ‘thinking the multiple’ is an essential philosophical / methodological device needed for such a project. Second, the other key idea mentioned above, *noise*, whilst not being in itself novel, allows and facilitates the translation of scientific ideas into the realm of the social in a way no other thinker of multiplicity has been able to achieve. This will be fully explored in section four. Third, Serres’ empiricism and his critique of abstraction (outlined in 3.5 below) brings to light where other attempts to describe the social along these general lines have failed. Put simply, abstraction (and formalisation) masks the complexity and multiplicity that needs describing. Additionally, though this is by no means crucial, Cilliers’ description fails to mention a vitally important feature of self-organising

systems that is revealed through Serres' methodology. This feature is only hinted at by that other great exponent on self-organising systems, Stuart Kauffman (1993 & 2000), and is left to his one-time collaborator, Brian Goodwin (2001 & 2007), to explain fully – namely, the emergence and recurrence of common forms in nature – the self-similarity described above.[28] I am not suggesting that these ingredients are unique to Serres, but I am suggesting that their accentuated presence together in one body of work is. I wish to suggest that Serres' attempt to provide a philosophical perspective based on multiplicity, fluidity and non-linear dynamics, together with these three particular ingredients, makes a translation from complexity theory to the social world possible. This thesis does not claim that this is the only way such a translation can be made, but it does suggest that it is a way that should at least be attempted.

Bearing all this in mind, I present here a brief description of both the main features of complex systems, as offered by Cilliers, and a brief outline of the method he proposes for their modelling. As many of the phenomena described by both him and Serres are similar, such an outline will act as a reference point, and possibly as a further means of explanation, when discussing Serres. I shall attempt this by referencing in both directions; by making links to Serres' ideas whilst outlining Cilliers' descriptions, and by referring back to Cilliers' very clear model whilst proceeding with this investigation. I have taken the following list of the main features of complex systems mainly from Cilliers (1998: 3-5; all quotes, unless otherwise referenced, are taken from here) though have made additions from other sources. It needs noting however, as others have done, that complexity theory, if indeed it warrants the title *theory*, is in its early stages of development and no definitively agreed list of such features exist.[29] However, the following seem to be generally agreed by most who write on the topic.

Complex systems not only consist of a large number of elements, but these elements interact dynamically – the system changes with time. These interactions, however, need not be physical; they can involve the transference of information. Such a premise forms the backdrop, and is implicit, in all that Serres writes, and in *The Birth of Physics* he argues that such a premise is not new, but can be traced back to the physics of Epicurus, as described by Lucretius, and to the mathematics of Archimedes. *Genesis* takes such multiplicities, or "the multiple as such", which he describes as "a set undefined by elements or boundaries" (Serres, 1995a: 4) as a new object for philosophy, with Serres suggesting that philosophers become "the shepherds of multiplicities" (1995a: 23). For Serres, not only do such multiplicities change with time, an "irreversible, irrevocable time, pointing like the endless flow of atoms, flowing, rushing, crashing towards fall and death" (2000: 125), but they are time: "Time is pure multiplicity" (1995a: 115). I shall return to this vitally important aspect of Serres thought later (section 6.1) as for him time (or more accurately times) result from, and are integral to, the emergence of multiplicities.

There is, therefore, a relatively high degree of connectivity (what Cilliers refers to as being 'rich') between these elements: "any element in the system influences and is influenced by, quite a few other ones."[30] Again, for Serres, such connectivity is central to any model he proposes or describes, and his work is literally infused with references; to take just two examples: "All things are transmitters, without interruption in every direct" (2000: 49), and that everywhere "there are models of the most general theory, that of floods and paths, of elementary *rhèmes,* capable of intertwining, here and there, into *syrrhèmes*, connective rhythms." (2000: 89)[31] A vitally important point though, as stressed by both Cilliers and Serres, is that each element only acts

or responds locally, to the information that is available to it at the local level; it is "ignorant of the behaviour of the system as a whole". It is from this key feature of *all* complex systems that a genuine solution to the problem of the relationship of the macro (global) to the micro (local) emerges.

As a consequence of the above, interactions usually only have a fairly short range – to their immediate neighbours. Long range interactions are usually restricted by local, practical constraints but, due to the high connectivity of the system, there can be, and often is, wide-ranging influence.[32] Yet again, this relation between the local and the global informs much of what Serres investigates. In *The Birth of Physics* he offers three models: The first is "local and original", the second is global, and "takes the whole path into account", but the third is what connects the two – the emergence of "Aphrodite from a flux of elements" (2000: 49-50). As he says later, "there are no solutions, reasons or sciences, other than the local" (2000: 95), each node within the system only behaves in accordance with local conditions, but due to the connectivity of the system "as soon as [each object or node] is born, complex, twined, twisting its long thick hair, it begins to transmit, in floods and in all directions, a star of flow" (2000: 50). Such connectivity allows local topography to give birth to global form (2000: 116). This concept of the emergence of form is a key feature of complex systems that will feature throughout this thesis, and in many ways becomes central to its conclusion. In Serres' writing, though, emergence is often likened to Aphrodite rising from the sea, an effective metaphor when it is considered against the idea of life emerging from the sea, from the prebiotic soup as he refers to it in *Genesis*. This influence across the system, however, is not straight-forward and can be enhanced, suppressed or altered in a number of ways. It is my hypothesis that the problems outlined in 1.1 and 1.2 will be resolved with such an approach to the micro / macro problem – an approach that describes the

dynamic and emergent relationship that exists between the local and the global.

One of the reasons preventing wide-ranging influence being straightforward is the presence of feedback loops. These can be either positive, in which case they enhance the interactions, or negative, in which case they dampen them. Another reason is that the interactions are non-linear: any series of interactions can split into two simultaneous series, a process that is often referred to bifurcation and / or as progressive symmetry breaking due the progressive decrease in invariance. When Serres states that “the fall through space is a metaphor” (2000: 40) he is referring to the laminar flow of atoms described by ancient atomism, a metaphor for the symmetry that is progressively broken by the chance and minimal deviation from the flow, an event he terms the clinamen. However, when he states that “all at once, I am speaking of time, of physical time, and flux is no longer a metaphor, I am speaking of the flux, the laminar flow that is sown, here and there, with turbulence” (1995a: 95) he is referring to the real life dynamics of progressive symmetry breaking. This is a vitally important concept for both Kauffman (1993 & 2000) and Goodwin (2001 & 2007) in explaining the morphogenesis of biological systems – for the development of tetrapod limbs, for example, from the embryonic state through the growth of first one bone, then two, then multiple. This also has caused Kauffman to propose a fourth law of thermodynamics, namely that:

> as an average trend, biospheres and the universe create novelty and diversity as fast as they can manage to do so without destroying the accumulated propagating organization that is the basis and nexus from which further novelty is discovered and incorporated into the propagating organization. (Kauffman, 2000: 85)

Without taking away anything from Kauffman, was not Serres saying the same thing when he wrote: “Now the law of circulation is henceforth known, it

is extremal. The flows spread as fast as possible, always taking into account the conjunction of constraints" (2000: 51)?[33]

The organisation and survival of complex systems depends upon a constant flow of energy that requires that the systems operate under conditions far from equilibrium. This has caused the second law of thermodynamics to be widely referred to as a way of explaining the energy flow through such systems, but it must be noted that the classical laws of thermodynamics refer to closed systems. One of the essential features of complex systems, however, is that they are, by definition, open – they interact with their environment. Serres refers to the second law and flows of energy in places too numerous even to begin to list.

Such systems have a history that is in part responsible for its present behaviour – this is often referred to as the system being path dependent. Using a language system as an example this would support Derrida's criticism (Derrida, 1997) of Saussure's prioritisation of the synchronic over the diachronic – both are intrinsic dimensions to any understanding of a system's present behaviour. As mentioned above, when Serres gives his three models, he notes that the second, the global model "takes the whole path into account", and in *Genesis* he refers to "the drama of history" (1995a: 76). This last comment, however, is made in the context that "the law of history is noise" and will be explained in detail later when Serres' concept of *noise* will be shown to be central to his understanding of the emergence of both form / classes and time. It is also related, I want to suggest, to the emergence of *weights* within a complex system that will be discussed below under *modelling complex systems*. One of the difficulties in describing such systems, as will be becoming obvious by my endless references to what needs mentioning now, to set down a marker, as it were, but will need to be explained in detail later,

is the impossibility of giving a linear narrative to a non-linear process. Although I am not aware of any place in which Serres says as much, I am convinced that such a difficulty is part of the reason for his style – he is actively demonstrating the non-linearity of what he is describing.

Cilliers also discusses what he terms as 'two indispensable capabilities of complex systems'. Firstly, in "order to respond appropriately to its environment, a complex system must be able to gather information about that environment and store it for future use" (1998: 11) – it must be able to represent the information in needs in order to survive. And secondly, such a system "has to develop its structure and be able to adapt that structure in order to cope with changes in the environment" (1998: 12) – in other words, the system must be capable of self-organisation. Whilst Cilliers does not refer to the concepts of state space and *the edge of chaos*, Kauffman (1993 & 2000) does in order to explain self-organisation as what occurs when a complex system is maintained in the creative middle ground between order and chaos. Using the model of 6N dimensional state space he explains an ordered space as being one where the 'next' state is predictable from the 'present' one, and a chaotic space as being one when the 'next' state could be any of the 6N possible states.[34] When the system is 'at the edge of chaos', whilst the 'next' state cannot be predicted it 'exists' as a limited number of what he terms *adjacent possible* states. Whilst the model of 6N dimensional state space is a closed system, because a real complex system is an open system, the adjacent possible is neither actual nor certain, though only one step away from being actual. It is the novelty of this *adjacent possible* that a complex system will explore "on average, as fast as it can" (Kauffman, 2000: 207) and which his proposed fourth law refers to (2000: 85).[35] And referring to the above notion of *far from equilibrium* he notes that the "nonequilblium

flow into a persistent adjacent possible may be the proper arrow of time" (2000: 48).

It should be obvious that none of the above conditions are independent of any of the others and cannot be adequately explained in such a brief overview. I offer them only as a means of orientating ourselves on a particular landscape. Let me summarise by quoting directly from Cilliers:

> Complexity is the result of a rich interaction of simple elements that only respond to the limited information each of them are presented with. When we look at the behaviour of a complex system as a whole, our focus shifts from the individual element in the system to the complex *structure* of the system. The complexity emerges as a result of the patterns of interactions between the elements. (1998: 5)

It is just such an understanding of this relationship between the local and the global, and between the elements of a multiplicity, that is the drive behind the collected work of Serres. But before I pursue this further it will be useful for me to outline how Cilliers proposes to model such systems – having a model, something tangible, will greatly assist the aim of this project. As such, when I refer to this model in future pages I am not suggesting that this is how things 'are',[36] merely that such a model provides a map that facilitates the exploration of unfamiliar terrain – that acts as a heuristic device.

Cilliers examines two possible ways of modelling complexity. The method he rejects is what he terms the classical approach. This is the formal, symbolic, rule-based approach used by modern digital computers and the most general method used by those researchers trying to develop artificial intelligence. Such a system "consists of a number of tokens or symbols, like pieces in a game. These symbols can be combined into patterns by means of a set of rules that define what is or is not permissible (e.g. the rules of chess). These rules are strictly formal, i.e. they conform to a precise logic" (1998: 14). The problem for such an approach in trying to model a real complex system, he

says, is finding the rules, assuming that they exist in the first place, and questions whether the behaviour of such a system can be so reduced. This has been the problem faced by those social scientists searching for the norms and rules that regulate society. In more philosophical terminology, this could be understood as the approach of a transcendental philosophy that sought the necessary conditions of the social.

The alternative model, the one he proposes, is modelled on the human brain, and is referred to by a number of terms including *neural networks*, *distributed processors* or *connectionist models*.[37] Cilliers offers the following very clear and succinct description:

> From a strictly functional point of view, the brain consists of nothing more than a huge network of richly interconnected neurons. Each neuron can be seen as a simple processor that calculates the sum of all its inputs, and, should this sum exceed a certain threshold, it generates an output. This in turn becomes the input to all the neurons that are connected to the present one. Each connection is mediated by a synapse. The synapse can cause the incoming signal to either excite or inhibit the target neuron and it also determines the strength of the influence...This level of the brain's operation can be modelled by means of a network of interconnected nodes. Each node takes the sum of its inputs and generates an output. The output is determined by the transfer function of the node, which has to be non-linear. The connection ('synapse') between any two nodes has a certain 'weight', which can be positive or negative and which determines the strength of the influence of node *A* on node *B*. In any specific connection, the information flows in only one direction, but nothing prevents two connections between *A* and *B* – one from *A* to *B* and one from *B* to *A*. Any node can also be connected to itself, either directly, or via other nodes. (1998: 16-17)

He goes on to explain that the output value of any node is determined by both the input values and the "present values of the weights in the network", and that the weights increase in direct proportion to the frequency of use of the connection, or, to phrase it differently, these weights increase in direct proportion to the *repetition* of their connection. It is by this method (in very simple terms) that the network develops an internal structure – a method that is purely based on "the local information available at each neuron" (1998:

17).[38] In section six I will propose something very similar to this regarding the social.

At this point let me take a look at a similar network proposed in an early work of Serres'. In the introduction to *Hermès I: La Communication* he invites us to imagine...

> ...drawn in a space or representation, a diagram of a *network*. It is made up, at a given instant (since we shall see that it represents a state in a changing situation) of a plurality of points (peaks) linked to one another by a plurality of branches (paths). Each point represents either a thesis or a definable element of some sort within a determinate empirical whole. Each path represents a link or relation between two or more theses, or a flux of determination between two or more elements of the empirical state. By definition, no point is privileged with respect to any other, and none is subordinate to any other. They each have their own power (which can vary over time), or their sphere of influence, or their original determining force. And as a consequence, although some may be identical to one another, they are, in general, all different. The same may be said regarding the paths, which convey the flux of different and variable determinations.[39]

Serres, then, appears to be describing something very similar to Cilliers.[40] Elsewhere in this introduction he talks a great deal about many of the features of complex systems described above, including feedback and non-linearity, and ends with the comment that this model "breaks the linearity of *traditional* concepts: complexity is no longer an obstacle to knowledge".[41] It appears obvious that Serres is trying to work through and model many of the features of complex systems, in exactly the same way as Cilliers, but perhaps the most notable feature about this text was that it was written in 1964, in the early days on Chaos Theory, well in advance of the emergence of Complexity Theory. There is though, from Cilliers' perspective, a serious problem with Serres' description. In the above, each node in the network "represents either a thesis or a definable element of some sort".

Cilliers' main reason for rejecting the former of the two models he presents and accepting the latter focuses on their respective methods of

representation. In the former, as in Serres', each symbol or node "has a precise, predefined meaning" (1998: 19). He rejects this in favour of the connectionist model where no node or neuron has such a meaning. In the latter, any individual node or neuron could be removed from the network without affecting the 'meaning' that is distributed across the network. In using the example of a language system he likens these two different paradigms of information processing to those presented by Chomsky and Saussure. For Chomsky, he argues, "models of language and the mind work with systems of production rules and are explained in formal and representational terms", whilst for Saussure "models of language and the brain work with systems of relationships and are not understood in representational terms" (1998: 30). He does though adopt Derrida's critique of Saussure. Without going into the details, it would be useful to mention briefly two concepts developed by Derrida (1997) that are both central to Cilliers' argument linking complexity to post-structuralism and an understanding of the neural networks he describes. First: *différance*. This accepts Saussure's understanding of meaning as being derived from the synchronic set of relations of difference, but overturns his prioritising of this over the diachronic. In the terms of the distributed networks we are discussing, this describes the important concept described above, whereby meaning is distributed across the network. No node 'represents' any piece of information about the systems environment, instead any such representation is invoked by a loose set of differential relations emerging from a richly connected group of neurons. But it also describes the equally important concepts of path dependency, non-linearity and feedback. Meaning or 'representation' is constantly being deferred, both in the sense that the histories of the pathways of those nodes active at any one moment are in a constant state of flux, and in the sense that due to feedback meaning is always being anticipated or waited for. Second: *trace*. Memory, Cilliers argues, is a vital mode of any such distributed complex network. It "is not a

cognitive function performed by a conscious subject", he explains, "but an unconscious characteristic of the brain...No neuron is significant by itself. Memory does not reside *in* any neuron, but in the relationship between neurons." (1998: 46) And, in contradistinction to Bergson (1988), it is worth noting that memory is never complete or of something, but is always in a process of being created and lost. It is created by the relative *weights* (derived through repetition) referred to earlier, and is therefore subject to the same set of differential relations. Cilliers argues that "as Derrida uses the concept of 'trace' to point to the influence that each component in the system of language has on every other component" it would seem "fruitful to suggest that the two terms – *weight* and *trace* – can in this context be used to describe each other" (1998: 30). In the first part of *Of Grammatology*, for example, Derrida refers to the *trace* as a non-present, constantly differing / deferring pathway through the text (Derrida, 1997). Gayatri Chakravorty Spivak in her preface states that "The structure of the sign is determined by the trace or track of that other which is forever absent" (Derrida, 1997: xvii) and reminds us that the French word *trace* "carries strong implications of track, footprint, imprint" (1997: xv). Any event in such a network is always the result of such a pathway; a non-present or forever absent pathway; a pathway of 'pure' difference.

As the model proposed by Cilliers is modelled on the human brain, the organ through which I (attempt to) make sense of both the natural world and the social world, and as any model of the social world must 'model in' the information processing abilities of those who act socially, this appears to be the most obvious model for the humanities to adopt. I will have more to say on this at a later point in this thesis, but any model of the social must be a model of how 'individual' behaviour organises into social patterns, and such 'individual' behaviour in itself must be modelled on how that 'individual' social

actor processes social information – a process that can only be carried out by individual brain function or activity.[42] This, therefore, provides this thesis with the correct level of 'the local' appropriate for an understanding of the social. It is only through the processing power of brains that information is processed such that behaviour that can become organised into social patterns. In other words, individual brains act as centres of organisation – as attractors of social action. This will be further supported by Serres' advocacy of empiricism and the bodily senses as the only way through which information is harvested and from which understanding is produced.

3.4 Serres: thinking the multiple

In *Genesis*, Serres' position seems to have developed from the earlier 1964 position to one that not only appears to be close to that occupied by Cilliers and Derrida, but that also employs terms that are of use, have a practical value, to this project. He not only describes his object, he also describes his subject. *Thinking the multiple* is the other side of the methodological coin to his understanding of time and the emergence of classes and forms out of the *noise*; perhaps the epistemological face to the ontological face. As such, it not only describes this emergence, but how we are to think of the emergent forms and classes, how we are to use them. Serres' exploration of *thinking the multiple* not only addresses the key features of complex systems (as laid out by Cilliers) but also points to how we think, how we acquire knowledge of our world. This epistemology cannot be separated from, in fact follows the same process as, that which it acquires knowledge of. It is at this point that all could be lost – that we could 'understand' the complexity of the world, the social world, but do so in terms of conceptual unities; in other words, without appreciating the complexity of the thinking process. The being of the world and how we process information about it are the same – there is a self-similarity of process. The great value of Serres' methodology lies in the

importance of this disclosure – that epistemology and ontology are inseparable; that epistemology emerges out of ontology in the same way that our brain's ability to represent and assign meaning to its world emerges out of the same material world. There is a self-similarity of process because, in essence, it is the same process. This will prove to be an important guide to the direction this project takes. In *Genesis* Serres develops his position through reference to a short story by Honoré de Balzac, *The Unknown Masterpiece*; I shall do likewise to explain my position and its links to both representation and self-organisation as described by Cilliers.

Poussin, a young and aspiring painter, seeks an audience with the former court painter Porbus, and gains entry to his studio in the shadow of the master Frenhofer. Porbus, in response to the master's interest in an already famous painting of his, a canvas representing *Marie the Egyptian* preparing to pay the boatman, asks if he thinks well of it. "Yes and no", he replies, adding: "Your good woman is not badly put together, but she is not alive. You artists think that you have done all that is necessary when you draw a figure correctly, and put everything in its place according to the laws of anatomy!" After further critique the master cries: "The mission of art is not to copy Nature, but to give expression to it! You are not a copyist, but a poet!" (Balzac, 2007: 4). Serres' analysis of the relationships between the various generations of artists, and between each artist and his model of affection is complex, but could be summed up as being critical of the classical view of representation, in the same way as both Saussure (1983) and Derrida (1997), and for that matter Deleuze (1994), do; of the representation where "someone takes the place of someone else". Such representation Serres describes as 'hatred', a 'struggle for place' (1995a: 76). The climax of the story sees the master persuaded, through the use of Gillette, Poussin's lover, as model, to reveal the canvas that he has been working on for a great length

of time, the *belle noiseuse*; a canvas that he would otherwise have revealed to no one, a canvas that he was only able to complete because of the unsurpassed beauty of Gillette, a canvas that would be the summation of his work and career. “My work is perfect,” he cries, “and now I can exhibit with pride. Never will painter, brushes, colors, canvas and light produce a rival...” Poussin and Porbus, though, cannot at first see the canvas, and when they do they cannot believe their eyes. Poussin thinks that the master is playing with them, for he “can see nothing there but colors piled one upon the other in confusion, and held in restraint by a multitude of curious lines which form a wall of painting.” (Balzac, 2007: 15)

Serres suggests, though, that neither artist appreciates the genius of the master. Accepted, he has not produced a representation *of* nature. There is no disputing that. But has produced something far greater, for the *belle noiseuse* “is nature herself” (1995a: 33), “she is not the one, she is the multiple, and a thundering mix, yes, chaos.” This canvas, this “flat projection”, is “the inaccessible object of metaphysics”, the background noise (1995a: 22). Serres then, along with Saussure (synchronically) and Derrida (both synchronically and diachronically) presents a critique of representation in terms of difference, of the “irreducibly individual [receding] like the horizon” (1995a: 3), of “the collective with its inaccessible edges” (1995a: 6) but does so not only by providing a description of difference from a perspective within the emergent structure, where all is receding horizons, but also from the perspective of the background *noise* from which the structure is emergent. It is from such a perspective that the complex, dynamic and emergent nature of this structure can be understood. These concepts and the critique of representation will be developed in greater detail later (6.1) through a comparison to Deleuze’s *Difference and Repetition*. For now it is sufficient to note that representation is an emergent process – emergent out

of the being of the world; it is not a representation of a radically different world, nor the outcome of the imposition of form on inert matter.

I noted earlier of how important the 'trace' was for Cilliers. Serres appears to be using the same concept for the same purpose when he focuses on the importance of the foot discovered in the *belle noiseuse*. Poussin and Porbus at first believe that the canvas is nothing but chaos, but they are mistaken:

> On drawing nearer, they spied in one corner of the canvas the end of a bare foot standing forth from that chaos of colours, of tones, of uncertain shades, that sort of shapeless mist; but a lovely foot, a living foot! They stood fairly petrified with admiration before the fragment, which had escaped that most incredible, gradual, progressive destruction. (Balzac, 2007: 15)

So the master had been correct in his claims. He had produced a masterpiece that went beyond any mere representation, he had produced something living. But still he had not been satisfied. In trying to get even closer to nature he had returned to the noise from which everything is emergent. Just the foot, a trace of his journey remained.

Serres talks of 'the trace of a foot' in relation to the *belle noiseuse* in many sections of *Genesis*, and more generally to "the trace of steps" when referring to the many myths he evokes. They sketch the paths actually trodden out of "the totality of the possible", *noise* itself; they sketch, in Kauffman's terms, the path actually followed in state space into the adjacent possible:

> The print of this foot means that *noise* holds this space, that it has set itself up there. In Greek, they call it: a thesis...Thesis is the action of putting something in place. What is important is the place, and only then the manner of occupying it. Of taking it, holding it, setting oneself up there. Setting one foot on it. The foot, here, is the trace of a thesis, and the wall of colors, the noise, is at once battle and racket, the two strategies...of taking place and getting a foot in the door. Balzac's painting was an unknown masterpiece of philosophy. (Serres, 1995a: 53)

The foot symbolises the trace, the path actually followed, deepened by use, by repetition, that allows a form, a thesis, a particular, an actual, to emerge

from the background *noise*; it symbolises the path of self-organisation. Theses, concepts, form out of the *noise*, they are collectives held together by the path created, by the path actually walked or trodden, but a path that does not 'exist', at least not as a presence.[43]

The importance of 'thinking the multiple', *the* single most important idea in this entire thesis, is the recognition that any concept or thesis is but a particular actualisation that has self-organised out of the *noise*. As such it is a one time collective that is path dependent. It is, in effect, a dissipated network that has no unity, no definitive set of atoms, but does have a fractal dimension and a virtual background. It has no unity because the path followed through the process of self-organisation, due to its non-linearity and feed-back loops, will always be venturing into new state space; it will always be occupying new ground, putting something else in place, and as such the collective held together will always be different at each actualisation. Whilst there are 'atoms' or elements within the virtual background they cannot be examined as 'individuals' in their contribution as their 'identity' is derived from the system, from their relationship with other elements; due to the dissipated nature of this background any of the elements that are held together to form the collective could be removed without changing the collective. And even if one of these elements were extracted, and placed under a microscope, it too would be found to be multiple. Hence a fractal dimension: "The irreducibly individual recedes like the horizon..." (Serres, 1995a: 3).

This problem seems to share many of the characteristics of W.B. Gallie's (1956) *essentially contested concepts* to be introduced later in this thesis. Because Gallie has already noted the existence of these characteristics within the realm of the social concepts we will need to examine how his ideas can contribute to this thesis. These concepts are internally complex in that behind

each concept lies a multiplicity of elements – a multiplicity that is not only temporally open, because the elements are continuously being exchanged, because they are continuously flowing and evolving, but also spatially open in the sense that they are variously describable – different observers will have differing priorities for the selection of the elements used to describe the event, no set of which could exhaust the totality of elements being described. So whilst it is possible to offer various descriptions of the phenomena experienced, it is not possible to offer a definitive concept; a concept that would, in effect, delimit and unify its elements. This difference between description and definition will also be shown to be vitally important, and will be examined in its practical or social aspects in later chapters. A definition, as I understand it, is of the essence, it is fixed like a statue. A description, on the other hand, only takes those elements from an open multiplicity that serves the purpose for a particular event – as such descriptions are imbued with difference.

3.5 Serres: empiricism

The emergence referred to above is premised upon a non-reductionist materialism. By this I mean that everything has its roots in the material world, though cannot be reduced back to and explained through that material base. Something original is produced through emergence that cannot be explained either as the sum of its parts or through an examination of those parts. In terms of complex systems this means that each system needs to be understood within the environment in which it survives and flourishes – and can *only* be understood in such local terms. A brain or a community of living beings are each an open system that self-organise in response to the environment in which they are embedded. But that environment, in its turn, is an open system itself embedded within its own environment. As such, each

system can be thought of as a nested set within a nested set,[44] but at each level new phenomena emerge that can only be understood at that level of scale and as a response to its particular environment. It is through such an understanding that the relationship between the local and the global begins to be disclosed. In these terms, biological human beings are complex biological systems nested, along with other biological life forms, in their physical / ecological environment. It is within these environments that the biological systems survive, and it is from these biological systems that first consciousness, and then self-consciousness and the social emerge. Such at least is the hypothesis of this thesis (and which will be explained in detail in later sections – particularly 5.4 and 6.1) – a hypothesis that is supported by Serres' empiricism.

The English translation of Serres' *Les Cinq Sens*, an extended essay on empiricism, carries the Library of Congress catalogue secondary categorisation of phenomenology. In it he echoes Husserl in hoping "for a return to things themselves" (2008: 112). The things themselves are our world, our environment, the given – things that can only be encountered through the senses (as it is only through the senses that we are on contact with, and receive information from our environment) and from which all our understandings are built: "There is nothing in the intellect that has not first been in the senses" (2008: 327). We originate, argues Serres, we are formed, from the accumulated variety that has been stitched together by the senses. We are, to use another of his metaphors, a vortex; we attract information from our environments, we join this information together to make sense of our environments, we are quite literally formed from our environments – not just biologically, but also as self-conscious and social human beings. We emerge from the various and disparate information received through the senses. We are tatters, variegations, hybrids (2008: 73). And it is not just

from the information we have received directly, but also from that received through the experiences of our ancestors (and codified into DNA): "I am made up of the others I claim to have left behind" (2008: 93).

This process of emergence is bottom-up – even allowing for the presence of top-down feedback loops (which themselves were emergent from their material roots and which may well have undergone some degree of codification). This means, following Serres, that we need to be very cautious of abstract knowledge. It is not that such knowledge (the only knowledge; knowledge *is* abstract) can or should be avoided (this would be impossible) but that this knowledge should be seen as what it is, and not as *the* source, the Ideal or transcendent source, of our understanding. Abstraction is a step, or many steps, removed from the multiple, the given. Serres argues that to abstract "means to tear the body to pieces rather than merely to leave it behind: analysis" (2008: 26). When we abstract, when we analyse, we remove selected elements from our interactive environment and examine them out of context, often in isolation, as little unities. This is what we do with standard notions, linear and non-complex notions, of reason and logic, often believing that we are getting somehow closer (as opposed to further away from) the 'truth'. And, in evolutionary terms, such a process has been very successful. Serres sees this success epitomised in the philosophy of language: "The philosophy of language is our reason, and always will be; it has converted us, and is winning. There is no doubt that it has the upper hand over phenomenology; we must declare it the winner" (2008: 112). It has proved to be successful because quite simply we *need* logic and science, however we phrase it, for basic day-to-day living and survival. The world, the given, may be fluid, unstable, uncertain, complex and dynamic, but we cannot cope, on a daily basis, with such things. This is the absurd position we find ourselves in.[45] Despite the fluid and dynamic nature of the given, our general

survival does not require (and could quite possibly not cope with) such an understanding. In fact our survival requires the opposite:

> Stability is required...Invariants are needed, constants. No one can act without them, nor think in the absence of their logic, nothing can exist without their sum...We need stability, and constants. What ever flows over there does not remain here. Imbalances always hide an equation, an equivalence, even transformations do. From which we get science, which organizes the thousands upon thousands of ways of writing an equal sign. (2008: 216-7)

For the day-to-day business of survival, easy to understand and apply approximations of the 'truth' are all that have been required. 'An equal sign' is actually an approximation sign, and is the basis of code. An understanding of the emergence of such codes in a social context will form a vital aspect of this thesis.

However, just because such a way of understanding has been useful so far in our evolution does not mean that it will remain so. In fact, such an emphasis on the abstract, on analysis, on logic, on unities, prevents us from seeing the underlying complexity and multiplicity from which all has emerged. I cannot stress this point strongly enough: that whilst of pragmatic value for certain purpose, focusing on the abstract, on analysis and formalised concepts, masks the complexity and multiplicity that gives rise to them. It is this that we need to be mindful of, for each time we accept the comfort, the solidarity, and the certainty of unities, we loose sight of this dynamic background: "A lack of subtlety prevents us seeing the forest of knots beneath the canvas or behind the tapestry, dazzled as we are by the representation of intelligence" (2008: 78).[46] This thesis is attempting to salvage some of this subtlety and to gain some insight of the forest of knots that lies beneath canvas of the social.

A final methodological comment on Searle's call for the development of a social ontology: Whilst this thesis cannot support his use of "one *formal* linguistic mechnanism" (Searle, 2010: 7 my emphasis) nor his reliance of the

resultant formal ‘status functions’ on the concept of collective intentionality, it does endorse his empiricism – his call for such an ontology to be based on certain basic facts. These facts are “the atomic theory of matter and the evolutionary theory of biology.” From the latter is drawn the understanding that both “conscious and unconscious mental phenomena are caused by neurological processes in the brain and are realised in the brain” and that the “Collective mental phenomena of the sort we get in organized societies are themselves dependent on and derived from the mental phenomena of individuals.” (2010: 4) I have outlined why I cannot endorse his formal methodology in comments above. A formal, rule based model as adopted by Searle is the one rejected by Cilliers in favour of one based on distributed or neural networks. Such a model is far more in accord with ‘certain basic facts’. This argument will be developed during the course of section 3 where a critique of collective intentionality will be added.

3.6 Conclusion: the methodology of this thesis

The methodology adopted by this thesis, therefore, is comparative in the senses outlined above. I have, in part, attempted to apply Serres’ metaphor of the double cone. I have attempted to approach the problems outlined in 1.1 and 1.2 not necessarily in a systematic or logical way, but more as a blank canvas that awaited an intuitive response. This was the starting point of the act of translation; a creative and philosophical endeavour rather than a social scientific one. In addition to my earlier comments regarding Russell and science there is, on the other hand, an additional factor that renders this approach more ‘scientific’ or ‘academic’ than some may grant. When a dynamic system is at its most creative, when it is at the edge of chaos, it responds to, in fact requires, perturbations to trigger further adaptation and self-organisation – a new order is found through an injection of disorder. This

new order emerges across the system in a non-linear fashion and could not have been predicted in advance. The same applies to our thinking with our minds / brains[47] – perhaps *the* most dynamic and complex of systems. The act of general or preparatory reading involves the ingesting of new ideas and concepts which effectively perturbs the system. It is then the application of thought to the problem in hand (standing in front of the blank canvas) that triggers a self-organising process that produces what is often described as an intuitive response. It is intuitive because it is non-linear – it is the result of self-organisation across a distributed network. The main problem, of course, is that these thoughts and solutions need writing up into a linear narrative that gives the impression that the thought process that led to its writing was linear. This was not the case – but I see no solution to such a problem.

The methodology adopted is also comparative in the sense that it has compared the thoughts and approaches from a wide range of writers and thinkers, and has attempted to note the rhythms and patterns that have been repeated there in. In so doing it is hoped that the deep connectivity that exists between all of life and nature's systems can, in part at least, be revealed. In later chapters I use Deleuze's reading of univocity to refer to this deep underlying self-similarity of pattern and organisation across nature – to the notion that the world speaks with a single voice, that all is part of a single process. There is nothing mystical about such a claim. It should be expected if we follow the general precepts of empiricism and emergence outlined above, and is supported by the work of such scientists as Kauffman (1993 & 2000) and Goodwin (2001 & 2007), and documented by science writers such as Ball (1999).

The above two key ideas of Serres (*noise* and 'thinking the multiple') are worth one final note of explanation. I have used the motif, or even the

command, ‘think the multiple!’ as a constant reminder to be aware of the dangers of abstraction and the production of unities, as a reminder of what I believe to be the complexity of the social given. This is based on the presupposition that everything outlined above concerning the complexity and dynamism of the world is accurate – and I have discovered nothing to suggest otherwise. With such a presupposition there can be nothing that is not multiple. This motif, therefore, will act as a constant guide, as the familiar territory of the social world is explained in a new way. And finally, *noise*. This has not just been a theoretical concept. Most of the fine and detailed points of this thesis only arose though the process of writing. They felt like they quite literally emerged from the noise of my thinking.

4 Existing approaches to social multiplicities

4.0 Introduction

In the previous chapter I surveyed Serres' methodology and made a connection to complexity science. The purpose of this was to provide an initial framework: a general methodology (comparative) and a set of concepts that will be of value in the task of constructing a social ontology that not only offers a resolution to the problem of the relationship between the micro and the macro in society and the emergence of social order, but also provides a map for our encounters with the social, and, by implication, social issues. This approach accepts that there is no ground, no foundation upon which to build such an ontology, but rather that we cannot avoid sensitive dependence on initial conditions, that we cannot avoid certain presuppositions. These presuppositions are that 'society' or 'societies' are complex multiplicities that in some way (yet to be determined) self-organise in a way general to all complex systems, a claim that is supported by the adoption of a comparative methodology. Also, that such systems should be modelled on distributed networks rather than formal, rule based models, and that the key to understanding these systems is to focus on the local conditions – on what takes place at the micro level. This claim remains subject to confirmation through empirical experience, but to achieve this I first need to construct an ontology of the social that is capable of such testing.

In this section we I exam three key thinkers who, in their own ways, are attempting to think in terms of multiplicities, and who comment either directly or indirectly on the social. My task, therefore, will be to gain a first hold on the problem through an examination of the approaches made by those who have not necessarily 'been there before', but who have at least considered

similar issues from a similar perspective. This will be as close as it will be able to get to an initial survey of the new terrain that I seek to explore. My aim will be to discover some aspect, perhaps some concepts, that I can take forward with some confidence into the next two sections where the construction of such a social ontology will be attempted.

4.1 Badiou: the void and multiplicities

At a superficial level it would appear that Badiou, in *Being and Event*, is proposing a similar project to that proposed by Serres in *Genesis*, namely that "the multiple, left to the implicitness of its counting rule, be delivered *without concept*, that is, *without implying the being-of-the-one*" (Badiou, 2007: 42). Any possible consensus of method, however, is abruptly destroyed once it is realised that for Badiou this is to be achieved through axiomatisation. *Being and Event* is, if nothing else, an immensely complex, rich and well written book, too complex and rich to be adequately assessed in the very limited space I have at my disposal. My remarks, therefore, will be confined to its contribution to the task in hand, namely the attempt to think the social and social structure in terms of multiplicities, with the avoidance of unities. It is Badiou's decision to utilise the Zermelo-Fraenkel axioms of set theory (hereafter referred to as ZFC when including the axiom of choice,[48] which Badiou does) that poses the greatest problem (following Serres) to the empiricist approach being taken by this project. This, from Serres' perspective, leads to an excessive level of analysis and abstraction and, I will argue, lead to very real philosophical problems. Out of this emerges three further issues that will keep forming obstructions to the path of this thesis, and which, by discussing in relation to *Being and Event*, will actually illuminate its task: over codification, collective intentionality, and the thorny issue of what, in social terms, is actually being organised. Finally, I will

suggest that by taking a more descriptive approach to the book a profound similarity can be found to *Genesis*, and at least one useful concept can be uncovered.

In *Being and Event* there is one central equation, that of the equivalence of ontology and mathematics; Badiou is unequivocal on this: "mathematics is ontology – the science of being qua being" (2007: 4). As Jon Roffe notes in his review of the first English translation of this book: "Not only will it be read poorly if the centrality of mathematics is downplayed, it will be read poorly if the nature of this centrality is misunderstood." (Roffe, 2006) In the philosophy of mathematics there is still much controversy as to the nature of mathematical 'objects', but Badiou, through repeated references to 'laws' and 'formalisation' adopts a formalist approach, in fact such an approach would seem essential to his overall aim:

> What is a law whose objects are implicit? A prescription which does not name – in its very operation – that alone to which it tolerates application? It is evidently a system of axioms. An axiomatic presentation consists, on the basis of non-defined terms, in prescribing the rule for their manipulation. (Badiou, 2007: 29)

Let me examine this statement via a general understanding of mathematical formalism. A fairly standard definition would be the position that "mathematics consists merely of formal symbols or expressions which are manipulated or combined according to preassigned rules or agreements." (Davis & Hersh, 1983: 413) These symbols are not objects as such, certainly not in any Platonic sense, and are devoid of meaning and content – they are not about anything, do not refer to anything, they have no meaning – they are simply rules for their own manipulation. What matters (all that matters) is their internal coherence, their integrity, their lack of contradiction; "all that matters are the rules of the game – the rules of influence by which we transform one formula to another" (1983: 394). And because these rules are not 'about' anything, they do not name anything, their terms (Badiou's

general ‘term’ for an element or item referred to or implied) remain undefined. It is through such an approach that Badiou thinks he can remain within the multiple, within the claim that “every multiple is a multiple of multiples” (2007: 29) and avoid any claim concerning the existence ‘of the one’, and refute any ontology of presence.

In what (if any) sense can such axioms be said to ‘exist’ though? This is not a trivial question considering, for Badiou, the equivalence of ontology and mathematics. Davis and Hersh state that as “a philosophy of mathematics, formalism is not compatible with the mode of thought of working mathematicians” (1983: 343) and make the claim that although at one level it is thoroughly discredited, “Platonism was and is believed by (nearly) all mathematicians. But, like an underground religion, it is observed in private and rarely mentioned in public” (1983: 339). Why is this? Why should a mathematics that dare not speak its name, a mathematics that claims that their objects of study exist eternally and totally independent of human research, survive? How can it survive amongst scientists who at all other times would dismiss any notion of Platonism out of hand? I would suggest that such a mathematics only exists in the rarefied atmosphere breathed by those engaged in pure mathematics – for here no problems ensue from such an approach; they are so far up the mountain that cloud cover obscures their view of the ground. Providing that the mathematics being worked on is not applied to any actual physical situation or event integrity and self-constancy is all that is required, and it surely becomes a matter of convenience or habit to ‘imagine’ that the ‘objects’ being worked upon actually exist. In fact it may be more that just a matter of convenience, it may well be that the mind posits entities that it constructs as actual because it has evolved to do so through a process of abstraction derived from our actual empirical experiences – but more of this shortly. On the other hand, for those engaged in applied

mathematics, the situation is quite different. For the Nobel Prize winning physicist Frank Wilczek, mathematics is about compressing data for ease of 'transportation':

> Constructing *profoundly* simple theories of physics is an Olympian game of data compression. The goal is to find the shortest possible message – ideally, a single equation – that when unpacked produces a detailed, accurate model of the physical world. (2009: 140)

For Wilczek mathematics codifies physical observations to produce theories that can be 'transported' or applied to other situation, and those theories "that make wrong predictions are disqualified" (2009: 140). In other words the mathematical entities used by the applied mathematician are openly acknowledged to be entities that have been abstracted from the physical world and are only of value in their ability to be reapplied. In other words, they are descriptions of the world rather than definitions; they are emergent from ontology rather than being equivalent to it.

In his essay 'Mathematics & Philosophy' Serres adopts a similar position. He suggests that the Thales' idea for the measurement of pyramids and the subsequent development of mathematics was born of the necessity of gaining access to the inaccessible. Thus geometry produced easily transportable models that scaled down the inaccessible and allowed for their measurement. But he attaches a cautionary note:

> Now it is probable that true knowledge of the things of this world lies in the solid's essential shadow, in its opaque and black density, locked forever behind the multiple doors of its edges, besieged only by practice and theory. (Serres, 1982: 94)

In other words, despite the pragmatic value of this geometry, something always escapes the measurement. The true knowledge of the object remains in the shadows, hidden from the geometer and mathematician. It therefore seems obvious that we should not mistake the model so produced for the reality of the object itself.

For Serres, particularly in *The Five Senses*, abstraction goes hand in glove with analysis and mitigates the reality and complexity given by empiricism, by our bodies' direct contact with their world. He revives the old empiricist battle cry that 'there is nothing in the intellect that has not first been in the senses', and explains that "this means that the intellect has collected what has remained of the senses, that it therefore becomes a memory, a reserve, a data bank" (2008: 327). In the intellect, something of the senses, of our experiences, always remains, and this is, by definition, abstract; it forms the basis of our language, what we talk about. This is not 'wrong', he does not suggest that we should not abstract and use language – far from it, he confesses his love of language – merely that we be aware that language and abstraction on its own, forgetful of its sensible source, divorced from its landmarks in the physical world, leads to us becoming anaesthetised to the aesthetics of the world, and leads to what Serres terms an addiction. The world and our experiences of it are 'given' to us, they are 'the given'; our language, our analysis, is what we say; and the "addition of saying and giving equals addiction" (2008: 97). He adds: "Addiction, the first diction, the first word, confirms all others." (2008:98)[49] I suggest that this addiction is an addiction to certainty, the certainty that we strive for in analysis – in the rather strict, and perhaps philosophical sense of the term. As Serres points out: "In the language of [analysis] confusion means failure" (2008: 160). This is what led to the ZFC axioms following the formulation by Russell of his paradoxes against Cantor's original theory – the need to remove any paradoxes, because paradoxes mean confusion, and there is little room for confusion in the nice, clear, pristine, clinical world of analytical philosophy. However, the experiencing of paradox and uncertainty is to be expected in a complex world. Serres' methodology is as opposed to an analytical approach as it possible to be. For him, to "confuse means...to pour together...a solution" and that "...the philosophy of confusion should be the common

ground of sapience" (2008: 160-1). Serres' approach is synthetic rather than analytic; it is an approach that is comfortable with complexity, uncertainty and confusion because that is how the 'real world', our world as we experience it, is. We acquire wisdom when we can accept this and build it into our theories – theories that, as in applied physics and applied mathematics, are abstracted or derived from our experiences, and are constantly tested or reapplied to them.

For Badiou, though, the axioms of ZFC somehow manage to 'exist' without existing. They have not been derived or abstracted from experience – if they were they would be subject to constant testing and evaluation - but neither do they exist in some Platonic realm. As formalisations, I am not suggesting that such axioms are without pragmatic value – that they do not have the ability to allow us to describe certain situations. Like Thale's model, they allow us access to a certain level of understanding and analysis that otherwise would remain inaccessible. The problem with such an approach arises when we question the ontological status of these axioms, particularly when we question any causal relation that may result from them.[50] This problem really comes home when we ask: how do they affect or influence actual social structures? In what sense do the laws of his formalisation actually produce an experience? Or rather, as this question is biased towards my approach to this problem: what is the nature of the relationship between ZFC and actual social events? If there is no relationship, if the axioms only exist in the same sense as formalised mathematics exists, then their only relevance in terms of the social is as abstract descriptors. The best way to explore this problem will be to use just about the only actual example offered by Badiou. I would add that whilst, again on the surface, *Being and Event* is a generalised ontology, in practise it is a social or even a political ontology; in places it reads more as an attempt to revitalise Marxism than an attempt to radically rethink the problem

of social complexity and multiplicity. It is no coincidence that his general use of the phrase 'the state of the situation' has not only a metaphorical affinity with politics, but in many places refers to an 'actual' State. Which particular state is not made clear, but under such an axiomatic approach all states would, at this level of analysis, be the same. The actual social situation offered as an example is:

> Here is an image (which in truth is merely approximate): a family of people is a presented multiple of the social situation (in the sense that they live together in the same apartment, or go on holiday together, etc), and it is also a represented multiple, a part, in the sense that *each* of its members is registered by the registry office, possesses French nationality, and so on. If, however, one of the members of the family, physically tied to it, is not registered and remains clandestine, and due to this fact never goes out alone, or only in disguise, and so on, it can be said that this family, despite being presented, is not represented. It is thus singular. In fact, one of the members of the family is, remains, himself, un-presented *within the situation*. (Badiou, 2007: 174)

A presented multiple, for Badiou, is the presentation of beings, the presentation of a consistent (and therefore countable as several 'ones') multiplicity out of the void – the inconsistent multiplicity which is the being of beings, or being qua being. In the language we have been using it is the emergence of differentiated entities out of the undifferentiated *noise*. In the language of set theory a presented multiple is the 'set' of elements or atoms of which the set is comprised. For set theory, as it is a formalised system, these elements, or 'terms' as Badiou refers to them, never refer to anything in particular. However, if we intend to apply this set theory language to the social (or any other actual situation) we surely need to be able to specify what these elements are – for it is their relationship, organisation and manipulation that the axioms themselves refer to. Badiou, sheltering behind the non-being of formalism, never attempts this – which would be acceptable if he remained in the formalist world of abstract description. However, as his ultimate purpose appears to be socio-political this cannot be acceptable – such a purpose implies change, and this requires an understanding of causal

relations that go beyond the descriptive. Not that this is easy task, as will be discovered in the next section – in fact I shall argue later that specificity is not actually possible, but that working through this problem and developing concepts that can cope with it are. But to return to the problem in hand. At first sight it would appear that the individual family members are the elements of the presented multiple. If this is the case there is a need to understand their emergence from the inconsistent multiplicity. Badiou makes no attempt to explain this, and I have no idea how he could, at least not in the socio-political context. Rather than focus on biological individuals, an alternative approach might be to focus on their behaviour; after all, it is what they do, their living together, their going on holiday together, that allows them to be counted as a one, as a family. However, attempting to use set theory to describe behaviour is no easier task.

The main problem that I want highlight at the moment, however, comes to light when we compare this presentation or belonging to representation or inclusion. These are two different 'presentations' or acts of 'counting':

> Once counted as one in a situation, a multiple finds itself *presented* therein. If it is also counted as one by the metastructure, or state of the situation, then it is appropriate to say that it is *represented*. This means that it belongs to the situation (presentation), and that it is equally included in the situation (representation). (Badiou, 2007: 99)

In fact, these are not only two different 'presentations' or 'acts of counting', but they are opposed, such that an "un-relation between presentation and representation" exists (2007: 281); the state 'as operator of the count' and the 'individual' family member presented or resisting the count of the state are in a Marxist State of conflict. The state ensures inclusion within the state by forcing each member of the family to register at the registry office and possess French nationality – presumably through the issue of a French passport. Now, without becoming embroiled in a debate about the merits or demerits of Marxist socio-political analysis, let me pose one question: How do

the axioms of set theory, axioms that formalise the ontology of the socio-political arena, affect, influence, control or in any other manner come into a relationship with either individual social actors, their social actions, or, indeed, The State itself? If these 'axioms' exist as some type of social code, norm or law, as arguably they must in order to cause the necessity of holding a passport or registering at the registry office, then these 'axioms' are no longer axioms. They have a referent and a particularity; they have an existence (as code) and a causality that can be explained. Alternatively, they could exist as formal mental concepts whose primary purpose is to allow descriptions of social events, but even here they could only 'exist' within individual minds as particular concepts. I suggest that for axioms to have any causal ability they need to be 'converted' into codes – into some type of norm, rule or law.

There are two other problems that are worth mentioning before I extract two valuable ideas from *Being and Event*. Firstly, I would suggest that Badiou's slippage into Marxist rhetoric and his constant references to *the* state actually run counter to his project of arguing that 'the one is not'. The state seems to emerge as some type of intentional unity, or at least as a unified multiplicity with collective intentionality. To reverse the above problem, which questioned the ontological status of the axioms: what is the ontological status of the state? If the void is "the first level of being" from which emerges "a hierarchy of being" such that there exist a number of levels that correspond to the series or ordinals (2007: 298), then where does the state sit in this hierarchy? Does it nest further up the scale than presented situations? In which case, it must, in some sense, be emergent from it. Or, if the state is opposed to presentations as is suggested by there being an 'un-relation' between them, are they two separate hierarchies that come into conflict with each other? Either way, assuming that "every multiple is a multiple of multiples" (2008: 29), how can the state achieve sufficient unity such that it

is capable of knowing, having a standpoint, forming a recognition, making a declaration - to take just a few examples from just one page (2008: 208). I would suggest that one of the great merits of trying to find a way of thinking the multiple of the socio-political arena is to expose the problems associated with forming any unified concept of class or social classification; not just to expose the profound difficulty in delimiting any complex multiple, but to show how decisions, actions and communication are always carried out at the local level – even if they have global effects. In fact, if my presupposition that the correct way to model the social is through complexity theory and distributed networks is valid, we *must* focus on the local conditions of any decision. The state is incapable of any intentional act; it is the individual social actors employed or working for the state who know things, form recognitions, have standpoints and perform actions. What remains to be worked out is how these intentional individual actors emerge and form relationships such that it *appears* that the state, or any other collective, is acting intentionally. *Being and Event*, whilst opening with the stated aim of exposing 'the one' for what it is, in socio-politcal terms at least, ends by reinforcing it.

The second problem concerns over codification. In a way that seems to have many similarities to the three 'lines' given by Deleuze and Guattari, Badiou presents three different permutations of how presentation and representation affect a term in any situation; normal, singular and excrescence:

> I will call *normal* a term which is both presented and represented. I will call *excrescence* a term which is represented but not presented. Finally, I will term *singular* a term which is presented but not represented. (2007: 99)

One problem with this very simple differentiation has already been alluded to, namely the nature of 'a term'; does it refer to an individual social actor or to their behaviour / actions? I fail to see how this could be applied to the former, even though that is the implication of the reference, as such an application

would effectively create a unity out of a multiplicity of differentially described roles and actions existing both synchronically and diachronically; but if applied to the latter problems emerge from the sheer complexity of human behaviour. Not only is the problem of isolating elements of human behaviour profoundly difficult, as I shall examine in more detail latter, but even should such an analysis be possible, each element would itself, by Badiou's own admission, be multiple, and as such would never fall into just one of these three categories. No action is ever pure, in the sense of being either totally under the control of the state's count (represented but not presented), nor totally free from it (presented but represented). All action would, to varying degrees, be normal. In Badiou's defence, he does admit that the "degree of connection between the native structure of a situation and its statist metastructure is variable" and that the "question of a gap is the key to the analysis of being, of the typology of multiples-in-situation" (2007: 99) but does such a codification, or even such an over codification, allow for the complexity and multiplicity of social behaviour and structures to be seen? Or rather does it over simplify to the point that the detail that explains the social is lost from view?

In *A Thousand Plateaus*, originally published in 1980, eight years prior to *Being and Event*, Deleuze and Gauttari offer a similar three fold differentiation of social structuration (2004a: 244-5). The first of these, "a relatively supple line of interlaced codes and territorialities" seems to correspond to roughly the normal situation; the second, "a rigid line" where "the social space implies a *State apparatus*" has a strong correspondence to the excrescent, as does the third, "one or several lines of flight" to the singular, where the terms involved offer a resistance to state control. But at least Deleuze and Gauttari offer their description in terms of codifications, with the second line being a "generalized overcoding" and the third being "defined by decoding and deterritorialization".

The advantage of using the language of codification is firstly, as Wilczek points out, the codes have a referent, they actually refer to something, and are not formal like the axioms of ZFC, and that secondly they allow for degrees of codification. For Deleuze and Gauttari, the greater the codification the more rigid the situation and therefore the less the degree of flexibility or adaptability the system, state or situation has to respond to a constantly changing and dynamic environment. They often refer to the severe overcoding of state control as cancerous, a reference to Solzhenitsyn's allegorical novel *Cancer Ward* and the 'cancerous' Soviet police state of the 1950's in which it is set. I would suggest that *Being and Event*, with its axioms and its plethora of technical definitions is itself an overcodificaction. Badiou must have had all this in mind when constructing his terminology, or perhaps it was just a coincidence that he chose *excrescence* to refer to excessive state control.

Codification and definition are all acts of abstraction that extract key features of their referent and then attempt to freeze them such that they reduce the complexity and multiplicity of the referent to a simplified and easily transportable commodity. Axiomatisation is the same except that once abstracted the axioms remain without a referent and are manipulated only at the formal level.[51] In a sense, in the sense described by Wilczek, this is an absolutely necessary procedure. It becomes a problem when we no longer see the said as a code of the given, but *as* the given – as the defining truth of the situation. If we approach the same phenomena not with the intention of defining but of describing we keep in mind not only that the description refers to something, but that this something is multiple and can be described in a number of different, but in equally valid ways – it becomes a question of where you draw the lines that delimit the multiple, and whether the resulting description works, whether it communicates what you intended to

communicate. There are at least two concepts within *Being and Event* that are worth referring to in this context: The void and its similarity with *noise*, and the act of 'counting-as-one'.

In a similar, if not identical way that for Serres *noise* is the primal, primitive and pre-ordered state, the "background of our being", the pure undifferentiated multiplicity out of which all classes, patterns or orderings emerge, for Badiou the void is "the nothing...the pure multiple upon which the count operates" (2007: 55), it is the 'inconsistent multiplicity', the 'not-one' out of which all 'consistent multiplicities' or 'several-ones' emerge. It is inconsistent because it is undifferentiated, it is literally 'no-thing', and as such it is the 'being qua being' of all beings. I can find no difference between these concepts. But whereas Serres attempts a description of *how* entities, through time or repetition, so emerge, Badiou offers nothing. He comes close to such a description when he says that: "Insofar as the one is a result, by necessity 'something' of the multiple does not absolutely coincide with the result...this 'there is' leaves a remainder" (2007: 53). But he does not attempt an explanation of why 'this' remainder from the emergence of this 'there is' should return to the ontological sump rather than 'that' remainder. Again, in Badiou's defence, such a formalisation would not require such particular detail, but, from Serres' perspective, I would suggest, it is an appreciation of the local conditions that give rise to a particular 'there is' that is central to an understanding of this process. Badiou's insistence, though, that what is presented is not one, but only a 'count-as-one', is a good *description* of the process of presentation. It recognises that the referent is a multiplicity, not a unity, but that for pragmatic purposes, for purposes of communication and recognition, we will refer to it as if it were one. What he does not pursue, however, is the nature of the count. Regarding inclusion or representation, he very emphatically argues that the state is the operator of the count.

However, as I have argued above, he does so without a description or analysis of how (implying a collective intentionality); he offers no suggestion of who counts that which is presented, how this count occurs, or what is counted. This count by the state reads as the opposite of a process of emergence, as a top down imposition (which, for political reasons, is no doubt his intention). Either way, this would all be easier to understand if we could have some notion of what is being counted. From a formalist perspective there is no need for a referent, but from the perspective of this thesis there is.

4.2 Deleuze and Guattari: the arborescent and the rhizomic

Having already established a link between Badiou and Deleuze and Guattari, I now wish to examine their collaborative work in a little more detail. It is perhaps easy to see why Albertsen and Diken (2003) devote so much of their paper to an exposition of this collaboration. They quote John Urry as arguing that "much of what happens in a 'society' is influenced by flows or fluids" (2003: 27) and, in following this concept of flow, make the decision to dwell on Deleuze and Guattari's philosophy "in order to look at what is perhaps the most radical elaboration of 'the social' as flow". And following the general outlook being followed by this thesis this would seem a sound decision.

The similarities of their approach to that of Serres are, again, on the surface at least, obvious. In describing their principle of multiplicity they are explicit that it has no relation 'to the One', either as object or subject, and that there "is no unity to serve as a pivot in the object, or to divide in the subject...not even the unity to abort in the object or 'return' in the subject." (Deleuze & Guattari, 2004b: 8-9) Two years later,[52] as I have already noted, Serres took as his object of study 'the multiple as such', which he described as "a set

undefined by elements or boundaries. Locally, it is not individuated; globally it is not summed up" (1995a: 4). There is barely a cigarette paper between the two descriptions. Not only this, they both describe the emergence of their multiplicities out of the *noise* or chaos through the same process of repetition:

> From chaos, *Milieus* and *Rhythms* are born...Every milieu is vibratory...a block of spacetime constituted by the periodic repetition of the component...Every milieu is coded, a code being defined by periodic repetition...Rhythm is the milieu's answer to chaos. What chaos and rhythm have in common is the in-between – between two milieus, rhythm-chaos or the chaosmos. (Deleuze & Gauttari, 2004b: 345)

Chaosmos is the edge of chaos, or the edge of the void in Badiou's terminology; it is that creative middle ground from which rhythms as codes of communication emerge. We are in the third place. We are in Serres' world of synthesis, a "synthesis of disparate elements [that] is not without ambiguity", a world of fuzzy aggregates (2004b: 379). These multiplicities have "no beginning or end"; they are "always in the middle, between things, interbeing, intermezzo". Just who is it that is speaking here? It was Deleuze & Guattari (2004b: 27). To push the similarities even further we have the speed of Hermes as well. These multiplicities are formed from lines, lines of communication, never from the plotting of points, and it is speed that "turns the point into a line!" (2004b: 27). Another and very significant area of agreement, one that will be looked as in some detail later (5.1), though in relation to Deleuze's solo work, is their critique of 'representation'.

Deleuze and Guattari actually present two models of multiplicities, and it is here, in the differences between them, that the problems with their approach start to become apparent. They term these two models the rhizome and the tree, or the arborescent; the latter being the model of structure and hierarchy, the former being the model that constantly escapes structure and hierarchy. Representation is linked to the model of the tree, to a logic of tracing and reproduction. "The rhizome", they say, "is altogether different," it

is “a *map and not a tracing*” (2004b: 13). What distinguishes the two approaches is the experimental nature of the map in its contact with the real or given; rather than reproducing a closed unconscious, a representation of a static, fixed ‘reality’, a mis-represented given, it constructs an open unconscious, it becomes Hermes fostering connections between fields, a guide to the turbulent reality, to the flows that constitute the true given.

In the previous section, when discussing the nature of complex systems, I noted that one of their features is their high degree of connectivity. This is essential for non-linearity and feedback to occur. The two models here described refer to two models or principles of connection within two types of assemblage or multiplicity. With the model they refer to as the rhizome (and in other places as the molecular), the degree of connectivity is high and unstructured, for “any point of a rhizome can be connected to anything other, and must be” (2004b: 7) such that “the linear unity of the word, even of language” is shattered in the same manner, they claim, as “Nietzsche’s aphorisms shatter the linear unity of knowledge” (2004b: 6). With the model they refer to as arborescent (and in other places as the molar) this fluid and constantly changing non-linear communication has been tamed, communication has been codified, if not over-codified, relationships between components have become fixed, and a hierarchical structure appears – definite points and positions can be plotted. Unities appear. In contrast to this coding or over-coding, rhizomes constantly escape codification, and they act as a universal model in as much as it applies to all systems, “ceaselessly establish[ing] connections between semiotic chains, organizations of power, and circumstances relative to the arts, sciences, and social struggles” (2004b: 8). And with a no doubt unintended display of irony they summarize the principle differences between these two models as the differences “between rigid segmentarity and supple segmentarity”, where in the former “binary

segmentarity stands on its own and is governed by the great machines of direct binarization" whilst in the latter "binarities result from 'multiplicities of *n* dimensions'" (2004b: 234).

The question that must be posed is: what is the relationship between these two models? Are they two different modes or poles of the same process? If they are then we would need to understand the movement from one pole to the other. Or are they creating a dualism? I would like to suggest that Deleuze and Guattari are simply unclear, or ambiguous on this point – that would be the most positive reading. Ultimately, however, they become very clear and their politics appears to get in the way of their philosophy, creating a serious difficulty. In their Introduction to *A Thousand Plateaus* their position appears clear: The tree and the rhizome "are not two opposed models" – "there is no dualism" (2004b: 22). In fact they argue that "mental correctives are necessary to undo the dualisms we had no wish to construct but through which we pass" (2004b: 23). Dualisms here are the enemy. We cannot stop them appearing, so in that sense they are an entirely necessary enemy, but they must, following Derrida (1997), be deconstructed as they appear. So if these two models do not create a dualism, what do they create? Perhaps a mixture of some kind? This certainly appears to be the suggestion when they state that there are "knots of arborescence in rhizomes, and rhizomatic offshoots in roots." (2004b: 22) But does this make things any clearer? The question remains: what is the relationship between these two models that form a mixture? If, as I will later argue, what we have is a 'progressive' process of codification operating in one direction, but at the same time a constantly moving process of decodification operating in the other direction, we have a *single* complex and dynamic process of both structuring and de-structuring. Is this what they mean?

A later section seems to maintain a certain ambiguity: two states of a single process *and* an opposition between two different processes: “This opposition between arborified and rhizomatic segmentarity is not just meant to indicate two states of a single process, but also to isolate two different processes” (2004b: 234). It would seem that we have two distinct but inseparable processes that coexist in some state of entanglement but are not a mixture, that maintain a distinction “because they do not have the same terms or the same relations or the same nature or even the same type of multiplicity” (2004b: 235). Now they appear to present two very distinct but interacting processes that even if they could not exist separately nevertheless are different in kind. So if one is emergent from the chaos through rhythm and repetition, from where does the second emerge? Answering this question leads to a very ambiguous situation.

It is necessary to understand that for Deleuze and Guattari “everything is political” and that “every politics is simultaneously a *macropolitics* and a micropolitics.” (2004b: 235) It is also necessary to understand that both *A Thousand Plateaus* and *Anti-Oedipus* had two critical targets, capitalism and schizophrenia, the sub-titles of both books. Regarding the latter, their aim was a critique and a radical overhaul of psychoanalysis in terms of what they call schizoanalysis. As this is outside the aims of this project I mention this only in passing. Regarding the former, in a similar manner to Badiou a few years later, their aim was a critique and radical overhaul of Marxism. On the one hand, following the events surrounding May 1968, there was a frustration or radical disappointment in the ability of the left to bring about social and political change, but there was still a strong adherence to a Marxist analysis. Despite their obvious difference from Marx, in as much as they “define social formations by *machinic processes* and not by modes of production” (2004b: 480) *A Thousand Plateaus* still holds on stubbornly to a Marxist view of

history, the ‘evolution’ of an ancient slavery into a feudal serfdom into the oppressive capitalism of today, and a series of strong binary oppositions that includes the proletarian working class set against the capitalist State (2004b: 505 & 513). In fact despite the ironic acknowledgement of the need to deconstruct binary oppositions, the whole book seems to be built around them - the main one being the two types of multiplicity where the State and ‘the system’ are synonymous with the arborescent.

So, to return to the question of where the arborescent emerges from – the answer, rather puzzlingly, is that the State “comes into the world fully formed and rises up in a single stroke” (2004b: 472). The State, which in their terms is extensive, metric, centred, arborescent and striated, appears unconditioned in contrast to the natural ‘war machine’, which is intensive, nonmetric, acentred, rhizomatic and smooth. There are two spaces, the smooth and the striated, and they are not the same; the striated “produces an order” (2004b: 528) whilst the smooth escapes order. If the latter is an assemblage that is in a constant state of flux both codifying and decodifying its space and relations, what is the different type of order that it is in opposition to? If we follow one reading of the book, the section where they refer to the Body without Organs (BwO) (2004b: plateau 6), this problem can be avoided. Here the Full BwO simply refers to the healthy organisation or organism on the edge of chaos – not pure chaos (Empty BwO), not the void or *noise*, an inconsistent multiplicity where no differentiation is possible, but a consistent multiplicity in a constant state of flux and flow, where codes are formed but just as quickly break down as the multiplicity constantly adapts to its changing environment. Here the process of overcoding that eventually leads, at its upper limit, to a totalitarian state, is termed the Cancerous BwO; the codes that allow social relations have been rigidified, turned into stone or into statues, such that adaptation to a constantly changing environment, under the auspices of ‘good’

governance, is prevented, and eventually the system stagnates and destroys itself. As a metaphor, as a broad description of the *single* process of codification and decodification, I would suggest that it has plenty of potential, and with more detail, could be made to work as a description of the social. The problem is that this interpretation seems to have been developed largely through their response to psychotherapy, from comments made by Antonin Artaud, but does not work when applied to their response to capitalism.

At the risk of a gross oversimplification, capitalism itself, as a target of a critical analysis, runs counter to this description. When I use the term 'capitalism' I do so with all the warnings attached to any essentially contested concept; that it has no unified meaning, that it is a concept that is in effect a multiplicity of other concepts of which there is no one agreed definitive set. That said, it appears to me that the battle cry of most state governments and economists that are supporters of capitalism is 'the free market!' – the removal of excessive codes of regulation that prevent the free flows of money, labour and consumer goods. More socialist states, on the other hand, have tended to support greater regulation of the economy and the market place, have codified, or, from the perspective of their opponents, over-codified the flows. Such an analysis would place capitalism at the 'right' end of the continuum, at the free and nomadic end, if the above 'single process' model was adopted. Such a simple binary opposition, of course, would lead Deleuze and Guattari into a politically untenable position. Their response is to make the State process fundamentally different from the free flowing and emergent nomadic, rhizomatic process, and to argue that capitalism "arises as a worldwide enterprise of subjectification by constituting an axiomatic of decoded flows" (2004b: 505). They accept that capitalism requires decoded flows, but invoke the formalist, empty axiom as a target of their critical analysis - as the cause of a process that they otherwise support. These

axioms “are primary statements, which do not derive from or depend upon another statement” and are invented and multiplied by capitalism (2004b: 510). Such a response can perhaps be best explained through Foucault’s description of the emergence of neo-liberalism following World War Two (2008). Here Foucault suggests that such states created the conditions for good governmentality by formalising the conditions necessary for a highly competitive free market and then transferring these formalisations across to the state in general. The difference between these two approaches is that whilst Foucault attempts to describe this formalisation as a practice of government (as an attempt to *utilise* formalisations that have been the result of economic analysis) Deleuze and Guattari describe these formalisations as non-dependent ‘primary statements’.[53]

So let me be clear as to what is being suggested here. States appear fully formed, and they, as capitalist states and together with ‘capitalism’ invent axioms that decode flows not for the maintenance of the freedom of a nomadic and smooth space, but for the subjectification of its occupants and the production, presumably, of capital and wealth for the minority. What this analysis completely fails to do is reveal the genesis of the State, capitalism or the axioms (assuming that the latter actually exist – a problem that has already been discussed). In completely ‘othering’ the process of state structure from what I will later argue is its field of emergence they fail to identify the relations that actually give rise to such structures, structures that emerge *out of* multiplicities, that are produced rather than being the producers. This distinction has real importance if we genuinely want to bring about social / economic change. To give one simple, brief yet current example: The recent ‘economic crisis’. In the conflict driven Marxist model suggested by the above ‘second’ reading of Deleuze and Guattari, the crisis is always the fault of *the other*, whether this is capitalism, the state, or bankers.

It fails to identify the social and economic relations that we are all entangled in; it concentrates on the differences between the global or macro and the local or micro, without identifying how the former emerges out of the latter, and therefore without realising that if we want to change the former we need to change the latter – that we need to focus on the local (not primarily the global) and the *process* of codification. One of the consequences of such a mistaken analysis is the preservation of the fallacy of collective intentionality; that states or capitalism, as collective unities, are capable of acting as an intentional agent. One of the supreme ironies in *A Thousand Plateaus*, even beyond the invocation of an endless series of binary oppositions, is the *de facto* creation of unities (*the* State, for example) rather than its deconstruction into the non-denumerable fuzzy sets they actually are.

The above reading of Deleuze and Guattari's approach to the social can be pushed a step further to reveal the crux of the problem. Whether we read the molar as one pole of an emergent process or as a fully formed principle it is, as they say, the 'molar organization'; it is that which organises and rigidifies - as opposed the 'molecular milieu' that dissolves or escapes this organisation. We not only have to offer an account of the organising process, an explanation of how, why and from where organisation or its breakdown occurs, but also an account of *what* is being organised, rigidified, or escaping. Claiming that these 'molecular movements' "thwart and break through the great worldwide organization" and that from "the viewpoint of micropolitics, a society is defined by [these] lines of flight" (2004b: 238) reads like the need to provoke political activism wins out over the need to fully understand social dynamics. Although such an approach has its merits, its danger is that we fail to understand the complexity of the social process. This point, though not in a political sense, was made by Serres during an interview with Peter Hallward (Hallward, 2002: 234). After speculating that at some point in the future we

may be in a position to “grasp the complexity” of the world of networks and relations in which we live, but that such knowledge does not exist at the moment, he stated that he has “always asked Deleuze the following question: in what space do you draw your plane of immanence?” (2002: 234) His point was that if we talk of planes or lines of flight then, by invoking spatial metaphors we imply the pre-existence of a degree of organisation that immanence does not permit but that supports a transcendence. His comment that “One could say that all of Deleuze’s thought refuses this idea of transcendence but that its very expression presupposes it” (2002: 234) succinctly expresses the problem with the approach of *A Thousand Plateaus*. Deleuze and Guattari fail to ‘grasp the complexity’ of the social because they fail to understand the emergence (preferable to immanence)[54] of social organisation, a process that they could only have offered a description of had they uncovered that molecular ‘something’ that actually flows and that becomes organised. Only by then observing how or from where this organisation emerges could an account be given of State organisation, and how the molecular flows escape it.

They do offer, though, some indication of what these flows might be of. From a capitalist perspective they talk of monetary flows. For an economist this may seem to make some sense, at least until you realise that money does not flow on its own account (no pun intended) but in response to ‘something’ that uses it or acts upon it. From a psychoanalytic perspective they talk of the flow of desires - in fact the description of their assemblages as ‘desiring machines’ permeate their work. This approach may not be without some merit, providing we can become a little clearer about the nature of these desires and how they contribute to social organisation. Of particular interest to this project may be the contribution desires make to social action, and the extent to which desires are not only psychological, but also social in origin. They also talk about the

‘molecular flow of sinfulness’ that escapes the power of the church and the ‘flow of criminality’ that escapes the legal code. Both of these point in the right direction in as much as both refer to human behaviour, to human social action. I will argue later that social organisation emerges from the codification of social action, and that social action is the emergence and actualisation of a very complex virtual process. In this sense at least it will be of value to see human social action as an emergent process.

There is though a point in the book where they pay homage to Gabriel Tarde; an adversary of, and a thinker originally overshadowed by Comte, whose work is now receiving a lot more interest, and who is acknowledged by Deleuze, both singularly and with Gauttari, as having had a great influence on them. I will return to Tarde’s work and ideas in the next section (5.2), where the problem of the nature of the flows or of the ‘social atom’ that receives organisation, will be explored in some detail. For now, let me simply note that for Deleuze and Guattari he was the inventor of microsociology. This was because he was not interested in the large scale collective representations and overcodifications that interested Comte, the so called ‘social facts’, but “instead in the world of detail or the infinitesimal: the little *imitations*, *oppositions*, and *inventions* constituting an entire realm of subrepresentative matter” (Deleuze & Guattari, 2004b: 241). For them, he was truly a sociologist of the local and the multiple. Deleuze and Guattari themselves ask “What, according to Tarde, is a flow?” and answer “It is a belief or desire (the two aspects of every assemblage); a flow is always of belief and of desire” (2004b: 241). I will suggest later that his could be modified into what I shall term an *expectation*, a quantum of the social that remains radically multiple but nevertheless self-organises in a similar way to that suggested by Tarde. I will contest, however, whether ‘flow’ is an appropriate term, as it already suggests a degree of codification. It will also be worth noting the *opposition*

referred to by Tarde is not of the nature described by Deleuze and Guattari; rather than an opposition to a totalising and overcodifying State, it is an opposition that remains local, it is the opposition of a differential selection.

4.3 DeLanda: nested sets

DeLanda has not only become one of the leading exponents of the work of Deleuze and its relationship to complexity and non-linearity, but has recently formulated what he terms an Assemblage Theory of the social – an approach to social ontology and social complexity directly derived from Deleuze's theory of assemblages discussed above (2006a, 2006b). In line with the orientation of this project he is emphatic that the relationship between the micro and the macro is the "most critical question which a philosophical analysis of social ontology must answer" (2006a: 250); his use of network theory highlights many of the features of complex systems described in the previous section; he is one of few, if any, social theorists who recognises the role of scale; most importantly his focus on the Deleuzian concept of an assemblage recognises the centrality of multiplicity in any account of the social; and, in light of the review of Deleuze and Guattari (and Badiou) presented above, he recognised the problems associated with 'the State':

> Avoiding the use of concepts like 'the state' is important not only because such reified generalities are not legitimate ontological entities but also because such notions are too monolithic, that is, they fail to capture the relations of exteriority that exist among the heterogeneous organizations forming a government hierarchy. (2006b: 85)

This statement justifying his rejection of 'the state' is important for two related reasons. Firstly, and quite justifiably, he makes this rejection on account of it transforming a general concept (an essentially contested concept) into an actual material object. And secondly, a point that he makes a great deal out of, the relations that bring large scale organisations into being should always be considered through exteriority; they are never totalities

formed through relations of interiority. For DeLanda, relations of interiority, as I shall go on to explain, are similar to the part to whole relations that exist within functionalist perspectives of the social, and are to be rejected in favour of those of exteriority. And in line with the arguments above, DeLanda links Deleuze's ambiguity over his use of such a macro social entity as 'the state' to his Marxism, and heralds his own rejection of it:

> Deleuze remained until the end of his life a committed Marxist and...Marxism tends to favour a form of macro reductionism. While in the social ontology I will be sketching there is no such thing as 'society as a whole', it is not clear that Deleuze rejected that notion. (2006a: 252)

Why then does he completely fail to actually think the social in terms of the multiple? Why, having avoided the problems associated with 'the state' by offering an entirely bottom-up approach which he describes in terms of emergence does he fail to explain how this emergence occurs? He fails, I suggest, because he also jettisons Delueze and Guattari's emphasis on micro-sociology; he fails to recognise the importance of local relations.

A useful entry point into DeLanda's theory is via his use of the terms micro-reductionism and macro-reductionism alluded to above. These terms relate to the 'classical' approaches to social theory. The former to those approaches that view the 'key social entities' as being the individual social actors, either as rational decision-makers or interpreters of routine behaviour, approaches that include ethnomethodology, social constructivism and phenomenology. He does not include Weber in his list of examples, possibly because he draws quite heavily on Weber and his study of the three different sources of legitimisation of authority, but I see no reason why his interpretive approach should not be included. The point, for DeLanda, is not that these approaches deny the existence of society 'as a whole', but that in reducing the focus of significance to the individual they regard such macro views of society as an epiphenomenon, as "an aggregate or sum of either many rational agents or

many phenomenological experiences shaped by daily routine", as a phenomenon that has no causal influence of its own. The important point to emphasise is that the "macro entity does not have emergent properties of its own" (2006a: 250). On this account 'society' is constructed through a non-dynamic, non-complex process of the aggregation of individual social actors.

Macro-reductionism takes the opposite view, "asserting that society makes the individual". Here "what really exists is the world of enduring social structures", with individual social actors this time reduced to mere epiphenomenon brought about through a process of socialisation and which have no causal effect on the structure. It's the approach subscribed to by Durkheim, Parsons and the older Marx (2006a: 250). He also inserts Giddens' theory of structuration as a third strategy between these two classical positions, as what he terms a "'mesoreductionist' solution to the micro-macro problem." Here, as we have previously seen, both the micro and macro construct each other through a reflexive process that focuses on social practices (2006a: 251). DeLanda does not offer a critique of this third strategy, but those briefly discussed in the introduction to this thesis apply.

DeLanda's approach is "to abandon the idea that there are only two (or three) levels" and instead to bridge the gap between the micro and the macro "with many intermediate levels, each operating at its own spatial scale and having its own relative autonomy" (2006a: 251). These levels include communities and organisations of all sizes, ranging from families (I assume) and small social networks all the way up to cities, territorial states, government organisations and multi-national companies. Despite, however, referring constantly to emergence, populations and *statistical* results we discover a social world of wholes:

> each differently scaled individual entity (individual persons, individual organisations, individual cities and so on) is made out of entities at the immediate lower scale, that is, that the relations among scales is one of *parts to whole*. (2006a: 251, DeLanda's emphasis)

Each population forms "another concrete, *singular* entity" (2006a: 252; again DeLanda's own emphasis) that interacts with other entities. This approach, I argue, leads to more problems than it resolves. Chief amongst these are:

1. The problems associated with the invocation of a parts-to-whole relationship and its closeness, if not identity, with concepts of unities. This is not just a passing comment; the phrase 'whole-part relationship' dominates his approach.
2. An explanation, implied but not given by DeLanda, as to how these concrete singular entities actually interact with each other. Such an explanation is not possible unless the notion of 'wholes' or anything approaching social unities is abandoned; unless we adopt Serres challenge to 'think the multiple', adopting it as a motif, as a constant guide and reminder not to lose our way.
3. The dangers of approaching an unjustifiable position where we confirm the performance of collective intentionality; a position where our casual use of terms like 'national actors' (used by DeLanda 2006a: 263) is used to infer the intentionality of groups or populations, a position that radically obscures the complexity and dynamics of actual social relations and prevents our understanding of them.

I will examine each of these in turn.

1. As DeLanda explains in his introduction, the 'neo-assemblage theory' he develops is "is not strictly speaking Deleuze's own". For this reason I will aim my comments entirely at DeLanda's exposition and refrain from any direct comment on Deleuze's own theory of assemblage. DeLanda's critical target is a form of what he terms the 'organismic metaphor', "a more sophisticated

form of the basic metaphor" that culminated in the functionalist school of sociology, a form, that despite the rejection of functionalism, "still exerts considerable influence in most schools of sociology" (2006b: 9). This persistent version of the metaphor that implies a relationship between the nature of an organism and the state involves:

> a general theory about the relations between parts and wholes, wholes that constitute a seamless totality or that display an organic unity. The basic concept in this theory is what we may call *relations of interiority*: the component parts are constituted by the very relations they have to other parts in the whole. A part detached from such a whole ceases to be what it is, since being this particular part is one of its constitutive properties. (2006b: 9; DeLanda's emphasis)

A rejection of any seamless totality, or any unity, organic or otherwise, is perfectly in accord with the approach of this project, though not necessarily a general relationship between the emergent organising principles of organisms and states. Moreover, from DeLanda's perspective, such an approach has to be rejected due to its macro-reductionism. As described above, the 'whole' pre-exists its parts and constructs its parts to serve its own ends such that if any of these parts are removed from its totality they cease to exist. The problem lays with what DeLanda terms 'relations of interiority'. In the above, 'interiority' is applicable only from the perspective of the whole; from the perspective of the parts, however, the relations that constitute them are exterior, and if we have nested sets of assemblages, as we do with this theory, it must be close to impossible to state that for any given level of 'nest' whether the relations that hold it together are interior or exterior. Unfortunately DeLanda does not emphasise this relativity.[55]

'Relations of exteriority', on the other hand, argues DeLanda, are what characterise the wholes that Deleuze terms assemblages. An important difference is:

> that a component part of an assemblage may be detached from it and plugged into a different assemblage in which its interactions are different. In other words, the exteriority of relations implies a certain

> autonomy for the terms they relate, or as Deleuze puts it, it implies that 'a relation may change without the terms changing'. (2006b: 10-11)

The point being made is that the existence of 'the part' does not depend on its relations to the whole which it constitutes; it is able to be 'un-plugged' from one assemblage and plugged into another assemblage without undergoing any radical change. This concept is vital for DeLanda's understanding of emergence in the social sphere as it prevents any form of reductionism: "the properties of the component parts can never explain the relations which constitute a whole" (2006b: 10-11); in other words any resultant whole is always greater than the sum of its parts. In a broad sense such a concept is in line with the arguments this project wants to present, though its presentation in terms of wholes and parts, and in terms of interior and exterior relations over simplifies the social process, and prevents DeLanda from being able to offer an explanation of *how* such a process works in the social sphere.

In this neo-assemblage theory assemblages form nested sets of assemblages; they are, to use Badiou's phrase, multiplicities of multiplicities. Such assemblages act as the component 'parts' of larger assemblages that exhibit emergent properties – properties that cannot be reduced to the sum these parts. However, any dynamic system is always an open system, as much dependent on its external relations with its environment or milieu, in which it needs to survive and flourish (or the assemblage in which it is nested), as with its internal relations that hold it together into an identifiable form. This being the case, in what sense is it of value to separate relations into internal and external, particularly with the intent of prioritising one over the other in the sense that the assemblage derives its character or even its existence from one rather then the other? A collective may derive its form from the self-organisation of its internal relations, but it only does so in response to its

external relationships which supply its input and receive its output. If you 'unplug' an assemblage from the larger assemblage in which it is nested, and 'plug' it into another assemblage its internal relationship may or may not remain the same – it would depend on a large number of factors including the robustness of the system and the degree of perturbation it receives as a result of having a different milieu. Moreover, I fail to see in what sense any assemblage could be conceived as a whole. By any definition of whole completeness and entirety is implied, as is the notion of being undivided and of being a unified system. If it is accepted that this is not what Delanda wants to imply, the question of why he chooses to use such terms (especially when it is considered that the formal study of wholes and parts, mereology, is closely related to set theory) remains; an approach that has hopefully been dismissed. The answer seems to be that DeLanda requires such a concept to attempt an explanation of the interaction of social entities; the larger assemblages are emergent wholes that interact with other whole assemblages.[56]

However, an explanation of how these emergent wholes interact with each other and go on to form even larger scale emergent wholes is only implied. The reason why DeLanda fails to offer a full explanation, I suggest, is that, for the sake of simplicity, he has blinded himself to the complexity of what occurs, and no doubt felt compelled, because of his non-reductionist approach, to reject a focus on the local. Such an approach is not reductionist, I argue, because the emergent global or macro effects are still of a different order, are vastly more than the sum of their 'parts', even though they need to be understood at the local or micro level. What I will go on to suggest is that rather than resolving the micro / macro problem by the prioritisation of one over the other, by inserting a third level, or even by the construction of a multiplicity of levels as DeLanda attempts, there is a need to conceive of an

unbounded inconsistent social multiplicity, or noise, out of which all social entities emerge. For the time being this task will be aided by examining how DeLanda's approach fails to explain the interaction of 'whole' assemblages with other 'whole' assemblages.

2. Unities are again implied when it is considered how, for DeLanda, these concrete emergent wholes interact with one another. He is no doubt correct in arguing that communities become structured through the dynamics of social networks, but pushes his description too far in suggesting that these communities form political coalitions that "provides a community with resources like the legitimacy derived from numerousness and unity, but...also constrains it to struggle only for those goals that the whole coalition has agreed on pursuing" (2006b: 36). We thus move into a social world where social groups (communities and organisations) become united behind agreed goals and objectives and interact with one another through a process of negotiation and coalition – a process that takes place at the level of the emergent whole such that these wholes exhibit causal capacities that cannot be reduced or explained by reducing our focus to a lower level. DeLanda anticipates an obvious response: "It may be objected, however, that these alliances and subordinations are not the effect of these larger assemblages, but of the activities of the people that compose them" (2006b: 36). His answer to this objection is that "it is possible to accept that assemblages of people must act by means of the activity of people and at the same time argue that these larger entities do have their own causal capacities" (2006b: 37). Again, I am not questioning the ability of emergent organisations to have causal capacities, but what I do seriously question is the validity of only taking into account these capacities, and then describing them in such rational terms. To say that this simplifies the process by obscuring the complexities is an understatement, but in effect this is what DeLanda does. "The device that

allows such a compromise", he says, "is the concept of *redundant causality*." (2006b: 37, DeLanda's emphasis)

This sleight of hand termed 'redundant causality' says that we are justified in ignoring the micro details of a process if the effects would be the same what ever these details. So, for example, in "a coalition between communities...we may be justified in explaining the emerging coalition as the result of the interaction between entire communities if an explanation of the micro-details is unnecessary because several such micro-causes would have led to a similar outcome" (2006b: 37). So, assuming that these negotiations are actually being pursued by individual social actors, DeLanda is suggesting that what he calls "the assembly of subpersonal components (impressions, ideas, propositional attitudes, habits, skills)" (2006b: 52) can be safely bracketed if different collections of such components would have led the negotiations to the same outcome. This bracketing dismisses both a key feature of complex systems and a quite obvious piece of logic. Firstly we cannot dismiss any feature of such a complex process, no matter how small, because, as has already been explained, due to non-linearity (a subject on which DeLanda has written)[57] and feedback the slightest variation, a clinamen, can produce unexpected and unpredictable effects of a magnitude totally out of proportion to the cause. And secondly, how is it possible to know that a different set of micro-causes would lead to the same outcome without that same set of negotiations being repeated under controlled conditions? How often, socially, are identical negotiations performed? The only conceivable way such control or certainty of a social process could be achieved is where the procedures have not only been codified, but codified to the extent that for any given input only one output or response was possible – in other words: gross *over*-codification. In fact such a situation is implied by DeLanda when he states that:

> a large organization may be said to be the relevant actor in the explanation of an interorganizational process if a substitution of the people occupying specific roles in its authority structure leaves the organizational policies and its daily routines intact...[and]...if the emergent properties and capacities of the organization remain roughly the same after such a change, then it would be redundant to explain the interorganizational outcome by reference to specific managers, accountants and engineers. (2006b: 37)

Putting it bluntly, 'redundant causality' is achieved by replacing specific human actors possessing specific, individual and unique skills with automatons trained only to enact the organisation's codes! However desirable some managers in certain organisations may find such a possibility, for reasons already explained such a scenario is not possible, and even within Stalin's USSR its attempt produced the inevitable social cancer.[58]

3. Such an approach implies a concept not directly addressed by DeLanda, but which nevertheless requires exposing as a fallacy if I am able to manoeuvre my argument into a position whereby the full complexity and dynamics of social organisation is to be appreciated. This is the fallacy of 'collective intentionality' implied in the above quote through the consideration of a large organisation as a 'relevant actor' and to other references such as 'national actors'.

In making reference to 'collective intentionality' I intend neither an exploration nor an explanation of the issues surrounding the current debate on the subject, merely to, firstly, establish a link between this debate and this project, and, secondly, to underline the dangers of such thinking in addressing actual social issues and concerns (as opposed to sets of analytic propositions representing them). Deborah Tollefsen (2004), in her overview of the debate describes collective intentionality as the "idea that a collective could be the bearer of intentional states such as belief and intention" and points out that even if our reaction to such claims is to fall back on the

position that only individual brains / minds feature intentionality we are still left with the obvious 'fact' that "we do not always act alone and [that our] coordination with others...raises issues regarding the possibility of collective intentions", and that, further, we "often attribute beliefs, desires, and other propositional attitudes to groups like corporation." Trying to understand the apparently coordinated action of 'individual' social actors, and the resultant patterns of behaviour or social structures is at the core of this project – though the term 'self-organised' will be substituted for 'coordinated' as the latter implies a too greater degree of conscious and planned intent. Even if the inclination exists to dismiss 'collective intentionality' as a mere fiction, as a useful metaphor in everyday speech, the problems that need addressing still remain. For example, as Tollefsen points out, part of our system of justice involves the attribution of responsibility to organisations, since "we could not hold them legally and morally responsible for an action unless they *intended* to commit the act", and further, that "our ascriptions of intentional states to groups have a surprising explanatory power", a power that provides "*prima facie* evidence that our ascriptions are not simply false." (Tollefsen, 2004)

The problem with trying to explain these phenomena through the notion of 'collective intentionality' is that such explanations inevitably gravitate towards unities – often, paradoxically, at the level of individual social actors. Summative accounts, for example, seem to analyse group attitudes in terms of aggregates of individual attitudes, such that a group is said to believe or intend *x* iff the majority of the group believes or intends *x*. Non-summative accounts, on the other hand, appear even more focused on the individual. Michael Bratman, for example, describes individual social actors sharing intentions and coordinated actions with other social actors, and Margaret Gilbert suggests that social groups are formed by individuals bonding or uniting in certain ways in order to produce a joint commitment to act in a

particular way or to participate in a particular project (cited in Tollefsen, 2004). John Searle's most recent book argues that human social reality results from the imposition of functions upon objects and people. "The performance of these functions", he says, "requires that there be a collectively recognized status that the person or object has", and that "there must be collective *acceptance* or *recognition* of the object or person as having that status." In other words, these status function "depend on collective intentionality." (Searle, 2010: 7-8, Searle's emphasis) His belief "that society has a logical…structure that admits of, indeed requires, logical analysis" (2010: 7) and that it can be understood through the use of "one formal linguistic mechanism" (2010: 8) succumbs to the critique of abstraction, analysis and formalisation already presented.

Such analytic responses to the problem avoid the obvious fallacy of collective or group minds, but at the expense of the reduction down to the level of individual social actors who, often with reason and logic, produce collectives that act 'as if' they were collective agents. Whilst such an approach fails to capture the complexity, dynamics and emergence of the social process, the greater dangers lie, in a sense, in those non-analytic philosophic and non-philosophic (political) responses that seem to convert the above metaphors into social realities. The problems associated with group responsibility and the apparent explanatory power of group intentional states are not resolved through the above micro-reduction of explanations to individual social actions as such explanations fail to explain how such individual actions are influenced by collectives; but neither are they resolved through the macro-reduction to the level of the state or society as a whole (as DeLanda quite correctly argues) as they fail to explain the influence on the collective by individual social actors and we end up debating futile notions such as that of British values; *and* neither can they be reduced to *any* intermediate level, where we

end up trying to explain concrete social wholes acting without causal influence from entities of a different scale and debating equally futile and meaningless statements such as: 'this government believes...' or 'The Sun says...', or the various intentional states associated with bankers or Muslims. *Each* approach constructs a non-existent unity. To push the point: in order to get anywhere near a comprehension of the dynamic and complex social processes that give rise to the emergence of social phenomena there is a need to avoid any notion of unity; a need to find a way of thinking the multiple.

In the end, then, neo-assemblage theory fails to actually explain both how collectives interact and how other less 'clear' social phenomena, phenomena that do not form concrete singular entities capable of interacting with each other, emerge. In his final chapter DeLanda describes the effects of certain historic territorialisation and deterritorialisation processes in cities and other urban spaces that resulted from social phenomena such as social status, social prestige and fashion. For example he explains how the introduction of 'internal transportation' (lifts) into Paris apartment buildings reversed the "clear vertical stratification in which the social status of the inhabitants decreased with height" (2006b: 97); how the "impetus behind fashion was not just the desire to mark social-class territories through the way bodies and homes were dressed" but also expressed the desire for increased social mobility from rich merchants and artisans (2006b: 98); and how "a desire by residents to live in a relatively integrated neighbourhood" resulted in relatively homogenous racial, ethnic, class and language congregations (2006b: 101). What he makes no attempt to do is explain such phenomena as social prestige and fashion and *how* these territorialisations actually emerged and became organised. Such an attempt would have been a move in the right direction but could only have been achieved by recourse to the micro-sociology that was thrown out with the bath water – a micro-sociology,

however, that is not micro-reductionism. To anticipate arguments that I present later, I suggest that the notion of straight-forward imitation is insufficient to explain such phenomena, and that a far more radical critique of 'the history of fashion' would be required here.

4.4 Conclusion

What then can be drawn from this brief survey of three contemporary approaches to thinking the social in terms of multiplicities? Well, firstly, that in order to truly think in such a manner it is necessary to constantly remind ourselves that this is what we are trying to do. It would appear that, despite the best of intentions, it is far too easy to create unities. It may be that such a tendency is quite natural, in as much that at a pragmatic, everyday level we have learnt, even been coded, to think in such a manner – and that for the vast majority of our evolution, for all but the relatively infinitesimal last few thousand years, such an approach has worked – we have survived. But as the problems we face evolve, so must our way of understanding them. In order to avoid the fallacy of collective intentionality, in order to understand the complexity and dynamics of the social process, we need to move on from such a way of thinking. I need, therefore, as I progress through this project, to keep questioning myself as to whether I am inadvertently creating unities; and if such a recourse seems necessary in order to hold onto some pre-existing socio-political belief, I need to question that also. The challenge of trying to think the multiple is paramount. Secondly, of equal importance, and of an equal challenge, I need to 'discover' a non-abstract 'term' or 'unit' that emerges from the social *noise* / void and that is neither a unity itself, nor forms unities – even though what it does form can be 'counted-as-one' for pragmatic purposes. This challenge will be taken up in the next chapter and will be guided by a third factor also drawn from the above survey, namely the

need to avoid explanations that resort to abstractions, formalisations, and collective intentionality. This can be achieved by focusing on the local conditions. Or rather, it is because I need to focus on the local conditions that I need to avoid abstractions, formalisations and collective intentionality. There is a need to remain at the point of emergence, where these yet to be discovered 'terms' emerge from the *noise.* Such measures should prevent a construction of unities that take on a life of their own and their masking of the complexities of the processes we are trying to uncover. As was noted in 3.3, for both Cilliers and Serres, each 'element' only acts or responds locally, to the information that is available to it at the local level, and is ignorant of the behaviour of the system as a whole. There is a need, therefore, to be clear as to what, in social terms, these 'elements' are and the information, within their local milieu, that they respond to. All the thinkers examined in this chapter have, in their own way, failed to do this. Assuming that I can be successful in this task I will then be in a position to workout how such a 'term' becomes 'organised' such that distinct patterns of sociality are identifiable – a task which will involve a process that uses, in some manner, the codifications / de-codifications and territorialisations / de-territorialisations referred to by both Deleuze and Guattari and by DeLanda.

5 Non-units of social organisation

5.0 Introduction

The American sociologist, Dennis H. Wrong, who makes a contribution to my argument below (5.3), quotes the sociologist Jeffrey Alexander in stating that:

> The problem of order is the problem of how individual units, of whatever motivation, are arranged in nonrandom social patterns. Defined in such a generic manner, as the neutral problem of 'arrangement' or 'pattern', it is clear that every social theory must address the order question. (Wrong, 1995: 11)

Now, accepting all that has been argued regarding the problem of 'unities' and 'units', and my conclusion regarding the need to focus on 'the local', but nevertheless accepting the obvious truth of this statement (indeed, one that further supports the conclusion reached in the previous section), that for organisation or pattern to be perceived there needs to be something that is so ordered or organised into a pattern, there is now the need to discover (or create) some kind of non-unit of organisation; a term or a 'count-as-one' unit that, whilst itself being constantly and continuously open and multiple, nevertheless forms relationships with other terms such that some degree of recognisable organisation can be experienced. That is my task in this chapter.

5.1 Foucault: power relations

Michel Foucault's description of power relations, particularly in the first volume of his *The History of Sexuality*, is the closest to a description of the process of social organisation (in terms of multiplicity and dynamics) that I have been able to uncover. Whilst this particular work, or even his study of power in general, does not lead me directly to that which I seek, it will take this research tantalisingly close, and closer still if it picks up on another

thread of his work – the complexity that forms the hinterland to discourse. I shall discuss this in section 5.3.

It is difficult to give a definitive reading of power in Foucault's work. This difficulty may arise out of an ambiguity regarding the focal points of power – social subjects.[59] In attempting to work through the formation of the subject it is too easy to regard power relations as dominant structures. Contrary to how many people working in the social sciences have understood Foucault, in my reading of his work power does not refer to institutions and mechanisms that ensure subservience, it is not a mode of subjugation taking the form of the rule, it is not "a general system of domination". Rather, in Foucault's own words:

> power must be understood in the first instance as the multiplicity of force relations immanent in the sphere in which they operate and which constitute their own organization; as the process which, through ceaseless struggles and confrontations, transforms, strengthens, or reverses them; as the support which these force relations find in one another, this forming a chain or a system, or on the contrary, the disjunctions and contradictions which isolate them from one another; and lastly, as the strategies in which they take effect, whose general design or institutional crystallization is embodied in the state apparatus, in the formation of the law, in the various social hegemonies. (1998: 92-3)

There is so much in this passage that it requires a gradual unfolding.

Power, in straightforward scientific terms, is the rate of supply of energy measured in watts. Now energy, the capacity of any system to do work, as the first law of thermodynamics states, can be neither created nor destroyed – it is ubiquitous and can only become structured such that it flows in a reasonably organised manner, and in transferring from one region to another does work; it affects, moves or brings about change in something. This transfer of energy, this ability to do work, is power, and it loses none of its meaning when transferred to the social milieu – in fact, if anything it adds another dimension, or layer of complexity, to the same process. Lord Kelvin

proclaimed in 1851 that energy is *the* primary principle, and, for the sake of my argument, and to avoid waters so deep that I would no doubt drown in any attempt at their navigation, I will accept this as uncontested, and offer the no doubt grossly over-simplified suggestion that energy (also leaving aside any questioning of an ontology of energy) is that from which everything in the universe has been built such that even when organised into a relatively stable hierarchy (with corresponding increases in complexity) of energy systems – particles, atoms, molecules, chemicals, organisms – it still acts on the systems generated and is responsible for their further increases in complexity. I will have more to say on this expansion of complexity and what Stuart Kauffman has suggested as a fourth law of thermodynamics in 6.2. My point is simply that we could quite easily read the formation and evolution of human social systems as the result of exactly the same process, the univocal process referred to by Deleuze, which has produced quite literally everything – the process is the same, the only thing having changed being the degree of complexity.[60] Power, therefore, in social terms, is not a metaphor derived from the physical sciences to describe radically different relations in the social sciences – it is the same process, elevated, through emergence, to a much 'higher' level of complexity. Power, as the organised flow of social energy, can only emerge from the bio-chemistry of individual social actors – and can only become socially organised under the influence of local conditions.

Read in these terms, the above quote from Foucault describes the process of social self-organisation that I wish to argue for. No system, no describable organisation is either closed or a unity; all such apparent social units, all units that for the sake of routine communication and day-to-day behaviour we would wish to 'count-as-one', have to be understood as being comprised of a multiplicity of smaller and relatively less complex 'count-as-ones'.[61] These 'non-units' must be held together by a multiplicity of force relations that

themselves are immanent to that 'count-as-one' which they give rise to; which are emergent from them. In other words, power, in social terms, is the emergent organisation of energy flowing through the social realm. To recall Goodwin's description of fractal patterns, this organisation can be understood as "patterns that use minimal energy to achieve the most efficient flow through a system." (2007: 43) In order to describe this in any greater detail, or with greater clarity, I will need to have given greater descriptions to other parts of the process, but suffice it to say (for the moment) that the relations that allow for the emergence of the 'count-as-one' have been organised within these terms as the result of energy flowing through paths of least resistance (as described in 3.3 and to be returned to in 6.1) making the 'that', the 'count-as-one', which does emerge a self-organising entity.

This emergent self-organisation means a number of things: Firstly that the internal relations so formed are very dynamic, a seething mass of "ceaseless struggles and confrontations" that are effectively responding to a constantly changing milieu that requires periodic re-organisation or adaptation;[62] secondly that the emergent 'count-as-ones' themselves find a relative stability by forming alliances with other 'count-as-ones', thus forming larger and more complex systems wherein these 'higher order' 'count-as-ones' in turn become subject to a process of self-organisation that allows for the emergence of even higher order 'count-as-ones'; and lastly, that the state apparatus, the formation of laws and "various social hegemonies" are embodiments, or codifications, of these emergent and self-organising strategies. This last point is of vital importance. Such an analysis of power that Foucault is advocating "must not assume that the sovereignty of the state, the form of law, or the over-all unity of a domination are given at the outset; rather", he argues, "these are only the terminal forms power takes" (1998: 92). The State, the system of laws, and our long-standing structures of social influence are not

pre-existing sources of organisation that are external and transcendent to the systems or 'count-as-ones' which they influence; rather they themselves are the results of the same univocal process of self-organisation, and if they are pre-existing it is only in the sense that within such a dynamic process systems are constantly being formed within milieus where inevitably a whole range of systems and influences already exist, and whilst these emergent systems will in their turn influence the organisation of these larger systems of which they are a part, they will also, through various complex feedback loops, be influenced by them.

What Foucault is describing, therefore, is a social state of affairs where power is permanently present, where it is omnipresent, repetitious, dynamic and very fluid, and where it forms "a grid of intelligibility of the social order", but where power, in the more widely used and traditional sense of the word, is "the over-all effect that emerges from all these mobilities" (1998: 93). The dynamism of power relations can be dampened, their fluidity slowed down, such that the more dominant structures we more usually associate with power are produced. As Serres says:

> They produce unities, through them unity appears in the place and stead of multiplicities, they code. Code is nothing more than showing unities in the stead of multiplicitary noise. Thus are concepts born. (1995a: 86)

This stabilisation of the flow may be necessary, in the sense that without it no-thing will appear (it is responsible for "the great wall of appearance" (1995a: 77)) but in losing sight of the disorder and the noise we give "obedience to the rule that creates [a] scaled structure of domination" (1995a: 96). This same warning was expressed by Foucault, which I shall return to later.

This process, though, whilst describing a general system of power relations, still needs to be explored such that its complexity is opened up even further.

Unless this is done it will not be possible to understand the emergence of social forms. But to do this, two separate, but closely related concepts need to be created. Firstly, one that describes what these power relations actually are (though, what they virtually are will turn out to be a more accurate phrase), such that they create social acts and are able to become organised; and secondly, a detailed account of how this organisation comes about - a description of power relations such that they become non-units of organisation, and a description of their relations with other non-units such that social structures emerge; effectively the *what* and *how* of social organisation. I say 'non-units' simply to keep in mind the need to understand these *whats* as open and multiple. I also accept the need for a certain hermeneutics here, in so far as an understanding of the *what* will require an understanding of the *how*, and visa versa.

Unfortunately Foucault fails to provide such an analysis, at least as regards power relations. In both the earlier and later sections of *The Will To Knowledge* than that referred to above he instead offers a description of various emergent organisations of power relations, or rather various emergent flows with varying degrees of codification, that are not only described in such a way that they get dangerously close to generalisations that overlook the multiplicity of relations he himself acknowledges as vital to their understanding, but do so in a manner that implies that these emergent forms have collective intentionality. Effectively what Foucault achieves is a reference to the micro / local relations from which structures emerge, but a reference that lacks detail, and a generalised account of some of the macro / global structures so produced. He fails to provide a link between them. What we actually need is a universal description that is local not global, one that is universally local but globally contingent – effectively a self-similarity of process that is always actualised differently.

Foucault recognises the problem; in fact it could be said that he is attempting to directly tackle the problem: “In short”, he says, “it is question of orientating ourselves to a conception of power which replaces...the privilege of sovereignty with the analysis of a multiple and mobile field of force relations...” (1998: 102). This is exactly what this thesis seeks, an understanding of the ‘multiple and mobile field of force relations’ from which all structure, including organised power flows, emerge. To this end he describes a series of sexual practices, regulating codes, and ‘mechanisms of repression’ that whilst being historically contingent nevertheless are dominant in a particular historical period. The question remains, though: what is the relationship between these various practices, codes, techniques, and mechanisms, and the actual social acts performed locally by actual social actors? If we accept his claim that all forms of sovereignty, law and domination are “only the terminal forms power takes”, where is it possible to locate these techniques? Techniques can only be performed by actual social actors, so if the ‘terminal form’ of their actions are these codes, how is it possible to describe or account for those actions actually performed? Whilst the codes in no way have total domination over social action, they obviously have a huge influence – but how is that influence applied? And if they are in some manner the product of “a multiple and mobile field of force relations”, a process whose ‘terminal form’ is sovereignty, law and domination, in what manner does this process work?[63] Let me explain this problem in relation to two specific sections of text, the first concerning sexuality, and the second concerning torture from *Discipline and Punish*.

At one point in *The Will To Knowledge* Foucault distinguishes “four great strategic unities which, beginning in the eighteenth century, formed specific mechanisms of knowledge and power centering on sex” (1998: 103). The first

of these is the "*hysterization of women's bodies*", a process that involved, amongst other things, the feminine body being analysed "as being thoroughly saturated with sexuality" (1998: 104). I do not doubt or question the existence of such a 'mechanism', nor that the extent of its influence was wide and powerful, but what I would like to problematise is its ontological status (particularly as some form of unity), and how it influences the social action of particular actors. Is the implication that *all* social actors were in some way *forced* to analyse women's bodies in such a manner? I do not read Foucault as implying such a high degree of coercion – though a less that careful interpretation of 'four great strategic unities' could lead to such a reading. So there must have been a variety of ways of regarding women's bodies, even if there was a degree of coercion to comply with the scientific status that was more subtle than implied by force. Even if such 'mechanisms' had been codified in some form, either through scientific texts that attached a perceived authority to them, or even (in an extreme situation) through certain rules or laws, there would still be some social actions that did not conform, that were influenced by other power flows. Without, for the moment at least, wishing to get involved in the psychological arena of the decision making processes of individual social actors,[64] it would seem reasonable to assume that there existed, as Foucault suggests, multiple and mobile power relations that influenced how people thought and behaved regarding women's bodies, that influenced what could be said about them, that provided the impetus to behave in one way rather than another, and that through some process not described by Foucault became channelled into flows of such force and significance that they could *appear* to be omnipotent. This takes us to the heart of this project: Of what are these flows constituted such that they can be channelled, organised and even codified? How does this channelling and organising come about?

The same questions can be asked of the other specific mechanisms that focus on sexuality: the "pedagogization of children's sex", the "socialization of procreative behavior" and the "psychiatrization of perverse pleasure". Take for example the first of these. Foucault states that there was:

> a double assertion that practically all children indulge in sexual activity; and that, being unwarranted, at the same time 'natural' and 'contrary to nature,' this sexual activity posed physical and moral, individual and collective dangers; (1998: 104)

So within this specific and 'unified' mechanism of power and knowledge we are immediately able to identify several contributory power-knowledge streams; mechanisms that are necessary conditions, that form a *historical a priori*,[65] such that the implied knowledge and understanding contained within such a mechanism as the 'pedagogization of children's sex' could be understood and enacted – for example: the nature of sexual activity, judgements as to the sanctioning of certain types of behaviour, the existence and desirability of natural behaviour, the nature of both physical and moral norms, the being of an individual and a collective, and the nature of pathological states. I would also suggest that each of these could be broken down even further to smaller and smaller streams, and that *none* of these streams would be exclusive to the larger and more powerful stream they flow into. In other words, what Foucault describes, with no doubt total validity, as various processes, mechanisms and techniques, are effectively various flows that have been sufficiently codified as to be able to be described in general and ubiquitous terms. As such they are doubtless 'great strategies' that at the descriptive level allow us to write 'a history of the present', but from the perspective of this project do not provide the detail needed to explain the relationship between the local, micro actions of individual social actors, and the larger scale global, macro 'assemblies' that are both formed by, and, in their turn, influence those actions.

Let me briefly offer two further examples, from *Discipline and Punish*, to illustrate my point. In the second chapter, in his discussion of torture, Foucault cites three principle criteria that transform punishment into torture, and certain rules "that had to be obeyed in establishing the truth" (Foucault, 1991: 33). The three criteria were: that it must produce a certain amount of measurable pain; that it must, in some way, mark the victim; and that "public torture and execution must be spectacular" (1991: 34). Now, as above, I am not suggesting any inaccuracy on Foucault's part, that these were not in some manner important or significant criteria in the performance of public torture; but I am arguing that such descriptions have a far greater efficacy as higher level descriptions, not as devices for understanding the multiplicity of power relations that cause *particular* social actors to perform *particular* social acts.[66] As Foucault says himself in regard to "the general forms of penal practice up to the Revolution" as regulated by the ordinance of 1670: "we must not be misled. There was a considerable gap between this arsenal of horrors and everyday penal practice" (1991: 32). So, even if these criteria were codified into a penal code (and Foucault does not suggest that they were), even if the executioner was not only fully aware of this penal code, but also had such a sense of duty that he always carried out his duties according to it (and that is a lot of 'ifs'), these would not be the only power flows acting upon the executioner. We do not need to speculate as to what they might be, but it would not be unreasonable to assume that there were a multiplicity of such flows, a whole collective of motivations, acting upon, and in some measure causing, the actions of any particular act of execution – and that this multiplicity would, to some degree, be different at each act. Focusing on the three criteria cited by Foucault effectively blinds us to the dynamics and complexity of the situation - and likewise with the rules that existed for the establishment of the truth during an investigation, and the "nature and use of evidence". Even accepting that "a rigorous model of penal truth" was defined

(1991: 36) it seems unrealistic in the extreme to think that the motivating factors, the power relations that brought about acts of interrogation, flowed only from these codified sources. I cannot believe that these were the only relations at work, and I doubt that the person had a solicitor present to ensure that the codes were being dutifully followed.

With Serres' challenge held in mind, there is a need to be mindful of the dangers of creating unities, of trying to think the multiple through unifying concepts and representations. In defence of Foucault, I see no evidence to suggest that this was his intention, but, as I've already said, there is a danger that a less than careful reading of his work could lead in this direction, and his writing style – perhaps the style used by most writers unless they are especially vigilant – could give support to such a reading. He does, for example, in the quote given above, say that "we can distinguish four great strategic unities", and when he describes various discourses or collections of practices / techniques he often does so in such a manner as to at least imply a certain unity – he refers to *the* pedagogical institutions, for example (1998: 29) and to the "whole internal organization" of "the secondary schools of the eighteenth century" (1998: 27). The danger, then, is really the same as that pointed out by Serres (and Deleuze) in relation to classification, that in offering a description of an open and dynamic collective, which we need to do in order to be able to discuss it or have any communication regarding it, the descriptive term solidifies into something more than a description, it become reified into something with direct causal power. I am not saying that there are no causal relations flowing from collectives, but I am saying that these causal relations are very complex, and that we lose sight of this complexity when the collective is understood as an overly stable entity. This can lead to the creation, or at least veer towards the creation of, collective intentionalities. This tendency to account for actions and events as the result of an intentional

relationship between a singular point of consciousness and its intentional correlate, even when the event comes about as the result of a multiplicity, from a collective act, may well be an instinctive tendency, deeply rooted in our evolutionary past as a convenient and simple method of communication - it certainly possesses a certain descriptive efficacy. But its adoption blinds us to the complexity of the process that lies behind it.[67] It is though a tendency that even those trying to think in terms of multiplicities succumb to. And it is a tendency that Foucault is guilty of in places.[68] To give just two examples: He states at one point that "from the eighteenth century onward, Western societies created and deployed a new apparatus..." (1998: 106). To view any society as an entity that not only created a social apparatus – as opposed to new practices emerging out of a certain social reorganisation – but had the ability to deploy them is dangerously misleading if one is keen to really understand the power relations being effected. At a very superficial level we could refer to an army deploying its troops, but to really understand what a certain deployment entailed we would need to examine the general or group of senior officers who made the decisions, the power flows and influences that they received and the process whereby they produced a coherent outflow. At another point he states that "pleas for help" emanated from the family, and that "the family engaged in searching out the slightest traces of sexuality in its midst" (1998: 111). Without wishing to labour the point, pleas for help emanate from individual social actors – not in isolation and often as part of a collective admittedly – each with their own different collective of power flows acting on the singularity that is their 'self'. To lose sight of this and to view any family as a unity, let alone to view a whole social collective of families speaking with a single intentionality, means that we lose sight of the complexity of power flows and relations that give rise to such collective descriptions. It also steers us into that dark social alley where social bodies have "functions", where the "deployment of sexuality has its reason for

being", and where families have "roles" within a social collective (1998: 107-8).

Despite the value, therefore, of Foucault's various genealogies at a certain descriptive and generalised level, there is a need to avoid the seductive call of the sirens and, following the mantra of 'thinking the multiple', focus instead on the mobile, reversible, and unstable" nature of power relations (2000: 292). To this end, the possibility of there being some type of small, local power relation, 'something' that acts in the manner of some type of social bond or cord, and enables social action, is worth investigating further. However, focusing on the many techniques, practices or mechanism so described only has a value if we fully understand how they emerged, and see them as a result of a multiplicity of power flows that have been channelled into larger, more organised flows that have undergone various degrees of codification. Foucault was fully aware of this:

> The analysis of power relations is an extremely complex area; one sometimes encounters what one may call situations or states in which the power relations, instead of being mobile, allowing the various participants to adopt strategies modifying them, remain blocked, frozen. When an individual or social group succeeds in blocking a field of power relations, immobilizing them and preventing any reversibility of movement by economic, political, or military means, one is faced with what may be called a state of domination. (2000: 283)

There is a need to think of these power relations in their most fluid and dynamic form; to consider them as micro-power relations and disregard them as strategic or as macro mechanisms. These relations not only act on the social subject, but help form the social subject, and are only possible, for Foucault, "insofar as the subjects are free" (2000: 292). These relations are socially ubiquitous, they could well be the first social structures to emerge from the social *noise*, and it is they that direct social energy such that it flows into self-organising, emergent forms. It is only when these flows become first codified, and then over-codified that the dynamism is slowed, by degrees, to

the extent that individual social freedoms are lost and various states of dominations appear; then "power relations are fixed in such a way that they are perpetually asymmetrical and allow an extremely limited margin of freedom" (2000: 292). These dominations, to varying degrees, are what Foucault describes in his genealogies, and tend to be what most people working in the social sciences gravitate towards when discussing power in his work. What I want to focus on are the micro-power relations that become organised in such a way that these dominations are able to emerge.

But what are micro-power relations? Is it possible to observe them? Record them? Provide evidence of their existence? Or, to put the question another way: what do these relations relate; what do they provide a bond or connections between? After all many (if not all) of the dominations described by Foucault, the various techniques and practices that have controlled peoples behaviour, can either be observed directly, or documentary evidence discovered, that supports their description. It is here that this project comes up against one of its greatest obstacles. It is possible to observe and document people's behaviour. It is possible to provide evidence of various practices that have been codified into rules, regulations and laws. But I'm suggesting that these behaviours and codes are just the emergent forms of something more elusive, more dynamic, which resists observation – in fact, are resistant to this entire project. All I can hope to do is to offer some kind of map that acts as a guide to the social landscape, and a map whose accuracy can only be judged by its success as a guide, not by how closely the symbols it uses resemble the actual physical features they represent.[69] To this end I need to offer a description of these relations in far greater detail than attempted by Foucault. Following Serres, I need to be able to offer a description of that first 'form' to emerge from the *noise*, that non-unit of social organisation that forms both the basis for micro-power relations and

that upon which they act. Foucault has opened the door with his genealogies, and, as I will argue later (5.3) offers substantially more assistance through his archaeologies.

5.2 Tarde: beliefs, desires and memes

Gabriel Tarde is relevant to this research in a number of ways. He was very influential to the work of Deleuze, prompting the latter to remark that all of "Tarde's philosophy...is founded upon the two categories of difference and repetition" (Deleuze, 1994: 307) and that his philosophy was "one of the last great philosophies of nature" (1994: 313). Also, his work has been recently revived, particularly by social scientists working in the field of memetics, prompting Paul Marsden to refer to him has the forefather of this area of study – but more of that later. More specifically, his work is relevant in three ways.

Firstly, he advocates for a certain univocity of process based upon universal repetition; he suggests a certain self-similarity of process across the whole of nature. The "subject of social science is seen", he says, "to present a remarkable analogy to the other domains of general science" (1903: 4), and this self-similarity is based upon the two categories of difference and repetition: "All repetition, social, vital, or physical...springs from some innovation" – difference (1903: 7). He divides nature into the three great domains of the physical, the vital, and the social, and claims that organisation in each emerges from the same interplay of repetition and difference, but that in each domain the mode of repetition is different – being vibratory, hereditary, and imitative respectively. Although a detailed examination of this claim would be too great a side-track at the moment, it is worth noting both the similarities to those self-similarities being discussed by scientists as noted

earlier (3.1) and the importance of both difference and repetition that will be picked up again later (6.1). Secondly, he advocates that imitation is the method of repetition and organisation in the social world. I will examine this claim in detail in section 6.2, and will argue that the concept (to some degree) possibly provides the key to explaining social self-organisation, but not in the way Tarde suggested. For now, though, the question that I need to focus on is: what is it that is being imitated, repeated, or replicated? Imitation, or any other method, concerns the *how* of organisation, but we are still searching for the *what*. This brings me to his third relevance, and the one that I need to focus on now: beliefs and desires, Tarde's 'units' of organisation. Could these be the key to understanding micro power relations? Could these form the bonds and cords of social action?

According to Tarde, "in the last analysis all social facts are beliefs or desires under the different names of dogmas, sentiment, laws, wants, customs, morals, etc" (1903: 24), and these social facts (which include wants and ideas generally) interact with each other to form societies. On the surface, then, they appear to be some type of simple social 'building block' that interact or become organised such that social structures are formed. Superficially, the building process is as equally simple: If they neither "confirm nor contradict" each other they do not interfere with each other, but "If they do appear to help or confirm each other", he argues, "they combine", whilst if they "are mutually hurtful and antagonistic" there is some type of evolutionary survival of the fittest such that "the less cherished belief or passion is sacrificed" (1903: 25). This interaction between these so called social facts seems to return this thesis to the same problem it keeps coming up against – the creation of some type of social unity (a necessary outcome when the complexity of the process, to be explored in the next section, is masked). What sense could be made of a belief that is capable of either combining with

another belief, or being sacrificed in its favour, unless it was some type of unity capable of being isolated as a social fact? But perhaps this is all too abstract and I need something more tangible to work with. Tarde provides the examples (today we may prefer to say the stereotypes) of "the patriotism of [the] Greek or Roman...the fanaticism of the Arab, the proselytism of the Christian, and the propagandism of Jacobin and revolutionary doctrines". These forces, he argues:

> …always arise from one person, from a single *centre*, long in advance, to be sure, of the moment when they break forth and take on historical importance. An enthusiast, eaten up with an important desire for conquest, or immortality, or human regeneration, chances upon some idea which opens an unhoped-for door to his aspirations...He embraces the idea, it exalts him, and behold, a new apostle! In this way a political or religious contagion is spread abroad. In this was a whole people may be converted to Christianity, to Islam, and to-morrow, perhaps to socialism. (1903: 29-30)

We have then, according to Tarde, an isolatable idea, that somehow is formed in a single person, and because of its superiority in some fashion is adopted by other single individuals as a replacement for a similar but inferior idea, and in a similar manner to a virus or bacterium is passed from person to person until a whole body of people have become infected with the idea. We have, in his own words, "specific desires" and "specific beliefs" that issue from "distinct centres" (1903: 109). Now, admittedly, he does acknowledge that social facts form composites and complex combinations, but he also argues that these composites are themselves imitated. The main problem is that there exists, according to Tarde, something clear and distinct, some type of unity, which is passed from person to person by imitation. What sense can we make of this 'something'? What is its ontological status? Here even Tarde himself seems to acknowledge a problem. He asks: "Do we know anything more about the essence of the suggestion which passes from one person to another and which constitutes social life?" His answer is that "We do not" (1903: 76).

There are two other problems associated with Tarde's approach that I would like to comment on (an almost Hegelian teleology and an approach to the use of statistics that gives priority to the generalisations produced by them), but first I would like to delve a little deeper into the above problem by way of a slight, but very valuable, diversion. In 1956, the English philosopher W.B.Gallie gave a paper to the Aristotelian Society entitled 'Essentially Contested Concepts'.[70] In this paper he argues that there are "an important group of concepts", those that "relate to a number of organized or semi-organized human activities" (for example concerning democracy or the Christian tradition), for which "there is no one clearly definable general use...which can be set up as the correct or standard use" (1956: 168). He adds that any dispute centred on these concepts is, therefore, perfectly genuine and "not resolvable by argument of any kind", and moreover, that their use "inevitably involves endless disputes about their proper uses on the part of their users" (1956: 169). None of this sounds particularly radical in itself, though it does point towards a problem concerning the imitation of certain beliefs and ideas, the usage of which cannot be agreed. What is more interesting, though, is the list of characteristics or conditions that these concepts possess:

1. Their "use must be *appraisive* in the sense that it signifies or accredits some kind of valued achievement."
2. This "achievement must be of an internally complex character" the worth of which contributes to it as a whole.
3. "Any explanation of its worth must...include reference to the respective contributions of its various parts or features", where rival descriptions of its total worth refer to a differing selection or priority of its parts.
4. Any achievement must be capable of being modified in the light of changing circumstance that could not have been prescribed or predicted in advance – it is "'open' in character."

5. Users of rival descriptions recognise that its use is contested by other users, and may use the concept "both aggressively and defensively".[71] (Gallie, 1956: 171-2)

In other words, for Gallie, certain significant concepts that are used to organise human activity are not unities (even if in use we treat them as wholes) but are multiplicities of an internally complex nature whose usage is actually determined by differing and rival selections and organisations of their internal features; they are open, dynamic systems that result in the ascription of values to human activity.

Let me illustrate my interpretation of Essentially Contested Concepts (ECC) by way of an example of my own – 'citizenship':

1. The notion of citizenship, what it means to be a contributing member to the city, state or community, is without doubt 'appraisive'; it is steeped in values and value judgements, whether these refer to the behaviour or participation of good citizens (such that citizenship is taught in schools) or in some way acknowledge being accepted into a different community or state or as a 'right of passage'.
2. Any notion of citizenship (or for that matter any other than the most simple concept), if examined and reflected upon, is shown to be composed of number of other, possibly (though not necessarily) less complex, concepts. For example, in the case under examination, concepts related to the good, to belonging, to nationalism, to law, order and justice, to political participation, to the family, to social status – I could make the list just about as long as I wanted. And each of these composites is in turn internally complex.
3. Any actual attribution of worth or ascription of value given by the usage of this concept will refer to differing internal groupings or organisations of these constituent concepts. So one community may,

as a generalisation, prioritise notions related to nationalism and law and order, whilst another may prioritise social status, the family, and making an economic contribution. But even here it would not be unrealistic to assume, to varying degrees (the degree itself dependent on the acceptance of varying understandings of what it means to be a good citizen – a feedback loop), that smaller groups within the community, perhaps different families or even individuals, have differing notions of citizenship deriving from differing sets of priorities concerning the composite concepts and their relationship with each other.

4. The notion of citizenship is very obviously open to the influences of changing circumstances. Not only was the notion of citizenship different in ancient Athens and Sparta, but it adapted through the rise and fall of Rome, through the Middle Ages and into more modern capitalist nation states – though even here it varies from state to state, from community to community, and in response to changing political environments. Some social scientists are now referring to the notion of ecological citizenship as a way of redefining our relationship to our planet in light of what we now know about the results of our activities upon it.[72]
5. Examples of rival and contested use of differing notions of citizenship, often involving aggressive support and defence, are not difficult to find – whether they be between supporters of a global, multicultural view of citizenship, and those who adopt a more nationalistic and exclusive understanding, or whether they be between two groups who base their notions of citizenship on two rival and mutually exclusive religions.

I wish to suggest that Gallie's notion of ECCs has a far wider and more fundamental application to the social than he suggests. It is my suggestion, which I hope to be able to substantiate as I proceed, that *any* concept, idea,

or belief held by any person that in anyway at all contributes to the organisation of human activities is by its nature an ECC; that due to the above features it is impossible to grasp hold of any example and view it as any type of unity, and that therefore any explanation of social organisation that involves their usage must take into account this complexity and cannot rely on simple notions of 'social facts' emerging ready formed and then passing from person to person.[73]

As I have already implied, and as I shall explain in a little more detail below, Tarde's approach to the problem of social organisation has been closely associated with what has been termed memetics. This is the idea that social organisation is somewhat analogous to biological organisation in as far that it is based on a 'unit' of social replication, the meme, that is analogous to the unit of biological replication, the gene. This idea emerged out of a certain neo-Darwinism, and therefore has strong associations with evolutionary theory. I do not want to dismiss this link, in fact, in many ways I hope to strengthen it, but I do want to add a note of caution. Tarde fully embraces an evolutionary approach, but appears to read into it a wholly unjustified teleology. At the centre of this is the claim that "as a society advances it becomes richer in beliefs than in desires", and that, therefore, belief is the "true and final object of desire" (1903: 147); that societies 'advance' through not just the conversion of desires into beliefs, but into a set of unanimous beliefs:

> Social peace, a unanimous belief in the same ideal or in the same illusion, a unanimity which presupposes a continually widening and deepening assimilation of humanity – this is *the goal* for which, irrespective of our wishes, all social revolutions are bound. This is progress, that is to say, social advancement along logical lines. (1903: 148, my emphasis)

A few pages later he identifies "*teleological* as *logical*" (1903: 154, note 1) and proceeds to develop an almost Hegelian dialectics by comparing "the logical struggle to a dual", to "a conflict between opposites" (1903: 155); a

process in which “the resulting harmony creates a new kind of antagonism...until the final solution is reached” (1903: 185). The need to strongly resist any notion of ‘a final solution’ is not because of the obvious connotations of which Tarde (of course) would have been totally unaware, but because the whole concept of an end to the social process, to a goal that human societies are working towards, whether we are aware of it or not, is alien both to any notion of evolution as a process of differential selection within, and adaptation to, a constantly changing open and dynamic environment, and to its links (which I would like to emphasise) to the dynamics of complex systems. Admittedly Tarde does not base these claims on any notion of a predestined or transcendent purpose or meaning, but, rather, on what he sees as solid scientific reasons. These are “the Spencerian formula of Evolution which states that all evolution is gain in matter with corresponding loss in motion” which he translates as meaning “that every development in life or society is a growth in organisation offset *or, rather, secured* by a relative diminution in function”, and, more particularly that “As a society enlarges and expands, as it perfects and differentiates its institutions, its language, religion, law, government, industry, and art, it loses its civilising and propelling vigour” (1903: 147). The key here is the notion of perfection – a notion which, in terms of open, dynamic systems surviving within equally open and dynamic milieus is close to being meaningless. Perfection implies a *telos*, a goal for the system that has, in some manner, to exist *a priori*. This would be opposed to all the features of complex systems already discussed.

So whilst, on the one hand, Tarde’s ideas have been adopted by some social scientists working generally with a ‘mobilities’ framework, one that seeks an understanding of social organisation through the use of concepts such as flows and fluidity, they could also be adopted by structuralists in the field of social theory working from a dialectic or conflict perspective – I could certainly

see the above being incorporated into a Marxist perspective. His ideas also, unfortunately, lend themselves to being adopted by other structuralist perspectives, particularly those whose methodologies are dependent upon statistics.[74] Tarde regards what he calls the 'science of statistics' as "pre-eminently the sociological method" (1903: 105). Whilst archaeology studies and classifies historical desires and beliefs in their invention, statistics counts and measures contemporary desires and beliefs in their imitation; it "is an enumeration of acts which are as much alike as possible" (1903: 102); from them is derived "a sort of empirical law or graphical formula for the very complex causes of the particular spread of every kind of imitation" (1903: 140). Now leaving aside any judgement as to the value of the concept of imitation for the time being, it can be seen that Tarde is fully aware of the "very complex causes" of, shall we say, social phenomena. The problem is of course that he then argues that we classify and generalise these phenomena, and then study the resultant generalisations in such a way that we produce laws that not only explain their emergence, but which actually "govern all imitations" (1903: 140). He not only unifies this complexity (if fact going so far as to say that the whole social process is working towards unification) but then reverses the emergent non-linear causality into a top down simple causality. Not only, then, does his 'unit' of social replication turn out to be too complex, too mobile and fluid, too 'essentially contested' to be an object of study, but his whole methodology turns out to be an attempt to codify, solidify and simplify the social process. In other words, under the guise of the science of statistics, he does exactly what Serres is so cautious of – he abstracts from the given. His resulting analysis produces an alternative reality far removed from that given to our senses / experience. We end up with something so abstract that it has very little relation to actual social dynamics, and is about as far removed from micro power relations as it is possible to be.

As I noted above, Tarde has been closely associated with a new area of social research – memetics – such that Marsden has awarded Tarde the title of 'forefather' of the research domain. "One way to conceptualise memetics", Marsden explains, "is as a stance that seeks, using a selectionist rationale, to interpret the human social world in terms of the ongoing differential reproduction of traits describing that social world" (Marsden, 2000: 2; Tarde, 1903: 74). In stressing the centrality of imitation to the social world, he emphasises Tarde in stating: "What is society? I have answered: Society is imitation" (Marsden, 2000: 2; Tarde, 1903: 74), a view endorsed by the thesis of psychologist Susan Blackmore's book, *The Meme Machine*. In it she states "that what makes us different [from other animals] is our ability to imitate" (1999: 3).[75] Blackmore goes on to add:

> When you imitate someone else, something is passed on. This 'something' can then be passed on again, and again, and so take on a life of its own. We might call this thing an idea, an instruction, a behaviour, a piece of information...(1999: 4)

This 'something', following Richard Dawkins, she terms a meme. The crucial assumption here is that when you imitate 'something' is passed on. Does imitation necessarily involve 'something' being passed from person to person? Although it is very difficult to separate an item of imitation from the act of imitation, as each informs the other in many intrinsic ways, for the sake of clarity that is what I need to do. Here I want to take a closer look at what this group of researchers term a meme, and later, in 6.2, I will take a closer look at the role of imitation. In certain respects I may need to anticipate, even take for granted, what I will examine in more detail then, but that cannot be avoided. For now, though, the above claim needs my attention. The key question is: *If* imitation is the method of social reproduction, *is* something actually passed from person to person? And if it is, what?

Dawkins first speculated on the similarities between biological and cultural evolution in his notorious *The Selfish Gene*. The key component to any process of natural selection, he argued was a replicator. As he summarises in the Foreword to Blackmore's book:

> The real unit of natural selection was any kind of replicator, any unit of which copies are made, with occasional errors, and with some influence or power over their own probability of replication. (1999: xvi)

With regards to biological replication, it is clear what is replicated and how; genes are actual bio-chemical entities that are physically replicated and passed from person to person; we can study them.[76] However, memes are not genes, and, as Blackmore warns, we should not fall into the trap of thinking that they work in the same way. There is a similarity of process, of differential selection, of replication, no more. Following the American psychologist Donald Campbell, Blackmore states that "We need to remember Campbell's Rule when we compare memes and genes":

> Genes are instructions for making proteins, stored in the cells of the body and passed on in reproduction. Their competition drives the evolution of the biological world. Memes are instructions for carrying out behaviour, stored in brains (or other objects) and passed on by imitation. Their competition drives the evolution of the mind. Both genes and memes are replicators and must obey the general principles of evolutionary theory and in that sense they are the same. (1999: 17)

Memes, then, according to this view, are "instructions embedded in human brains, or in artefacts such as books, pictures, bridges or steam trains" (1999: 17), they are instructions for carrying out behaviour, and are passed on through their replication / imitation. Accepting, for the time being, that they are in fact some type of 'instruction' for social behaviour, in what sense is this 'instruction' passed from person to person? This may be possible if either this 'instruction' was very simple (i.e. not complex) or if it was directly coded, but for any 'instruction' more complex than this I fail to see how sufficient information of a high fidelity could be transmitted through imitation such that the corresponding behaviour would result. We only directly experience other people's behaviour (in the widest sense), and if we simply imitated this

behaviour, and all we needed to do to understand society was to focus on people's behaviour, then behaviourism would be vindicated, society could be studied purely on the surface, and all the complexity, fluidity and dynamism that I have suggested is so fundamental could be forgotten. If anything more than directly imitating another person's social act (and in that I include speech acts, production of written artefacts etc) as experienced is involved, then there is a need to probe beneath the surface.

Dawkins gives the following as examples of memes: "tunes, ideas, catch-phrases, clothes fashions, ways of making pots or building arches" (1989: 192). There is such a difference in the degree of complexity between the imitation of a tune and an idea that it is misleading to discuss them as similar. The imitation of a tune or a catch phrase could quite easily be described by the above process of 'instructions embedded in human brains'. Repeatedly listening to a tune or catch-phrase makes it (often annoyingly and against our will) easy to recall in our imagination, and as Blackmore points out, due to the high connectivity of the brain, "imagining conversations activates speech areas, and so on" (1999: 39). But even a relatively simple idea is surely something much more complex. I hear someone say something about a political event, perhaps a debate that is taking place in Parliament. I could quite easily imitate their words, just like an actor repeating lines from a script – but in what sense has an idea been passed to me in this act of imitation. Even the most simple ideas are complex, are multiplicities, and some are in effect multiplicities of multiplicities (Dawkins and Blackmore refer to them as memeplexes), and as such have all the feature of essentially contested concepts described above. They are not unities capable of being passed from person to person by imitation, and even if they were sufficiently self-contained and limited they are surely too internally complex to have the information they contain so replicated. I will argue later that imitation does

have a role to play, but not by direct replication; that repetition is not primarily extensive, between people, but intensive, within people, but also that the extensive differences between these intensive series play a vital role.

Accepting, then, that 'instructions' do, in some manner pass from person to person (and this still needs to be verified) and that imitation is, in some manner involved (and again, such a claim still needs to be verified), the problems that still exist are those concerning scale and unity. Any 'instruction' needs to be much smaller and simpler than implied by any of the ECCs usually referred to (in fact, it needs to be some type of micro power relation), and such an 'instruction' needs to be something that only works in open complexes; such an 'instruction' needs to be very straight forward, yet able to work (perhaps can only work) in multiplicities that resist unification.

5.3 Foucault: statements and expectations

And so to a possible solution to this problem (at least regarding the non-unit or micro power relations sought in this chapter): Dennis H. Wrong states, quite simply, that "order consists of the predictability of human conduct on the basis of common and stable expectations" (1995: 5). In a similar manner to that in which Foucault, in *The Archaeology of Knowledge*, separates actual sentences and propositions (social acts of discourse) from the statement, the unit of order that lies behind them, I will argue that Wrong's use of 'expectation' works as a non-unit of order that lies behind actual social events – events taken in their widest sense, including any social act capable of being experienced. Wrong's suggestion of the 'expectation' as the 'unit' of social organisation is the main strength of his analysis, and in focusing on this aspect of his argument I will ignore his careering into a blind alley though his focus on the problem of motivation and his seeking a solution within the work

of Freud – this just need not concern this project. Using language that could quite easily be taken for that of Serres, Wrong regards society as "a process or a fluctuating set of events unevenly distributed in space and time", as "nothing but a web of social relations that is constantly being spun, broken, and spun again, invariably (unlike a spider's web) in slightly different form" (1995: 44-5). Such a description of the web of social relations and his description of the fragility of the social order, of its "insubstantial, evanescent, here-one-moment-gone-the-next attributes" (1995: 44-5) fully supports my attempt to avoid concepts of unities that try to disguise these qualities and replace them with something more solid. However, no matter how fluid this web is, it still has to be spun out of something, and for Wrong "Society is both the web that is spun and the expectations out of which it is spun" (1995: 44-5).[77] I will term expectations 'non-units' not because they cannot be individualised and talked of as a very simple unit or atom of social order, but because in their emergence they only have a virtual existence – because they can only become actualised, can only produce actual social action, by working in self-organised open multiplicities of expectations.

Recalling Albertsen and Diken's call for the reconstruction of the social "in terms of...concepts such as differentiation, heterogeneity and ambivalence", and at the same time seeing the social very much through the lens of Serres' general methodology, and in the terms Wrong outlines in the above comments, leads to a very similar problem as that posed by Foucault in his search for the unities of discourse. In the same way that Albertsen and Diken are critical of traditional social theorists in their search for unity, purity and order, Foucault is critical of traditional historians in general, and historians of ideas in particular, in their quest to "reveal the stable, almost indestructible system of checks and balances" (1989: 3), a phrase that sounds that it has

been lifted directly out of a 'traditional' social theory text book. In a passage worth quoting in full, Foucault argues that:

> The old questions of the traditional analysis (What link should be made between disparate events? How can a causal succession be established between them? What continuity or overall significance do they possess? Is it possible to define a totality, or must one be content with reconstructing connexions?) are now being replaced by questions of another type: which strata should be isolated from others? What types of series should be established? What criteria of periodization should be adopted for each of them? What system of relations (hierarchy, dominance, stratification, univocal determination, circular causality) may be established between them? What series of series may be established? And in what large-scale chronological table may distinct series of events be determined? (1989: 4)

In other words, he is arguing for a move away from a traditional conceptualisation of unity and order, one that sought 'vast unities' (in history 'periods' or centuries') and that prioritised continuity, stability and stasis, to one that uses concepts like "discontinuity, rupture, threshold, limit, series and transformation" (1989: 23). This, he goes on to argue, means that discourse (and for my purpose I suggest that this can also be read as 'social discourse' – as non-verbal behaviour and social acts, as well as those conveyed by language, that nevertheless communicate social 'meaning')[78] "must not be referred to the distant presence of the origin, but treated as and when it occurs" (1989: 28). We are no longer tied to interpreting events (historical, discursive, social – it does not matter what the events are) by reference to large scale structures, transcendent reference points, or distant points of origin (this emphasis on the local will emerge as very significant), all of which are discovered to be inherently problematic, but are free to open up the event in all its local significance and to discover its complexity. This does not mean, by the way, that we throw away global structures, but it does mean, as I shall argue later, that they are radically reconceptualised. Foucault's project then is that "of a pure description of *discursive events* as the horizon for the search for the unities that form within it" (1989: 29-30). The unities that he seeks are to be found not by the discovery of grand, totalising structures, but by

exploring the complexities of events, by going inside or underneath them, by investigating their multiple layers of formation, and by tracing particular or similar series through and across events. These unities are not definitive and stable unities (statues), but descriptive, 'count-as-one' unities – unities that allow us to communicate, to exchange meaning and understanding, such that we can live our existence; they need to allow a process of adaptation and normativity, and not be considered the definitive and the normal.[79] This perspective can equally apply to my endeavour to understand social order such that social events can be described using the same general methodology as discursive events. To do this I need to layout (in general terms) the methodology that Foucault developed.

In contrast to linguistic analysis, with its focus on the sentence and the proposition, the description of discursive events focuses instead on what Foucault terms a statement, a term that Foucault himself struggles to define (despite a whole chapter titled to just this task). This is not due to his lack of ability but due to the 'fuzziness' of any 'meaning' that can be attached to it. In a way, I suppose, it is a similar problem to defining the function of a word in a sentence in isolation of its actual use – it is actually defined by the function it fulfils. In describing a statement as an 'atom of discourse' he is at pains to point out that it is neither a structure nor a unit (though this need not be a problem for this thesis), but rather 'a function of existence' that only has meaning in the relationships it holds together, that defines the relation between two (or more) discursive variables. Statements are fewer in number than either sentences or propositions, and may be expressed in any number of ways through them, but "a statement is always an event that neither language (langue) nor meaning can quite exhaust" (1989: 31). Bearing in mind my own particular task, Foucault gives four particular attributes to statements: 1. They have no correlate – their referential forms a field of

emergence that makes correlation possible; 2. They have no author, there is no subject as such – rather they allow the position of the subject to be assigned; 3. They belong to an enunciative field – a complex contextual web in which they play a role; and 4. They have a repeatable materiality – they are neither a unique event nor relate to an ideal form. In relation to the 3rd point, it is worth noting that Foucault describes in great detail a multiplicity of variables, any number of which can come into a relationship to produce a statement or series of statements, and notes that "behind the visible facade of the system, one posits the rich uncertainty of disorder...an immense density of systematicities, a tight group of multiple relations" (1989: 84-5).

Foucault's methodology then is the description of the relationships between a particular grouping of statements, a 'system of dispersion' that produces a 'discursive formation'. But "can we really speak of unities?" he asks (1989: 80), and if we can in relation to discourse – discourse being "a group of statements in so far as they belong to the same discursive formation" (1989: 131) – does this help in my quest to understand social organisation though the discovery of its 'units', its building blocks? He answers his own question in the affirmative, but stresses that any notion of unity cannot be taken in any traditional sense of the word. "These systems of formation" he says "must not be taken as blocks of immobility, static forms that are imposed on discourse from the outside, and that define once and for all its characteristics and possibilities." Neither are the origin of constraints "to be found in the thoughts of men", rather, they "reside in discourse itself" as "a complex group of relations that function as a rule" and which produce emergent "regularity of practice" (1989: 82). Such unities are not fixed and are not definitive, rather "one is [always] able to describe other unities" (1989: 32) – a unity simply becomes the particular path followed. Foucault does not actually use the word 'emergent', but using the language of complexity theory this is what he surely

means. His description of these complex groups of relationships carries much similarity to those used by complexity theorists in their description of self-organizing dynamic systems whose higher order properties are emergent from the system itself. And it is this similarity, possibly even this identity of process that allows for its transference (and translation) to social 'unities'. The great value of this aspect of Foucault's work, therefore, is that he has attempted the description of a human process that displays many of the features of non-human complex systems, perhaps even displaying a high level of self-similarity, and in doing so he has made that first important step towards a translation of these features, via discourse, into a social ontology. Behind social events lie 'social statements', effectively what Wrong describes as 'expectations', which, through a complex series of relationships with other social statements / expectations produce emergent groupings that we experience as social groups, organizations, communities, societies, and nations etc. Before outlining what Wrong means by expectations though, it is worth noting the similarity of his description of society cited above ("fluctuating set of events" and "web of social relations") to the descriptions of the discursive field given by Foucault. Both are describing complex networks that, whilst producing actual events, are defined by dynamic relationships.

As I have already noted (1.1), if I was taking a more traditional perspective on social order, one that sought totalities, continuities and regular causal connections, I would be seeking the predictable characteristics of social interactions that previously have been exemplified by rules, values and norms. But, as I have already discussed, classical social theory has failed to detect the homogeneous presence of these 'laws' of social order. In this sense at least, attempts at a structural account of society have failed. In opposition to such a structural perspective, other theorists have taken an interpretive perspective and argued, to varying degrees, that any sense of social order is

effectively a construct formed in the minds of interacting social subjects. If I may be permitted to repeat my introductory generalisation, such theories do not so much deny the existence of society as, due to their focus on the micro rather than the macro, fail to offer an account of it. Wrong does not explicitly comment on the tensions between these two broad perspectives, but implicitly steers a course through them that, I would suggest, effectively neutralizes them. In stating that "Society is constructed by an immense series of interlocking intentional acts performed by a multitude of people [and that] social order is nothing more than this series" (Wrong, 1995: 41) he acknowledges the importance of the intentional act of the individual social actor but, in a similar manner to Foucault, seeks order in the series, in the relationships that form out of those intentional acts. He does not, though, use 'an intentional act' as his 'atom of (social) discourse'; rather he uses the term 'expectation'. The advantage of this, he argues, is its ambiguity, in as much as it can be taken in both a predictive and an imperative mode, and thus carries both the sense of expected or predicted order that is objective along with a sense of wanting or commanding that is subjective.[80] Expectations, he argues, in as much as they "guide and constrain action...exemplify what sociologists call 'social norms'", but they also exemplify the "subtle interplay of tacit understandings and non verbalized expectations in face-to-face encounters [that] endows social life with its varied and spontaneous character" (1995: 46). Further, they form a continuum that "runs from conscious adherence to clear-cut norms to the sheer automatism of 'blind' habit" (1995: 47). Expectations, I suggest, have a similar relationship to social behaviour as statements do to propositions and sentences in discourse; that they are functions that map (variable) elements of (social) discourse to one another. In this sense, as I shall go on to explain, *expectations* are virtual; they *become* actualised as social actions. In order to acknowledge the fact that verbalising an *expectation* (or, more accurately, a complex of

expectations) is itself a social act I will differentiate these two senses by the use of italics. '*Expectations'* refer to the virtual, 'expectations' to actual expressions of expectation.[81]

However, whilst acknowledging Wrong's use of the term I would like to re-position it slightly such that is more in line with both Serres' search for the cords and bonds that make "our relations visible and concrete", that connects the local to the local, the local to the global, and the global to the local (Serres, 1995b: 107), and Foucault's 'function of existence' that only has meaning in the relationships it holds together. As such, I propose an 'entity' that 'exists' at increasingly complex levels prior to any codification, but one whose function is always to 'hold together'. At its simplest it is a relation, a simple connection held in the mind of a social actor (fundamentally, then, a neuro-biological relationship or pathway); a simple 'if x then y'. By this I mean a relationship whereby if *x* occurs then I expect *y* – either in the sense that *y* is about to occur or that *y* is what I 'should' do, though both *x* and *y* could range from something very straight forward, a very simple sense experience, to a concept with all the characteristics of ECCs described above; a relation or link that has been established through experience, and reinforced through either habit / repetition or through the sheer power or force of the original experience (or both). However, and this is of vital importance for the description I am attempting to present, even in the most simple sense possible, with regards to social actors, such *expectations* are already complex and multiple. This is so because *expectations* are emergent from the *noise* of the pre-social, from the realm of the pre-subjective, from the existence of the potential social actor when the singularity of experience was conscious but not yet self-conscious. In other words, they are emergent from 'experiences' experienced prior to the formation of the self or subject, but nevertheless are carried over into this formation which, in line with the arguments presented

by G. H. Mead (1967),[82] is the result of the social process. On this general point, that the self emerges by means of a process of reflexiveness that involves the turning of the experience of the individual, as a centre of experience, upon himself, and to therefore, in effect, taking the attitude of the other towards himself, this thesis is in full agreement. The role of others in this process will be examined in greater detail later (6.2). In section 6.1 I will offer a description of the emergence of *expectations* at the pre-subjective level using the ontologies presented by both Serres and Deleuze. Such an understanding will be vital for a comprehension of the self-organising process that is at the core of social organisation. However, a brief outline of this emergence now should enable me to offer a preliminary explanation of what I mean by *expectations* – a full understanding will only be possible following a complete description of the social process.

At the pre-subjective / pre-social level the centre of experience is conscious of its environment, but not self-conscious;[83] it has 'experiences' (it receives sense stimuli) and 'responds' or reacts to those experiences, but there is no 'self' behind either the experience or the response. There is simply a continuum or a field of sensory 'experience', an inconsistent multiplicity from which consistent multiplicities emerge, but no pre-organised subjective centre that does the organising. The only sense in which a centre or singularity is applicable is in a purely bio-chemical one. This 'vital' singularity is the centre of organisation that first of all engages with the social other, is thrown into the social world, and then becomes active in keeping the social world alive through the emergence of the subject. As such, the emerging social subject is irreducibly social; born of its encounters with others; born of its own repetitions, of its own time. So, for example, *x* may 'occur' as a single 'event' in the environment of this centre of experience, but not be 'experienced as *x* because it was lost in the 'sea of indeterminacy' or obscured by the

background *noise*. It only becomes an 'experience' through repetition. Likewise, this centre may exhibit or 'perform' a certain action, but not be understood to have done so at first as the action was similarly lost in the *noise* of its bodily movements. It only becomes an 'action' through repetition. If *x* is repeated a number of times, followed by *y*, if this link between the two is forged through habit and reinforced through other feedback loops, then a basic *expectation* is created – a path has been traced. But even at this most simple and basic of pre-subjective states it is already multiple in at least two dimensions – through the repetition of each series of *x* and *y*, and through the differential relationship established between the two series. A relationship has been forged in the pre-subjective consciousness that creates a bond between *x* and *y*, a micro-power relation (or perhaps a nano-power relation would be more accurate at this level) has been created such that if *x* occurs *y* should follow.

From such humble beginnings, I wish to argue, all future *expectations* / expectations are built. As a self, a social actor, emerges from this pre-subjective state the *expectations* that form the virtual background to any social action develop relationships with other expectations and go on to form the developing virtual background of all future thoughts and actions; future social *expectations* evolve from these pre-subjective *expectations*. But no demarcation line can been drawn. Further, it is impossible for any of the post-subjective *expectations* (which, in the terms to be described, all social *expectations* must be) to be enacted in isolation; any actual social action is always the particular and unique actualisation of a multiplicity of differing *expectations*. I cannot stress this last point enough. Both *x* and *y* (and a multiplicity of other series) are themselves multiplicities of *expectations* in performance. In other words, that any *actual* social act is the actualisation of any number of virtual *expectations* brought about by the circumstances of

their particular performance. In this sense, *expectations* remain virtual; they are impossible to state. If an expectation is verbalised as a particular intention it becomes an actual performance (the actualisation of a particular set of pathways within a network) and as such is a very rudimentary codification of the complexity that lies behind it. I shall return to this in Section 5.

Let me return to Foucault and see whether we can strengthen the connection between the above (albeit brief) outline of *expectations* and his claim that statements perform a 'function of existence'. I will do this through reference to the four attributes of statements cited above – which will be a test of the applicability of these attributes as much as a method of reinforcing my explanation of *expectations*.

1. Certainly in their 'pure' state (if I can get away with such a phrase) *expectations* are not correlated to other *expectations*; they are though relations (they are quite literally bonds or cords) in that they 'connect' at least two series of experiences through repetition and habit, very much as described by Deleuze (1994) and Hume (1978). But they are only in this 'pure' state in the very early stages of their formation within a pre-subjective singularity, prior to their self-organisation into multiplicities, into relatively stable complexes of *expectations* that collectively form a field of social interpretation. At this stage they emerge from the social *noise*,[84] from the chaotic sea of social perceptions and experiences, but correlations with other *expectations* have yet to occur. However, even in the post-social or post-subjective state correlations are no more than a general field of possible social relations – a virtual field that makes actual social correlations possible.
2. This 'pure' state, as I have just said, is pre-subjective; the *expectations* formed here have not been created by either an author or

a centre of self-consciousness. This pre-subjective singularity is an experiential centre that is responsive to its environment, but is more akin to a vortex – a centre that pulls in experiences and becomes the focus of a self-organising process, but which has, at its core, a void.[85] Self-consciousness, a sense of 'I-ness', the subject of social actions, forms from this self-organisation as an emergent property. It is formed from the correlations of these 'pure' *expectations*. But once the subject has emerged from this process it is still being revised to a lesser or greater degree, being reworked or reformed into an evolving 'self' that needs to adapt to its changing social milieu (this revision being the result of feed-back loops of *expectations* that could include *expectations* as to the degree to which the 'self' should remain solid in the face of adversity, become a statue, or be flexible and adaptable).

3. Rather than an enunciative field, let me say that *expectations* belong to a field of social action – in fact it is the core hypothesis of this research that this field of social action is a complex contextual web formed from *expectations*, their formations into complexes, and their various degrees of codifications. The social actions that become related through the emergence of *expectations* are themselves embedded within this web, and the emergent *expectations* so formed will, in their turn contribute (in a progressively more complex way) to this field. A more detail explanation of this process, and the role played by *expectations* in the self-organisation of the field of social action (society) will form the subject of chapter 6.
4. The precise nature of their repeatability, as I have indicated, will be examined in 6.1 below. For now let it simply be said that they are formed, both in their emergence from the *noise*, and in their self-organisation into open complexes, through repetition, and that as such they are neither unique events nor representations, copies or

simulacra of some ideal form of social action. As to the nature of the materiality of this repetition I can only argue that it exists within the mind, the biological and material brain, of the social actor – and as such is probably best described as bio-chemical. I would like to at least suggest that the actual material basis of these *expectations* are actual neural pathways established in the mind / brain of individual social actors through first establishing a connection between one region / area and another through direct sense experience, and then developed through repetition of that pathway, through the tracing of a connection.[86] Such a view would certainly be in accord with the suggestion to be developed later (6.1) that there is only a single 'universal' process out of which all phenomena emerge, and that everything, therefore, has a material base – though, of course, cannot be reduced to it.

5.4 Conclusion

Expectations, therefore, as described above, provide an effective description of micro power relations as non-units of social organisation. In both their most 'pure' form, as well as in the progressively more complex multiplicities they create (though still below the level of organisation that could be described as codified), they form, in their emerging web of relationships, a multiplicity of force relations that are emergent to the field in which they operate and which constitute their own organisation. They provide, I will go on to argue, through their progressive codification, the link between the local /micro and the global / macro. Their emergence from the *noise*, their formation into complexes, is a local effect; they can only be a local effect as they result from actual, direct experience; they link, provide a bond, between

actual experiences. As such they avoid the need to resort to any notion of collective intentionality or a fundamental source of collective action.

Such a description of a non-unit also acknowledges their open and complex nature, a nature that resists any strong sense of being copied or mimicked. But if organisation does not occur by such methods, the question remains: how do they become organised such that the non-random social patterns described by Wrong can be detected? The value of such a description, therefore, can only be evaluated by a detailed description of *how* such organisation comes about, and that it what the following chapter will attempt. For the time being they will be held as a provisional notion, as a notion that can only be fully validated by an understanding of their self-organisation. Such an understanding will show how Foucault's concept of micro power relations provides a very effective description of what they do, of their ability to transfer social energy, to do 'social' work. It will also show how the various practices he describes, as well as the multiplicity of beliefs and ideas that are to be found within social structures are all products of their self-organisation, are all contingent global effects, but effects which have all the characteristics of essentially contested concepts.

6 Social (self) organisation

6.0 Introduction

Having established a tentative 'what', a candidate 'non-unit' of social organisation, I need now to turn my attention to the 'how'. This will feedback and strengthen this concept of the 'what'. To do this I need to build a picture of the emergence of *expectations* from the pre-social / pre-subjective realm of 'experience' and follow their self-organisation into the social and inter-subjective realms through various degrees of codifications. A very brief outline of the emergence of *expectations* from the pre-social / pre-subjective was given in 5.3, in order to explain what I meant by the term. In 6.1 I will describe this emergence in greater detail through a reading of both Serres and Deleuze. In 6.2 I shall investigate the role of the other in the formation and self-organisation of expectations. This will show how what appears to be a process of social imitation is in fact something subtly different, a process whereby the experienced actions of others acts both as a catalyst for the self-organisation of *expectations* already held, and for the emergence of new *expectations* from the multiplicity of those already held. This will be linked to a concept put forward by Stuart Kauffman as applicable to biological self-organisation, that of auto-catalytic sets. And finally, in 6.3, I will endeavour to show how these expectations pass through various degrees of codifications such that norms, laws, institutions and other social structures and phenomena are formed.

6.1 Repetition and difference

My first task, then, is to explain in some detail the emergence of *expectations* from the *noise* of the pre-social / pre-subjective realm of experience. The

work of Serres, particularly in *Genesis*, is of some help in this, but by itself it is insufficient. Serres' general dislike for jargon and technicalities restricts him to a general ontology, one that on its own is incapable of providing the detailed description needed for an application to a particular realm. However, the ontology given by Deleuze in *Difference and Repetition* carries the same universal application, the same univocity, but the technicalities introduced by him are particularly applicable for the task in hand in as far as they provide a way of describing this emergence. My aim, then, is to use both ontologies side by side. But straight away a problem confronts me. The ontologies that I need to use and adapt are actually used by both writers to describe the emergence of time, and my initial reaction is that starting to talk about time is too great a diversion. But perhaps this is inevitable. Perhaps *expectations* are not only temporal entities (in as much as they would appear, on the surface, to be both rooted in the past, in habit, in experience, and to be projected into the future, to be focused on future actions and possibilities) but are for us, as we experience it, time itself. Anyway, without getting diverted into terrain I have not set out to explore, I do need to follow the 'path of time' for a while at least.

Time, then, is intrinsic to an understanding of both ontologies, and my starting point has to be the background *nothingness* from which it, or to be more precise *they*, emerge. As has already been outlined (3.3), for Serres *noise* "may well be the ground of our being". It is the pure chaos, the pure undifferentiated, totally symmetrical fury, the pure multiplicity out of which everything emerges like Aphrodite out of the sea. "Noise cannot be a phenomenon", he says, because "every phenomenon is separated from it, a silhouette on a backdrop..." (1995a: 13). "Classes", states Serres, "are a *result* of fury" (1995a: 82, my emphasis). For my present purposes *noise* refers to the pre-social and pre-subjective realm, a realm in which human

individuals are conscious or aware of their environment, but are not yet self-conscious, are not yet subjects. In this I endorse Mead in stating that the self "is essentially a social structure [that] arises in social experience" (1967: 140), that emerges through a reflexive process such that the centre of consciousness become an object to itself through the relations it forms with others. As such, all patterns, any notion of social order – classes, genera, concepts, unities, entities – emerge out of this *noise*; and this *noise*, this pure multiplicity is time – or rather time, Serres says, "is a threshold between disorder and redundancy, it is the multiplicity next to chaos and prior to all spatialities. It is the first injection of redundancy into a pure multiplicity" (1995a: 117).

For Serres, 'redundancy' is a key term, and one that is closely synonymous to Deleuze's 'repetition'. Serres' use of the term, here as elsewhere in his writings, is derived from information theory where it refers to the difference in the number of bits of actual information in a transmitted message, and the total number of bits that were used to make the transmission. It is the wastage, but expressed in positive terms; it is the initial repetition that allows, or makes further repetitions possible; at its minimum it is the first, faintly perceived echo, that initial repetition from which everything that follows depends upon but which will no longer be perceivable as such. As Serres describes:

> A fluctuation appears, it is lost in the desert or the packed-fullness of background noise, either through lack of reference, or through excess of difference. It vanishes, it gets buried. In order to be or to make an appearance, it needs a reference, it needs an analogy. It is either set in the laminar, then, or it is distinguished through its identity in the differentiated. It thus needs an other, it needs a same, it needs an echo. The echo alone is discernable here. Either through its position or through its redundancy. In the beginning is the echo. Background noise, fluctuation, echo. Everything begins on the threshold of the echo...The echo is the minimum of redundancy, then, sown in pure multiplicity. Time is born with the echo, the echo is from birth to make time begin. (1995a: 119)

A pure multiplicity, *noise*, whilst 'containing' a multitude of elements or atoms is, in a sense, unthinkable, in as far as the perfect symmetry of the laminar flow prevents any differentiation, and thus any sense of either space or time. None of the atoms have any relationship to any of the other atoms – all is chaos. All is an undifferentiated sea of sensory experience, though, in terms of human consciousness, it may be pushing it too far to say that various sensory experiences (even if they could be so isolated) form no relation with other experiences. Evolution has 'hard wired' a degree of connectivity that is, for the experiencing singularity, *a priori*. But generally, for relations or emergent patterns to begin to form certain elements will start to stabilise into quasi-stable turbulent relationships with other elements; relations formed by the repetition and redundancy of energy flows between them. From this turbulence all things, all classes are born; born from these first relationships between certain elements, born from these first codes. As Serres says: "Life, invention, violence...a processual flux codes a classing" (1995a: 95). Fury becomes a classifier, a giver of form. This is the state of consciousness 'experienced' by a new born child whose field of consciousness is (to a very large degree) an undifferentiated sea of sensory experience; the supposedly *a priori* elements of space and time necessary to structure these experiences being only partly in place; as Rita Carter notes, "Concepts such as time, space and body are absolutely fundamental...But they are not wholly installed at birth" (2002: 159). A certain amount of 'hard wiring' is present at birth, having been determined by the accumulated experience of countless generations and passed on through genetic coding, but even so, much of this still requires sensory input in the early months of life to become 'hardened up'; but a large amount of the establishment of the neural networks requires, is dependent upon, further experiences: "The structuring of this sensory onslaught into definite sights and sounds (and later objects) is produced partly by genetic determination...and partly by the gradual rationalization of

brain connections through learning" (Carter, 2002: 163). Carter goes on to note that the complex concepts that go on to become so fundamental to our self-consciousness are born from these sensory 'atoms': "In a baby, each concept begins as a tiny 'seed' of sensory experience...But over time it becomes more and more complex" (2002: 164). I will explore this building complexity in 6.2 and 6.3, but for now I need to remain with the emergence of the 'seeds' from the *noise*.

In *Difference and Repetition* the same background nothingness is found. Time is constituted through a series of repetitions, through a series of contractions, syntheses and differentiations experienced by the mind. Now whilst Deleuze makes a very strong link between time and thinking, it should be noted, perhaps, that this link is made stronger by Deleuze's focus on the later 'stages' of the series of syntheses. So whilst time can only be thought through an active synthesis, the passive synthesis is performed by all organisms, and in effect we have a description of the emergence first of living organisms, of *lived* time and rudimentary consciousness, and then self-consciousness, mind, and the *meaning* of time. These syntheses are not carried out by a pre-existing mind, but occur in a 'mind' that is being formed by the process itself. Put in its most straightforward way, and loosing some of the technicalities that only serve to obscure the process rather than reveal it, Deleuze cites three instances whose repetition and synthesis constitutes time: the *in-itself*, the *for-itself* and the *for-us*. It is the former of these that I wish to focus on at the moment, but for purposes of orientation let me say that the *in-itself* is unthinkable as such, that it disappears as soon it appears, and which, I argue, equates to *noise* (as well as the notion of the *void* in Badiou, and very obviously Sartre's *nothingness*);[87] the *for-itself* emerges out of this nothingness through a passive synthesis (the details of which I will examine later) and forms what Bergson would term duration (and in the terms of this

thesis, pre-social / pre-subjective consciousness); the *for-us* is grounded upon this passive synthesis but emerges through an active synthesis which allows the emergence of reflected representation, of both memory (in the sense of actual memories) and understanding. The *for-us*, then, becomes the emergent, reflexive self-consciousness that makes both the subject and society possible – it has evolved from an insular *itself* to a collective *us*. Both the *for-itself* and the *for-us* are the results of differen*t*/ciation, the former existing virtually as a product of differen*t*iation, whilst the latter has actual existence as a product of differen*c*iation. This first instant, the *in-itself* of time is, for Deleuze, pure, in the sense that it is the general *a priori* element of all time; it is the pure past, but not in the sense of one instant or present passing only to be replaced by another:

> The past...neither passes nor comes forth. For this reason the past, far from being a dimension of time, is the synthesis of all time of which the present and the future are only dimensions. We cannot say that it was. It no longer exists, it does not exist, but it insists, it consists, it *is*. It insists with the former present, it consists with the new or present present. It is the in-itself of time as the final ground of the passage of time. In this sense it forms a pure, general, *a priori* element of all time. (1994: 83)

It is, in other words, that pure multiplicity that Serres refers to as *noise*, where any 'time' is not on the outside, is not ex-istent, but is internal and differential, is in-sistent and con-sistent.

Particularly in *Genesis*, Serres uses various forms of the word 'clamour' to great effect to refer to the background *noise*: "What are called phenomena alone are known and knowable, avatars of a secret remote process emerge from the clamorous sea" (1995a: 18). Perhaps in reference to the modern belief that life on earth first emerged and then rose out of the sea, perhaps in reference to the mythology of Aphrodite, goddess of love and fertility born from the foam of the sea, perhaps even in reference to his own maritime experiences of its power, the sea, for Serres, becomes heavily symbolic of the

background *noise*, from which, quite literally, everything emerges. In other words, this process of emergence from the *noise* is a single process; a single process in the sense that it describes a universal process of emergence that can be used to describe emergence at any level. It is such a process, I suggest, that Tarde was proposing when he described a self-similarity of repetition across the three realms of the physical, biological and social. In similar fashion, Deleuze refers to the univocity of Being, to a "single voice" that "raises the clamour of being" (1994: 35-7). This single voice, however, is not 'the One', it is not in any sense a unity, it is a pure multiplicity – pure in the sense that no-thing can be distinguished or differentiated within it (in fact it doesn't even make sense to refer to either 'within' or 'it'). It is, in Badiou's terms, the void, an inconsistent multiplicity. Deleuze aims at the collapse of the traditional 'one / many' distinction – a distinction that he refers to as a distorted dialectic; for him the pure multiplicity of the *in-itself*, as the *noise* does for Serres (and arguably the *void* does for Badiou), replaces the one and the multiple as the true substantive (1994: 182). The only danger in evoking Badiou is that for him the void, cast in terms of set theory, forms a solitary null set, a general ontological sump that resists the general descriptive application that my current use requires. The important point is that there is but a single, universal process, a univocal process, from which *all* things emerge, including the organisation that gives form to the products of the process:

> In fact, there is a physics, and that's all there is to it. There is a nature to things, a process of emergence, which is enough. Its function is universal. Whether we look at atoms, at species, and later at society, the same model is always at work. (Serres, 2000: 176)

Organisation, or distribution, then, occurs from within; it is in-sistent; it becomes a self-distribution, or, to equate it to one of the key features of complex systems, self-organising; organisation results from the intensive relations that emerge from within any emergent consistent multiplicity, not

from some transcendent power above or some transcendental principle below. There is, to use Deleuze's phrase, a demonic rather than a divine distribution. All limit is imposed from within through the intensive process of immanent wrapping or enclosure – enveloping. "Univocal Being is at one and the same time nomadic distribution and crowned anarchy" (Deleuze, 1994: 37). This is important to note. All the social organisation that I will go on to describe is emergent, it comes about as the result of an intensive process (partly codified by the results of the experiences accumulated from previous generations admittedly, effectively acting as feedback loops, but still intensive from the point of view of the emerging singularity), not by the imposition of structures or form from without.

Serres' response to attempting to the think 'the multiple as such' is to think in a manner he terms 'vectorially' – in a manner that maps the relations that form between the units or atoms within a multiplicity and which allow the emergence of form. It is possible, on the one hand, to group those elements that, through repetition and redundancy, have formed an emergent pattern together, and view them as a unity, as a collective – as a noun or as a verb. This, Serres argues, is the traditional way we believe we make sense of our world. His methodology, however, is to abstract what it is that connects these elements together, the prepositions; the messengers, bonds, cords, links that "*comprehend*, since they join or grasp or seize several things, beasts or men together" (Serres, 1995b: 107). The former method produces stasis, stable objects and 'processes', linear logic, statues; the latter produces fluid and turbulent patterns – patterns, I want to argue, that can actualise into any number of different forms in different spatial and temporal locations (including, for current purposes, the pre-social / pre-subjective mind), patterns that are relational in a topological or non-Euclidian sense rather than relational in a conventional geometrical sense, patterns that are fluid,

turbulent, non-linear and very adaptable. This is what Serres means by weaving together networks into a general theory of relations. My problem, then, is to translate this general theory of relations onto the pre-social / pre-subjective realm, and for that I need to provide a more detailed description. I need to be able to think of these bonds or cords (these *expectations*) as they apply within this realm.

Deleuze, fortunately, does attempt a more detailed, a more technical account of this emergence, one that can be so applied. But even here such an account will need to be modified. He first of all develops a two-fold synthesis of time (passive and active) that he later develops into a three-fold synthesis. Which of these are needed? Or is it necessary to understand both? Does it really matter? Now in asking this last question I do not wish to sound flippant, merely to point out that, as Deleuze himself argues, in total agreement with Serres, "categories belong to the world of representation", and that in their place he has "continually proposed descriptive notions" (1994: 284). As one of the key purposes of *Difference and Repetition* (again, in total agreement with that of *Genesis*) is to subvert the privileged place that essence and definition has traditionally held, a descriptive rather than a definitive account of the process is what is called for, and as such there is a need to avoid definitive statements as to the precise stages or categorisation of it. This is not easy – my very act of attempting to write a clear explanation of this process appears drawn towards definitive statements. It is, however, this difference between description and definition that lies at the heart of the difference between Ideas and concepts that runs through the whole of this work; as Deleuze says: "Ideas are not concepts; they are a form of eternally positive differential multiplicity, distinguished from the identity of concepts" (1994: 288). This is Serres' challenge, to think the multiple without 'availing myself of the concept', without recourse to the safety and certainty of identity

and definition. Serres achieves this, I suggest, partly through a far more descriptive and, dare I say, literary style, whereas, rather ironically, Deleuze attempts it through in many ways a more traditional technical philosophical style where he very frequently 'defines' his terms. Serres is quite opposed to this 'technical' style, and in his conversations with Latour expresses his dislike of jargon, suggesting that 'hypertechnicality' is not only "useless, redundant, harmful" but also that it "breeds fear and exclusion" (Serres & Latour, 1995: 23-4). On the other hand, I think it could be argued that in so doing Deleuze does at least attempt a more detailed account of the emergence of time within consciousness that provides insightful and useful concepts to those of us working within the humanities and social sciences. It is with this spirit that I will describe two types of multiplicity found in *Difference and Repetition* – one virtual, intensive and implicit, formed from the passive synthesis; the other actual, extensive and explicit, formed from the active synthesis. But none of the 'technicalities' so expressed should be read as definitive.

Both these syntheses are formed through processes of differentiation, but different types of differentiation: "We call the determination of the virtual content of an Idea differen*t*iation; we call the actualisation of that virtuality into species and distinguished parts differenciation" (Deleuze, 1994: 207). The former of these, differen*t*iation, refers to the echoes, to the initial repetitions that emerge from the background *noise* or *in-itself* of time, to the faint rhythms that can only be distinguished from the background, and which, through redundancy, a series of repetitions emerge. At this 'stage', all difference is internal to the series, and as such it is intensive. It cannot be measured as there is nothing but itself to compare itself to, and measurement and extension, like tangos, require two. In the context of that which is here being investigated, difference arises from the repetition within a series of experiences within the experiential field such that each repetition allows such

an experience to ‘stand out’ from the *noise* of the crowd, and as such it is more easily ‘recognised’ in and for subsequent repetitions. Deleuze also describes such multiplicities as implicit, as being formed through a process of implication. Implication, derived from the Latin for ‘fold’, to enfold, or in-fold, suggests a self-same relationship, a relationship formed completely internally to the series or system, a coming together or enveloping of emergent terms (to use Badiou’s word) to form a series of repetitive ‘states’ whose only relations are the internal holding or folding together of these terms. It is this passive synthesis that forms the virtual, a ‘state’ that is real, but which has not been actualised: “The virtual is opposed not to the real but to the actual. The virtual is fully real in so far as it is virtual” (1994: 208). This is important because the virtual ‘state’ of the system should not carry any sense of the negative, nor any sense of relationship usually associated with representation – “the negative is always derived and represented, never original or present: the process of difference and of differenciation is primary in relation to that of the negative and opposition” (1994: 207). Even though the internal relations that form the virtual cannot be perceived, because to be perceived they would need to be actualised (the series of states that form them would need to form a relationship with another series of states) they are every bit as real – it is just that their reality is of a different order than the actual. The virtual, though, is the basis of all actual structure: “The reality of the virtual consists of the differential elements and relations along with the singular points which correspond to them. The reality of the virtual is structure” (1994: 209). This is why Deleuze, in terms of consciousness or mentality, describes the virtual mental states as Ideas, as opposed to their actualised concepts, as it is from them, from their virtual structure, that our everyday concepts capable of representation are derived. In this sense, and in this sense only, they are a priori – they are prior to, and form the necessary conditions for, any actual experience.

For Deleuze, actual phenomena are emergent from an active synthesis between two or more virtual series, from their differenciation, from the establishment or communication of differences between the two series. This often invisible and imperceptible difference between two intensities that allows 'thunderbolts' to explode between them Deleuze terms, rather provocatively, the *dark precursor* - dark because unseen, yet a precursor to all seen phenomena:

> Given two heterogeneous series, two series of differences, the precursor plays the part of the differenciator of these differences. In this manner, by virtue of its own power, it puts them into immediate relation to one another: it is the in-itself of difference or the 'differently different' – in other words, difference in the second degree, the self-different which relates different to different by itself. (1994: 119)

Once the thunderbolts start flashing, once Hermes establishes communication between two or more series of intensive differences, virtual differences are actualised and phenomena emerge. These actualised phenomena are both extensive and explicit. Differences of time can now be measured. Virtual differences, intensive differences are purely internal to the series, and as such measurement of them is non-sense; they are like unheard rhythms that only make sense when they form a relationship with another series of rhythms – a hearing subject. And, of course, the now formed actual phenomena are explicit: they are capable of being unfolded, analysed and represented.

However, as close as the above account is to where I want to get to, it is still not quite there. *Expectations* as just described are formed from a synthesis, a bonding, of two or more series of repetitions of experiences, but it would make sense to still describe them as being virtual, and to save the term 'actual' for actual social acts (including speech acts and other acts of communication) that result from a further synthesis brought about by a response to the conditions of the social milieu. In the process as I understand

it, distributed networks, formed through the synthesis of two or more series, remain virtual – they await the actualisation of particular pathways in response to particular events.

In terms of the social, then, there is the birth of relatively simple social *expectations* out of the *noise*; the building blocks or 'non-units' of social self-consciousness out of the pre-social / pre-subjective realm. These *expectations* are, even at this stage, relatively simple bonds or cords. They have been formed though the experienced connection of two or more series of experiences, themselves formed through a process of repetition and redundancy: A particular sensory input is experienced that activates a particular neural pathway / network. Even at this 'stage' the experience is multiple. Each time a similar sensory input is experienced the pathway / network is strengthened – each repetition makes it easier and more likely for that pathway / network to be fired the next time a similar input is experienced - redundancy. Each sensory input need not even be identical, only similar, to strengthen the network (or series of networks).[88] Further, when two or more series are experienced repeatedly together a further neural network is established between them, a bond or cord is established, they become involved and enveloped with each other. It is through these basic *expectations* that a centre of action and experience will be gradually differentiated from the experiential field and the self or subject will emerge. As interesting as the particular emergence is, focusing on it directly would distract us from my endeavour of understanding the emergence of social (as opposed to psychological and neurological) form – though it should be noted that the difference is only one of focus, not even one of degree, let alone of kind. My next task is to understand how these relatively simple *expectations* self-organise into more complex *expectations* such as beliefs, ideas, concepts and norms.

6.2 Imitation and autocatalytic sets

Expectations, as described above, form the basic building blocks, the 'atoms' of social discourse and structure – though, as so described, they are already multiple, they are non-units. They are the relatively simple *expectations* that are emergent from the noise of the pre-social / pre-subjective realm; they are the relatively simple bonds that tie together two or more series of sensory experience; they are, for example, the joining of the sound 'dog' (repeated many times by the parent of the young child, accompanied by finger pointing in an attempt to direct the child's gaze towards the picture of a dog in a story book or an animal in the park) with the visual image of a particular four-legged creature.[89] Both the sound and the image each form a series, with each repetition within each series being different to some degree, but also possessing sufficient similarity that at each repetition the series is strengthened. When a bond is established between these two series an *expectation* is created: the expectation that on hearing the sound 'dog' the linked image will also be present somewhere; or that on seeing the image of a dog by uttering the sound the parent will respond. But straight away it is possible to begin to see how other series become tied into the particular *expectation* of the emerging subject – a particular response from the parent that creates a particular emotional feeling. This emotional response could well be that of pleasure in getting the parent's attention, but it could also be one of fear if an early experience of a dog had been a negative one. The point is though, that the emergent *expectations* are constantly forming links, and possibly breaking links, not just with sensory data but also with emotional responses, and that by definition these *expectations* are particular to the subject – they are always local.

But from these local expectations, global patterns and structures emerge, are maintained, or are developed – and I need to chart this path from the local to the global. In the following section (6.3) I will attempt a description of how our relatively complex expectations, our beliefs and social ideas, become codified into norms, laws, institutions etc.,[90] but first I need to offer a description of how the relatively simple expectations described above develop their complexity such that they become recognisable as what we would regard as social beliefs, ideas and concepts. I lay out this description in this linear manner purely for purposes of clarity and ease of exposition; I in no way wish to imply that the social process is similarly linear, because it is not, far from it – it is non-linear and features all the aspects of complex systems already described (3.3). I intend to point out that imitation, despite being an attractive option, cannot, in its simple form of the imitation of memes, desires or beliefs, account for this complexity. In its place I will substitute the idea of autocatalytic sets. The best way to do this will be to start with what I wish to end with (the complex expectation) and then reverse engineer it. I have presented a starting point, the simple emergent expectation described above - I will now jump to the complex expectation, and chart a way backwards.

Earlier (5.2) I briefly referred to Gallie's notion of 'Essentially Contested Concepts' for the purpose of challenging the implied unity associated with Tarde's use of beliefs and ideas. I now wish to return to this notion and use certain features of it to examine complex expectations. My point then was that although Gallie thought that this 'important group of concepts...relate to a number of organized or semi-organized human activities' they in fact apply to ALL the concepts used to organise human activities, and that these concepts 'are not unities (even if we treat them as wholes) but are multiplicities of an internally complex nature', that 'they are open, dynamic

systems'. The particular features that I wish to use and to suggest are features of all social concepts are:

1. That they are 'of an internally complex character'.
2. That 'various parts or features' make varying contributions to rival descriptions of their value.
3. That they are 'open in character' and are capable of modification 'in the light of changing circumstances that could not have been prescribed or predicted in advance'.

I will examine social concepts through these three features in the light of what I have already described of their emergence. My aim will be to draw on the ideas and concepts I have presented so far in order to develop a distinctive solution to the problem being investigated. But first, one more ingredient is necessary.

Deleuze notes that the "reality of the virtual consists of the differential elements and relations along with the singular points which correspond to them", that "the reality of the virtual is structure", and that "far from being undetermined, the virtual is completely determined" (1994: 209). For Deleuze the virtual is every bit as real as the actual, it is simply that the virtual Idea has not been actualised into a concept or representation. For my purposes, this actualisation is the production of a social act – one capable of being experienced, of being represented by another. For Deleuze, Ideas (as opposed to concepts) are the mental structures formed through a process involving repetition and differentiation whose complexity is of such a degree that they are incapable of being represented or actualised 'as it is', but only in part, to a certain degree, in relation to specific circumstances. "An Idea", he states, "is an *n*-dimensional, continuous, defined multiplicity." These dimensions are "the variables or co-ordinates upon which a phenomenon depends", those elements from within the structure as a whole whose emergence from the

subjective *noise* makes the definition or standing out possible; and this continuity is "the set of relations between changes in these variables", the total connectivity of the system or structure from which these variables have been drawn (1994:182). An Idea, then, is an internal, complex mental structure, it is an internal multiplicity, "a system of multiple, non-localisable connections between differential elements which is incarnated in real relations and actual terms" (1994: 183).

This brings me to the resolution of the problem; to my suggestion of how all the strands so far discussed flow into a synthesis, a complex place where "everything meets and joins together", the knot "through which everything passes like an interchanger." (Serres, 2008: 80) A speech act is a social act if it is spoken to another, or an act of writing if read by another, and that on being listened to or read it was capable of influencing the behaviour of the other. Let me take the examples given by Tarde (the religious ideas of Christianity or Islam, or the political idea of socialism) as working examples of social ideas that (in ways that have yet to unfolded) affect social organisation. Ideas such as these are far from the simple *expectations* I described earlier, far from the simple bonding together of a series of two or more experiences, whether these are vocal sounds, visual images, or written words. Following the genesis of the emergent subjectivity a continuity of experiences has provoked the creation of a very complex mental structure. Various series' of repetitions have been differentiated from other series', bonds have been formed, connections made; bonded series' have been connected to other bonded series', pathways forming these connections have bifurcated, merged, and produced feed back loops; as a result of the accumulated experience, and processing of this experience, the mental structure has developed into arguably one of the most complex structures imaginable. The degree of connectivity is vast; not only are various sense experiences connected in such

a complex manner, but these are connected to (and cannot be isolated from) areas of instinct and desire that have been inherited from our animal past, and from our emotional experiences, and no doubt to many other areas of our accumulated history. What is important though is not listing all the various areas or subsystems of this complex mental system, but noting that the degree of connectivity is high, very high, and that no area or faculty can be isolated as a completely distinct system. So, whilst on a purely verbal level, it might be possible to describe how relatively simple ideas have been bonded together to form the complex ideas of socialism or Christianity, these cannot be disconnected from the desires and emotions which contributed to their formation. What exists then, with these virtual social ideas, is a 'definable' network of *n*-dimensions (where all that can be said of *n* is that it is a very large number) that is connected to the whole system, from which it is nonetheless defined.

This virtual network is too complex, and too open, to be actualised in its entirety. Admittedly, speaking or writing the word 'socialism' or 'Christianity' is an actualised social act, but it is no more the appearance of the entire virtual network it evokes than the very tip of an iceberg. The words are easy to speak or write. Their meaning, at the subjective level, lies in the differential network of complex mentality that gave rise to their utterance.[91] When a subject performs a social act in accord with their socialism or Christianity various parts or features of this network are actualised at the expense of others and this can give rise to internal conflict and ethical, emotional or rational dilemma. Rationality, making sense of what we do and how we act, is a reflective process; it is an attempt to actualise by use of concepts and representations a process, a complexity that cannot be completely actualised. Any actualisation, even through a speech act, can only actualise various parts or features of the underlying virtual network, and the process whereby this

actualisation occurs takes on all the features of non-linearity; of a dynamic system responding, in some measure, to its social milieu.

But even in the evocation of these various sub-networks, there is a need to note the open character of the system – for it is this that makes each actualisation unique. It is not just the rival features within a virtual network that are actualised, but, due to its very high degree of connectivity, any number of features from the mental system as a whole, whether these be rational, emotional or instinctive. Of course, if these wider features have, through a process of repetition, become associated internally with the social idea, they will have become part of the virtual sub-network, but this does not preclude the future inclusion of features or sub-networks that have never before become directly connected with the idea, or the recollection of a connection that had been formed in the past (but fallen into disuse) and reactivated through the inclusion of some link experienced in the social situation being responded to. Each 'particular' network, then (the idea of socialism for example) is constantly open to new connections being made as the result of an open relationship with an ever-changing social milieu. The social ideas of either socialism or Christianity, therefore, can never be the basis for a straightforward and definable social act, or actualisation of a social idea. Even accepting, through a process of inter-subjectivity to be discussed in 6.3, that a degree of standardisation occurs as to the meaning of ideas (and without such a standardisation no social act would make sense), there will always remain areas of the virtual network derived from the particular experience of that particular social actor waiting to be actualised in any social act – for example the emotional feelings of love, hate, fear or security experienced in similar social situations as a child. The importance of emotional states to the formation of *expectations* should not be dismissed; the internally

complex networks that I am describing are open, and their connectivity must include the emotional centres of the brain.

From the above description it should be obvious that such complex multiplicities cannot be based on any straightforward conception of imitation, and remember that for Tarde the religious and political ideas such as Christianity, Islam or socialism were such that on being exposed to them people could be converted. Let me reverse the above description such that rather than examining the actualisation of the virtual socio-mental network, I examine how exposure to actual social expressions of such ideas by others could lead to their adoption by an experiencing subject. If, for example, a subject who has never heard of the concept 'socialism' were to walk into a public meeting and be exposed to such discussion for the first time, would it be reasonable to imagine them absorbing the complexities of the concept straightaway, and become infected? But asking such a question presupposes initial conditions that would be unlikely in the extreme, and completely fails to acknowledge the actual complexities it mentions.

Even if a teenager from a very sheltered background were to be introduced to the term for the very first time such they were in a position to ask 'what do you mean by that?', it would be very unlikely that they would have no working concepts related to, for example: the notion of rights in general, historical movements for workers' rights, the trade union movement, democracy, co-operatives, the ownership of property and the difference between private and public ownership, economics and the differences between a 'free' market and a controlled market (together, of course, with the more emotional responses of a feeling of belonging, a cause to fight for, a sense of injustice, or even contempt for people who do manual work). So assuming that this naive teenager had some working understanding of these

concepts, an initial introduction to the term could well do little more than re-organise existing concepts, perhaps envelop a collection of these concepts into a portmanteau concept that could be carried round and used at will. And, assuming the worst, that this teenager had little or no exposure to these other concepts, then some sense of them would have to be mentally digested first before socialism as a life changing concept would stand any chance of overcoming his political immune system. In the same way, then, that a virtual social Idea is too complex to be actualised in its entirety, an actual social experience related to a social idea is too complex to be made sense of, and requires the fertile ground of a subjective virtual network in which to take root.

And in the same way that there is competition for which virtual sub-networks are to be actualised in any social act, which can result in conflict and tension, so too is there competition for places when new social concepts are introduced. If we accept that no complex concept can be absorbed into a conceptual framework without reference to, or rooting in pre-existing (and probably less complex) concepts, and that the hinterland that forms this conceptual framework as a whole is open in character and has a very high degree of connectivity, then there is a good chance that such an introduction will require the introduction and assimilation of sub-concepts and that these sub-concepts will either have to replace existing concepts that they do not agree with or (and in all probability) will find a way of existing side by side with them – and thus introducing an increase in the internal tension.

And even if I place to one side such complex concepts as ‘socialism’, and look at ‘simpler’ examples of memes such as those of “clothes fashions, ways of making pots or of building arches” (Dawkins, 1989: 192) the problem does not go away. Even the relatively simple imitation of another person’s fashion

style still requires a whole array of virtual roots – roots related to which group of people it is good to be visually associated with and which group of people not, and the emotional roots associated with in groups and out groups is, when examined in a little detail, a very complex and deeply rooted network of connections. I will accept that, at possibly the simplest level of all, the imitation of a catch-phrase or tune, there are examples to be found of straightforward imitation, of the direct replication of another's social act, and ones that reveal the human propensity for imitation. I do not wish to disregard our basic ability to imitate, which, as Susan Blackmore (1999) and many others have suggested, may well be a crucial facet of our human overall evolutionary ability, but it is one of the main arguments of this thesis that such a simple exchange of information cannot explain social organisation. In other words, if imitation has any role in human social organisation it cannot be as the replication, the passing from person to person, of social ideas. These are just too complex to be so replicated; if this is the case then, to where can I turn for a solution? Well, as it happens, I do not need to stray far. In fact I can remain well within the confines of evolutionary biology.

Stuart Kauffman (2000) advocates the notion of a self-similarity of process for life (and the cosmos) that has been a central premise of this thesis, but, regarding biological processes, one that is not so dependent upon the 'traditional' concepts of replication. He argues that rather than life being based on "template replication", it could be "based on far deeper principles of catalysis". It is his suggestion that 'autonomous agents' – any living entity from a single cell, to a bacterium, to an organ, to a human being that is capable of acting on its own behalf through at least one energy cycle within an environment – are autocatalytic sets. These sets are such that:

> ...all the molecules whose formation must be catalyzed find molecular species within the set that catalyzes the reactions forming each of the molecules. All the "catalytic tasks" get done such that the set is

> collectively autocatalytic. This holism is not mystical; it is an objective, observable property of a collectively autocatalytic set of molecules. (Kauffman, 2000: 32)

In other words, the organisational properties of any set at any level of biological organisation are contained within the set, that they are self-organising. Kauffman's argument is based on the notion that any open thermodynamic (living) system or set works through the constrained release of energy; that as a non-equilibrium entity it 'works' to preserve energy, whilst at the same time (following Kauffman's proposed 4th Law of Thermodynamics, as outlined in section 3.3) 'working' to maximise its diversity and propagation. Further, that within the phase space of any such system, at any particular phase, the options for the next phase are finite. On the one hand the system is 'working' to expand into its environment, but on the other, the need to conserve energy restricts the number of viable 'next moves'. Which move is made, however, is determined by this environment.

"In a collectively autocatalytic system", he explains, "no molecule catalyzes its own formation, but the set of molecules as a whole catalyzes its own reproduction from input molecular species" (2000: 31). So, whilst the possible states of organisation are contained within the system undergoing transformation, the particular state adopted results from the presence of an outside system that acts as a catalyst. For example, a protein undergoing transformation will have the limits (and possibly the options) of its possible future states set by the cell DNA in which it resides and of which it forms part of a collective, but the actual state adopted will be determined by the presence of an adjacent protein which actually takes no part in the self-organisation. In the presence of protein *B*, protein *A* will become identical to protein *B* even though no organisational code or information has been transferred between them. All that was necessary was the presence of the

'shape' of *B* for *A* to adopt it, which, given the state of its own phase space, was one of its options.

I suggest that this notion provides the basis of a solution to my problem. And its translation from the biological to the social would be one that Kauffman supports. He argues that "there must be principles of coevolutionary assembly" that apply equally to biospheres, economic systems and legal systems; principles such as the univocal presence of power law distributions throughout nature; principles that describe the co-evolutionary organisation of all life. "There are hints", he adds, "that general principles govern the coevolutionary construction of lives and livings, organisms and natural games, firms and economic opportunities. Perhaps such a law governs any biosphere anywhere in the cosmos" (2000: 20-21).[92]

The solution that I have been working towards is now obvious. The actions of others act as catalysts for the organisation of internal and open sets of *expectations*, and the formation of *expectations* of increasing degrees of complexity. No social replicator, no meme is passed from person to person like a virus – in fact, I seem to have reached a solution that was beyond my earlier ability to express. *Expectations*, as virtual n-dimensional open sets are too complex, and have too higher a degree of connectivity, to be actualised in their entirety. In act fact, it does not even make sense to talk of their entirety. There is no unit, no unity – that which I describe are quite literally unbounded multiplicities. There is no 'thing' that becomes organised. A word of caution is required though. I said earlier, in relation to the process of autocatalysis at the biological level, that one protein becomes identical to another. In translating this general idea to the social I need to drop any notion of identity. This may be reasonable at the biological level where the number of stable adjacent possible states are limited, but not at the much

more complex social level. The experienced actions of others may act as the 'templates' of the autocatalysis of *expectations*, but the resultant self-organisation always remains virtual, open and unique. This uniqueness is path dependent on the (social and genetic) history of the emergent subject. In other words, despite the complexity at the biological level, in transferring to the social the degree of complexity and non-linearity is increased exponentially. Two social acts may appear to be very similar, if not identical, in their actualisation, but the virtual structures that gave rise to them were unique, and could be actualised into different acts at different times or places.

It is in response to its social milieu that the social subject first emerges from the pre-subjective and pre-social realm, and it is this continuing relationship that provides the catalyst for its self-organisation. Bonds or cords are constantly being tied and untied between the growing number of series' of experiences in an attempt to construct a conceptual map that will enable the social subject to navigate its environment. As the degrees of complexity and connectivity increase in line with the increase in social experiences, for the reasons explained above, internal tension between competing sub-networks increase, the degree of uncertainty for any particular situation rises. On the one hand the mental system as a whole is working to diversify, to resolve conflict, to be able to negotiate an ever-changing social milieu, but on the other hand its release of energy needs to be constrained. The social acts of others, whether they are bodily gestures, speech acts, or the production of written texts, act as catalysts to this dynamic system. They allow links to be made, networks to be created, that allow 'mental energy' to flow by the most energy conserving route whilst at the same time resolving 'far from equilibrium' states of internal tension.[93] Within the phase space of any mental system, for any particular state, there are only a limited number of likely next moves. These have been determined by repetition, by the repeated tracing of

internal pathways. The experienced social actions of others determine which of these next moves will be made. They may, of course, simply reinforce well-trod pathways, further entrench patterns of behaviour such that the *expectation* lying in the virtual shadows is almost revealed as an actual expectation – as an expressible expectation such that if this experienced situation should occur again then this is what will or should occur. But what can never be revealed, however, is the dark hinterland in which this expectation is rooted. On the other hand, the next move may take on all the appearances of novelty. Within the particular state a number of tensions or conflicts may exist which, through a particular social experience, may find partial resolution, and create a novel next move – create a new *expectation*.

This dynamic system is essentially self-organising. All the organisational energy flows, all the pathways through which it flows, are internal to the system. But the routes taken are always in response to events outside of the system, to its social milieu, where the behaviour of others act as catalysts that determine, to varying degrees, the future state of the system. To return briefly to a point made earlier. Such a system is at its most creative, is socially at its healthiest and most adaptable, when it is 'on the edge of chaos'; when it is neither entrenched in mechanistic habitual cycles (expectations in the strong sense of the term), nor floundering in a chaotic state with little or no *expectations* to help determine possible next phase states. And as such subjective systems are open systems, connected to the social sea that in part determines, through catalysis, these next states (and hence, through repetition, future states), we are actually referring to a vast inter-subjective social network – a system that, in its turn, is at its most creative at the 'edge of chaos': social chaosmos.

6.3 Codification: norms and laws

A social act, then, is the actualisation of a virtual inter-subjective expectation or social Idea. These bonds have been formed at a purely local and subjective level. They do not possess the objectivity of a social something that has been passed from social actor to social actor through imitation or replication, nor even the objectivity of a unified subjective 'thing'. Rather they are the result of a uniquely individual process that is nevertheless dependent on the social actions of others which act as catalysts for their formation – hence inter-subjective. They are complex, n-dimensional, open multiplicities rooted in the accumulated social experience of the actor; they would, therefore, in social terms, and purely hypothetically, be in a constant state of flux were not their dynamism dampened to some degree; self-organisation would be centred on the emergent subject, with inter-subjective organisation being loose and very contingent. In this hypothetical state all social phenomena would remain at the local level; there would be no global as such phenomena would be too unstable. For social (as opposed to subjective) organisation to occur certain feedback pathways need to be established that stabilise this flux – though in actuality, of course, there is no opposition between the social and subjective levels; there was no natural state or original position that became socialised. The subjective self has only been able to emerge from its pre-subjective state due to its relations with others – the social and the subjective are co-extensive and ontologically born from the same sea. But for this to occur, for both the social and the subjective to emerge, feedback loops in the form of codes need to emerge as part of the process. Social (and subjective) organisation emerges on the strength of the codification of expectations.

In passages, Serres appears to place a great deal of importance on actual objects rather than codes. "The object, for us", he says, "makes our history

slow", and that our "relationships, social bonds, would be airy as clouds were there only contracts between subjects." These objects stabilise our relationships (1995a: 87). And it was this focus on the importance of objects as well as social subjects that led Latour to his now rejected Actor Network Theory.[94] There is no doubt that objects do become involved in social organisation. A rugby ball, for example, acts as the focal point for the game, a process of social organisation that could not occur without it. On a larger scale perhaps the American flag could count as an example. But difficulties appear if, as with Latour, too much emphasis is placed on the object. The above quote from Serres states that apart from objects there are also contracts between subjects, and it is surely these that give the ball or flag its meaning in the first place.

In other passages Serres refers instead to quasi-objects. These objects, rather than actual objects like rugby balls, are "more a contract than a thing...a bond." These bonds, in the terms I have been developing, are *expectations*, and it is their varying degrees of objectification that stabilise the social flux and allows social phenomena to appear: "The social bond would only be fuzzy and unstable if it were not objectified" (1995a: 88). So for Serres, it is the *process* of the objectification of social bonds that stabilises the flux, a process that could produce an actual object, but does not need to. I am talking, then, not just of the actualisation of *expectations* in individual social acts, but of the objectification of these acts to some degree, such that the resultant quasi-objects are available for spatially and temporally wider repetition and thus have the effect of building stability and allowing the emergence of social phenomena. This is brought about through the codification of the bonds, a process that produces, in the first instance, concepts, and the appearance of unities: "Coding is nothing more than the showing of unities in the stead of multiplicitary *noise*. Thus concepts are born"

(1995a: 86). In other words, the initial objectification of social actions means their conversion into something that can be spoken, and once spoken a whole additional layer of feedback is instigated. It is no longer just the observed action of others that acts as a catalyst, but their spoken, and in time, written actions as well.[95] These concepts, of course, are emergent in exactly the same manner as the *expectations* that gave rise to them, and are just as rooted in the mental hinterland of the acting social subject, but their use codifies or bonds together a far greater number of 'sub-expectations' than mere observed social action could. This objectification, though, as I have repeatedly pointed out, is a double bladed sword; whilst totally necessary for the emergence of social organisation, it hides its own tracks from our enquiring gaze: "Not only does the classed manifold of combinations slow it down as it codes it, but the classing manifold of combinations blinds out conception to the process" (Serres, 1995a: 96) – focusing on the codes covers the process of their emergence.

In order to understand the emergence of social organisation, therefore, there is a need to understand "the flux and its way of coding" (Serres, 1995a: 95), a flux that "is at all points self-coded" (1995a: 99). This codification is subject to Venutian law, *foedera naturae*, rather than Martian law, *foedus fati*, a process whereby "nature generates the living flows" from within (Serres, 2000: 111).[96] This is a self-organising process – Venus assembles, "she is not transcendent" (2000: 123). Venutian Law, like Aphrodite rising out of the sea, is an emergent process. The codes produced do not exist in the way some believe the laws of physics pre-exist, they are neither Platonic nor transcendent in any manner. They have not been determined in advance as *the* way the social should be assembled. But what do I mean by codes? What are these codes that emerge quite naturally from the social inter-subjective process?

Let me briefly recall Wrong's comment that the "problem of order is the problem of how individual units...are arranged in nonrandom social patterns" (1995: 11). In the context of the current discussion the individual units are the actualised social acts performed by individual actors; the problem concerns how these acts, emergent from processes that can be traced back into pre-subjective and pre-social aspects of the actor, come into relationships with the actions of other actors such that 'nonrandom social patterns' can be identified. The problems I identified with the formalisations discussed earlier was how the they could *produce* 'nonrandom social patterns' rather than merely describe them once produced. I accepted that any solution must occur at the local level as it is only here that the emergent subject can experience the necessary causal stimuli. However, the question remained as to *how* this occurred at the local level. I have so far dismissed, to a large degree, the obvious solution of imitation, but have admitted that part of the solution to this question is provided by the notion of the actions of others acting as a catalyst for the subjective organisation of expectations such that patterns of behaviour, based on repetition and habit, can be observed. Admittedly, due to the catalytic effect, a degree of similarity will be observed between social actions, but the argument is that, without other factors, this degree of similarity would be too unstable for the degree of non-random social patterning that we do observe to come about. What is needed is a method that allows the actualised expectations of one social subject to be converted into a piece of relatively stable information such that it will act as a catalyst for the formation of similar actualisations in many others, not just those who directly experience such an actualisation. Such a method is vitally important for the emergence of structure or order – for the development of a global pattern out of local actions. Such a piece of information I term a code. Codification is quite simply the process by which relatively complex

information from a source is converted into a form that can be communicated such that information that would otherwise be difficult or impossible to communicate can be achieved to some degree.

There are two particular forms of codification that are relevant to this discussion, and are therefore worth noting: linguistics and the legal. Linguistic codification is the process of the development and standardisation of norms in language, not just the rules for grammar, spelling, and pronunciation, but also the meaning of words and phrases. Since the publication of Saussure's ground-breaking work language has been understood as based on codes which derive their value and meaning from the differential relationships established within the system of their use, and Wittgenstein has argued as to the extent that we follow the rules of grammar, syntax etc. without realising that we are (Saussure, 1983; Wittgenstein, 2001). Bearing in mind that both Serres and Deleuze describe a process whereby concepts emerge, and that I have derived my understanding of *expectations* in part from Foucault's understanding of discourse, the importance and relevance of linguistics for the social should be obvious. It was the emergence of language that allowed for the emergence of the social subject out of the pre-social / pre-subjective *noise*.[97]

Under the general banner of the legal code it is worth noting the difference between common law and statutory law. In societies that operate under common law the rules or codes that prescribe what is permissible and what is not in terms of social behaviour have emerged firstly out of common practice or tradition, and have then been further codified or standardised through court decisions whereby precedents are set. Both aspects can be seen as pragmatic solutions to actual problems, the latter applying a degree of reasoning and mental consideration, the former perhaps relying on what has

been found to work. Such a system most closely resembles the 'natural' aspect of the process I'm outlining. In a society based on statutory law, however, whilst the laws produced are still codifications of emergent behaviour, this behaviour is more abstract and theoretical. They are based not so much on what has been found by trial and error to work, but on what rational reflection says should work. In this sense, common law closely resembles Venusian law (in that it is emergent from the social flux) whereas statutory law is closer to Martian law. This is not a straight forward distinction though. Strictly speaking, it would only be Martian law if it was thought to be 'natural law', with its legitimation derived from outside of the social process yet imposed upon it. However, if these laws were constructed by social subjects (even in very theoretical and abstract circumstances) it could still be argued that they are emergent. The important point, though, is that laws that form part of a legal code effectively (in various ways) attempt the objectification of *expectations*.

There are, of course, degrees of codification: the degree to which the dynamic variance of social behaviour is slowed, or the degree to which the rigidification of the social occurs. I use the relative terms 'low' and 'high' purely out of convenience, and in so doing I in no manner wish to suggest a quantitative scale – at least not one that can be calibrated and that allows measurement. I do, though, want to suggest at the least a theoretical continuum that has at the 'lowest' pole a minimal degree of codification that permits a maximal degree of fluidity and variance, and at the 'highest' pole a maximal degree of codification that permits a minimal degree of fluidity and variance; at that latter pole the fluidity of the system has become very rigid, and stasis is close. Depending on the degree of codification, the codes prescribe the relevant social action to be performed or avoided. At the highest level the codes prescribe in detailed and very objective terms the expected social

action. Conforming to such expectations may produce a great deal of tension within the social actor due to the inability of his own emergent *expectations* to organise in such a manner that they 'fit' the template prescribed. The path dependency of their virtual network of *expectations* is very resistant to the re-organisation required. At the lowest level, due to there being less objectivity and more ambiguity, the 'fit' is far easier to achieve.

At this lowest level of codification there is the emergence of language – the birth of concepts. As Blackmore notes, our "human language capacity is unique", and that as "far as we know, no other species has any kind of grammatically structured language – nor are they capable of learning it" (1999: 88). She also notes "that people do not learn language by being systematically corrected for their mistakes, nor by listening attentively and slavishly copying what they hear. Instead, they just seem to pick it up, using minimal input to build up richly structured grammatical speech" (1999: 87). This is surely where our ability to imitate comes to the fore. We learn speech by imitation; we copy the sounds we hear. We do not, however, as Blackmore also argues, imitate memes or concepts – for all the reasons given above. We imitate the signifier, not the signified. The latter is built up in the manner explained above through a process based on difference and repetition, whilst the signifier, the code, is attached through a process of trial and error in the communication of the signified.[98] Hearing words and forming concepts, attempting to make sense out of them through trial and error, means they act as catalysts for the formation of social Ideas and *expectations* within the subject. This low level of codification does not require, in itself, a precise social action in response. The response need only be general, in the broad range of what of what was meant – though constantly being fine tuned depending on circumstances. So, for example, on hearing or reading about concepts related to socialism or Christianity we need, in order to attach

meaning to the concepts, to embed them within our own mental relational framework. But whilst the pre-existing element of this framework will allow for meaning to emerge, in order for the new elements to be absorbed into it a degree of re-organisation will ensue, and the re-organising of the virtual background will (again to varying degrees and depending on circumstances) result in new or different actualised actions. At this level of self-organisation, whilst concepts may influence actualised action, this influence is very non-specific.

When normal everyday language is used to reflect upon social behaviour, when it is purposefully used to describe (encode) social action we see the emergence of what we generally refer to as social norms. Georges Canguilhem (1991) has made a comparison between biological health and social health, and has described norms as the product of a normative process, as the "functional solution found by life as a response to the demands of the environment" (1991: 144). In the same way that "physiological norms define less human nature than human habits as they relate to the kinds, levels and rhythms of life" (1991: 168), a social norm "offers itself as a possible mode of unifying diversity, resolving a difference, settling a disagreement" (1991: 240). Norms, again to varying degrees, go a step further towards the standardisation of behaviour than the general use of concepts in language. In the same manner as language / discourse, norms "are relative to each other in a system" (1991: 249), but, in the context of my argument, they differ in so far as they particularly refer to social behaviour – they inject an element of the 'ought' into expectations. At their lowest level they may only be articulated as a result of something not happening 'as it ought', but the point is they *can* be articulated if required. And this articulation enables them to act as a 'stronger' form of catalyst than a general concept: there is a far clearer image of what the resultant behaviour 'should' be, of what the product of the

self-organisation of *expectations* should be, even if this behaviour is not prescribed in every detail.

Norms, as so understood, as *expectations* codified to the extent that they can be articulated, form the basis of all social organisation, and at their highest level they form some type of rule – either written or unwritten. Once both actualised and codified the resultant norms (or expectations in their usual, specific and non-virtual sense) cannot be reduced back to the *expectations* that gave rise to them. These actual expectations form the catalysts for the organisation of the behaviour of others, and most institutions and organisations are formed from a mixture of many types of such expectations. An organisation may have a written constitution or a set of written rules that prescribe in quite some detail the types of behaviour that is expected. These act, in catalytic terms, as quite a rigid template; they prescribe the type of behaviour to be produced by a social actor, whilst the process that leads to that behaviour will be different for each actor based on their own unique self-organisation of existing *expectations*. Codes, therefore, are *always* synthesised at the local level. This process of producing social action from existing *expectations* guided by rules of behaviour can, of course, produce new *expectations*; such a production being the outcome of a very complex feedback system. The written rules are the objective codifications of a generalised set of social actions, themselves the actualisations of complexes of individual *expectations*, which, in their turn, affect the production of social behaviour of other social actors, and in so doing, contribute to the formation of new *expectations* in these other actors. There is, of course, no guarantee as to what these new *expectations* will be. They may be sympathetic to the organisation and closely resemble their norms – an extreme case of which would be a state of complete institutionalisation – or they may react against the organisation in the form of some resistance to their norms. Many of these

norms / expectations, however, will be unwritten. The same process will apply, but it will be far looser, less rigid, less objectified – quite literally, because unwritten, less an object for inspection. Such norms can be discussed, but for all the reasons given previously, only to a very superficial level. At a deep level they are rooted in a unique hinterland of accumulated subjective social experience.

In most societies, the highest level of codification is the production of laws and legal codes. And as we reach the highest level of codification, we also reach the highest level of abstraction, and all the problems that result in attempting to apply such abstractions back to examples of actual behaviour performed at the local level. Here the 'oughts' and 'ought nots' are prescribed (codified) in such detail that there is no ambiguity as to the social behaviour that is expected – or, at least, such is the aim. The problem is, of course, that in order to lose the ambiguity in describing an action as something that is not permitted the background complexity from which all social actions emerge is effectively masked or ignored. This, as I have discussed, is the problem with all abstractions. This means that when such an abstraction is then reapplied to any particular social act all that complexity comes flooding back, and the clearly defined act looses all its hard fought for definition.

As was noted earlier (4.2), Deleuze and Guatttari point to the dangers of over codification, whilst extolling the virtues of the 'line of flight', a minimum of codification. In actuality both of these poles present us with social and political problems, and such an understanding of social organisation as presented in this thesis may well form the basis of *the* political issue of the current era. Within any social group, the degrees of codification can vary, but this degree directly affects both its fluidity (its ability to respond and adapt quickly and easily to changes in its milieu) and its predictability (the more

rigid a system, the greater the ability to predict its future states) – poles that are inversely proportional.

6.4 Conclusion

In order to substantiate the notion of *expectations* as the 'non-unit' of social organisation it has been necessary to describe two important modes of their being. First, it was necessary to account for their genesis, their initial appearance. As far as I have been able to ascertain, no account of the social, even those theories broadly sympathetic to the general approach of this thesis, have so far achieved this without resorting to some notion of transcendental norms or values. This has been achieved through a description of their emergence from social noise, a process that remains speculative, for the time being at least, yet has the advantage of conforming to the certain 'basic facts' of scientific understanding. Secondly, it needed to describe how they become so organised without resorting to a process of imitation that is very difficult, if not impossible, to justify. This has been achieved through the notion of the self-organisation of an individual social actor's distributed network of expectations. This network was associated with the actor's neural network, and the process of its self-organisation brought about, in part (a significant part), through a process of auto-catalysis. This process of auto-catalysis allows for the behaviour of social others to become significant (in fact it requires them as a necessity) without resorting to their direct imitation.

Finally, to account for the detection of non-random social patterns I have argued that this self-organisation of *expectations* is subject to a process of codification. This codification of internal relations effectively slows down or dampens the dynamics of the system, but the cost is a loss of creativity and adaptability. Systems with a minimum of codification (regulation) are very

responsive to external events and are very adaptable, but also very unpredictable – you cannot control the direction they take.

This last point, the general uncertainty of such systems, and the fact that their degree of certainty and predictability, on the one hand, and their degree of creativity and adaptability on the other, are inversely proportional, could well have important (and uncomfortable) political implications. Yes, the system in general, in some form, may well survive, but the cost may be that certain parts are not fit enough to. This is natural selection at its most dynamic and would be typical of a free market economy – with the proviso, of course, that (ironically) neo-liberal governments have intervened to 'create' such markets. At the other extreme, a system can be codified to such an extent that it becomes effectively over-codified. In such a system it would, in theory, be possible to control the outcome of any process, but this would require that the environment in which the system is nested does not change – and this just does not happen. Such a system will die, sooner or later, from stagnation or, as Deleuze has remarked in referring to Solzhenitsyn's allegorical novel of the totalitarian Soviet state, through becoming cancerous. However, in human terms, a degree of predictability is essential for our survival; it may well be that our ability to predict events in our environment has been crucial for human evolution as it enables us to plan and overcome contingencies. The golden zone in this relationship is the place that I have already referred to as *the edge of chaos*; it is a point somewhere between these two extremes. This is where any system, as a coherent and recognisable system, is at its most creative – is most adaptable to changes in its milieu.[99] In social terms there is neither strict order nor creative, yet unpredictable chaos, but social chaosmos.

7 Conclusions and implications

Two broad conclusions can be drawn from this thesis: a primary one that responds directly to its original question regarding the ontological status of society and its corollary regarding the relationship between the micro and macro in society; and a secondary one that vindicates the methodology adopted by this thesis in answering these questions.

This methodology was to a very large degree drawn from the methodology of Michel Serres and was both comparative and empirical. It was comparative in the sense that it recognised that there is a deep self-similarity across the multiple manifestations of life, a recognition that is supported by the emerging science of complexity theory. It was empirical (and materialist) in the sense that it recognised that an understanding of the social for any social actor and observer can only come about through their direct sensory experience of their social milieu. In this sense it warned against placing too great a degree of explanatory power on abstract notions. But perhaps even more important was Serres' challenge to 'think the multiple'. Whilst the adoption of complexity theory forces its users to recognise the multiplicity of life, as I have demonstrated even with those writers sympathetic to this general approach, it is very easy to be drawn into the creation of false unities and abstractions. Having Serres' challenge in front of me, as it were, almost as a mantra, helped prevent this. In accord with all of this, this thesis has conformed, I suggest, to the 'certain basic facts' (particularly the evolutionary theory of biology) as called for by Searle (2010); or, at the very least, it is not antagonistic towards them.

I would like to think that whilst this was not the primary objective of this thesis, the actual successful demonstration of this methodology vindicates

both its selection and its efficacy, together with its choice of writers and thinkers whose work has directly contributed to its conclusions. This choice was based on a philosophical rather than a directly socially scientific approach to those problems derived from social theory; an approach that has allowed the degree of freedom necessary for an act of translation from a broad understanding of complexity science into the arena of the social world. Its aim has been to allow the exploration of the familiar territory of the social world in a new way – a way that would lay the foundation for the resolution of deep seated problems in social theory whilst remaining firmly rooted in certain basic facts. To this end it was necessary to have a broad understanding of the problems facing social theory and various approaches being made to resolve them, without having the creativity of the research process overly dampened by the existing codes of social theory and social science methodology. In a similar fashion, it was necessary to have a broad understanding of complexity science and its various incarnations without being drawn into the conventional codes of science itself. These codes, or scientific functions as Deleuze and Guattari (1994) have referred to them, would also have mitigated the fluidity and dynamism of the creative process of translation.

The main objective of this thesis, however, was an account of social order and the construction of a social ontology. Its conclusion is that our experience of 'non-random social patterns' is the effect of an emergent and self-organising process that is not only complex, as described by complexity science, but one that at every level, and from every angle, is irreducibly multiple. It defies unification, and any attempt to create unities from or within it will only lead to misunderstanding, confusion and paradoxes. It even defies, as I have shown, being understood, in an ontological sense, through any degree of formalisation (through axiomatisation or status functions for example) and through abstractions (through statistical generalisations). These methods of

social analysis may have some efficacy at a certain level of description, but they are close to useless for any understanding of the ontological status of the social. This is because any such method masks the complexity of social relationships, and most importantly fails to recognise that such social relationships are forged under local conditions – forged from the furnace of the emergent social subject in response to its experiences within its social milieu. Our experiences of the macro or global, of social order, is our recognition, at the local level of experience, of patterns of behaviour that have been stabilised through varying degrees of codification.

Strictly speaking, though, order is not the most accurate term to describe such patterning; it would be more accurate to state that social patterns, patterns of social behaviour and action, are at the edge of chaos: social chaosmos. This is important for number of reasons. Firstly, there is a need to jettison any concept of society that involves any form of a top down interpretation of social structure, any sense of how society 'ought' to be, and any sense of discoverable objective rules and norms that govern such structure. Society, social structure, is at all points self-organising and emergent – it adapts, it evolves, in response to the changing milieu in which it is nested. This milieu may involve, of course, an understanding (by way of codifications) of larger scale social structures or the physical / ecological environment itself. The only question is how effective such an adaptation is. Secondly, and leading on from this, such an understanding directly affects both the possibility and the method of any intervention on the part of politicians or practitioners working within the social sector that attempts to effect changes upon this structure – both in terms of actual social / community work, economic understanding and control, and political power structures. Any attempt to influence the emergent macro structure can only be achieved through the influencing of what I have termed *expectations*. But

for all the reasons associated with complexity theory such outcomes are inherently uncertain. In this sense Keynes has been vindicated:[100] The key to economics (and all the social sciences) is to understand the uncertainty of expectations. Also in this sense Camus has been vindicated:[101] Life, social life, is inherently absurd; our survival, to varying degrees, depends upon the recognition of pattern, order and meaning, but we can only discover its inherent uncertainty.

The observable fact that there appears to be a large degree of non-randomness to social behaviour, I have argued, is due to a process of codification that effectively slows down these emergent and very dynamic social systems; a process that can only occur at the local level – at the level of the individual social actor. The link, therefore, between the local / micro level and the global / macro level of society is produced by this system of codes – a system that effectively provides a multiplicity of feedback loops that both directly and indirectly influences individual social actions. The macro is emergent from the micro and comes into focus due to this process of codification.

This process, however, is far from straightforward. At its most objective level, though never entirely so, are, perhaps, the social group's collections of legal codes. Here codes attempt to clarify as to what actions are permitted, even expected or demanded, and which are not permitted. They are objective in the sense that they have been written down, codified into language in such a way that ambiguity regarding expected social action is reduced to an absolute minimum. This ambiguity however, as experience tells us, is never entirely eradicated. This is due, as I have attempted to demonstrate, *because* social action can only take place at the local level, and for any code to be 'enacted' it needs to be absorbed into to the self-organising, dynamic, inter-subjective

system that is the social actor, and this process of absorption is always unique – both for each actor, and, to some degree, for each time of its 'occurrence'.

On a similar level of objectivity, perhaps, lies what John Searle (2010) has termed 'status functions', functions that have been imposed upon objects and people by society that cannot be said to exist solely by virtue of their physical structure. Examples given by Searle are "a piece of private property, the president of the United States, a twenty-dollar bill, and a professor in a university" – all of which "are able to perform certain functions in virtue of the fact that they have a collectively recognised status that enables them to perform those functions" (2010: 7). However, the recognised status of each of these is no more clear-cut and universal than those of legal codes. The function of each of these, in as far as they influence the actions and behaviour of social actors, still needs to be determined though the same unique process of absorption by individual social actors in response to local conditions.

So called social facts, of course, are no more objective, perhaps even less so. For what we like to think of as real and tangible aspects of society, those statistics, classes, and classifications that we so love talking about, are shown to be nothing more than abstract generalisations. At their best, these abstractions offer us little more than a set of descriptions that allow certain features and trends within the social flow, certain types of non-random patterns, to be noticed. At their worst, however, these higher-level descriptions are taken to be definitions – definitions of society and of what controls it. It is inevitable, of course, that such solidifications of the social process have some influence on *individual* social action, they effectively provide another system of feedback loops, but they do not directly control the social process, nor do they define it.

These codes, these abstractions and solidifications, are absolutely necessary of course, as they slow down a highly dynamic and fluid social process into something that allows a degree of stability and predictability to enter our lives, and life would be very difficult, if not impossible, without some degree of this stability and predictability. We would be unable to work cooperatively to respond to the demands of our environments and physical needs. But we need to remind ourselves that they are not themselves the source of the social; rather, that they, themselves, are the product of ever more fluid codes. They have emerged as responses to the above demands, as practical solutions to the problems posed by our various (social, political, economic, and ecological for example) milieus – and to this end they work. Their source codes are likewise emergent; emergent from repetitions and habits of everyday social action, repetitions that are both conscious and non-conscious, repetitions that can be codified to the extent that they can form a discourse on social behaviour and action, and repetitions that cannot. These social actions, I have argued, are the actualisations of virtual networks that whilst organised within each social actor extend well beyond them. These networks, to the extent that they refer to any general set of social situations, I have termed *expectations*. However, any particular *expectation*, one that is capable of having a particular description or referent, becomes an actualisation as soon as it is so described. To this extent, the virtual hinterland in which *expectations* have their existence remains forever in the shadows.

Tracing this emergent process 'back' even further, I have argued that these *expectations* are themselves emergent from the pre-subjective / pre-social realm. This realm is effectively the condition of new born child; a child who is conscious of their environment and can respond to it to some degree, but who is not yet self-conscious, whose subjectivity has yet to emerge in response to the presence of others. In effect, socially, this environment amounts to

nothing more than social *noise*. But it is from the very first repetitions and rhythms within this *noise* that both time and *expectations* for the future individual social actor are born. There is, of course, no clear line to be crossed such that at one moment the social singularity becomes a social subject, though sociality and subjectivity are effectively the same – inter-subjectivity. And because of this, *expectations*, right from the very earliest point when they could be said to exist, will always be open networks, and multiple in their very nature.

I have further argued that these *expectations*, despite in many respects being the 'atoms' or 'non-units' of social order, are not passed from person to person, they are not copied or imitated – even though, in a certain sense, imitation has a role to play. Rather, *expectations* are always the emergent results of the unique history of individual social actors, and are, right from the very earliest of stages of this emergent process, too complex, too multiple, and too dependent on local conditions to be copied. They are, however, heavily influenced in their emergence by the experienced actions of others. These actions act as catalysts to their formation; they form (in a sense) a mould or template that provides a form or shape that the internal self-organising process can grow into. It makes no sense what-so-ever, though, to call them copies, as everything from which they are emergent and which provides the dynamics that holds them together, not only 'resides' within the social subject, but this hinterland, with its path-dependence, is always unique and incapable of being copied – it is just too complex!

Individual social actors, therefore, are only individual to the extent that they are singularities of social action – they are centres, biological centres, for the processing of social information. In this sense each action is, to some degree, unique and local. As subjects, however, they are irreducibly social – their

subjectivity could not have emerged from the social *noise* without the presence of others. Further, it is their adaptation to their social milieu, both individually and collectively (in the sense of 'shared' codes), that provides the dynamics of social evolution and survival – and this is at its most creative when society is 'on the edge of chaos'; when there exists a state of social chaosmos.

A final comment: Nothing remains stationary, least of all this line of research. As I have already stated, this thesis has not attempted the production of a new social theory that can now be applied to the direct description of social phenomena or to the design of interventions into the social process. It has merely attempted to produce a map that will allow the exploration of familiar territory in a new, and hopefully useful, way. It has been a creative act of translation from one field of knowledge to another, and as such claims to be no more than the work of philosophical reflection. To my understanding, however, the value of philosophy comes from just such explorations; from the creative process of reflecting on familiar problems in new ways. As such, however, further acts of translation will be required before it can be directly applied to social issues and phenomena.

There are two other, more philosophical, directions that this line of research could take; directions that whilst having a theoretical base, have (I suggest) quite urgent practical implications. One of these concerns ethics, from which two particular questions emerge. First of all: To what extent can the norms or codes as this thesis has described them be regarded as normative? Now in one sense this is a very straightforward question. As described from this theoretical perspective, and as described by Canguilhem (1991), they would appear to be normative by default – they 'naturally' regulate the social process. But the problem is, of course, that humans have the ability to reflect

on this process, and purposefully attempt to steer it in certain directions; when faced with ethical dilemmas they are not only able to automatically respond, but to reflect on the decisions they face. So, from where do we derive our guidance as to how to make these decisions? This is of particular importance since, having rejected any notion of an absolute reference point, it is all too easy to slip into either a general moral relativism, or perhaps, even worse, a media / market led set of expectations or norms. In this respect, it would be of value to explore the degree to which a 'virtue ethics' could be adapted to, or developed out of, this thesis. Secondly: To what extent can Sartre's notion of responsibility be re-grounded in such a social ontology? This would appear to have value in a number of directions. Firstly, because if we accept how any of our actions can become catalysts for the formation of *expectations* in others, our level of responsibility for those actions is significant. Secondly, because of the very high degree of social connectivity and complexity, the effects of our actions can spread very widely and have many unintended consequences. And lastly, and following on from this last point, this connectivity extends well beyond the realm of even a world-wide humanity. We need to understand our connectivity to our planet, to our eco-system, and to many other non-human systems.

The other direction (though not unrelated to the above) concerns politics. Here a number of questions demand answers: Accepting that some degree of codification of the social process is absolutely necessary, what degree or level of codification is the most effective? How do we decide on what 'effective' means? Who has control over this process? Who makes the decisions? Why is 'democracy' the most effective method of making these decisions regarding the degree and type of imposed social codes? Questions regarding this process of codification appear to me to be the most urgent of our current political concerns; concerns regarding the degree of control or regulation of

the financial system; concerns regarding the ‘marketization’ of education and the health service. I would suggest that whilst there are many other areas that would benefit from being re-evaluated from the perspective of the social ontology offered by this thesis, for example notions regarding the ‘unity’ of the state or other collectives of citizens and the relationship between these ‘collectives’, that the problems concerning this process of codification cuts to the very core of modern politics, and could, in many ways, define it for some time to come.

Notes

[1] By referring to 'order' here I imply only a general sense of regularity or degree of prediction regarding future conditions, not a strict sense of mechanical order that would permit of an exact prediction.
[2] If they had been successful another problem would have opened up, namely the ontological status of these of these laws and structures, and their causal relationship regarding the behaviour of social agents.
[3] For an excellent overview of the tensions between these two perspectives written from a multicultural viewpoint, see Fay (1996). The phrase 'pernicious dualism' is his.
[4] See Wittgenstien (2001).
[5] Or such problems are deemed to be 'psychological' and therefore outside of the realm of social theory. One of the advantages of the deconstruction of unities is the corresponding problematizing of academic boundaries. If concepts only have meaning in terms of open networks then this is inevitable.
[6] As I explain in section 2.5, the methodological approach of this thesis is empirical. This requires that any existent must be capable of being 'sensed' in some manner, even if this requires the aid of technology.
[7] This has not escaped the attention of many very eminent thinkers of the 20th Century of course. In terms of social science, Robert Skidelsky argues that "Uncertainty pervades Keynes's picture of economic life" (2010: 83), and it could be argued that it was such a phenomenon that led to Camus and others to describe life as absurd.
[8] Taken from the transcript of the speech made to Fabian New Year Conference held at Imperial College, London on Saturday 14th January 2006, available at www.fabian-society..org.uk/press_office/news_latest_all.asp?pressid=520 (accessed 25/01/2006)
[9] See Hobbes (1985).
[10] Taken from 'Course Guide to Understanding Connexions' (p4), Crown Copyright 2002, ref. UCX/CG.
[11] The other aspect to this, of course, which is not discussed in this thesis, concerns the ethics of such interventions. It is one thing to respond to an individual who approaches a practitioner for help, it is another for that practitioner to attempt to influence the expectations of every individual they meet.
[12] Higher Education Initiative Fund, round 4.
[13] In other places, Serres refers to this process as 'cross-breeding', a process he regards as his 'cultural ideal'. See Serres & Latour (1995).
[14] From here on, I shall italicise 'expectations' when I use it specifically in the sense developed by this thesis, and leave it not italicised when used in the general sense.
[15] Following Serres' own practice I shall italicise 'noise' when I use it the sense described in section 2.1 in order to separate this meaning from its everyday use.
[16] David Webb has been my supervisor throughout this project and was responsible for my introduction to the work of Serres in the first place. He was able to provide guidance as to the contents of Serres' *Hermes* series together with translations of several sections of test from this series for post-graduate seminars. It is impossible to overestimate his influence and inspiration to my research. For this and his continued support I offer a very sincere thank you.
[17] See also Serres' *Hermes I*, and Webb (2011)
[18] Serres makes numerous references to maps as analogies to guides that help us navigate between academic disciplines. Brian Fay (1996) also makes much of such an analogy; he points out that maps are not meant to represent reality, but merely show the relationship between certain aspects of it.
[19] This will be explained in greater detail in section 2.2.
[20] 'Statue' is a regular metaphor used by Serres to refer to a fixed or frozen state of affairs, as opposed to being fluid and mobile. He may well have derived its use from Moliere's *Don Juan*, which is the subject of any essay written by him (in Serres, 1982).
[21] Hermes was not only the Greek messenger god, but also the god of traders and thieves. As such he perfectly represents the themes of communication, translation and distributions that permeate Serres work.
[22] The phrase complexity science is probably more accurate than complexity theory for, as Durie et al point out (2007): "at this stage in the development of complexity theory there are no generally agreed set of concepts or ideas that define it as a separate academic discipline."

[23] As I explain in greater detail later (5.1) the notion of time cannot be separated from Serres understanding of emergence, so cannot be ignored, but a full exposition of it would be too great a distraction from the task in hand.
[24] See Serres' *The Birth of Physics* (2000), a reflection on Lucretius' epic poem, *On The Nature of the Universe*, itself a versification and celebration of the atomism of Epicurus.
[25] In using the capital letter here I am highlighting our tendency to not only fix these descriptions into definitions, but to confer upon them a transcendent (Platonic) ontological status.
[26] Though, as I have already pointed out, Serres was familiar with network and information theory which no doubt influenced his thinking in this direction.
[27] Kauffman's model of 6N dimensional space provides a relatively simple description of such 'space'. See pages 58-60 of his *Investigations*.
[28] See also Philip Ball's *The Self-Made Tapestry* for a wider, but perhaps more reductionist approach to pattern formation in nature, but nevertheless, one that explains much of the physics and chemistry involved.
[29] I have also referred to an unpublished paper 'New Communities, New Relations: The Impact of Community Organization on Health Outcomes' by Robin Durie, Katrina Wyatt & Hazel Stutely form the Health Complexity unit at the Peninsula Medical School. This paper uses complexity theory to evaluate a community regeneration programme.
[30] This concept of connectivity is explored by Mark Buchanan in his *Small World: uncovering nature's hidden networks* (2003).
[31] Regarding this connectivity, Leibniz's influence on Serres is an interesting line of research. Important in this, perhaps, is the difference between Leibniz's physics and metaphysics, for whilst in the former all matter is irreducibly open and multiple, in the latter the monads do not connect or communicate with each other at all.
[32] The emergence and effect of the Internet has greatly added to the complexity of the range of interactions, and has made an understanding of 'local' problematic.
[33] *The Birth of Physics* was originally published in France in 1977.
[34] See pages 58-60 of his *Investigations* for a more detailed description of 6N dimensional state space.
[35] Kauffman writes: "A candidate fourth law: As an average trend, biospheres and the universe create novelty and diversity as fast as they can manage to do so without destroying the accumulated organization that is the basis and nexus from which further novelty is discovered and incorporated into the propagating organization."
[36] My use of words in single quotation marks is similar to Derrida's use of "under erasure" –not strictly accurate in an ontological sense, but necessary in order for my ideas to be explained.
[37] These terms and ideas are not original to Cilliers. For an early exposition of them ideas see the work of Paul Churchland (particularly 1992), but even Churchland does not claim complete originality.
[38] For a more detailed explanation see Churchland (1992).
[39] Taken from an unpublished translation by David Webb.
[40] Serres may well have derived this model from his engagement with the development of Information Theory (see Hallward, 2003b). James Gleick notes that one discovery by Claude Shannon "showed how to maximise flow through a network of many branches, where the network could be a communication channel or a railroad or a power grid or water pipes." (Gleick, 2011: 264-5)
[41] Taken from the same unpublished translation as note 33 above.
[42] I do not wish to imply that the social can be reduced to individual brains, or that brains, in some manner, are the source of the social. I merely wish to make the (to me) obvious point that the actual processing of social information can only be accomplished through actual brains.
[43] See also Derrida (1997) Part I, Chapter 2.
[44] The term 'nested set' is that used by Delanda (2000).
[45] It seems to me that Camus' *The Myth of Sisyphus* describes the human response to this paradox perfectly.
[46] Nietzsche makes a similar point in his originally unpublished essay 'On Truth and Lies in a Nonmoral Sense'.
[47] I make no apology for equating the mind and the brain, even though such an assumption would require another thesis (at least) to fully justify. Based on everything that I proceed to explain regarding the emergence of the self-conscious and social self I see anything other than such an assumption as introducing a dualism that is at odds with everything that I argue.

[48] The axiom of choice states that from every family of disjoint sets (sets having no members in common) a set can be constructed containing exactly one element from each of the given family of sets. It is independent of the other axioms and is rejected by some mathematicians.
[49] Serres also points out that the words addict /addiction are derived from the Latin 'addicere' – to declare.
[50] In this respect I am inclined to think that Schopenhauer makes a valid point when, in *The Fourfold Root of the Principle of Sufficient Reason*, he differentiated objects into four independent realms with independent means of reasoning. In this respect, only material things are subject to cause and effect; abstract concepts are subject to reason in terms of logic, but cannot enter into causal relationships.
[51] As abstract concepts their existence is that of a mental phenomenon. They do not exist outside of human brains; they are not Platonic in any sense – there is simply no evidence to suggest such an existence.
[52] *A Thousand Plateaus* was originally published (in French) in 1980, and *Genesis* in 1982.
[53] In discussing the introduction of the formal properties of completion into government practise (2008: 131) Foucault effectively describes their conversion from the formal into codifications.
[54] Immanence implies both an outgrowth of something that pre-exists internally and an emphasis on the mind – neither of which are implied by emergence.
[55] In *Genesis* (and many other places), Serres questions whether it is possible to make such clear boundaries: "I hear without clear frontiers, without divining an isolated source…" (Serres, 1995a: 7)
[56] This notion of a component part capable of being unplugged from one assemblage and plugged into another would also appear similar to Serres' notion of a 'black box' – a notion he identifies with the subsuming of multiplicities under unities. See Serres (1995a: 5)
[57] See, for example, his *A Thousand Years of Nonlinear History* (1997).
[58] Even though I argue for the uncertainty of process, I would justify my use of 'inevitable' by arguing that if it is attempted to illuminate as much variation as possible a certain social tension will be created that will gradually build until the pressure causes a breakdown. This breakdown is inevitable even though its time and place cannot be predicted.
[59] As Beatrice Han points out: "an analysis is needed of what the *individual* (as not yet formed subject) is as a point of departure for subjectivation. However, such an analysis cannot be found in Foucault's work." (Han, 2002: 166)
[60] In using the term 'univocity' I do not wish to imply any sense of monism. It does not refer to the 'oneness' of all things, rather to the fact that all 'things' are emergent and multiple – but emergent from a single process. In other words, quite literally, nature speaks with a single voice.
[61] This invokes what could be termed 'the fractal dimension', a self-similarity through scale.
[62] See also Canguilhem's description of the process of normativity (1991) ; also see Foucault's Preface to his *History of Sexuality Volume 2* in (2000: 200)
[63] I would suggest that these are questions that Foucault was unable to answer due to his attempt to understand the constitution of the self; the enacting of codes and techniques can only be performed by social subjects – but it was the emergence of the social subject that he was attempting to describe and which he could not therefore presuppose. See also note 49.
[64] For Foucault such a psychological attitude would imply the presence of a subject, a psychological individual that, in the *Archaeology of Knowledge*, he was trying to uncover the necessary pre-conditions for.
[65] Beartrice Han argues that Foucault offers no clear meaning of the term 'historical apriori' (2002: 38) and that this is because of the ambiguous position of the subject in his work. She suggests that it is a "nonanthropological version of the fundamental", a version of the "transcendental without a subject". (2002: 6) Han, though, does not appear to appreciate the importance of emergence. She accepts that the term refers to the conditions of possibility of the subject and the acceptability of truth though. To my understanding it refers to the historical (multiple and complex) conditions into which a being is thrown at birth, and out of which its subjectivity emerges. It forms, therefore, the necessary conditions of that subject, but it is historical and not transcendental.
[66] I do not wish to disregard Foucault's critique of the subject, but, at the same time, I cannot avoid making the obvious statement that social actions are only performed by particular actors in particular situations. I do though think that there is a way to explain the emergence of the subject that would satisfy Foucault's concerns whilst remaining at the local level. This I do in sections 4.3 and 5.1.

[67] Searle is critical of Foucault for the opposite reason. He writes that "not all of Foucault's examples seem to be able to satisfy our constraints of exactness and intentionality. We cannot say who exactly is exercising power over whom and what exactly is the intentional content of the exercise." (2010: 154)
[68] Or, perhaps, this is something his interpreters are more guilty of. Perhaps he intended no more than a descriptive account. As Han points out, in *The Archaeology of Knowledge* Foucault: "proposes to study discourse at level of the purely discursive, with no referent, to analyze the 'discursive practices from which one can define what things are and identify the use of words'" (2002: 53-4). He therefore accepts a nominalism and a discursive methodology. However, such description does not account for any causal relation.
[69] In addition to the comments of note 12, a map, in this sense, acts as a guide to living. The absurd paradox of living is that our survival depends on our ability to make predictions about the future state of affairs, whilst at the same time accepting our inability to make 100% accurate predictions. A good guide will reduce uncertainty to the minimum possible.
[70] This paper was referred to by Albertsen & Diken (2003) – so I have them to thank for bringing this wonderful paper to my attention.
[71] I do not take this to mean that a complete relativism applies. I would suggest that the contestation would result in a process of normativity not unlike that described by Canghuilhem (1991).
[72] Serres argues that we need to renegotiate our relationship with the Earth in *The Natural Contract*.
[73] It is worth noting that the problems highlighted here also apply to that other favourite explanation used by politicians and some social scientists, namely values, particularly 'British values'.
[74] I do not wish to be totally dismissive of statistics. 'Statistical mechanics' and 'population theory' are of great value, but only as a descriptive method – of allowing certain trends and phenomena to be seen that otherwise would go unnoticed. They do not, however, have any direct causal influence – though there may be indirect influences through various feedback routes. Statistics, therefore, have a greater value in sociology that social ontology.
[75] But do not let us forget that the importance of imitation can be traced back to at least Aristotle: "Imitation is natural from childhood, one of his advantages over the lower animals being this, that he is the most imitative creature in the world, and learns at first by imitation." (*Poetics* 4)
[76] I accept that this is a somewhat simplified claim, but a more detailed examination of the role of genes would be too much of a diversion. Stuart Kauffman's critique of the emphasis on replication in the process, outlined in section 5.2, does go some way to rectify this.
[77] Serres makes frequent reference to the Greek myth of Penelope, and her endless task of weaving and unweaving.
[78] Foucault would not disagree. In *The Archaeology of Knowledge* he points to the applicability of his description to events beyond discourse.
[79] For an explanation of the difference between 'normal' and 'normative' see Canguilhem (1991).
[80] Although Wrong does not make this claim, I would suggest that the value of this ambiguity points is that it is indicative of the complexity that lies behind intentional relations.
[81] Expectations had a significant role within the economic theory of Keynes (see Skidelsky, 2010). It would be interesting to apply this virtual / actual distinction to this theory.
[82] It is also interesting to note that in commenting on the role of imitation Mead also refers to Tarde.
[83] It is a 'centre of experience', what Deleuze has referred to as a 'pre-individual singularity' – a biological centre (a brain) that has yet to develop self-hood.
[84] I refer here to the *noise* of the social milieu, not the 'internal' *noise* of the pre-social.
[85] In this sense Sartre was correct in making a link between consciousness and nothingness.
[86] For possible models of this see Churchland (1992).
[87] As I've already noted, in this sense at least, Sartre was correct: consciousness is, 'in-itself', no-thing. What he didn't realise, of course, was that this was a relative nothingness emergent from the materiality of the biological being.
[88] For a neuro-biological description of how this works see Churchland (1992), particularly chapter 10 and 'prototype activation'.
[89] I am not suggesting that ostensive learning is the only method of learning, but I am suggesting, in line with Quine (1965), that objects need to cause sensory stimulation, and thus engender stimulus meaning, in the early stages of language learning. Quine's use of such terms as 'pre-

linguistic space' and 'to weight qualitative differences unequally' (1965: 83) also suggest a degree of agreement with this thesis.

[90] Although these appear to be very different things, it will be my argument that in fact they are all the emergent effects of varying degrees / types of codification of *expectations*.

[91] Quine (1965) makes the same point regarding the Indeterminacy of Translation. His analogy of two bushes cut to identical shapes, yet held together by completely different patterns of branches is particularly illustrative of this point.

[92] This 'translation' across academic boundaries is central to the entire work of Serres. *In The Birth of Physics*, for example, he reprieves the physics of ancient atomism as 'the science of relations'. Serres' isomorphism is derived from a such univocal understanding of relationships.

[93] In *The Birth of Physics*, Serres refers to this flow by the most energy conserving route as the thalwig – the route of the quickest descent.

[94] See Latour (2005).

[95] In this sense I agree with Searle when he argues "that all of institutional reality is created by linguistic representation." (2010: 14) However, the danger with this general linguistic approach is that expressed by Serres' critique of abstraction and the philosophy of language.

[96] Serres makes this distinction in *The Birth of Physics*. Martian law represents transcendent law; law that in some manner exists outside of the system it controls – as opposed to the emergent law of Venus. The trouble with the former is that it is understood in absolute and atemporal terms – terms that are unresponsive to changing circumstances.

[97] Serres, as I have already noted, accepts the importance of language, but does not directly refer to the emergence of the social. Others, like Searle, whose formalism I would otherwise critique, do stress the fundamental importance of language.

[98] For a more detailed account of language learning see Quine (1965), particularly chapter 3.

[99] An interesting ambiguity emerges here. As all systems are effectively open systems the question may arise as to where a system ends and its milieu begins. Any answer to this question is, in a sense, both arbitrary and pragmatic. For some systems (such as biological beings) it is fairly obvious, but for others (like communities and societies) this is less so. For the purpose of this thesis the only relatively obvious 'system' is that of the emergent social subject, purely because each human brain becomes the centre (the attractor) of organisation.

[100] See Skidelsky (2010).

[101] I am referring, of course, to his writings on The Absurd, particularly his *The Myth of Sisyphus* (2005).

Appendix

The Role of Expectations in Social Change: Project Report

1. Aims and methodology

The aim of this project was to work with a local social sector organisation that made interventions to promote social change (e.g. regeneration). It was our hypothesis that such organisations tended to develop both the overall aims / outcomes of these interventions and the actual practices of that bring them about. However, despite policy and practice decisions being evidence based (normally based on reports of what has worked in similar situations elsewhere) we believed there to be a lack of understanding as to the detailed process that links practice to outcomes, in particular regarding *the object of intervention*. Our research suggests that practice actually intervenes on people's *expectations*; a term we take to refer to embedded sets of complex relations that undermine any simple understanding of cause and effect. This research further suggested that these expectations display many characteristics of complex systems, including self-organisation. It was our aim for these research findings to be examined in a concrete setting and then used to develop guidelines that will enable more effective interventions to be made in the future.

An initial meeting was arranged with Conrad Parke, from Regeneration West Midlands, to discuss the feasibility of this project working with a local regeneration scheme, and if so, who should be contacted. The outline project met with a very positive response. We were informed that there were three regeneration projects running in Stoke-on-Trent (covering the town centres of Stoke, Longton and Burslem), and were advised it would be best to focus on Burslem, as it was the most developed. We were given the contact details of Julian Read, the manager of the Burslem project (Burslem Regeneration Company). An initial meeting was then arranged with Julian to explain our project and to discover details about the structure of both his and the other local regeneration projects. It was agreed that we would interview him, his two full-time project workers, and the chair of his regeneration company.

We also decided that we should interview the managers of the other two local projects, to get a wider perspective, and also the Programme Manager from

the City Council who had overall responsibility for all three projects. All these interviews took place except for that with the Programme Manager, which proved impossible to schedule. The interviews were semi-structured, and were based around the following four questions:

1. What is it you are trying to achieve?
2. How will you know whether you have achieved this?
3. What is it that you do, on a daily basis, to achieve this?
4. In your daily work, what is it that you are trying to change / affect?

These questions were constructed to try and uncover the *object of intervention*, even if such an *object* was not recognised as such.

2. Evaluation of theoretical research findings against practical research findings

The PhD thesis (*Social Chaosmos*) that provided the theoretical background to this research project drew heavily on the emerging science of complexity theory and its application to social systems. This was not a completely novel approach, and both this thesis and this research project were informed by an existing retrospective "case study of a process of sustained regeneration which took place on a severely deprived estate in West Cornwall" carried out by the Health Complexity unit at the Peninsula Medical School (Durie, Wyatt & Stutely, 2007). This study used "complexity theory as the theoretical framework with which to understand a community regeneration process." Both this case study and *Social Chaosmos* drew heavily on Paul Cilliers' *Complexity & Postmodernism* (1998) for our understanding of complex systems, though the thesis, in attempting a translation of these ideas into a social ontology added significant elements into the description. Rather than provide a list of the key features of complexity theory here, we refer the reader to either of these two works.

Regarding social regeneration, however, *Social Chaosmos* restricted itself to a description of a 'natural' self-organising social process – one that occurs relatively spontaneously, i.e. without the planned intention of regeneration. By self-organisation we mean a process whereby the internal organisation of an open system increases in both complexity and structure without the guidance or management of an outside source. As Cilliers notes, this "is a process whereby a system can develop a complex structure from fairly unstructured beginnings" and adapt that structure "in order to cope with

changes in the environment" (1998: 12). In this sense, then, *Social Chaosmos* only provides a background theory for the emergence of the social system. It does not, not directly at least, comment on how to intervene into that process – on how to subject the system to guidance or management from without. However, it does provide the concepts from which such an intervention could be developed. The question becomes, therefore: How do you intervene in such a process to achieve particular, desired structures? How do you affect the emergence and development of people's *expectations*?

It is regarding this point, the *object of intervention*, people's *expectations*, that a practical problem arises. The sense in which *Social Chaosmos* uses the term *expectation* is very particular and novel, and it would be unrealistic to find direct evidence that this was the intended object of intervention in any actual regeneration project. However, even though it is not a widely accepted or used term within the social sciences, it would still be applicable in the sense used by Wrong (1995) as the actual expectations people have of what will or should happen in a given circumstance. To this extent, the results of this research project did provide some evidence to suggest that the theoretical focus on *expectations* can be useful and effective.

Two points need stating from the outset, however. First, none of the three project managers interviewed could cite any theoretical perspective from which their strategies or actions took shape or direction. Each appeared to be working on the basis of what one termed "an intuitive sense", which we took to mean a mix of relying on their own personal knowledge, experience and skills of assessment, together with an assessment of "what works in other areas". As one of the managers explained, there is generally an attempt to distil 'best practice' from initiatives that have taken place in other areas of the country – though it was pointed out that it was "difficult to prove success". This last point we interpret as an intuitive grasp of the non-linearity of the regeneration process. By 'non-linearity' we refer to the difficulty of identifying a direct causal link between a given state and the circumstances that brought it about; that there is no straight-forward linear link between the two. This means that for any accepted 'successful' project (one whose 'outcomes' are to be replicated) it is next to impossible to state the causes of those outcomes; that even if an accurate set of 'causal' factors could be isolated, there is absolutely no guarantee that in a different environment they would produce the same effect. This problematizes the value in identifying such successes in

one socio-geographic area as a method of identifying possible causal features of successes in another such area, even though such research may provide certain insights. One manager told us that the “picture is so complicated”.

Second, due to this lack of a theoretical regeneration framework, there was nothing, in a theoretical sense, to compare our own theoretical framework against. Consequently, we are only too aware of the tendency on our part to offer an interpretation ‘that fits’ our own purposes. We took some care to try and not lead answers in the direction, or in the terminology, that made an easy fit into our own, but, due to this lack of a theoretical framework on their part, their answers were in ‘every-day language’, which lacked the precision of a more technical ‘jargon’. Some degree of interpretation on our part was, therefore, inevitable.

Having said that, in trying to ascertain what it was that they believed they were working to change, to actually make an intervention on, all their answers were easily interpreted as various descriptions of *expectations* – albeit *expectations* that have undergone at least some degree of codification such that they were much more in line with the term as used by Wrong (1995), as the actual expectations people had of what will, or what should happen. What perhaps was of more significance was the absence of a strong consensus as to anything different; no person interviewed had a firm opinion on what this certain something was. One manager actually talked of “translating expectations”, in the sense that in meetings with local politicians there was a need to match the expressed ‘expectations’ of the community to those who had the political power, and the “matching of expectations”, this time in the sense of community expectations to those of potential economic investors. Other general terms used in this context were: motivation, public opinion, vision, belief, hope, aspiration, perception, and attitude – all of which can be interpreted as various codifications of *expectations* as so described.

There also existed amongst those interviewed what could only be described as an intuitive understanding that the communities that they were working with were complex systems, at least in terms of a high degree of connectivity. One project worker, for example, talked of trying to create communication networks between local traders and various resident and community groups, of trying to encourage the exchange of information, of getting different groups of people talking to each other.

One of most frequent comments made by all those interviewed was the existence of a strong negative attitude towards the City Council, an attitude that was often cited as the biggest obstacle to regeneration. There appeared to exist a widely held belief that whatever the council decided to do or support was, by definition, wrong; this has become the starting point of public opinion, a condition that needs overcoming for any Council led or supported project to succeed – in other words, there exists a strong prejudice against the City Council. Another often cited problem working against regenerative success is the existence within the City of a strong sense of parochialism; that individual communities see themselves as exactly that, as individual, with the members of these communities having a stronger sense of affiliation with their community than with their City or region, to the extent that they often appear to be in competition with other communities within the City – a situation perhaps not helped by there being three regeneration projects, each focused on a separate 'town', rather than one for the City.

In complexity terms, these key features, the prejudice against the City Council and the strong parochialism, could be cited as examples of sub-systems that have become 'locked-in', that the codes that hold the sub-system together have become, in a sense, over-coded, and are approaching that mechanistic state where stagnation threatens. This is a double-edged sword. Such an over coding is often the result of a lack of communication with other communities in the first place, but once established, through repetition and habit, it works against such communication. The solution, in part at least, is exactly as proposed – the creation of communication networks. These should allow for an increased 'flow' (or more accurately, according to *Social Chaosmos*, the greater opportunity for a catalytic effect for change brought about by contact with others from different communities or backgrounds) of expectations from the wider community and the building of trust and understanding with the City Council. This, though, would be more effective, in regeneration terms, if it took place within structures that allowed contact and communication with communities in other cities that have been involved in successful regeneration schemes themselves, and if the communication networks allowed for a greater degree of practical involvement by members of the community. This last aspect was not addressed by *Social Chaosmos*, but it was significant in the retrospective case study conducted by the Health Complexity unit. From our perspective, it emerged in and through a

consideration of how the research into expectations in *Social Chaosmos* could be applied, which can be taken as evidence that the research will have a practical dimension.

In the Health Complexity unit's case study, such locked-in behaviour was a very significant factor in the economic, social and health decline of the estate, and was cited at clear evidence of "path dependency of both agency representatives and residents". The case study explains that typically such locked-in behaviour occurs: "when there is insufficient experience of different outcomes to persuade elements within the system to experiment with alternative behaviours; and when local experience reaffirms the expediency of current behaviour patterns. Current behaviour is thus exacerbated or strengthened through the effect of reinforcement by [negative] feedback loops" (Durie et al, 2007: 8).[1] Two related solutions were offered to this problem. First, citing Buchanan (2003), it notes that "social network theory suggests that, for the most part, we maintain strong connections to those who are close to us, such as immediate family and neighbours, and that the effect of these relations is to reinforce current views and behaviours." It proceeds to suggest that the potential for change is facilitated through a system of 'weak connectors'. These, in contrast to 'strong connectors', "link people who are mere acquaintances", people who can facilitate the formation of further acquaintances. Without such connections, it points out, social systems lack "the potential for any examples of innovative behaviour", behaviour that has the potential to influence small internal sections of itself with the possibility of such innovative behaviour spreading through the whole system (Durie et al, 2007: 8). Second, it was noted that in the case study, a decision was made to hand over a large degree of control of the regeneration process to the residents themselves. This, the report noted, "was seen as very significant by both the statutory agencies and the residents" (ibid: 12). This, it argued, was due to "the way in which problems and needs emerge" out of "the self-organising nature of the behaviour of the community" and the regeneration partnership. It states that the evidence from their case study suggests "that the process of discovering, and responding to, problems is itself a 'creative' process." This, the report writers believed, was "amongst the most significant" of their findings. "It challenges", they write, "our dominant understanding of how problems function, and, as a consequence, of how we should think about the process of solving problems" (ibid: 15).

To return to the subject of this report, there was clear evidence that due to local 'over-codification', subsystems within the Stoke-on-Trent community, if not the community in general, have become locked-in, and that such a situation makes successful change or re-organisation unlikely or very difficult. There was evidence that the local regeneration projects did look towards other projects, to what works elsewhere, to 'good practice'. There was also evidence of project workers trying to establish communication channels between different groups within the City, but not directly with other 'successful' regeneration areas, and there was no evidence given to me of more direct involvement. The problem with this limited engagement with examples of 'good practice' occurring in other areas is that when local project workers translate their understanding or interpretations of this practice into a number of clear approaches to be applied locally, with the best of intentions they effectively codify the dynamics that produced this success. To avoid this, local people need to be directly engaged and involved in the regeneration process. This way their own *expectations* are directly and practically engaged with the 'reality' of the situation. And ideally, these people need to have direct contact with people involved in other regeneration projects; they need to develop 'weak connections' that facilitate engagement with innovative practices. Direct contact with new, different, and broadly successful, role models creates the conditions for expectations to be re-organized.

In summary, regarding these local regeneration projects, we would say that there exists an intuitive understanding of the social dynamics that lie behind the communities that are the subject of regeneration. As a general point it may be advantageous if staff involved in these projects, particularly those working at the planning and strategic level, had a greater understanding of complex systems. The single most significant factor affecting these projects, however, was the extent that the communities showed indicators of being in a 'lock-in state'. This needs overcoming before any significant regeneration can take place. To this end we would strongly recommend that clear emphasis is placed on the development of the communities' weak connections, and on the direct involvement of members of these communities not just in problem solving, but in discovering for themselves what these problems are.

3. Possible Evaluation Model

If we focus on the actual process of social self-organisation, there are two main aspects: the process of codification, and the catalytic effect of other social actors. If we extend this focus to an attempted intervention, to a directed re-organisation, two further aspects emerge regarding the catalytic effect: the relative balance between 'strong' and 'weak' social connections, and the degree of direct involvement in this re-organisation. If we want to develop a model for evaluation such an intervention project, therefore, three main areas of interrogation emerge:

1. The process of codification.

Codes are a blunt tool for the shaping of social structures; they are too general and not sufficiently focused on the local situation. There is, most importantly, an inverse relationship between the degree of certainty of outcome and the degree of creativity needed to achieve that outcome. It is possible to put codes in place that facilitate the process, various rules and regulations, but at the risk of dampening a creative and emergent response.

2. The extending and strengthening of weak social connections.

This makes it possible for the social actions of others to serve as a kind of template to assist in the self-organising process. More specifically, they act as catalysts, encouraging individuals and groups to explore alternative and possibly innovative initiatives (what Kauffman calls 'adjacent possibles'), thereby reducing the relative strength of the 'strong connectors' that lock the system into negative feed-back loops.

3. The degree of involvement of members of the community.

Members of the community should be directly involved in the regeneration process, not just by exploring problems and possible responses, but by being actively involved in identifying problems. This should be approached as a creative process, one that challenges the expectations of those involved through the discovery of problems.

From these three areas of interrogation a number of models for regeneration projects can be constructed. At the 'ideal' end of the spectrum the project and its funding would be largely handed over to the community. This would initially require the recruitment of number of members of the community who had both the necessary organisational / communication skills and who were respected by the community who could act as organisers. The aim, though, would be for the community itself to investigate their needs, decide for themselves what their problems are, and then construct solutions to these problems. Support and advice should be made available, but not imposed.

If this was thought to be too much of a 'leap of faith', a more planned and controlled model would involve the co-opting of a number of community members with the appropriate skills and respect onto the regeneration project. They would form, along with others appointed by the fund holders, a steering, planning and decision making board. They should (ideally) be full-time paid members, should have full and equal decision making rights, and should be involved in researching projects taking place in other areas. They should also organise wider public meetings and consultations, and provide feedback to their community.

As a bridge between these two models, it would be useful to allow a number of small projects suggested by the community to ahead, even if they were thought to be trivial or not economic by the above board. These projects should be run and organised by members of the community recruited for the purpose, and funds should handed over to them. The economic viability of these projects should not be of importance. Their value should be understood in a number of ways:

- As directly engaging the community with the problems they face
- As ways of 'kick-starting' a self-organising process
- As ways of developing inter-group communication
- As a means of directly experiencing the need to develop communication skills
- As stepping stones towards the more ideal of the two models given above
- As a way of building trust between the community and those in positions of power

Six key theoretical concepts need to be held onto when designing each project:

1. It must be understood that any successful structure needs to be emergent, and not imposed.
2. The presence of others from outside the community will be necessary in order to act as catalysts to the self-organising process.
3. The problems to be solved need to be discovered by the community themselves.
4. The inter-connectedness of these problems needs to be born in mind at all times.
5. The relationships between causes and effects are non-linear.
6. Due to 4 & 5, *all* suggestions from the community should be taken seriously and given equal consideration.

From the above, there are a number of practices to be avoided:

1. An over analysis of the causes of particular problems and issues that channels discussion in advance, and gives more weight to certain factors than others.
2. The imposition of ready-made solutions.

An evaluation model would, therefore, be developed from the above numbered points, together, perhaps, with an assessment of the degree to which staff at the strategic or planning level understand complex systems. What becomes very obvious, of course, is that such an evaluation model itself then needs to become the subject of a further, far more rigorous evaluation.

4. Report summary for *Burslem Regeneration Company*

We would first of all like to thank all the managers and project workers (and Ed York, the chair of the Burslem Regeneration Company) for their cooperation with this project.

From the responses we received in the six interviews we conducted (four with members of the Burslem Regeneration Company, and two with the managers of the other Stoke-on-Trent projects) we learnt the following:

- That the 'object of intervention', that which the projects were attempting to influence in order to achieve their objectives, were people's expectations. This conclusion on our part, however, involved a

degree of interpretation due to the fact that there did not exist any other clear theoretical framework in which the projects could be explained.

- That despite having no obvious familiarity with complex systems the project workers / managers appeared to have an intuitive understanding of such systems, at least in as far as they appreciated the need to develop communication networks within the communities.
- That the single most important phenomenon that appears to be mitigating the success of the projects can be explained, and possibly resolved, using complexity theory / social network theory. The prevalence of a very negative attitude towards the City Council and a strong sense of parochialism can be understood as examples of what is termed a 'locked-in state'. We explain this below.

Members of communities tend to maintain 'strong connections' with those they are close to, such as immediate family and neighbours. These 'strong connections' or 'strong expectations' are established through repetition and habit and tend to reinforce current views and behaviour. If these 'strong connections' dominate the communities become 'locked-in' to existing behaviours and attitudes. Communities that are creative and amenable to change have these 'strong connections' balanced by a large number of 'weak connections', as it is through these that the potential for change is facilitated. 'Weak connections', in contrast to 'strong connections', link people who are mere acquaintances.

We appreciate that it was not in our remit to in any way evaluated the practices that were described to us. If, however, we were asked to make recommendations, these would be:

- The development of 'weak connections' between the target communities and those where successful regeneration has taken place. This, we believe, would help balance the dominance of 'strong connections' and allow different 'expectations' to be created.
- The direct involvement of members of the community, not just in working to overcome problems, but in actually discovering for themselves what these problems are. This would require a level of involvement that goes beyond consultation. If people are simply asked their views and opinions their expectations are not challenged to any perceptible degree. If, however, they are directly involved in problem

solving (and ideally problem discovering) then their expectations are directly engaged, and they will be an incentive to view their local environment in a more positive light.

- Managers to have some training regarding complex systems and social network theory.

We would, of course, be willing to explain any of these points in greater detail if it was considered of value.

Kelvin Clayton
David Webb
28th March, 2011

[1] The actual report reads “positive feedback loops”, which I take to be an error. As this report itself states earlier (page 4): “Negative feedback works to return a system to specified initial conditions...positive feedback amplifies divergences from these initial conditions.

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