

**Potential Economies:
Complexity, Novelty and the Event**

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Summary

The primary concern of this dissertation will be to understand under what conditions novelty arises within a system. In classical philosophy, the notion of novelty is usually said to arise out of an event. However, the notion of an event often carries with it metaphysical and conservative implications. Therefore, part of the concern of this dissertation is to begin to develop an approach to novelty which is not dependent upon the event. This approach is developed through the insights offered by Critical Complexity and post-structuralist philosophy.

In social science the model of the frame has dominated how to think about the limitations to the context specific nature of knowledge. Instead of the analogy of a frame, this dissertation argues that it is better to adopt the notion of an 'economy'. This is due to the fact that the notion of an economy allows social scientists to better theorize the relationships which constitute the models they create. The argument for an economy is made by exploring the connections between the work of Jacques Derrida, the complexity theorist Edgar Morin and Georges Bataille.

However, when using the notion of an economy, one must always take the excess of this economy into consideration. This excess always feeds back to disrupt the economy from which it is excluded. Using terms developed in complexity theory, this dissertation illustrates how a system adapts to the environment by using this excess. Due to this there can never be a comprehensively modelled complex system because there are always facets of this system which remain hidden to the observer.

The work of Alain Badiou, whose central concern is the notion of novelty arising out of an event, is introduced. The implications of depending on the event for novelty to arise are drawn out by discussing the affinities between the work of Derrida and Badiou. In this regard, Derrida's use of the term 'event' much more readily agrees with a complexity informed understanding of the term in contrast to the quasi-religious definition which Badiou uses. This complexity-informed understanding of the event illustrates that what the

event reveals is simultaneously a dearth and wealth of possibilities yet to be realized.

Therefore the event cannot be depended upon to produce novelty.

However, the notion of the event must not be discarded too quickly; classical science has traditionally discarded this idea due to its reductive approach. The idea of process opens up an understanding of the radical novelties produced in history to the possibility of the event and to a new understanding of ontology. This dissertation proposes that one can begin to think about radical forms of novelty without the event through the notion of experimentation. This approach allows one to engage with what exists rather than relying upon an event to produce novelty. This argument is made by following Bataille, who argues that through an engagement with non-utilitarian forms of action, by expending for the sake of expenditure, the world is opened up to possibilities which remain unrealized under the current hegemony. In this light, this dissertation begins to develop a definition of novelty as that which forces a rereading of the system's history.

Opsomming

Hierdie proefskrif onderneem hoofsaaklik om die omstandighede waaronder nuwigheid binne 'n stelsel ontstaan te verstaan. Daar word in die klassieke filosofie voorgehou dat nuwigheid gewoonlik vanuit 'n gebeurtenis ontstaan. Die idee van 'n gebeurtenis hou egter dikwels ongewenste metafisiese en konserwatiewe implikasies in. Hierdie proefskrif onderneem dus om, deels, 'n benadering tot nuwigheid te ontwikkel wat onafhanklik van die gebeurtenis staan. Hierdie benadering word verder uitgebrei met behulp van insigte vanuit die Kritiese Kompleksiteits- en Post-Strukturalistiese filosofie.

Tot onlangs het die model van die raamwerk die wyse waarop daar oor die beperkinge van die konteks-spesifieke aard van kennis in die sosiale wetenskappe gedink word oorheers. In hierdie proefskrif word voorgehou dat die idee van 'n 'ekonomie' in plaas van die analogie van 'n raamwerk hier gebruik behoort te word, omdat dit ons sal toelaat om die verhoudings binne die modelle wat deur sosiale wetenskaplikes gebruik word beter te verken. Verder word die moontlike verbande tussen Jacques Derrida, die kompleksiteitsfilosoof Edgar Morin en Georges Bataille teen hierdie agtergrond verken.

Wanneer daar van 'n ekonomie gepraat word, moet die oormaat van die ekonomie altyd in ag geneem word. Hierdie oormaat ontwig altyd die ekonomie waarby dit uitgesluit word. Om te wys hoe die stelsel van so 'n oormaat gebruik maak om by sy omgewing aan te pas, sal terminologie wat in die konteks van kompleksiteitsteorie ontwikkel is gebruik word. As gevolg van die oorfloed binne 'n stelsel sal daar nooit 'n volledige model van die stelsel ontwikkel kan word nie -- fasette van die stelsel sal altyd vir die waarnemer verborge bly.

Verder sal die werk van Alain Badiou, wie se filosofie rondom die idee van nuwigheid wat uit 'n gebeurtenis ontstaan gesentreerd is, in hierdie verhandeling bespreek word. Die implikasies van die idee dat nuwigheid van die gebeurtenis afhanklik is word uitgelig deur die verwantskappe tussen die werke van Derrida en Badiou te bespreek. Derrida se gebruik van die term 'gebeurtenis' dra 'n noue verwantskap met kompleksiteitsteorie, en dit word teenoor Badiou se amper-godsdienstige gebruik van die term gestel. Daar word aangevoer dat daar binne 'n kompleksiteits-ingeligte verstaan van 'n gebeurtenis beide 'n skaarste en 'n

oorvloed van moontlikhede bestaan wat vervul kan word. Daarom kan daar juis nié op die gebeurtenis staatgemaak word om nuwigheid te skep nie.

Die idee van die gebeurtenis moet egter nie te gou verwerp word nie. As gevolg van die klassieke wetenskap se reduksionisme is die idee van 'n gebeurtenis tradisioneel ontken. Daarteenoor ontsluit die idee van 'n proses die moontlikheid van radikale nuwighede in die geskiedenis as gevolg van 'n verstaan van die gebeurtenis wat tot 'n nuwe verstaan van die ontologie lei. Hierdie proefskrif stel dus voor dat ons voortaan aan radikale nuwigheid dink in terme van die denkbeeld van eksperimentering eerder as in terme van die gebeurtenis. Eksperimentering laat ons toe om te werk met wat ons het, eerder as om op 'n gebeurtenis te moet wag. Na aanleiding van Bataille is die voorstel dat daar deur om te gaan met nie-utilitaristiese vorms van optrede nuwe geleenthede vir die wêreld oopgemaak word; geleenthede wat onder die huidige hegemonie ongerealiseerd sal bly. In hierdie verband stel die proefskrif 'n definisie van nuwigheid voor as dít wat mens dwing om die geskiedenis van 'n stelsel te herformuleer.

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Preface

This dissertation aims to lay the groundwork for a theory of novelty which is not tied to the notion of an event. As will become clear, the current neo-liberal hegemony under which the world labours is forcing us into an increasingly restricted framework with dire consequences. The detrimental social and environmental impact of capitalism demands that we begin to develop alternative modes of living in the world. At the same time, 'classical' approaches to producing novelty are insufficient for reacting to the conditions of the day. As I will argue in Chapters Three and Four of this dissertation, this is because of a reliance on a set of metaphysical assumptions which revolve around the concept of the 'event.' In classical philosophy the idea of the event has held a central position in any demand for the new to arise. In order to be surprised, in order for radical change to occur, there must be some radical disruption of the everyday. Otherwise, we would only be faced with the modification of that which is present. For something to be novel implies that it must disrupt the present horizon of possibilities. Novelty then must arise out of an event. However, this classical understanding of novelty is beset with metaphysical assumptions concerning our understanding of the world and the disruption of the present. These metaphysical assumptions include that it is possible to understand an event without any prior experience of it. Because of this, it is necessary to hypothesize that the world is built upon a set of 'truths' which become accessible to us during an event (see Chapter Four). In the conclusion to this dissertation I argue that the hypothesis of truth as a stable ground for action leads to a form of conservatism¹.

¹ My concern with conservatism is twofold. Firstly, as this dissertation's concern is with novelty, conservatism marks the opposite pole of the attempt at newness. Secondly, due to the complexity of the world, it is ever changing. The increasing threat of climate change and economic instability demands that we come up with new ways to react to and live under these conditions. Conservatism forsakes us to the conditions of the present (see the conclusion to this dissertation) and hence undermines our ability to mitigate the damages of these changing conditions.

Alain Badiou exemplifies such an approach. As will become clear, for Badiou the notion of an event is meaningless unless it is accompanied by the revelation of a 'truth.' Due to the dominance of arguments concerning the impossibility of separating novelty from the event, I spend a fair amount of time explicating Badiou's philosophy, especially as it relates to the notion of an event. I do this in order to better illustrate what is at stake in the notion of an event for thinkers who want to think through the possibility of novelty's eruption into the present. We must understand what is at stake in thinking about novelty as depending upon an event, what is gained and lost by the adoption or rejection of this term. As I will show, by not relying on the term 'event' as the sole harbinger of change, I hypothesise that we can develop a theory of novelty which will allow for individual praxis and agency without having to wait for the truth, or an event, to inspire this need for change. In this regard, removing the term 'event' from our thinking about change will possibly lead to the development of a theory of praxis which starts with the here and now; this is what I aim to develop in Chapter Five around the idea of experimentation. Furthermore, I will argue that the dependence upon an event for radical change in fact leads to a type of conservatism where all action must be measured against a hypothesised 'truth' rather than being free to adapt to changing circumstances. As I will argue, the reliance on an event creates a measure for future actions based on the conditions of the present. This results in a state where all our decisions are made by a measure defined in the past and hence limits our ability to create true novelty.

However, despite the considerable attention I grant to the work of Alain Badiou (this is partly due to his newness to English speaking audiences) the main philosophers whose work I am concerned with here are Georges Bataille and Jacques Derrida. I adopt the approaches of these two philosophers as they provide us with unique insights into understanding complex systems. Thinking about complex systems is useful for this project as it gives us access to a set of tools and ideas underused in philosophy at present. As the object of this analysis is the development of a new political, economic and social order, it can itself be seen to be a complex system and therefore lends itself to analysis in these terms. However, it is also important to note that a systems-style of thinking has a long history in philosophy. I continue then in this history which aims to understand the world relationally rather than

atomistically. Both Bataille and Derrida aim to give content to a systems view of the world which is excessive. Both philosophers recognize the impossibility of a neat Hegelian dialectic which reincorporates all excess back into the system through a process of *Aufhebung*. Something always escapes the repetition of a system; an excess is always present². We can grasp this excessive understanding of a system by engaging with Bataille's notion of a general economy. The idea of the general economy, as read by Derrida, applies to our understanding of the simultaneously excessive and restricted nature of complex systems. I therefore argue that we can carry this understanding through to understanding how novelty is produced in complex systems without the notion of an event whilst maintaining a radical definition of novelty. This will allow us to escape the conservative and metaphysical consequences of philosophies which are built too strongly on the idea of an event, while at the same time maintaining a strong understanding of novelty as something that is not simply the product of change. The idea of an economy adopted here is borrowed from the tradition of critical philosophy. 'Economy', as the term is used here, allows us to think of the simultaneously excessive and restricted nature of complex systems. This allows us to explain how systems maintain robustness at the same time as having the ability to change. This dissertation then does not aim to economize our thought, or seek to reduce the world to economics. In contrast, the specialized use of the term I develop here is precisely to illustrate the impossibility of such a reduction to economics. Perhaps ironically, by developing the notion of a general economy I aim to illustrate the impossibility of economizing thought; I aim to illustrate the danger in reducing the world to an economics.

² As I will come to show, mainly in the first two chapters of this dissertation, this excess has consequences for the system and its ability to respond to unforeseen circumstance which may arise. I will also illustrate how this excess can lead to novelty (see Chapter Five).

Introduction

Critical Complexity

Since the Enlightenment science has held a space of privilege in Western thought. Classical science, built on the works of Newton and Galileo, along with the possibilities for reduction offered by physics, conceptualized the world as operating under mechanistic and atomistic principles. The problems we face in the world, under this conception, can be solved by looking for the underlying rules or atoms which universally constitute all phenomena. In other words, in a fashion which mirrors Plato, the role of science is to discover underlying laws or essences which generate and hence explain the world as we experience it. The only limit to our ability to find these laws was the state of knowledge at any time. These essences were assumed to exist. It is only our inability, limited by current knowledge, to discover them that is holding back our ability to completely explain the world. The demands of 'classical science' argue for the reduction and separation of disciplines. Due to the fact that the world is built upon essences, we must reduce and divide in order to discover the underlying atomistic principles which constitute it and by which we can comprehensively explain the world³. As Chu, Strand and Fjellan (2003:21) explain:

Science is largely dominated by a Platonist ideal. The essence of this ideal was established in mechanics by Galileo and its most important successes is [sic] maybe theoretical physics... Another element that is tightly woven into a Platonist/Galileian paradigm is the idea that natural systems can be separated into a relatively simple essence plus irrelevant perturbation or 'friction.' The latter acts like a curtain to hide the basic principles of nature's working. It is the craftsmanship of a good scientist

³ In this dissertation I will use the term 'comprehensive' as a shorthand for explanations which believe that a single explanation can describe the entire system and its workings. A comprehensive explanation is then one which is universal and does not depend upon the context in which the model was developed nor in which the system finds itself. I will illustrate such comprehensiveness to be impossible.

and modeller to be able to separate those components and to see the simple principles that guide natural phenomena.

This view of science regards the world as reducible and divisible into different essences which each object in the world has. It believes in the possibility of universal knowledge due to the fact that the job of the scientist is to reveal the underlying principles and essences which would explain all phenomena. It is this separation and reduction which has made possible vast improvements in the state of the human condition. The different fields of specialization allow us to produce knowledge about isolated phenomena found within that field. If we tried to comprehend the world *in itself* we would be left with nothing more than a meditative state. We therefore need specialization to improve upon and further knowledge. As Laszlo (1996:3) argues:

The specialist looks at carefully isolated phenomena: he is interested in how one thing affects another. He can compute the effect by looking at things as separate facts connected by some causal or correlative relationship... But there is one thing such knowledge cannot tell us, and that is how a number of different things act together when exposed to a number of different influences at the same time. And almost everything we encounter around us contains a large number of different things and is exposed to a number of different influences.

The problem we face with the current state of knowledge is that we need a method through which we can understand the relationships between different parts of a system⁴. The reductive approach can only bring us so far in better understanding the world around us. What current processes of globalization and global warming are bringing forth is that we need to develop means by which we can better understand the complexity of the world around us which is not reducible to some central or single essence. When we attempt to face the relationships between different parts of a system we come to the limits of the reductionist style of thought as it aims to separate and reduce. In contrast to the

⁴ See Laszlo (1996) for an introduction to systems thinking

reductionist, approach a holistic approach has been argued for (see Fodor & Lepore 1992, Jackson 2003, Lazlo 1996). The holistic approach argues that we cannot simply separate disciplines or reduce wholes to the parts which constitute them. We must rather look at the whole *itself*. Apart from being quite vague as to what exactly constitutes the whole, attempts at holism often lead to some form of mysticism which makes taking action in the world difficult as the whole takes on incomprehensible dimensions. A shortcoming of the holistic approach is that it is difficult to answer the question as to what exactly the whole *is*. Although providing an important critique of the reductionist model, the holistic approach makes similar mistakes to reductionism. Both assume that we have unmediated access to the objects we study and we can therefore easily study either the part or the whole. Both assume that the whole can be easily separated from its environment. As will become clear below, the problem with complex systems is that we can never neatly divide the world from our interpretations of it. We are always subject to some form of error.

A means for overcoming the shortfalls of both the reductionist and the holist approaches is to find means of presenting phenomena in a manageable form whilst keeping their complexity under consideration. In other words, we need a means of approaching problems which is neither essentialist/reductionist nor some form of vague holism. We need to develop an approach to the world which is neither essentialist nor idealist. One way to do this is to look at the models we create in order to deal with complex issues. Models, as Levi-Strauss (1966:24) argued, are helpful as they make the complexity of phenomena manageable, “the intrinsic value of a small-scale model is that it compensates for the renunciation of sensible dimensions by the acquisition of intelligible dimensions.” The model, for Levi-Strauss, smaller in scale than the phenomenon we are observing, creates distance from the scale of the problem we are observing but makes up for the scale through the fact that we are better able to deal with the problem we are witnessing. The phenomenon becomes more manageable by means of excluding some aspects of the system.

The modernist assumptions inherent in early forms of structuralism, like Levi-Strauss (1966, 1969) or Ferdinand de Saussure (1983), held that, despite the acknowledgement of

reduction on which models are built, the model still comprehensively explained the phenomena they were trying to understand. This is due to the fact that these models captured some underlying essential structure or law which defined the system. In this sense, reductionism can be defined as the belief that we are able to reduce “reality to ultimate particles as well as seeing ultimate particles, or simple systems, as representatives of wholes” (Rasch 1991:77). Reductionist science believes that we can take complex systems, such as societies or psyches, and find the underlying laws which will adequately be able to explain the entire system. In science this attempt was exemplified by the hope that mathematical algorithms could neatly explain any system we found in the world. Part of the possibility of such a reduction is the assumption that we can precisely divide and isolate the system we are examining from the environment in which we find it. The ambiance or environment of a system was considered as a secondary concern of the scientist. If the world is constituted by essences we can find these wherever we look, we need not concern ourselves with the world in which these essences are brought forth. In a certain sense this description of reductionist science maps quite neatly on to the modernist attempts to define social systems by some universal or essential principles or structure as is found in social science from the earlier part of the twentieth century (Durkheim 1982, Levi- Strauss 1966; 1969 [1949]).

In a certain way this attempt to reduce a complex problem or system to some essential law or principle discards the complexity of the problem (Morin 2007). As Mol and Law (2002:3-4) argue:

... [S]implifications that reduce a complex reality to whatever it is that fits into a simple scheme tend to “forget” about the complex, which may mean that the latter is surprising and disturbing when it reappears later on and, in extreme cases, is simply repressed. To talk in this way is to denounce simplification. However, although it is important to be suspicious of simplification in the modern world ... it is equally important to be suspicious of the standard ways of reacting to these simplifications, the denunciations of simplicity.

We cannot then simply dismiss complexity. If we cannot understand complex problems in their complexity, perhaps because of their scale or the nature of their interactions, and if we cannot reduce systems to some essential principles, we need some other means of thinking about this relationship between systems and our models of them. At the same time, as Mol and Law argue, we cannot simply dismiss simplicity for its own sake. As I have attempted to illustrate, we depend upon the simplicity of models in order for the world to be intelligible to us. We need to develop a means for dealing with the complexity and uncertainty of the world which commits neither the errors of reductionism nor holism. This approach, as I will argue for in this dissertation, can be referred to as 'General' or 'Critical' Complexity.

I am concerned with complexity as I believe that the phenomena we are examining here, societies, economics and political thought in general, can best be described by the model of complexity I am trying to develop. It is important at this point to give a better understanding of what I mean when I use the word 'complexity'. Peter Allen (2000:78-79) argues that complexity can be produced by two means: Firstly, the situation may contain an "enormous number of interacting elements making calculation extremely hard work, although the interactions are known" (79). This is the definition of complexity adopted by the school of thought spearheaded by the Santa Fé Institute. According to this definition of complexity it is possible to reduce complex problems to some mathematical algorithm due to the fact that we can measure all the interactions. This is a reductionist model as it believes that a system does not depend upon the environment for its existence. We can then neatly capture the system and, if we are clever enough or have fast enough computers, we can work the system out completely. This view of complexity argues for a quantitative approach to complexity in which the only difficulty is the sheer amount of interacting elements which constitutes the system. It is thus possible under this approach to complexity to reduce the system to an algorithm and thereby to neatly explain the system. This is an approach to complexity I will come to term 'restricted complexity'. The model of language developed by Ferdinand de Saussure commits this error. It argues that the words of a language constitute a network which gives each word its meaning (see below). For Saussure we could work out where each word was in this network and comprehensively model the language in question.

In contrast, the definition of complexity which I adopt (in line with Peter Allen 2000; 2001 and Paul Cilliers' 1998 use of the term) in this dissertation is a more 'qualitative' one. It agrees with Peter Allen's second reason for the production of complexity. Complexity, as will become clear in this dissertation, is more a product of the *nature* of the interactions between parts than the *amount* of parts and their interactions. It will be fair to say that the interaction between a husband and wife is more complex than the interaction between the many parts which make up the engine in your motor car. I can reduce the inner workings of my motor car to a manual which can comprehensively describe the processes at work. I cannot however reduce my relationship with my wife to a manual that will help me resolve marital hiccups, no matter how much I pray for such a manual. As I will illustrate, the possibility to say anything about complex systems always rests on a set of assumptions which one has to make in order to exclude some of the complexity from our understanding (Allen 2000: 80, Cilliers 2001:137). This implies that we can never have a comprehensive understanding of a complex system; we can never have a model which completely describes the system. Our views will always be partial⁵. This is a view of complexity which has come to be known as 'General' (Morin 2007) or 'Critical' Complexity.

To begin with, when we are faced with a complex system we must distinguish that system from its environment. In contrast to reductionist complexity, general complexity argues that the boundaries of a system are open rather than closed. In other words, reductionist complexity, based upon the assumption of some essential underlying law or principle, assumes that we can easily separate a complex system from the environment in which we find it. The boundaries of such a system are said to be *closed* as the system can exist independently from the world in which we find it. The argument from general complexity is that a system cannot be neatly separated from its environment as it is constituted by that environment. The system's boundaries are *open* due to the fact that the system relates to its environment. If we consider a human being to be a complex system, the place we grow up in, the food we eat or the language we learn to speak all constitute us as people. Every

⁵ For a good discussion of the characteristics of complex systems see Cilliers (1998:2-7)

aspect of human life I decide to analyze will always exclude the others. We cannot then neatly separate me from my environment because where we draw the line between the environment and the system would be a matter of choice for the person making the model rather than something intrinsic or essential to the system itself (Cilliers 2000: 27-28). This is because the system is constituted by these relationships. Chu, Strand and Fjelland (2003:23) argue that

[e]very definition of a system partitions the world into two parts, namely the *system* and its *ambiance*. Importantly, the idealization process that leads to a model does not only involve the simplification of the internal dynamics of the system, but also an idealization of the system-ambiance interactions.... No equivalent of ambiance can be present in the model *as ambiance*. If it were, it would simply have comprised an extra element of the system, enlarging the system boundaries. (Emphasis in original)

When dealing with complex systems, we are always dealing with models of these systems. This is because we cannot understand the system in its complexity. In order to make any sense of the complex web of relationships and interactions which constitute a complex system we must divide the system from its environment and then exclude parts of that system in order to get some kind of grasp of the phenomenon at hand. This implies that we cannot include a system's environment inside a model because then it would be constituted as part of the model and hence be seen as part of the system. It becomes difficult in this sense to draw the boundaries of the system. There is no determinate means of doing so; the construction of a model always involves choice. We can see then that modelling is a context-specific endeavour. The model we create of a complex system is determined by the choices we make in constructing that model. This contextuality is furthermore a product of the fact that complex systems themselves are contextual phenomena (25):

... [I]n real systems contextuality manifests itself often through the fact that its elements play multiple roles, fulfilling several functions across the boundaries of systems. In a certain sense, contextuality is a ubiquitous phenomenon: Given any

part of the world, it is always possible to find a host of different partitions resulting in different system definitions, i.e., establish some form of contextuality⁶.

It is this contextual and open nature of complex systems which resists their reduction to underlying essences. We cannot reduce the system to a model and assume that it will comprehensively describe and explain all the interactions the system may have. The model may be accurate for certain cases in certain contexts but this usefulness will be limited to these specific cases. For example, the attempt to reduce psychological disorders such as depression to hormonal imbalances in the brain may only successfully help a certain portion of the population. Depression induced by trauma or social circumstance for instance cannot be successfully dealt with by the introduction of these hormones when the social conditions which caused the trauma continue to prevail. We can see then that initial attempts or approaches at understanding complexity committed the same reductionist error discussed above. That is, these approaches assumed that a system could be neatly disentangled from its environment and then be reduced to some essential characteristics or laws which globally define the system.

Critical Complexity does not argue against reductionism *per se*. It is necessary to reduce in order for the world to be intelligible to us. We need to create boundaries –exclude certain aspects of the system itself and the environment of the system from the model we create– in order for the system to be intelligible to us. We cannot understand the world in its complexity. However, the boundaries we create of such systems are always provisional and depend upon the uses to which we put our models. (This does not mean that we can create just any boundary). There must be boundaries and limits in order for a system to exist. However, where you draw those boundaries and the status you accord those boundaries is what is at issue here. Critical Complexity is therefore interested in the limits to our knowledge; it helps us to understand the boundaries of our knowledge (see Allen 2000; Cilliers 2001:140-142).

⁶ Later in this dissertation I will offer a slightly different definition of context which more closely approximates Derrida's use of the term.

Philosophical Implications: Jacques Derrida

In many ways the debate between reductionist approaches to complexity and the Critical Complexity position I am adopting here follow the lines of the movement from structuralist to post-structuralist approaches to social science. Structuralist approaches, as exemplified by Claude Levi-Strauss's (1969) approach to anthropology and Ferdinand de Saussure's (1983) structuralist linguistics, came in reaction to attempts by social scientists to understand social life as constituted by basic units of analysis. Against the atomistic and essentialist approaches of thinkers such as Plato and Kant and those who drew inspiration from them, the structuralists attempted a more systemic understanding of social life. Similar to thinkers such as Aristotle and Hegel, the approach adopted was to understand the elements of social life *relationally*. That is, to understand how elements of social life are constituted by their relationships rather than by a singular essence. The structuralist move was to understand how the individual units of the social world took on *meaning* within the broader system in which they are embedded. That is, structuralism argued that a social phenomenon, for example a word for Saussure, takes its meaning from the relationship it maintains with other words. Rather than looking for some essential property to a term, the structuralists emphasize the relationships between words in order to explain their meaning. There are no positive terms, only relationships. Structuralism argues that we understand the world systemically rather than atomistically. Social life and meaning is constituted not by anything inherent within ourselves but by our relationships with others.

For example, in his *Cours de Linguistique Générale* (1983), Saussure argues that language consists of a system of signs and it is precisely this systemic nature of language which provides it with meaning. There is nothing inherent in a word which gives it meaning. What then gives a sign its meaning? Culler (2003:98-99) explains:

[Saussure] argues that signs are arbitrary and conventional and that each is defined not by essential properties but by the differences that distinguish it from other signs. A language is thus conceived as a system of differences... Now the more rigorously Saussure pursues his investigations, the more he is led to insist on the purely relational nature of the linguistic system... Indeed, he concludes that 'in the linguistic

system there are only differences, *without positive terms*'. This is a radical formulation. The common view is doubtless that a language consists of words, positive entities, which are put together to form a system and thus acquire relations with one another, but Saussure's analysis of the nature of linguistic units leads to the conclusion that, on the contrary, signs are the product of a system of differences; indeed, they are not positive entities at all but effects of difference. (Emphasis in original)

As radical and important as the intervention of structuralist thought was in social sciences it still held some reductionist assumptions. Levi-Strauss (1966) argued for a 'universal mind', that is, for the idea that all human behaviour and thought, although contingent on the relationships within which it finds itself, can still be reduced and explained by an underlying structure which is universal. In other words, for Levi-Strauss, underneath the complexity and diversity we experience at the surface of human interactions, was a structure which was universal. Levi-Strauss was inspired by the work Ferdinand de Saussure who argued that despite the fact that meaning is constituted by a system of differences, we can still *in principle* work out where all the differences lie and from there offer a comprehensive model of the system. In this regard structuralism, despite making an initial move against essentialist or reductionist attempts at understanding the world, could not move away from a model of science which believed in the necessity of making universal claims. Like reductionist complexity, structuralism posited that at least in principle we can find the underlying features of the world which explain all. This is because, like Saussure, they saw the systems they were trying to understand as being relatively stable in which each entity remained in its place. This was because, to borrow a term from cybernetics, these systems had to maintain *equilibrium* (Cilliers 1998:42). The thinking was that the meanings of words had to maintain a balance in order for the system to be possible. We could therefore work out the system because, although it could evolve over time, it did so in a neat linear fashion as each word had to evolve in balance with the rest inside a closed system.

Jacques Derrida saw the radical possibilities offered by Saussure's structuralist method in that this approach provided a critique of the essentialist and rationalist approach dominant

in Western philosophy⁷. Saussure's approach offered a critique of what Derrida (1997) labelled *logocentrism*. The logocentric view regards the world as reducible to some essential *logos* or reason. Saussure's system undermined the necessity for positive entities in language to which language can be reduced, thereby removing the possibility for producing a certain foundation (Culler 2003: 99). However, even though Saussure challenged the logocentrism of Western rationalism he did not take into consideration the metaphysical ground upon which his philosophy was built. Removing the positive foundation on which language was built implied that context had to be taken into consideration in order to understand how meaning is constituted. It is here that Derrida critiqued Saussure's model. As Cilliers (1998: 42) explains:

Derrida's critique of Saussure's description of the sign is related to his critique of a tendency in the whole tradition of western philosophy, which he calls the 'metaphysics of presence'. In the case of Saussure, the metaphysics of presence is affirmed by his insistence that the sign has two components, the signifier and the signified, of which one, the signified, is mental or psychological... This would imply that the meaning of a sign is *present* to the speaker when he uses it, in defiance of the fact that meaning is constituted by a system of differences. That is also why Saussure insists on the primacy of speaking. As soon as language is written down, a distance between the subject and his words is created, causing meaning to become unanchored. (Emphasis in original)

In Saussure's model words do not have a certain foundation. This implies that they are unanchored and thereby the possibility for misinterpretation is opened up. This is why Saussure prioritized speaking above writing as he believed there was a 'closeness' in speaking between the speaker and his meaning. For Derrida though, this unanchoring of meaning was not something that Saussure should have been concerned about. In fact, as Derrida illustrates, this distance between a subject and his words always exists; the meaning of words are always subject to interpretation due to the fact that a word's meaning is

⁷ For a good introduction to the work of Derrida and deconstruction see Culler (2003)

constituted by its relationships to other words (Cilliers 1998: 42-43). If we unanchor words in the way Derrida argues we should, we are left with a system which is open to play and change in ways which are different from Saussure's, yet these words maintain meaning.

Derrida 'opens' Saussure's system up by arguing for the contextual nature of meaning (see Derrida 1977). If a word's meaning arises from its relationship with other words solely, if the meaning of a word is not anchored then it takes on a temporal nature. The relationships between meanings carry with them a history of their previous uses in different contexts. We therefore understand the meaning of a word by its history of relationships formed in different contexts in relation to the context in which that word is currently being used. The fact that a word's meaning is unanchored and context-dependent does not mean that it can mean just anything. The meaning of a word is constrained by the *traces* that connect it to other words (Derrida 1981: 26). It can only carry meaning by maintaining a relative stability whilst at the same time being free enough to take on different meaning in different contexts. As I will argue in this dissertation, the notions of *iterability* and *différance* are key concepts to understanding the simultaneously constrained and liberated nature of the meaning of a word (Derrida 1977, 1997 [1974]).

What is important to note from this brief discussion of Derrida is that he does not discard wholesale the structuralism from which he draws inspiration. In contrast he argues for the necessity of structure in order for words to take on meaning. Words can only have meaning in their relationships with other words. However, in contrast to the structure of structuralism, Derrida's structure is one without centre (Derrida 1982: 278). It is a structure which cannot be reduced or anchored to some essence or core, yet it simultaneously maintains some form of rigidity. In fact, meaning is impossible without this structure because a word cannot mean absolutely anything; for it to make sense, there must be limits to its possible meanings in order for it to be able to function. Yet, at the same time, for meaning to be possible implies that it must be flexible in changing contexts. The system then must be equally flexible; it must allow change and play in order to function. There is then a 'double movement' in Derrida in which there is simultaneously structure and anti-structure. The one cannot be privileged above the other. The necessity of this double

movement for our understanding of the world is partly the product of Derrida's move to 'open' the system of language to context. As was argued in the discussion of complexity given above, when we deal with an open system our views of that system are always context-dependent. This is because we cannot give a comprehensive description of both the system and its environment. Yet we can give a provisional account of the system, just as we must understand that the meaning of a word is always provisional.

Georges Bataille

Derrida introduced an excess into the otherwise conservative reading of a system provided by Saussure. In other words, Ferdinand de Saussure's model was based upon the premise that all the terms in the system were in relation to one another and that these relationships then completed the system. In this sense, the Saussurian model is a closed one (Cilliers 1998:43) as it argues for the possibility of comprehensively determining the system without needing to take context into consideration. There is no 'excess' to this system; it is perfectly closed and balanced. In many ways this is a legacy of thinking about systems which stems from a certain reading of Hegel's dialectic. In this approach to systems, that which the system produces is always reincorporated into the system in the process of *Aufhebung*. Derrida's critique of such closed and totalizing systems stems partly from the work of Georges Bataille.

Derrida's reading of structure begins to take into consideration that which one needs to exclude in order for us to think of a system as closed. Derrida opens Saussure's system up, arguing that the meaning of a word is context-dependent and therefore dependent upon the environment within which a term is expressed. The acknowledgement of excess comes in when Derrida (1977, 1978) argues that in order for words to have meaning, they must always carry an excess of meaning in order to mean the same thing in different contexts while still being adaptable to different contexts. If a word meant exactly the same thing in all contexts it would be relatively useless. To take a relatively straightforward example, one cannot tell from the word 'port' itself whether it is being used to refer to a harbour, the left-hand side of a boat or fortified wine. The context in which the word is being used provides the information needed to infer the meaning intended. In order for a word to take on

meaning in different contexts, it must be adaptable. This adaptability comes from the fact that a word's meaning is not fixed. The meaning of a word exists because of its relationship with other words. This adaptability and flexibility, to mean something in different contexts, implies that the meaning of a word is simultaneously constrained by the context in which it operates and excessive due to the wealth of relationships it maintains with other words within a system of meaning. To function in different contexts then means that a word's meaning must be simultaneously constrained and excessive. It was the attempt to take such excess into consideration, to consider that which exceeded the Hegelian *Aufhebung*, which concerned Georges Bataille.

Bataille, born in 1897, has held a marginal status in mainstream philosophy⁸. Trained as a medievalist librarian, Bataille spent much of his life split between formal institutions such as libraries and philosophy departments where he produced work on what he considered the excesses of bourgeois society. The other half of Bataille wrote erotic novels, engaged in debates with the surrealists (Bataille had a famous argument with Andre Breton for instance) and began secret cults which experimented with what he termed the 'expenditure of society' (see Chapter 1 page 61). Bataille's academic interest was in what he considered the discarded aspects of human life, that which repulsed, that which produced anxiety or orgasm. In short, everything which the bourgeoisie actively, anxiously, attempted to exclude from their existence in order for that existence to be seen in restricted or utilitarian terms⁹.

Bataille's interest in the discarded was based upon his materialism which he borrowed from a combination of Marxism, Giordano Bruno and Marquis de Sade (see Stoekl 2007). For

⁸ For introductory texts to Bataille see Richardson (1994), Bailey Gill (1995). For collections of Bataille's essays see Bataille (1985; 1998). For a critical review of Bataille's work see Boldt-Irons (1995), Stoekl (1985).

⁹ It is important to note here that Bataille uses the term "utilitarian" to mean that which can be put towards achieving some end, making a profit or a return on an investment. Utilitarianism for Bataille operates in the world of means and ends rather than in a world of excess and waste (see Bataille 1985:116)

Bataille, ontology was constituted by an active materialism which he termed base matter¹⁰. Bataille was interested in the possibilities which this active base matter held for revolt when it was repressed, as it is under current bourgeois capitalist society. As I will illustrate in this dissertation, Bataille believed that the attempt to suppress this active materialism resulted in it releasing itself in moments of orgiastic joy or violent war. Living through the period between the two World Wars, Bataille was concerned by such critical thinkers as Nietzsche who sought to rise *above* everyday struggles. This concern with elevation came about as a critique of the fascist desire to rise the leader, and hence those who followed him, above that of the mundane and the lowly. In contrast, rather than arguing for a revolution which sought to overthrow and surpass the current situation, Bataille saw in his theorizing of base matter the possibilities for revolt in a way which would avoid the pitfalls of fascism which was established precisely by the desire to rise above, to raise the leader to the level of the master:

... Bataille sees his critique of the elevated – the ideal, the *surreal* – as inseparable from a political critique of fascism ... Base materialism, unlike pragmatic or functionalist theories of materialism, does not pass beyond matter in the construction of a ‘scientific’ conceptual edifice. (A materialism that generates abstract ‘laws’ is in complicity with idealism)... Instead, base materialism posits a matter that cannot be reduced to systems of scientific or political mastery. Marx’s ‘old mole’ burrows under and *subverts* the idealism that founds and legitimates systems as diverse as authoritarian imperialism (fascism), utopian socialism, the Nietzschean *superman*, and ‘spiritual’ *surrealism*. The imperial eagle that signifies these entities flies over (*sur*), but its easy mastery will be definitely disrupted when

¹⁰ For Bataille, the universe is constituted by charged matter. In Bataille’s thought this implies that there is no distinction between our thinking about the world and the world itself. For Bataille, when we exclude certain forms from our thinking we physically exclude that matter from being released in the world (see Chapter Four, page 184 for a discussion of Bataille’s ontology). Plotnitsky has argued that one can think of Bataille’s active materialism in much the same terms as some discoveries in quantum mechanics (see Plotnitsky 1994).

the repugnant revolutionaries tear it out of the sky. (Stoekl 1985: xv, emphasis in original)

Bataille's philosophy, along with his novels, is concerned with how we deal with the excess which is excluded from idealist systems. For Bataille, the world is excessive. It is our models of the world which makes the world seem ordered, to our peril. In a certain sense we can see Bataille's method as a precursor to Derrida's deconstruction. The attempt at critiquing systems of thought from inside these systems rather than from some ideal position is precisely the work of deconstruction. To look at what a system discards, to find that which is excluded from a system is reflected by Derrida's concerns with such notions as the 'supplement' or the 'outside'. However, Bataille's primary interest is in the excess of the system which we cannot know, in contrast to Derrida's concerns with that which is repressed in the system yet which the system depends upon to have meaning.

Bataille develops his concern with the excess of society in different places but the idea is best expressed and supported by sociological evidence in a three volume series of books entitled *The Accursed Share* (1991; 1993). As I will demonstrate in this dissertation, the accursed share is that which is excluded from any model in order to make that model coherent. However, this excluded part does not remain passive or idle in its excluded place; it will always intrude and disrupt the economy we are labouring under. Bataille (1991) argues that what he labels a 'restricted economy' produces the accursed share as it excludes that which bears no utilitarian value. The general milieu in which this exclusion takes place Bataille has labelled the 'general economy.' It is the relationship between the general and restricted economy which I will be mainly dealing with in this dissertation.

It is perhaps important to point out here that I use the term 'economy' in a very specific way in this dissertation (see Chapter One)¹¹. The term is borrowed from a tradition of philosophy

¹¹ The term 'economy' is used in this dissertation as shorthand for explaining the sets of relationships both "within" the system and the relationships the system maintains with the "outside." The term then, although it shares some characteristics with its usage in economics, differs from the economic use in that it is more interested in the sets of relationships a system maintains than with the use of resources. I will argue that we

in which it is used as a means for expressing the simultaneously limited and excessive nature of any system we encounter. In this regard, I am not using the term 'economy' in the economic sense of the word. I am not concerned with the notion of an 'economy' as used by economists. In the conclusion to this dissertation I will critique capitalism by means of the definition of an economy I develop here. However, my concern with the notion is to develop a means of thinking about systems as we find them in the world, along with our thinking about such systems, which takes into consideration a whole set of concerns. As will become clear, these considerations include the simultaneously open and closed nature of a system along with the relationships which criss-cross such porous boundaries, including that which will escape such boundaries. In this regard, the philosophical conception of an economy developed by Georges Bataille is especially helpful in developing such a model as it was Bataille's intent to develop such an excessive understanding of the term 'economy'.

Derrida's reading of Bataille is interesting in this regard as he argues that, along with Bataille, that we can have no access to the general economy. According to Derrida, we are forced to work with a restricted economy. The general economy, for Derrida, is the relationship which is established between the restricted economy and that which we have no access to. In other words, like Critical Complexity, Derrida argues for the fact that our models of the world are always limited and this is unavoidable. However, through the concept of a general economy we can begin to grant the openness of our worldview to the forces which we are by necessity forced to exclude from them. This will all become much clearer in the following few chapters. What is important to note now though is the relationship which Derrida, via Bataille, establishes between that which we understand about the world and that which we are forced to exclude in order to make this understanding possible. Derrida develops this idea elsewhere (Derrida 2004) in relation to the demarcation of an inside or an outside in relation to any understanding of the world.

can use the term when we think about the models we create of complex systems. In this regard, I argue that the term works better than idea of a 'frame' because it allows us to think about our models in terms which do not depend upon the simply dichotomy between an "inside" and an "outside."

Complexity and Post-Structuralism

In this dissertation I draw on different sources of inspiration and insight. On the one hand, being written in the discipline of philosophy, this dissertation draws on the work of social scientists and philosophers. On the other hand, by attempting to contribute to our understanding of complex systems, I have drawn on work usually associated with the 'hard sciences,' in such fields as biology. Paul Cilliers (1998) has made the case that some of the contributors to the postmodernist movement can enrich our understanding of complexity and vice versa. In other words, the insights produced by philosophers such as Lyotard (1984) and Derrida can offer valuable tools for our understanding of complex systems. At the same time, work surrounding complex systems can constrain the insights of post-structuralism in fruitful ways to further the understanding we have of this system of thought. There is then a general approach or 'ethic' in post-structuralist social science which lends itself to improving our understanding of complex systems. The distinction, as will become clear in this dissertation, between 'soft' social science and the 'hard' sciences, under which complexity theory has traditionally fallen, is a false dichotomy which has been historically established. In fact, if we challenge this strong distinction between the two sides of the university it could lead to the development of ideas beneficial to both fields. This does not imply, however, that we collapse the distinction and call for an interdisciplinary university free from the distinctions between the disciplines. This will be to counter the productive tension which is produced by the disciplines necessary for the furthering a particular science. We must then maintain the disciplines; we must further the pursuit of philosophy, sociology, biology and mathematics independently of having to justify each move to the other disciplines. The constraints of a discipline are necessary for the productivity of that discipline.

What we must remove, however, are the false dichotomies which argue for the primacy of one discipline above any other. When we begin to discuss the possible insights which both post-structuralism and complexity hold for our understanding of complex systems, we are not trying to settle the debate for the primacy of the one over the other. They both make contributions to our understanding and the tensions or disagreements are as productive as

the points of agreement. We cannot then easily escape each discipline and the language it uses, but we can, if we are careful, use the contributions which each discipline makes within different fields of study. We must work with existing knowledge and boundaries. We cannot call for a radically new language or discipline. Instead, we must put to work that which we already have. As Derrida (2004:5-6) argues:

To put the old names to work, or even just to leave them in circulation, will always, of course, involve some risk: the risk of settling down or regressing into the system ... To deny this risk would be to confirm it: it would be to see the signifier – in this case the name – as a merely circumstantial, conventional occurrence of the concept or as a concession without any specific effect. It would be an affirmation of the autonomy of meaning, of the ideal purity of an abstract, theoretical history of the concept. Inversely, to claim to do away immediately with previous marks and to cross over, by decree, by a simple leap, into the outside of the classical oppositions is ... to forget that these oppositions have never constituted a *given* system, a sort of ahistorical, thoroughly homogenous table, but rather a dissymmetric, hierarchically ordered space whose closure is constantly being traversed by the forces, and worked by the exteriority, that it represses: that is, expels and, which amounts to the same, internalizes as one *its* moments. (Emphasis in original)

The interstices between Critical Complexity and philosophy illustrate precisely the opportunities there are for challenging current hierarchies by means of using existing resources by means of deconstruction (see Cilliers, Human & Preiser n.d). In this regard, Critical Complexity is not calling for some radical new transdisciplinary approach in which all the sciences can be reduced to a single master discourse. Rather, what Critical Complexity aims to offer is an approach to the existing sciences which takes into consideration the critiques of modernist science as made by post-modernism and post-structuralism. We must then put to work that which we already have but remember the limits to these terms -- remember how these terms are produced in certain contexts and for certain needs. It is a critical enterprise precisely due to this self-conscious or self-critical approach to the limits of the statements, or the models, we produce of complex systems in this world.

Problem Statement and Chapter Outlines

Under current conditions, the notions of novelty, newness and the next all garner massive interest. Corporations are constantly pushing the newness of their products or approaches. Companies advertise the new approach they have developed to managing human resources, finance or insurance. Consumers are incessantly procuring new products, from cars and technology to clothes and the food they eat. This rate of consumption of the new is radically faster than the lifetime of individual products, producing a mass of waste yet to be sufficiently dealt with. The capitalist system is constantly pushing the boundaries of its scope; it is constantly seeking new forms of commoditization in order to create ever-expanding markets. The next generation product, the newest science and newer ways to understand the world are all products of an economy built upon the necessity to sell. This desire for the new is a structural feature of a system which exists by propagating desire to the furthest reaches of the planet. The desire for the new or novel is a key feature of the dominant hegemony we witness today. The new or novel holds promise of a better life, of an improved standard of living. You only need to buy the next iPhone, the newest car or the next fashion in order to improve your social standing. This is the modernist ambition still inherent in late capitalism. The new implies progress. With modernity's apparent overcoming of myth and religion we witness a reinstatement of the roles played by myth and religion in the fantastical promises of the new (Rhodes & Pullen 2010: 2):

The mythical belief in the necessity and inevitability of progress is characterized by neophilia – fetishistic love of all that is new. As a fetish, that which is new might be supposed to have mystical powers on account of its supposed novelty – novelty is a totem to humanity's self-aggrandizement. With neophilia, the new is something to be loved, worshipped, and adored for its own sake. Those afflicted with neophilia become excited about novelty; they crave newness and the progress that it promises.

At the same time, it seems increasingly pertinent to come up with an alternative to this global economy which propagates waste to the detriment of both the planet and the disenfranchised of the world. The possibility of acquiring the new and satisfying neophilic

desires is only available to the smallest proportion of the world's population. In a certain sense then we must resist this pathological desire for the new. But what shape this resistance comes in is also of concern. A conservative¹² resistance which longs for a romanticized and puritanical past is inappropriate for the current conditions under which the planet labours. The past, as imagined by the conservative, is built upon exclusion, the state of an idealized nationalism or puritanical community. This would do little to improve a condition which is currently premised upon the exclusion of the poorest.

Often, resistance to the conditions of the day has come in the form of subversives calling for an overthrow of the order of the day in a single radical swoop by the uprising of the masses. In the philosophy which underpins much radical politics, for the novel to arise means there must be a disruption of the present in the form of a revolution. The event of the revolution was seen as the harbinger of change. Therefore, thinking about the novel in social sciences is traditionally built around the concept of the event. This is a common sense definition of the idea, for there to be something new, something must happen. However, no matter how radical the call for change, time and again we witness the eventual reinstatement of the order the revolution was supposed to overthrow. Revolution it seems instates its own form of conservatism.

The work of Alain Badiou is exemplary of such an approach to novelty. Badiou, as will become clear in later chapters of this dissertation, aims to develop a philosophy which makes the event central to the concerns of philosophy. There can be no novelty in the world, according to Badiou, without the event. The event institutes a militant subject whose sole concern is to overthrow the current conditions in the light of an experience of the event. In this dissertation I look at the work of Alain Badiou as it relates to novelty and the event. In this regard, I give a description of his work as it relates to the *necessary* relationship between novelty and an event. Despite agreeing with facets of Badiou's

¹² I use the term here in the conventional sense of someone who longs for a romanticized past to be reinstated; a conservative in this sense is against progress. In the conclusion to this dissertation I will argue for a slightly different model of what conservatism is.

analysis, I take issue with the metaphysical ground on which he aims to base radical politics. I will illustrate that in his analysis of the event Badiou resorts to a quasi-religious language in order to be able to better deal with the uncertainty which the event institutes. In contrast, I argue that we need to develop other means for thinking about novelty and change which do not depend upon the event but carry with them radical enough implications to overcome the shortcomings of the present. This dissertation aims to begin to develop just such an approach.

It is important to note at this point that my interest in this dissertation is not to do away with the notion of the event. The notion of an event, as I will later illustrate, plays an important role in critiquing the reductive, law-like view of science¹³. However, my concern with the notion of an event bringing about change is twofold. Firstly, proponents of thinking about novelty as tied to the event often depend upon an outside such as ‘truth’ so that the event can make sense in the context in which it is found. If, as I argue, we see the event as a radical disruption of our understanding of the world, then philosophers such as Badiou depend upon a stable, interpretation free, ‘outside’ in order for the event to bear meaning for us. My second concern is related to the first. If we then hypothesize this outside, it implies that the event institutes a certain type of conservatism¹⁴. The *event* of revolution for instance, and history bears this out, is always called upon to take repressive action in the post-evental situation. This is because according to thinkers who tie the event to novelty, the event of the revolution, rather than instituting a radical uncertainty, reveals something like the truth of the world. Everything post-event depends upon the event for it to have meaning, to have legitimacy in the current order. The event in this regard carries with it a

¹³ This, as I will illustrate in Chapter Four, is the view that all aspects of the world can be reduced to sets of physics-like laws. This view of science holds the Platonistic idea that underlying all phenomena in the world is a set of laws which can explain everything.

¹⁴ As the concern of this dissertation is novelty, the idea of conservatism will be used as the counter or opposite to that which I aim to develop here. This is not to say that conservatism is in itself bad, just that it, by definition, stands in opposition to novelty.

set of metaphysical¹⁵ assumptions, as I will illustrate in regards to the work of Badiou. However, as I will illustrate, Badiou's definition of an event is a very limited one, and following Derrida, we can expand our definition of the event to mean something broader than simply the revelation of a truth.

At the same time however, we need to question whether there can be novelty without an event. It seems that without an event, anything new in the world would be simply the product of change, of evolution. Novelty in this regard would simply be the result of permutations of the same without the possibility of being radically different. It is problematic to label this novel if it previously existed, albeit in a different form. This type of change is typical of classical science and its dependence upon laws to explain all that it studies. This, once again, is also a conservative outlook. Descent with modification implies that there is nothing radically new in the world, that all we find in the world is a product of that which already existed¹⁶. We need then to develop another means of conceiving of novelty which does not depend upon the conservatism of either the event or laws yet which maintains a radical understanding of what 'novelty' means so that we can distinguish it from products of *neophilic* desire. In this dissertation I aim to develop such an approach by combining insights from Critical Complexity and post-structuralist philosophy.

The primary concern of this dissertation will be to develop a broad theoretical approach to the notion of novelty. I develop this approach in the hope that it will, firstly, give us some ideas as to how we can begin to institute change in the world and illustrate to us where the pitfalls of our current thinking about change lie. Secondly, I hope that the understanding developed here will allow us to better explain attempts at developing novel forms of life as

¹⁵ The concern with metaphysical assumptions is that it privileges a style of thinking which does not take into consideration the complex and contingent. Metaphysics, according to Derrida (1977:93), privileges a set of terms above others, purity above impurity, simple over complex, etc. As such, metaphysical dualisms and hierarchies give us little to work with when trying to understand complex systems as these systems often exhibit behaviour which cannot be easily reduced to these dualisms and hierarchies.

¹⁶ For a definition of novelty see page 215

we witness them in people's private lives and publicly in the form of social movements. In this regard I will ask: Under what conditions does novelty arise within a system? How can we begin to develop an approach to novelty which is not dependent upon the idea of the event? I will aim to develop this approach through the insights offered by Critical Complexity and post-structuralist philosophy.

In adopting the approach of Critical Complexity, one can see that our approaches to the world are always framed by a particular model. In social science the model of the frame has dominated how we think about the limitations to the context-specific nature of knowledge (Goffman 1974). In the first chapter of this dissertation I argue that instead of the analogy of a frame it is better to adopt the notion of an 'economy'. As will become clearer, the notion of an economy allows us to better theorize the relationships which constitute the models of our system. These relationships include those that are found inside the model, what I term *differences* and those which constitute the model by the fact that they are excluded from it. Our models of complex systems, under this consideration, should be treated much like we treat complex systems themselves, that they are relationally constituted and have boundaries which are open to influences from outside the scope of any one particular discipline. In this chapter I argue that we should develop models which adequately keep such considerations in mind in order to be better equipped to deal with and explain complex systems. This is what the idea of an economy, following Georges Bataille, offers us. In this regard I explore the possible connections between Jacques Derrida, the complexity theorist Edgar Morin and Georges Bataille as their work relates to the possibility of thinking about complex systems as economies.

In the first chapter I limit the discussion to our *thinking* about complex systems as economies. I therefore give little insight as to how one can conceive of the ontology which the analogy of an economy opens up. In Chapter Two I begin to explore the ontological foundation of a complex system. In this chapter I aim to illustrate how the ideas developed in Chapter One can be conceived of in terms of the system *itself*. According to Georges Bataille, when we speak of an economy, we must always take the excess of this economy into consideration. That is, the notion of an economy necessarily excludes certain

phenomena from its purview. This excess, which Bataille (1991) terms the 'Accursed Share', always feeds back to disrupt the economy from which it is excluded. Following the cyberneticist Ross Ashby (1957) and later the complexity theorist Peter Allen (2000, 2001) I conceptualise this excess in terms which Allen labelled 'Excess Diversity'. Using terms developed in complexity theory, I aim to illustrate how a system adapts to the environment by means of relying on this excess. In this regard, I begin to develop a model of the ontology of complex systems which can never be neatly defined. I do this through means of concepts, borrowed from Roberto Poli (n.d, 2006, 2010), of possibilities and potentialities. In Chapter Four I further develop these ideas in order to give a better understanding of how we can conceive of novelty without an event. As will become clear, our understanding of ontology is vital to the conception of novelty I am trying to develop in this dissertation. Using these terms, I argue that we can never comprehensively determine the future of a complex system precisely because there are always facets of this system which remain hidden to the observer. We can, through the idea of possibilities, make predictions about the system, but these predictions will always be context-specific and contingent upon the particular model being deployed. This means that we will never be able to comprehensively predict the future of a complex system, which implies that we need to develop another attitude in our approach to complex systems which always keep the provisionality and contingency of our models in mind (see Cilliers 2005b).

As the concern of this dissertation is with novelty, in Chapter Three I put aside the work done in the previous two chapters in order to explore the work of a current philosopher whose interest lies in novelty. In this regard I introduce the work of Alain Badiou (2001, 2003, 2005, 2007a, 2007b). Badiou's philosophy is important for this thesis because his central concern is the notion of novelty. For Badiou novelty depends upon an event. That is, in order for novelty to arise there must be an event which allows this novelty to break from the repetition of daily life. In this light Badiou develops a philosophy whose central concern is to give credibility to the notion of the event over that of structure. Despite Badiou's radical stand in politics, and his up until recent marginalization from mainstream French academy, Badiou's philosophy is typical of philosophical thought concerning the notion of novelty. Making novelty depend upon the event is a commonsensical approach to the

eruption of something new. In the final part of Chapter Three I discuss Badiou in relation to the work of Jacques Derrida. I do this in order to present a better understanding of Badiou's philosophy and how it relates to the approach adopted in this dissertation.

Chapter Four is concerned with drawing out the implications of a dependency of novelty on the event. I do this by furthering my discussion of the affinities between the work of Derrida and Badiou regarding the notion of the event. I argue that Derrida's use of the term 'event' would much more readily agree with a materialist understanding of the term in contrast to the quasi-religious definition which Badiou ascribes to the concept. This discussion is then furthered by a discussion of how we can conceptualise the notion of an event as it relates to our understanding of complex systems and the idea of an economy which I develop in the first two chapters. In this complexity-informed understanding of the event I aim to illustrate that, in contrast to Alain Badiou, what the event reveals is not simply the 'truth' of the world but rather simultaneously a dearth and wealth of possibilities yet to be realized. In this regard, the idea of an event does not necessarily promise change, the dislocation of the repetition of structure which the event is equally opens up the possibility for the reinstitution of the previous order. The simultaneous wealth and dearth of possibilities offered by the event is not a possibility which Badiou conceives of due to his restricted economy of analysis which depends upon the hypothesizing of the 'truth.' The event, as I argue in this chapter, cannot be depended upon to produce novelty, in fact to do so carries with it conservative implications which I explore in the conclusion to this dissertation.

However, we must be careful to not discard of the notion of the event too quickly. As I illustrate later in Chapter Four, classical science has traditionally discarded this idea due to its dependence upon the possibility of reducing the world to sets of laws. In other words, due to the fact that science is built upon a Newtonian framework which believes the world is reducible to a set of laws which adequately explains everything, the notion of an event is excluded as a possibility from the classical scientific framework. This is because, according to Ulanowicz (2009), classical science views the world as being built upon a set of eternal and unchanging laws. However, as Ulanowicz argues, the idea of an event is crucial to our understanding of the evolutionary process. If we cannot reduce the novelties which

evolution has produced to laws we must take the possibility of an event into consideration. In this regard, Ulanowicz argues that we must understand the complexity of evolution in terms of processes rather than laws. This will allow us to better engage with the problems we face when trying to understand phenomena as complex as evolution. This move from laws to process demands that we rethink how we understand ontology. That is, accepting a complexity informed understanding of the world implies that we must begin to reconceptualise the idea of ontology, as the principle of a perfect world free from our understanding of it begins to look problematic. In the final part of Chapter Four I indicate how we can begin to conceptualize what ontology is from the perspective of Critical Complexity. Finally, using this model of ontology, I begin to make an argument for the limits of thinking about change as dependent upon the event as described by Alain Badiou.

In the final chapter, before the Conclusion to this dissertation, I begin to develop a means for introducing novelty into the world which is not dependent upon the event. That is, I attempt to develop a model for bringing about change which is novel yet which escapes the conservative implications which thinking about novelty in terms of Badiou bears. In this regard, I propose that we can begin to think about radical forms of novelty without the event through the notion of experimentation. That is, when we experiment, we intrude into the general economy by using existing resources. This intrusion allows us to develop novel approaches to the world by means of engaging with what we have rather than by relying on some hypothetical outside, such as truth or an event. The process of experimentation is a result of the fact that we are embedded in the world. This inhabitation (see page 204) is a result of the excess which we are constantly producing as we make decisions during the experimental process. It is only in this final chapter of the dissertation that I offer a definition of novelty. This is because part of the project of producing a philosophy without the event demands a fair amount of redefinition of existing terms. Thus the ideas of an economy, of excess, of the event or ontology all demanded redefinition so that we can begin to conceptualise what novelty is. In this light I offer a definition of novelty as that which forces us to reread the history of a system.

In the final part of Chapter Five I argue that we need an imagination in order to allow us to decide which particular sequence of experiments to follow. It is our engagements with the actual and the possibilities we imagine which allow us to decide which actions to take in a complex world. The imagination then is not simply a tool for artists or idle speculation; it is crucial for our ability to solve problems in a complex world. We must be able to imagine other possibilities and other worlds if we want to be able to move beyond the restrictions of the present. I borrow Badiou's notion of 'forcing' in order to describe a means by which we can realize these imagined possibilities. I adopt this mathematical notion in order to better develop a means through which we can make decisions in the present which diverge from the current and help us to realise the possible worlds we can imagine in the future.

In the Conclusion I put to work some of the terms I have developed in this dissertation. I apply these terms as they relate to the current stage of late-capitalism. In this regard I look at the work of one of the main proponents of the current system, Francis Fukuyama and his book *The End of History and the Last Man* (1992). I argue that Fukuyama's thesis depends upon the restricted economy of analysis he deploys. In this regard, following Derrida's (1994) critique of Fukuyama in *Spectres of Marx*, I argue that arguments concerning the future are limited by the economies we deploy. In the case of conservatives such as Fukuyama, an extremely restricted economy often depends upon an outside which cannot be proven within the economy they are using. Fukuyama attempts to certify the claims he makes by means of hypothesizing an ideal Historical process. This idealized process for Fukuyama constitutes an outside on which he relies in order to structure his economy and acts as evidence for the claims he makes. In this light I illustrate how Badiou, despite his apparent progressiveness, actually presents us with a very conservative economy which leaves little possibility open for the future, as the economy which Badiou deploys reflects a structure very similar to Fukuyama's.

In response to the conservative economies of Fukuyama and Badiou, I argue that we must take capitalism to be the complex system that it is and that we cannot easily reduce the system to a single model which explains the entire system. As despairing as this is it is also an opportunity to illustrate the wealth of possibilities capitalism holds open for it to be

challenged. This challenge, I argue, can partly come from an engagement with the richness of the world, with experimenting with the excess of the world. Following Bataille I argue that through an engagement with non-utilitarian forms of action, by expending ourselves for the sake of expenditure, we begin to open the world up to possibilities which remain unrealized under the current neo-liberal, capitalist hegemony¹⁷.

It is important to note here that this dissertation is a theoretical and abstract attempt at a problem which is immense. The problem of developing novel approaches to the world is found in practice at many different scales and in many different places in the world using a near infinite variety of means. I have therefore left my analysis and applications at an abstract level which avoids the particular contingencies of specific examples. As with any theoretical exercise, the ideas developed here may mirror or may diverge from experiences on the ground, often both in the same instance. In this dissertation then, I provide a mere sketch of an argument that may be useful for understanding how novelty arises in the world. I cannot pretend to understand and explain all cases where novelty has arisen. However, the level of abstraction adopted here allows for greater intellectual freedom to develop a novel approach. I therefore hope that the sacrifice of empirical detail is made up for by the usefulness of the theory.

¹⁷ As will become clearer, my concern with capitalism is threefold. Firstly, it is quite clear that this system is both environmentally as well as socially unsustainable. The demand for increased consumption and individualized lifestyles results in a massive waste of resources and environmentally unsound practices, such as is seen in the massive demand for fuel in the United States, built on the principle of individual consumers and notions of 'freedom.' Secondly, the necessary exclusion of the poor from the capitalist system (see the Conclusion to this dissertation, especially page 241-242) means that a large proportion of the population is forced to live under increasingly difficult conditions as they are excluded from the ability to make a living. Finally, and related to the above two points, the capitalist system, is increasingly restricting the options we have for alternative, or divergent, means of living in the world. This increasingly restricted economy forsakes us to the conditions of the present and thereby the environmental and social destruction this system may hold in the future (see the conclusion to this dissertation).

Chapter One:

Towards an Economy of Complexity

Woe to those who, to the very end, insist on regulating the movement which exceeds them with the narrow mind of the mechanic who changes a tire – Georges Bataille

Introduction

In this chapter I will explore the relationship between a complex system and the notion of an economy. In this regard, I will combine the insights of complexity theorists such as Edgar Morin, Peter Allen and Paul Cilliers with the work of philosophers such as Georges Bataille and Jacques Derrida, in order to draw some of the philosophical implications of such an analogy. The concern with complexity has arisen from a variety of sources in recent time. In contrast to early attempts to reduce complex systems to their constituent parts¹⁸, new approaches to complexity argue for the irreducible and context-dependent nature of such systems (for overviews of these approaches see Byrne 2005; Cilliers 1998; Smith & Jenks 2006; Urry 2005b). Paul Cilliers (1998: 3-4) provides us with a list of ten characteristics which help us to define what a complex system is. I will not reiterate this list here but will rather present the characteristics which pertain to the discussion in this chapter.

Accordingly, a complex system is defined by a network of rich interactions which change over time. It is not the amount of parts interacting which define complexity but rather the nature of their interactions. These interactions are non-linear, meaning that one cannot add up the interactions in a system in order to measure their effects. In other words, “nonlinearity describes the property of a system whose output is not proportional to its

¹⁸ For example, such as by dividing societies up into institutions and looking for social facts or universals as was done by early social scientists such as Durkheim (1982) or Levi-Strauss (1969) in the hope that we could reduce the complexity we face in social science by simply looking at the parts we have designated to be important without trying to understand the relationships between the parts.

input” (Borgo & Goguen 2005:2). Small effects can have large consequences and *vice versa* (for a discussion on nonlinearity see Knyazewa 2004).

Furthermore, “complex systems are usually open systems, i.e. they interact with their environmentInstead of being a characteristic of the system itself, the scope of the system is usually determined by the purpose of the description of the system, and is thus often influenced by the position of the observer” (Cilliers 1998:4). This is an important aspect of complex systems. The boundaries which we draw between the system and its environment are always a product of the description we use of such systems and therefore what we exclude from analysis often still has an impact on the system (see below: for a discussion of the radical openness of complex systems see Chu, Strand & Fjelland 2003, for a discussion of observing complex systems see Rasch 1991).

A consequence of all these characteristics is that our knowledge of complex systems is context-dependent and based upon the models we create of such systems (see Byrne 2005). Proponents of what I will call ‘General’ or ‘Critical’ Complexity hold that it is impossible to model the world in its complexity without reproducing the world in its entirety (which would, of course, completely defeat the point of a model). Therefore, a strong reductionism, whereby scientists aim to reduce the complexity faced to a neat, comprehensive model or algorithm, becomes impossible as our knowledge of such systems is contingent upon the models we create of them (for a discussion of reductionism see Atlan 1993). Furthermore, phenomena such as emergent properties, illustrate that the relationships between the parts and the whole exemplified by reductionist approaches are not applicable to explaining the interesting aspects of complex systems. In contrast, the approach towards understanding complexity adopted in this dissertation is one which argues for a new conceptualisation of this relationship (see below; for a discussion of emergence see Dekker 2010; Morin 1992; for a discussion of the relationships between the parts and the whole see Morin 2007).

Edgar Morin currently leads the discussion on complexity sketched out above. An anthropologist by training, Morin has authored over 60 books on a wide variety of subjects, from death to cinema (for a short intellectual biography of Morin see Montouri 2004). The contribution of the five-volume *La Methodé* (1992) was a breakthrough in French thinking

about complexity. In this volume Morin disrupts traditional polarities and distinctions, arguing that these assumptions are not suitable for the way we think about the world. Even though Morin has contributed significantly to our understanding of complex thought, little of his massive body of published work has been translated into English.

Much more read in the Anglo-Saxon academy is the work of Jacques Derrida. The work of Derrida revolutionised the way we understand language and meaning to work. Although never writing explicitly on complexity, the insights Derrida provides regarding the complex system of language can be generalised to other systems. Greatly influenced by the structuralists who preceded him (Ferdinand de Saussure, Claudé Levi-Strauss), the radical process of deconstruction found by Derrida is also influenced by the philosopher Georges Bataille. Bataille was a contemporary of the surrealist art movement and developed a fascination for the Dionysian aspects of human life which he regarded as key to understanding and explaining many facets of modern society. Bataille's philosophy, as it appears in books such as the three volumes of *The Accursed Share* (1991; 1993), *Inner Experience* (1988 [1954]) and collected works such *Visions of Excess* (1985), was greatly influenced by Alexandre Kojève's lectures on Hegel. The notion of a general economy was developed as a critique of Hegel's dialectic and the possibility of *Aufhebung*. However, despite the radical portrayal of Bataille's work presented by many post-modernists who drew inspiration from him, we can see in Bataille a serious and measured critique of the restricted world view adopted by many in the periods between and after the World Wars. The seriousness of the critique is drawn out by Derrida in his reading of Bataille (Derrida 1978) and as such one can see in Derrida's work the many contributions which Bataille makes towards developing the post-structuralist critique of modernism.

This chapter aims to explore the links between the three theorists discussed above. That is, I aim to illustrate how the complex thought of Edgar Morin is linked to the insights which Derrida's deconstructive method provides for our understanding of complex systems. I do this by exploring Bataille's critique of political economy as a restricted worldview. The key theme explored in this chapter is the possibility of describing our models of complex systems as operating under a particular economy. That is I hope to complement existing

literature dealing with complexity with a new metaphor or model of complex systems. The notion of economy, I hope to illustrate, overcomes the limits of thinking about complex systems in terms of strict inside/outside dichotomies but says something more about the relationships inside the system. I hope from this to further develop our understanding of the philosophical implications of complex systems.

1.2. The Economy of Complexity

When approaching a complex system one is confronted with the problem of being limited in what we are able to say about such a system. In a certain sense it seems as if the statements we make about such systems are comprehensive, yet, at the same time, we are faced with the limits of our models the minute we want to make statements about the system which fall outside the scope of these models. We are therefore confronted with the adequacy of our models whilst at the same time facing their inadequacy. This is often true of our experience of complex systems themselves. When faced with a complex system we are often quite sure of the limits of the system yet we also, with imagination or experience, realize that such systems could be capable of nearly anything. We are sure of the physical constraints which the planet earth places on a species' development, yet we marvel at the process of evolution and the novelties it has produced. We are all sure of our own moral convictions, yet we witness the collective violence a society can produce with despair. In this regard, complex systems are both limited enough for us to be able to say something about them whilst being 'open' enough for them to constantly elude the models we create. In this chapter I will argue that one can look at the relationship between the notions which constitute our models, as well as the relationships which constitute the system itself, as a certain economy. In other words, I will argue that when faced with a particular system, viewed through a model, a certain economy of thought or terms is used in our analysis of the world. I will argue that the experience of both adequacy and inadequacy when faced with a complex system is a result of the nature of the economy of complex systems.

When we think of the term 'economy' a certain set of meanings is brought to mind. Primarily these include usages of the term in relation to the study of economics. The dictionary definition of an economy is a twofold definition of, firstly, the concern with the

production and consumption of resources and, secondly, the orderly interplay between the parts of a system (Collins English Dictionary 2006). In effect then one can state that an economy is the concern with the production and consumption of resources made possible by the orderly interplay of the parts of a system. However, when one thinks through the general use of the term a defining feature appears to be that in order for an economy to exist there must be some form of scarcity, thus its usage in statements like 'to economize' or 'economical'. Thus the notion of economy implies limited or scarce resources which places limits not only on the amount of things produced within a system but also on what is produced by that system (this of course is not fixed and changes over time). There are as such limits to production. A consequence of the limited use of resources is that a system is developed which needs to prioritize what should be produced and in what amounts (Flemming 1969). However, this system of prioritization not only determines what should be produced but also what *can* be produced, it determines or establishes the system, the orderly interplay between parts. An economy then operates on the principle of a relationship of feedback (see below) between the use of limited resources (production and consumption) and what the system is able to do with these resources and vice versa. This system of production and the limited resources it exploits results in the fact that certain areas or facets of life are prioritized over others. This prioritization is defined by the interests of the system.

So we can define an economy as the interface, the sets of interactions between parts, between resources and their eventual use or consumption. An economy in this sense is guided by the prioritization of resource use due to the fact that these resources are limited. To exist, an economy depends upon scarcity or limits. If resources were in abundance an economy would not exist as there would not be a problem in the use of resources nor in their distribution. Prioritization would not be necessary. For example, it would be senseless to speak of an economy of air on the planet earth but it makes sense to speak of an economy of air on board a spaceship as well as for the prioritization of the use of that air for survival (of course such an analysis is dependent upon at which level you analyze the use of resources, on a larger level, as global pollution is illustrating, there is indeed a very limited economy of useable air on planet earth).

So, for the time being, we can state that an economy exists if:

- Resources are limited
- These resources could be used, and be used for other things (in other words a demand exists which prioritizes resource use)

An economy, then, is a means through which we can come to understand why a system uses the resources that it uses.

But the notion of an economy is not only limited to the field of economics per se and it is the possibility of applying this term to other spheres which this chapter aims to explore. For instance, the size of a whale can be explained by looking at its use of resources and the possibilities the evolution of the species has had in exploiting the limited resources offered by the sea, in order to produce energy for the species to survive or procreate¹⁹. The orderly interplay of its parts, the physiology of the whale, is thus adapted to take advantage of the existence of krill or plankton which occurs in abundance within the sea. The shape which this system takes thus prioritizes the development of baleen plates, for instance, rather than teeth, for the efficient extraction of krill or plankton from the sea. And its feeding patterns would reflect this prioritization of searching for krill above say looking for bottom dwelling fish. Therefore, in the evolution of a species, a relationship is established between the use of resources and the system which has been established to exploit it.

Furthermore, when we use the term another meaning comes to mind which does not necessarily reflect the concern for production and consumption. In this use of the word, as the second part of the dictionary definition illustrates, an economy is more concerned with the limited sets of relationships between parts or the *play* between parts of a system. An

¹⁹ It is important to note that the use of the word 'prioritisation' in the field of economics implies an agency, there are decisions being made as to what needs to be prioritised and when. In contrast, prioritisation in complex systems is not necessarily the product of some form of agency but rather is a result of sets of relationships interacting with constraints both internal to the system as well as in its environment. Prioritisation in this sense does not carry normative or value judgements concerning certain traits or parts.

economy in this regard is something internal to a system, not as concerned with the production or consumption of resources as with the constraints placed on the ability of parts to act in ways which may diverge from each other. For example, it is possible to speak of an economy of movement in a human being. Humans, due to the limits placed upon them by their physiology, are able to skip, run, jump and swim but not fly. Furthermore, we can do each of these in limited or constrained ways and to varying degrees, if we over train one, we hamper our ability to perform in the other fields. For instance, a sprinter would not be able to perform well as a long distance runner when fully fit for sprinting. In this sense the term economy shares with it facets of the economic definition, an economy is dependent upon limits or constraints, an economy is concerned with the ability to do things, to produce an outcome but the focus of this definition is not so much on the use of resources but the relationships between the parts of a system.

When we use the term 'economy' the image of a circle always comes to mind. As Derrida (1992: 6-7) argues:

Among its irreducible predicates or semantic values, economy no doubt includes the values of law (*nomos*) and of home (*oikos*). *Nomos* does not only signify the law in general but also the law of distribution (*nemein*), the law of sharing or partition (*partage*) ... As soon as there is law, there is partition: as soon as there is *nomos*, there is economy. Besides the values of law and home, of distribution and partition, economy implies the idea of exchange, of circulation, of return. The figure of the circle is obviously at the centre, if that can still be said of a circle... This motif of circulation can lead one to think that the law of economy is the-circular-return to the point of departure, to the origin, also to the home.

The circular imagery described by Derrida is the method of distribution of resources within a system. In order for a system to produce something it must receive in return, indeed it would be difficult to conceive of an economy, as an economy, that only distributes or disseminates without return. In other words, it is necessary for an economy to be able to maintain itself, to have a pool of resources which it can exploit. However this exploitation must also feedback into the survival of the system or help the system continue its

exploitation of the resources. The resources a system uses must in some way support the structure of the system and therefore there must be constraints on how much a system can do. This can also be read as the foundation or basis of a system, in a certain sense then an economy, conceived of as a circle, is inherently conservative as it aims to preserve its point of departure or its structure. Yet these limits are not necessarily bad things, not only are they enabling (see Cilliers 2001:139; Juarrero 1999:132-133) but they are *necessary* for the existence of the system in the first place, something which has no boundaries, which is claimed to be and do everything, is indeed nothing.

If one looks at strategies or different systems of thinking as economies this point becomes clearer. A paradigm of thought requires that the theories or propositions which constitute it retain a certain coherence, a certain allegiance to limits which allow some components but exclude others. As a matter of fact, paradigm shifts are often initiated upon the upsetting or disruption of such limits. These economies of thinking exclude that which does not suit the *nomos* or reason guiding the model, guiding the return to the origin and consequently that which disrupts this *oikos*. For example, the shift which occurred from modernism to post-modernism was founded on the disruption of the taken for granted foundation of modernism, namely that of an accurately reducible world, by an economy of analysis which argued for an excess to such a foundation.

When faced with a complex system which we conceptualise as having open boundaries but is operationally closed (see for instance: Chu, Srand & Fjelland 2003: 28; Cilliers 2005a:6; Morin 2007:10) we need to come to terms with the limits which make possible any economy of thought. In other words, when we study a social process for instance, we are always partial and situated observers of the phenomenon we are studying. In order to be able to say anything about these phenomena, we inevitably have to exclude from our analysis certain aspects which may have a bearing on it. In other words, we need to draw a boundary *somewhere* in order to be able to say anything about the system at all (see below). What is excluded, as was mentioned above, is a result of the process of prioritisation we grant to certain facets of the phenomenon we are exploring, a system of prioritisation established by the *nomos* of the economy. Early attempts to deal with complex

problems took for granted the fact that the prioritisation which was made of certain facets of analysis was natural and sufficient enough to explain the phenomenon under consideration. These approaches assumed that what was irrelevant to analysis, formed by the hypotheses being used, did not have a bearing on the functioning of the system as a whole. As Derrida (2005:136) also illustrates, this was because the hypothesis formed the foundation of the analysis:

Hypothesis in Greek will have signified before all else the base or basis, the infrastructure *posed* beneath or at the bottom of a foundation. As such, it will have been a figure for the bottom or the basement, the groundwork or the foundation, and thus the principle of a thing, the reason of an institution, the *raison d'être* of a science or a reasoning, of a *logos* or a logic, of a theory, rationalization, or ratiocination. (Emphasis in original)

The method of these initial attempts at understanding complex systems was heavily influenced by a Newtonian approach to science. This approach can loosely be described as 'modernist.' These approaches attempted to reduce systems to their constituent parts and thus considered the models of their systems to be comprehensive as they captured the structure and function of each part of a system. In other words, the approach of early studies in complexity aimed to find the essential, underlying properties or structure of a complex system. This approach could be justified by the atomistic and rationalistic tendency inherent within Western metaphysics which argued that complex systems were constituted simply by their various parts (Dreyfus & Dreyfus 1986; Dreyfus 1999).

This reductionist rationality tendency of science implies that some kind of coherence, some kind of reason or rationality is necessary, in order for the model to be sensible²⁰. Therefore, that which is excessive, that which is excluded, stands outside the particular logic or reason

²⁰ It is important to note here that I am not arguing that we must introduce or allow irrationality to dominate the models we use in science. Rather, this argument is simply to illustrate how rationality thins out, or excludes, the excess of data we are faced with during the research process. In many ways the necessity of coherence allows us to do something useful with the quagmire of data with which we are often faced.

of that epistemology. In the thinking of classical science, or what I will come to label, 'restricted economies' of thought, the attempt to include this excess into thought implies defective representation as this excess challenges the coherence of the epistemology. It is for this reason that aesthetics is often excluded from the field of science. As Blood (2002: 838) has argued:

Rational ideas need to be precise and are governed by a strict relationship between words and what they represent. In this sense, rational ideas involve simple transactions; they are useful as currency in everyday exchange. Aesthetic ideas, however, cannot be confined within the rational economy of give and take because they engender an excess of thought....The excess of thought in this instance is produced by a defect or a lack of adequation between language and what it is supposed to represent. Excessive thought and defective representation go hand in hand.

Science cannot function with defective thought. It requires accurate descriptions of the world in the models it depends upon. This accuracy is also necessary for the 'currency' of science, for the possible communication of ideas between scientists. Therefore, what is excluded is often brought across to be rotten or defiled in some form, to be noise or inconsequential, in order to ensure the rational representation of the model. The 'other' in this instance is marginalised in order to provide a sense of coherence and order to the model (for an example of this in social systems see Laclau 2005: 139-144). Thinking in this instance demands that we exclude the heterogeneous, that we exclude that which challenges the taxonomy of our thought. Taking this excess into consideration was the goal of Georges Bataille. As Stoekl (2007:21) argues:

Rather than discovering the rational basis of collective enthusiasm – Durkheim's goal – Bataille seeks to "study" the very matter whose unjustifiable, a priori exclusion makes possible the coherence of rigorous, hierarchical systems of classification and thought. There is nothing inherently heterogeneous – repulsive, nonappropriable – in shit or in anything else. It is the relation of that element, that object, to a system

in which it cannot be given a stable position that makes it 'rotten.' Its excluded rottenness is necessary to the coherence of the system.

There is therefore a certain ideology or paradigm at play within any epistemological economy which will structure, and hence make possible the process of exclusion, of the system of thought aiming to be established. Reason or rationality structures this exclusion. The model in classical science abides by a certain certainty, a certain privileged position which makes possible the unification of certain features of reality into a model, by means of the exclusion of others. However, this certainty can only be established after the certainty of the model is decided upon. In other words, once proven successful, the model holds a privileged position in science as it unifies certain features of reality at the expense of others.

In an early work, while discussing a book by Merleau-Ponty which studies models of the universe and the convergence between the theory of relativity and astronomical experimentation at the time, Badiou (2007a: 11) argues that

[t]he model is a body of statements in virtue of which this historical convergence is integrated in a unique discourse. Naturally, a diversity of integrations exist, and none of them have the force of a law. This is because the models are nothing but intra-scientific constructions. Just as the child comes to surmount the horror of his fragmented body in the dupery of the mirror, models reflect the momentary (*instantané*) disorder of the production of knowledge in accordance with the premature ideal of a unifying text. The model appertains to the securing meta-theory of a conjecture.

In this regard, for Badiou, "the empirical, being inactive, indicates nothing by itself: all trials (*tentatives*) are possible in the inventive freedom of artifice. The model does not, in effect, administer any proof. It is not constrained by a demonstrative process, but merely confronted with the real" (15).

The ability to exclude needs to prove its success in dealing with the problems under consideration. The reason of the economy must be able to illustrate that the exclusions it makes are in fact successful. This cannot be achieved from the beginning as the new model

or reason being adopted needs to adopt a different reason or rationality in order to be distinguished from its predecessor. This economy can then appear to be incoherent or unreasonable to others in the field abiding by the reason of that field. The model, in this sense, reflects the 'momentary disorder of the production of knowledge' which Badiou argues for. There is then a temporal dimension to adoption of an economy. Coherence only becomes possible after a period of time. As Feyerabend (2002 [1975]: 17-18) argues:

Theories become clear and 'reasonable' only *after* incoherent parts of them have been used for a long time. Such unreasonable, nonsensical, unmethodical foreplay thus turns out to be an unavoidable precondition of clarity and of empirical success.... Now, when we attempt to describe and to understand developments of this kind in a general way, we are, of course, obliged to appeal to the existing forms of speech which do not take them into account and which must be distorted, misused, beaten into new patterns in order to fit unforeseen situations. (Emphasis in original)

The early stages of a new economy require allegiance to the reason or model being established. Due to the fact that these models are judged by the standards of the existing sciences, the new science cannot but use the existing resources available to it in order to explain its existence. This explanation will then appear incoherent or unreasonable as it cannot be accommodated by the reason of the existing sciences despite borrowing their terms. Thus, it is important to remember that science always takes place within a larger context in which a degree of fidelity is often required in order to make a model coherent. In other words, a degree of commitment to the possibilities which a model may offer is required for the time to be taken to construct the model. Therefore, that which is found outside the strict borders of our models can never, despite the contentions of classical science, be a blank space or noise. The process of science, or the development of the model, does not occur within a neutral, context-free environment. Models constructed in science are always constructed in a context full of allegiances and resistances between different schools of thought. However, our models can never, in order to be models, contain everything of relevance. There is no *a priori* means of determining what is relevant and what

not (see Cilliers 2005a: 4). The problem of what belongs to an economy of thinking and what not, is central to deconstruction. As Derrida (1982: xxiii) argues:

[This] compels us not only to reckon with the entire logic of the margin, but also take an entirely other reckoning: which is doubtless to recall that beyond the philosophical text there is not a blank, virgin, empty margin, but another text, a weave of differences of forces without any present centre of reference (everything - "history," "politics," "economy," "sexuality," etc- said not to be written in books...) ... and also to recall that the written text of philosophy (this time in its books) overflows and cracks its meaning

The margins of science or the borders of our models are not the limits of influence to what occurs inside the model. Not only our personal lives, but also other aspects, such as funding or politics, limit what can be found to influence the research process. The same is true of models: what occurs inside our models cannot be easily separated from what we exclude, as if inconsequential. What we exclude from our models constitutes them. However, this should not be seen as a call for the weakly post-modern cry for heterogeneity, for the inclusion of everybody and their best friend into the economy of thought. Indeed, this position is as futile as the complete exclusion of everything heterogeneous. It is what we find within these economies, which leads to the label of rottenness of what we exclude. But it is also the exclusion, the limits, which makes the economies useful to us. These limits are productive, not only because they are constitutive, but also because they allow the very antagonisms within the models to function. That which is excluded makes possible the debates or differences found inside the science (Laclau 2005: 149). In science, for example, for the possibility of a discipline such as botany to exist, for there to be debates within the science about the subject matter of the science, botanists need to behave and engage in a manner which by necessity excludes most other fields from their discussion. In order to be botanists they need to differentiate themselves from physicists, chemists and social anthropologists. This differentiation nevertheless remains problematic, since it is constantly challenged. The nature of the boundary, of what is considered internal or external is perpetually transformed by the threat of 'the outside', since the threat simultaneously

structures the 'inside' (for a discussion of the relationship between the notion of 'inside' and 'outside' see Derrida 2004 [1972]). Based on this, I distinguish between heterogeneity and difference²¹.

I will label 'heterogeneous' that which is perceived as noise from the perspective of the model. In other words, heterogeneity is that which, from the use to which we put the model, makes no sense or appears to bear no influence on the outcomes we aim to achieve yet can, or does, have an influence on the model. Heterogeneity can be proven to carry weight within the model through a process of analysis which makes use of other frames of analysis. Heterogeneity is not noise or a mystical force but simply that which does not make sense from the perspective of *this* model yet may bear weight on the analysis from another frame of reference. Difference in this regard is that which is constituted as different from the perspective of the model. In other words, difference refers to the discriminations which can be made from the perspective of the model under consideration. Differences can be recognised only in terms of a common frame. For example, the difference between a dictionary and a novel occurs within the framework of books, it occurs within a common frame of reference. However, the difference between a dictionary and a tree requires that one shift frames of reference considerably in order to make these differences understandable. To recognise heterogeneous objects one has to establish a chain of different frameworks, on different scales, which will eventually allow some comparison to emerge. The notion of tree, although negatively defined in relation to words such as dictionary, novel or books is heterogeneous to the models we create of such objects. Or in studies of fairytales, these tales are historically taxonomized by the role the leading man plays within the tale (Aarn 1961; Meyer 2010). It was seen by folklorists as being the universal measure one can make in order to classify these otherwise difficult to classify tales. However, recent feminist literature has taken to task this phallogentric system of classification (see Meyer 2010). Therefore, the role of this feminist critique can be seen as heterogeneous to this phallogentric system of classification due to the fact that the

²¹ I borrow these terms from Laclau (2005:140).

differences within the system do not consider the roles of women as a difference which helps to order the taxonomy of the system. We can note that difference and heterogeneity are products of particular frames and do not carry any normative judgements. In other words, to say that the feminist critique of the classification of fairytales is heterogeneous to the established taxonomy does not mean that it is or is not valid; rather it simply expresses a non-difference within the system of recognised differences within the taxonomy of a particular field or science.

The relationship between the heterogeneous and the different can be further explored in terms of the notion of *iterability*. In a certain sense, *iterability* defines the relationship between the heterogeneous and difference (Derrida 1977). *Iterability* is the term Derrida uses to describe the relationship between repetition and alterity when looking at signs in a system (9). According to Derrida, the meaning of a word is repeatable from context to context yet the word's meaning shifts in each context. These shifts may sometimes be radical and at other times only slight. In order for the same word to make sense to us in changing contexts there must be stability to the meaning of the word as well as adaptability. In this regard, as each context shifts the meaning of differences, different frames of analysis becomes plausible in analysing a system and, as such, objects which were heterogeneous to the system can now be recognised as differences within the system. Yet, for our models to be understandable, to have meaning, they must be robust enough so that debates or differences 'internal' to a field or model can be waged. However, these debates are waged on a terrain of heterogeneity which can intrude at any stage and which is generally protected by the players involved. An example of this is the reaction which two opposing chess players have when somebody disrupts their game (Laclau 2005:141). This disruption challenges the field on which the two player's differences are built. The field they have established through constraints, in order for their debates to have any meaning.²²

²² As the reader will notice, and as I will argue later, the difference between the notions of difference and heterogeneity collapse at a certain point as our analysis changes over time.

It is thus difficult to illustrate the incoherence and excess of any economy due to the fact that the language we use within models harbours this discrimination. That is, the language we adopt within an economy is made possible by the constraints and hence exclusions of that economy; the limitation of the meaning of words makes dialogue meaningful within that economy. The languages we use within models recognise differences not heterogeneity and it is therefore that critiques from outside of the models are often not considered valid by proponents working within the system. Therefore, it is very difficult to think through the discriminations we face as they provide coherence and order to the world which we find before us. Examples of this can be seen in the often lacklustre or nonchalant responses feminist or post-modern critiques receive from proponents of logo- or phallogocentric discourses.

The constraints of an economy also imply that answers perceived as valid to questions asked will be structured by these same constraints. Asking questions of an economy implies that we have a certain set of answers before us which are made possible precisely by the same exclusions which the economy demands. In the same vein that heterogeneity remains unrecognised within a system; the questions we may ask of a system are limited by the answers we can expect to receive. Our possibilities for alternative systems of thought are thereby limited by the questions we can ask if we want to bring about those changes within the same economy of thought. As such, Derrida illustrated through deconstruction how metaphysics forms a 'system of total surveillance' (as quoted in Harvey 1986:116) as it limits where and how we can challenge it. As Harvey (110-111) argues:

For instance, the question "what is...?" always installs the response within a definitive, essential, proper, and non-changing characterization. It is the question of the proper name. The question "why?" (*pourquoi?*) always presupposes the metaphysical notions of sign, origin, presence, absence, telos and arché- and immediately so. The instant one asks "why?" one is asking "what for?" which entails the philosophical notions of purpose, causality, destination...

The same implications as Derrida's critique of metaphysics' "system of total surveillance" can be applied to what I am describing here. The implication of this difficulty with

questioning economies is that it becomes difficult to discern what a specific economy is constituted by. Epistemological economies, like the systems they describe, are robust and restricted. Therefore, it becomes difficult to discern, through direct questioning, the economies of these systems. Asking an engineer why he appreciates a particular building one will receive answers related to structural strength, practicality and engineering brilliance, one is much less likely to receive an answer related to his phallogocentric sexual orientations. This is the case, however, if one perceives epistemological economies to be restricted. In contrast, I will propose that the economies of systems are open or 'general' and therefore the systems themselves present more opportunities for us to challenge current economies of thought than may at first appear to be the case.

1.3. From Restricted to General Complexity

Edgar Morin (2007) has argued that classical science dealt with the problem of complexity by means of rejecting the problem from the field of science. That is, Morin argues, classical science aimed to reduce the problem of complexity to a level at which the unique problems faced in complex systems are not taken into consideration. According to Morin, this rejection of the problem of complexity was achieved by means of relying on three explanatory principles. The first of these principles is that of determinism, which implies that all future and past events must be known within the present state of a system. That is, that a system has a determinate path which it must follow according to a set of laws, and is thereby predictable. The same applies to the history of a system and a determinism based upon an easily determined, single 'past.' In other words, the principle of determinism argues that a complex system rests on a neat, linear, historical trajectory and, based upon its current state, we can trace, as well as predict, the shape the system has been and will be (see also Dekker 2010).

The second explanatory principle adopted is that of reduction. Reduction is the assumption that 'consists in knowing any composite from only the knowledge of its basic constituting elements' (Morin 2007:5). The reductionist argument states that a system consists simply of a sum of its parts and that the higher interactions in a system can be easily reduced to a set of lower, or base interactions from which it must be possible to determine these higher sets

of interactions. Finally, classical science argues for the explanatory principle of disjunction which, 'consists in isolating and separating cognitive difficulties from one another, leading to the separation between disciplines, which have become hermetic from each other' (5). In other words, classical science assumes that we can easily separate academic disciplines as if there are strict boundaries between disciplines. One can see that all the explanatory principles of classical science are predicated upon a very similar principle, that a scientist can 'objectively' and comprehensively know what is *essential* to the functioning and survival of a system and thereby reduce, divide and allocate the different separable parts for study, the parts being more important than the whole (or indeed being separated from the whole). Classical science, therefore, works on the principle of *simplification* which seeks to simplify complex systems and problems to sets of laws and universal truths which operate as the foundation of science. Morin labels this strategy 'restricted complexity' as one tries to reduce and simplify complexity or restrict the problem of complexity. Yet, as Morin argues, one still 'avoids the fundamental problem of complexity which is epistemological, cognitive, and paradigmatic. To some extent, one recognises complexity, but by decomplexifying it' (10). This is done by means of trying to simplify the complexity of a problem to a point which avoids the problems unique to complex systems.

In similar work, Peter Allen (2000, 2001) has illustrated that what we have labelled restricted complexity is similarly based upon a set of assumptions which makes the simplification of complexity possible. These assumptions, as used by 'classical science' according to Allen (2000:80), are:

- 1) That we can assume that a 'system' and an 'environment' exist, that is, we assume there is a boundary between that part which we want to understand and 'the rest'.
- 2) That we have a taxonomy of parts for the classification of the objects we find within a system which will help us to understand what is going on. In other words, that we can divide up what is internal to our system and evaluate each part's worth and function.
- 3) The third assumption assumes that the various parts of which our taxonomy consists is homogenous. It assumes that these components are:

-either without any structure

-made of identical subunits

-or made up of subunits whose diversity is at all times distributed 'normally' around the average

This assumption leads to a description of the properties of elements over time which will not illustrate change. When a set of subunits is described according to fixed stereotypical insides, the learning and adaptive capacity of individual units cannot be accounted for. 'When we make this simplifying assumption, although we create a simpler representation, we lose the capacity for our model to represent evolution and learning within the system' (81).

4) The fourth assumption upon which we simplify complex problems is that 'the individual behaviour of the subcomponents can be described by their average interaction parameters...This assumption (which will never be entirely true) eliminates the effects of "luck" and of randomness and noise that are really in the system" (81). Thus, the interactions between the homogenous units, made in assumption 3), all interact in some average, unexciting and uniform way.

Allen argues that if all four assumptions can be made, accurate predictions and 'optimizations' can be carried out (Allen 2001: 24). This is allowed for by the fact that we divide up the system into its parts and then maintain that these run at average rates thereby removing 'random' and 'emergent' possibilities for action a system may take. This is the position from which classical science aims to operate. By making all four assumptions, one can predict the path a complex system may take and therefore the amount of use such a system will have. Allen furthermore argues that, if one only makes the first three assumptions, one is working with the possibility of self-organization and the possibility that dynamical behaviour may occur. Finally, Allen argues that if one only makes the first two assumptions, we are working with a model which is capable of adaptive evolutionary change yet it becomes impossible to comprehensively predict the future changes such a model may make (24). However, if we only make the first two assumptions, which are the bare

minimum one can make in order to say even the bare minimum about the world, we are left with a model which aims to include nearly all the complexity we are faced with when looking at the system *itself*. In other words, all that making the first two assumptions allows is for us to say: 'there is the system and those are its parts', without any more content to that statement. As such, the model we are left with is relatively useless in terms of any form of action one may want to take in the world. We are forced then to make more of the assumptions which Peter Allen discusses, if we want to be able to take any kind of action in the world or have any chance of explaining the behaviour of any system in the world. Reduction in this sense is not inherently bad; reduction is necessary for our understanding of the world, even more so if we aim to act in the world.

Against the approach of restricted complexity, Morin proposes the concept of 'general complexity' (Morin 2007). In the paradigm of general complexity the assumptions made by classical science are not taken for granted as truths. Although to a certain degree necessary for the process of science, it should be kept in mind that they are *assumptions* made to reduce complexity in order to make possible research as it occurs in a limited setting. The strategy of general complexity is to recognise this dilemma. Rather than shying away from the problem of complexity by aiming to restrict and reduce the field of this problematic, in order to cater for the demands of an elusive universal truth, general complexity aims to face the problem of complexity whilst keeping in mind the limited position which the observer takes. It thus acknowledges that although the process of reduction makes possible our understanding of complex systems, it is unable to deal with such phenomena as emergent properties²³. 'In opposition to reduction, complexity requires that one tries to comprehend the relations between the whole and the parts. The principle of disjunction, of separation (between objects, between disciplines, between notions, between subject and object of knowledge) should be substituted by a principle that maintains the distinction, but that tries

²³ Briefly, an emergent property is a property of the system which cannot be deduced from the properties of the parts of the system. An emergent property arises due to the unique interactions between the parts of a system.

to establish the relation' (10-11). General complexity points towards a new epistemology of complex systems which examines the *relationships* between the parts as well as the parts themselves.

This thereby opens up a new epistemological economy of thought which does not limit its worldview to the possibility of a complete reductionism. For example, one of the important insights that Morin's general complexity has provided us with is that we need to re-examine the relationship between the parts and the whole. In classical science, the sum of the parts makes up the whole. However, for Morin (11), "the whole is not only more than the sum of its parts... it is also less than the sum of its parts. Why? Because a certain number of qualities and properties present in the parts can be inhibited by the organization of the whole... Thus, the notion of organization becomes capital, since it is through organization of the parts in a whole that emergent qualities appear and inhibited qualities disappear." A strong reductionism thus ceases to be possible as the focus of analysis shifts away from the parts in order to consider the contingent and context-dependent sets of relationships between the parts. Therefore, due to context, there is always more to our analysis than we can grant based on the fact that we are always only partial and limited observers of any situation. This denies us the possibility of simple and universal models. The best we have are models that are partial and provisional.

As both Morin and Allen have pointed out, the models with which classical science aims to deal with complexity are models which do not take into consideration the assumptions they have made. In this regard these models consider themselves to be comprehensive and complete; they only recognise difference, not heterogeneity. However, in contrast, Morin proposes the concept of general complexity which aims to take into consideration precisely the assumptions made in order to make these models intelligible. Both Allen and Morin propose that we use models in a restricted sense yet, at the same time, acknowledge that these are indeed built upon a world full of heterogeneity. That is, that we make exclusions when we build models, consciously or not, and these exclusions still have an impact on both our models and on the system in the real world. The notion of general complexity is precisely to make us aware of this, that the strict disjunctions, separations and exclusions

are imposed by us in order to make these systems intelligible to us, in order to give these models any use to us. What I will propose is that the economies of complex systems, along with the models we create of them, should be conceived of as 'general' economies. I will argue that, despite our relatively restricted models, when we are faced with a complex system we are forced to concede to the fact that our models are context-dependent and therefore always open to chance and error as well as certain types of paradox or 'irrationality'. A restricted economy of analysis, as I will come to show, is one which does not take heterogeneity into consideration. In contrast, like Morin's general complexity, the notion of a general economy aims to keep heterogeneity in mind whilst granting us the use value of a restricted economy.

1.4. From a Restricted to a General Economy

In this chapter so far I have presented the notion of an economy and have aimed to give some kind of definition to what is popularly conceived of as an economy. I have then moved on to illustrate how any complex system can be conceived of as operating within a particular economy. In other words, I have tried to show how the concept of an economy is useful for the way we think about complex systems. As we can never have a complete view of a complex system, we are forced to acknowledge that the economy we postulate of a complex system is always the product of the particular viewpoint we adopt. In this regard, I began to look at the theories and models we adopt of complex systems as operating within certain economies. I have tried to illustrate how theories operate in the same way I classified as an economy and indeed stated that this 'economising' was necessary for the existence of the model, theory or system as such.

I then moved on to look at how classical science viewed the problem of complexity through the lens of Edgar Morin and the assumptions it was necessary to make in order to construct a model of a complex system. Following Edgar Morin, I argued that the viewpoint of classical science was one which adopted a restricted view of complexity. In other words, this approach was strongly reductionistic due to the history of rationalistic and atomistic thought prevalent in Western science. However, despite my critique of this reductionism I argued that, to a certain extent, this reductionism was necessary in order for us to be able

to say anything about complex systems. How then does the economy of thought of new approaches to complexity differ from that of classical science? In other words, if we criticise the economy of thought established by classical science yet, at the same time, argue for the necessity of that which we are criticizing, what is different about this economy?

Furthermore, one can note that a reductionist account limits the possibilities we have for explaining how systems change and if, as I have argued, one conceives of a system itself as existing within an economy, as well as conceding that it is necessary for an economy to be limited in order to be an economy, how can a system itself change? How can we speak of an economy, as an economy, if we are forced to speak of it as open and closed at the same time? Therefore, how can we conceive of an economy which is limited enough to be an economy yet at the same time open enough to be able to change?

1.4.1. Bataille's Economy

Another perspective on the notion of an economy is offered to us by the philosopher Georges Bataille (Bataille 1985, 1991). Bataille argues that traditional political economy restricts its analysis of a system to the production and consumption of resources. Analysis of economies is thereby restricted to a very narrow utilitarian logic which sees the production, and especially consumption, of resources limited to the immediate ends they serve. As Bataille (1985:117) argued, according to restricted economics, "on the whole, any general judgement of social activity implies the principle that all individual effort, in order to be valid, must be reducible to the fundamental necessities of production and conservation." Restricted economics is therefore utilitarian. It is only interested in the use value any object or activity may have. The prioritisation prevalent in the restricted economy of political economy is therefore the notion of utility and the assumption that all social activity can be reduced to utilitarianism. The problem with this model for Bataille was that it did not take into consideration the 'excesses' and so called waste produced by a system. A restricted economy of analysis only accounts for that which is put towards some use; it excludes the waste of a system in its analysis. In contrast to the notion of restricted economy, Bataille argued for the notion of 'general economy' which aimed to include within its analysis the excesses and waste not considered by a restricted worldview.

The 'law of general economy' states: "On the whole a society always produces more than is necessary for its survival; it has a surplus at its disposal. It is precisely the use it makes of this surplus that determines it: the surplus is the cause of the agitation, of the structural changes and of the entire history of society. But the surplus has more than one outlet, the most common of which is growth" (Bataille 1991:106). For Bataille, the impact which a surplus has on the nature of a system is not reflected upon by restricted economies of analysis which limit their analysis to notions such as utility and thereby exclude, and are unable to explain, other forces which act upon the system. It is for this reason that Bataille (1991) argues that restricted economic worldviews struggle to explain the occurrence of such phenomena as war, sacrifice or eroticism because these are phenomenon which tend towards pure loss, there is no gain to this expenditure. As Bataille explains (1985:118):

... [I]t is necessary to reserve the use of the word *expenditure* for the designation of these unproductive forms, and not for the designation of all the modes of consumption that serve as a means to the end of production. Even though it is always possible to set the various forms of expenditure in opposition to each other, they constitute a group characterised by the fact that in each case the accent is placed on a *loss* that must be as great as possible in order for that activity to take on its true meaning. (Emphasis in original)

These aspects of human life and history remain sidelined and are seen as marginal to the 'more important' aspects of survival. Yet, according to Bataille (1991), it is precisely these marginalised forms which give shape to the societies we live in. General economics therefore tries to incorporate these aspects of life which are considered pure expenditure into its frame of analysis. In other words, general economics aims to explain, at the same time, the utilitarian as well as pure expenditure of human life. However, as we have already argued, we always operate from a limited, context-dependent position. Bataille in this sense tries to 're-economise' our thinking by attempting to take into consideration the excess of the frames we use when describing economies purely in utilitarian terms. In other words, Bataille tries to include *all* social activity in his analysis; he aims to overcome the limits of the economies we create due to our situated perspectives.

Yet, as Bennington (1995: 47-48) argues, by focusing on the waste or excess produced by a system, Bataille is structuring his analysis around a single concept (that of excess) in the same vein as the restricted economies he is critiquing. "In its most abstract form, this suggestion would say that 'general economy' is not the other of 'restricted economy,' *but is no other than* restricted economy; that there is no general economy except as the economy of restricted economy; that general economy is the economy of its own restriction" (47-48, emphasis in original). The argument here is simple enough, that in order to be an economy, it must by definition operate as if it is restricted; an economy cannot contain everything, in order for it to be an economy²⁴.

Of course when we model a complex system our analysis will always be restricted, due not only to our limited perspectives, but also due to the fact that our models are obliged to fulfil the demands of reason, coherence or logic and will thereby always be exceeded by an excess. This is due to the fact that excess, by definition exceeds reason (Derrida 1978: 255, quoting Bataille). It is as such that despite being limited in a certain sense, an economy at the same time will always be exceeded by an excess which it cannot capture and reincorporate into its circular imagery. This excess I have labelled heterogeneity²⁵. This excess is also true of complex systems themselves. As I will illustrate in the following chapter, one can also see that complex systems may not always display behaviour which expresses a utilitarian end, in fact they invest energy into producing non-utilitarian phenomena. What the notion of general economy does is to establish a relationship to this excess (Derrida 1978:270), it establishes a relationship to the 'loss' which an economy experiences, to that which does not return to its origin and to the possibility of using limited resources without any utilitarian gain.

²⁴ Bataille himself acknowledged that in reality we are always moderating between the restricted and general economy. These two economies form two poles between which human life is enacted (1991:12; for an example of this in morality see: 1993:56-58).

²⁵ It is important to note that heterogeneity for a Bataille is a far more radical concept than the one which I have defined in this chapter. For Bataille (1985:140), heterogeneity can never be reincorporated into any economy; it is that which stands radically outside all economies.

In Derrida's exploration of Bataille we can note the double handed movement of the deconstructive process which aims to maintain the radical nature of Bataille's critique whilst at the same time illustrating the impossibility of a 'pure excess' without an economy to which it corresponds (or sovereignty as Bataille (1985: 145) labels it). In other words, Derrida tries to maintain the critique of a rationalistic utilitarianism which Bataille establishes whilst maintaining the impossibility of a truly excessive economy. In this regard, Derrida argues that we need to remember that we can only speak of one economy (of one discourse); it is senseless in this regard to postulate two different kinds of economy, one restricted and the other excessive or general. That is, we cannot postulate an economy of excess which runs parallel to the restricted economy or a general economy in which there is only excess. When we speak of a general economy it is not an economy separate from a restricted economy. Rather, it is a single economy which is not closed but is both open to random chance events as well as predictability, open to the possibility of destruction and yet robust, whether it comes from the play of forces inside the system or from the system's relationship to its environment (Derrida 1978: 272).

The models we construct of such systems must therefore keep in mind the fact that a system does not run on an entirely rational, utilitarian basis but is open to the possibility of paradox or inconsistencies. What Harvey (1986: 209-210) illustrates on the work of Derrida is equally applicable to our understanding of complex systems:

... with Derrida we turn toward a universe... of movement, of forces, of play, which also nonetheless contains or exhibits a certain "calculus" and a certain "system." In shifting, however, from a "substantial" universe to one that is essentially in motion, Derrida proposes a certain "dislocation of the proper," a certain "inappropriateness"...

In other words, the notion of general economy describes an economy with open boundaries and a play of forces inside the system. It is not the strictly restricted economy of traditional political economy nor that of classical science based upon atomistic worldviews which deny the partial perspective any viewpoint takes. However, neither is it an economy of excess (whatever that may look like). The double-handed logic of Derrida allows us to conceive of

this economy as being limited and restricted at the same time as being open and 'containing' an excess. For example, under the constraints of a restricted economy, a system will not be able to adapt to its environment as change is often the product of experimentation which cannot beforehand be justified by utility. In the evolution of a species, certain traits develop which do not necessarily benefit the species at the time. However, with time, the species may come to realise the benefits of such traits in either new or changing environments. However, most new traits and mutations that arise in the individual members of a species are not at all advantageous to them and may even be disadvantageous, and most of them do not survive to become widespread within the species²⁶. It is clear that a species needs to be limited; it needs to be conservative and robust. The notion of a general economy establishes the relationship between this excess and the conservatism necessary for a species' existence. However, the notion of general economy cannot give us an indication of the relative value of either conservative or excessive measures. In other words, the general economy cannot indicate to us what or when it is appropriate to be conservative and when excessive. It does not provide us with a measure of the value of either pole.

1.4.2. The Play of the General Economy

Under a restricted economy, a single term or centre, a single logic or reason (*nomos*), defines and limits the structure of a system. That is, a restricted economy assumes the possibility of reduction to some essential core or centre which determines the system. As Derrida (1978: 278) argues, "the function of this centre was not only to orient, balance and organize the structure – one cannot in fact conceive of an unorganized structure – but above all to make sure that the organizing principle of the structure would limit what we might call the *play* of the structure." However, in a complex system totalization of this sort, totalization by means of proposing a centre, is not possible due to the 'centreless' nature of complex systems, due to the impossibility of reducing the system to some essential truth, or algorithm, in the style of restricted complexity. As Derrida argues:

²⁶ See footnote 37 for a discussion of mutations of this kind

Totalization, therefore, is sometimes defined as *useless*, and sometimes as *impossible*. This is no doubt due to the fact that there are two ways of conceiving the limit of totalization... Totalization can be judged impossible in the classical style: one then refers to the empirical endeavour of either a subject or a finite richness which it can never master. There is too much, more than one can say. But nontotalization can also be determined in another way: no longer from the standpoint of a concept of finitude as relegation to the empirical, but from the standpoint of the concept of *play*. If totalization no longer has any meaning, it is not because the infiniteness of a field cannot be covered by a finite glance or a finite discourse, but because the nature of the field... excludes totalization. This field is in effect that of *play*, that is to say, a field of infinite substitutions only because it is finite, that is to say, because instead of being an inexhaustible field, as in the classical hypothesis, instead of being too large, there is something missing from it: a centre which arrests and grounds the play of substitutions (Derrida as quoted by Johnson 1993: 51, emphasis in original).

Play proposes another, different, form of what one could consider excess. This is no longer the excess 'outside' the system but rather a certain infiniteness or indeterminacy 'inside' the system. This is due to the nature of the non-linear interactions and feedback paths within complex systems, as well as due to the fact that the boundaries of complex systems are always open and not restricted. This makes them non-totalizable. Play is a product of the relationships which a system establishes internally as well as with its environment. The notion of excess is therefore not something which is necessarily external to a system. It is rather something which can also be found within a system due to the play of the interactions between the parts of the system. Play is a product of the multiple relationships both inside the system as well as with the environment of the system. As I will illustrate later, play is a product of the openness of a complex system to its environment along with the fact that the structure of a complex system represses certain possibilities within it in order for the system to function.

Therefore, we cannot reduce this system to a set of preconceived terms or truths, nor imagine that everything which happens within the system is reincorporated for utility within

the system (*Aufhebung* in Hegelian terms). Rather we must grant, according to the same logic as that found in Derrida's notion of *iterability* that systems, even though they are robust, exist at a point which is open to change and even destruction, open to chance and a play of forces which we can never comprehensively predict or calculate. It is for this reason that the notion of general economy, even though it is read or understood in restricted economic terms, places our understanding of a system in a space in which we are forced to grant the vulnerability of both the system and our understanding of it to forces beyond which we can ever predict or control (Derrida 1978: 270). As Derrida (272-273) argues of reading Bataille:

It is not a question of subordinating the slidings and differences of discourse, the play of syntax, to the entirety of an anticipated discourse. On the contrary. If the play of difference is indispensable for the correct reading of the general economy's concepts, and if each notion must be reinscribed within the law of its own sliding and must be related to the sovereign operation, one must not make of these requirements the subordinate moment of a structure. The reading of Bataille must pass through these two dangerous straits. It must not isolate notions as if they were their own context, as if one could immediately understand what the content of words like 'experience'....*means*. Here, the error would consist in taking as an immediate given of reading the blindness to a traditional culture which itself wishes to be taken as the natural element of a discourse. But inversely, one must not submit contextual attentiveness and differences of signification to a system of meaning permitting or promising an absolute formal mastery. This would amount to erasing the excess of nonmeaning and to falling back into the closure of knowledge.

(Emphasis in original)

Thus, we must deal with the excess which escapes our models of complex systems by finding a balance between two strategies. Firstly, we cannot exclude the excesses of the system as if they exist in some mysterious, unknowable form, 'outside' of our understanding of the world, as if they exist in their own context. We cannot act as if we could simply write off that which we can't model, yet has an influence on the system we are studying, as

inconsequential 'noise' or 'chaos.' This was the purpose of my use of the term 'heterogeneity'. In contrast to noise which is unstructured and can perturb a system, heterogeneity is 'structured' and therefore can have consequential effects on the system. Heterogeneity can be found within the play of the system and is not something simply external to the system. We must remember that heterogeneity and excess are defined by, and thus exist in a relationship with, the model we have constructed. The inaccessible, the unknowable in this regard is not some mystical force outside of restricted economies which guides their interactions. "This unnameable is not an ineffable Being which no name could approach: God, for example. This unnameable is the play which makes possible nominal effects, the relatively unitary and atomic structures that are called names, the chains of substitutions of names in which, for example, the nominal effect *différance* is itself enmeshed, carried off, reinscribed, just as a false entry or a false exit is still part of the game, a function of the system" (Derrida 1982:26-27). The unnameable or unknowable is an inevitable product of the limits of the models we construct.

On the other hand, we cannot assume that we have mastered this excess. We cannot comprehensively model a system and the play of its processes. Nor reduce its contingent existence to a single framework. There will always be an excess to the models we create and this excess is neither mystical nor simply that which we have as yet to master. The notion of a general economy reminds us that our understanding of complex systems in the world must walk this narrow edge between assuming excess to be mystical or mastered. The general economy reminds us that excess is always a by-product of the reason we use to give form to our economies. We cannot escape excess; it exists because our models have meaning to us in particular contexts.

Context must not be confused with environment. A system exists in an environment only after we have divided the system from the environment. Context is a much broader term which encompasses the sets of relationships both 'inside' the system and the sets of relationships 'outside' the system. This is because the boundaries of complex systems are open and therefore the relationships within the system exist in a relationship with the various relationships of the systems which constitute the environment. We can define

context then as the relationship between relationships inside the system and the relationships outside the system made possible by the open boundaries of the system. This is why “context is never absolutely determinable, or rather, why its determination can never be entirely certain or saturated” (Derrida 1977:3). Context is illimitable because we cannot describe these sets of relationships without once again closing down the openness of these economies, without once again constituting an inside/outside dichotomy. Context is the openness of different systems to each other. This openness includes the excessiveness of these systems along with the excessiveness of their histories and the anticipatory mechanisms they have established for the future (see below). The temporal nature of complex systems –complex systems are in a certain sense nothing but their histories – implies that in a context this excess is open to the histories of the surrounding systems which constitute the environment (for a discussion of contextuality in complexity see Chu et. al 2003:25). This excess, both due to the openness of the system’s boundaries and the temporal nature of complex systems, is why we can never reduce a context to some centre or anchorage (Derrida 1977:12). The term context refers to the impossibility of differentiating the interweaving of different systems and their histories.

Keeping this in mind, the notion of *différance* becomes central to our understanding of complex systems and the economies under which these systems operate. This is due to the fact that the notion of *différance* establishes the relationship between a restricted and a general economy. As Derrida (1981:8-9) explains:

... [*D*]ifférance refers to the (active and passive) movement that consists in deferring by means of delay, delegation, reprieve... In this sense, *différance* is not preceded by the originary and indivisible unity of present possibility that I would reserve, like an expenditure that I would put off calculatedly or for reasons of economy...I would even say that it is *the* economical concept, and since there is no economy without *différance*, it is the most general structure of economy, given that one understands by economy something other than the classical economy of metaphysics, or the classical metaphysics of economy. (Emphasis in original)

Difference, heterogeneity and noise, as I have used these terms, all collapse at this point into the notion of *différance*. This is due to the fact that, due to the general economy of a system, we can never comprehensively define, due to the context under which we operate, the clear distinctions between the different terms. The temporal nature of *différance* (to defer), implies that what is noise today may be central to our understanding of the system tomorrow, as we gain new means of interpretation or new understandings of the system. In this light, there can only be provisional discriminators between noise and structure.

However, as the inside and the outside of the system are a product of the boundaries we draw rather than something essential to the system itself (Allen 2000:80; Cilliers 2001:141; see also Derrida's chapter *Plato's Pharmacy* in Derrida 2004 [1972]), the notions of difference and heterogeneity cannot be neatly distinguished, as it is often the heterogeneity of the context which defines which differences will be important, or seen as differences, inside the model.

Furthermore, it is also the space created by the boundary of the model which allows us to say something about the system. This is a third aspect of the notion of *différance*. As Cilliers (1998:45) argues, "space is required as a site of action" and it is the space which we create between differences such as inside and outside which allows us to create models and indeed to act in the world. In other words, by drawing a boundary between the system and its environment we create the 'space' which is necessary for us to be able to say something about the system. This space is not static but is a site of action. It is in this space that we create differences, including the difference between inside and outside, which allows us to create models and act in the world. Therefore, in the relationship which the general economy establishes between the restricted economy and its excess one can find the *play* of *différance*. What makes it possible to model systems is the fact that *différance* remains undecided between activity and passivity (Cilliers 1998: 45; Derrida 1982: 8-9). 'Pockets of stability' make it possible to contingently model a system. However, it must always be remembered that this model is contingent upon the context under which it was established (Cilliers 1998: 43). If we grant this context-dependent nature of a model we must accept that it is constantly being reinterpreted and reused in new ways in different contexts. There can be no universal model. Models have to be reinterpreted and critically re-evaluated in

each new context in which they are deployed. The process of *différance* thus creates the possibility for the deployment of a restricted economy in our creation of models at the same time as precluding the finality of such a restriction. However, this is to get ahead of ourselves. In Chapter Four I will further explore the notion of *différance* as it pertains to the themes established in this chapter.

Conclusion

In this chapter I have argued that the notion of an 'economy' is useful for our understanding of complex systems. I have argued that complex systems, and the models we make of them, operate under a particular economy. I did this by illustrating that classical science operates under a restricted economy of analysis which does not acknowledge a model's relationship to that which it needs to exclude in order to function. In contrast, I have argued for the notion of a general economy in which this excess is acknowledged. However this does not imply that one can operate from a general economy. As Derrida illustrated of Bataille, we can only operate from a restricted economy. This does not mean that I am arguing for a positivistic reduction of a system to some central economy. The fact that we have to reduce does not imply that these reductions are comprehensive. At the same time, I am not arguing for a relativism in which anything can be constituted as the economy of the system. One cannot privilege either form of economy. We are always dealing with economies which are simultaneously restricted and general. We cannot privilege either pole of this dichotomy, nor can we find a compromise²⁷. This is not a debilitating position. The robustness of complex systems does cater for the restricted economies upon which models are built. Yet the excess of these models leave novel possibilities open for the future. In complex systems we have to deal with the simultaneously open and closed nature of boundaries.

In this regard, the term 'general economy' is perhaps not the best one to use. An 'open,' 'folded' or 'excessive' economy may be terms which could be used to replace the idea of a

²⁷ This does not mean that we can depend upon some vague holism either which still commits the same error as the restricted economies I am criticizing.

general economy. However, these still fall prey to the inside/outside dichotomy and the assumption that a single, essential economy exists. However, the term 'general economy' holds significance for the critical tradition in French philosophy as it marks the point at which Bataille illustrated to us the impossibility of a closed system.

The idea of an economy moves away from the limits of speaking about our knowledge in terms of frames; which rely upon a metaphorical distinction between an inside and outside. The conception of the general economy allows us to conceive of a complex system as being simultaneously open and closed. 'Economy' allows us to speak about the boundaries of a system without conceiving of these boundaries as being the limits to the system, as being the borders of influence to the system. To be an economy means to be open. An economy can be seen as an interface between resources and the use of those resources. In other words, an economy is constituted by sets of relationships rather than individuated components. The structure of the economy is therefore a relational one, yet it maintains enough form in order to be spoken of as *a* system. The term therefore overcomes the conceptual constraints of speaking about systems as both being, and being constituted by, isolated entities. Furthermore, the notion of frame limits what we can say about the play *inside* a complex system. The frame is only concerned with what we can say about the system and its environment. It conjures up an image that what happens inside the system is not affected by what happens outside the system. The idea of economy allows us to begin to say something about the nature of the relationships 'inside' a complex system whilst acknowledging the openness of a system's boundaries. The notion maintains that in a complex system, everything is simultaneously close to the boundary and embedded (Cilliers 2001: 142). The inside/outside distinction thereby collapses under the aegis of the general economy. In this regard, the general economy acknowledges the 'foldedness' of the system in its relationship to the outside (Derrida 1979)²⁸. It makes us aware of the fact that the

²⁸ In systems terms, the idea of foldedness holds that a system has open or porous boundaries and is constituted by non-linear relationships. This means that we cannot easily state where a system begins and ends as the open boundaries of the system implies that the system maintains a relationship with its environment in order to survive. The non-linear relationships imply that we cannot easily mark what is central

boundaries of a system are imposed by us in order to make the system comprehensible to us and that the play of the system always exists in a relationship to the environment.

In the following chapter I will give some content to how we can understand the model of an economy I have developed here in relation to the system itself. In other words, in Chapter Two I begin to give ontological content as to how we can understand the idea of an economy as it relates to a complex system operating within an environment and not simply as a model. In this regard I explore the work of cybernetic and complexity theorists as it relates to our understanding of how a system functions within, and adapts to, a changing environment. I argue that the understanding I develop of a system under the model of a general economy has implications for what we consider to be possibilities in the world. I further this argument, as it relates to our understanding of ontology, in Chapter Four.

to the system and what is not as small consequences can have large effects and vice versa. Keeping this in mind, embeddedness means, however, that a system still has boundaries in order to be system, even though we cannot confidently state where these boundaries lie. Furthermore, the embeddedness of the system means that a system maintains a network of relationships “inside” the system with a history which allows us to demarcate it as a system.

Chapter 2:

The System and Its Excess

Wise men see outlines and therefore they draw them... Mad men see outlines and therefore they draw them – William Blake as Quoted by Bateson (2000)

Introduction

In the previous chapter I presented an argument for why we should view complex systems as operating within a particular economy which should be regarded as ‘general’ rather than ‘restricted.’ I then gave content to what the notion of a general economy entailed.

However, up until this point, I have given little content as to what could be seen as the general economy of the system *itself*. Of course, due to the fact that we cannot operate with the sure-footedness of classical science, it becomes difficult to establish what exactly we mean by the notion of the system *itself*. Keeping this fact in mind (that our perceptions of a system are always mediated by some form of model which always produces an excess), in this chapter I aim to give an analysis of what could be considered the general economy of a system and the effects the ‘excess’ of the system has on itself.

As has been argued, a system operates within a particular economy. It does not allow every property to flourish within itself while at the same time it opens up possibilities for emergent properties to arise. The system, as Morin reminds us, is both more and less than the sum of its parts. This is a result of the play within the system in which new relationships are forged between the different parts of the system and its environment. A product of play is that certain activities, ‘wasted energy’ according to a restricted model, occur. Whether these properties are allowed to emerge or not is dependent upon the context within which the system finds itself²⁹. That which is inhibited, and that which reveals itself may not

²⁹ Due to the fact that a complex system’s boundaries are open, whether emergent properties arise is determined as much by factors internal to the system as by the environment.

necessarily serve immediate utilitarian ends but are rather defined by the particular model we apply³⁰. In other words, the utilitarian nature of an object is defined more by the perspective or worldview that the observer holds, at a particular time, than anything internal or 'essential' to the object itself. What then is the economy of a system? If we define what is essential to a system, and what is not, simply by the models we adopt, how can we say a system is robust? In this chapter I will begin to outline how a system maintains robustness whilst at the same time maintaining the ability to adapt to changing environments.

2.2. The Laws of Diversity

When we describe the economy of a system we are of course describing the relationships inside the system and their use of the resources which the system gathers. However, as argued above, there is always an excess to the economies of complex systems. If the system were reducible to some 'core' we could easily describe the economy of this system. The challenge now is how do we conceive of this excess? As will become clear below, this excess is not something which we can simply discard. It is essential to the survival of the system as it provides it with the internal diversity necessary for reacting to changing circumstances. In this section I aim to illustrate how we can conceive of this excess.

Early or 'first wave' cybernetics was concerned with explaining humans, animals and machines through a common framework. This was achieved through the development of models concerned with the common denominators of "feedback loops, signal transmission, and goal-seeking behaviour" (Hayles 1994:441). Part of this concern was to explain how a system maintained internal stability in an ever changing environment. In other words, the

³⁰ Furthermore, our models of complex systems will reflect which aspects of a system are inhibited and which are revealed to us. It is important to note then that when we discuss a notion such as the economy of a system it becomes difficult to separate the economies under which our models operate (what we define as central to the explanation of a system) and the 'actual' economy of the system.

concern, in much the same terms as the structuralist concern for equilibrium, was how a system maintains *homeostasis*. In *An Introduction to Cybernetics* (1957) Ross Ashby argues that a system requires a certain amount of internal diversity in order to survive within, or indeed simply to understand and react to, its ever changing environment³¹. As Ashby states, “natural selection favours those gene-patterns that get, in whatever way, a regulator *F* between the disturbances *D* and the essential variables *E*. Other things being equal, the better *F* is as a regulator, the larger the organism’s chance of survival.... Thus an essential function of *F* as a regulator is that it shall block the transmission of variety from disturbance to essential variable” (199). In this case, a gene-pattern is the DNA of the organism or whatever allows the system’s survival beyond the life-time of individual organisms (this appears to be limited to living systems of whatever type). Natural selection ensures “particularly those [species] that lead to the production of an individual that carries the gene-pattern well protected within itself....What this means is that those gene-patterns are specially likely to survive (and therefore to exist today) that cause to grow, between themselves and the dangerous world, some more or less elaborate mechanism for defence” (198). *F*, in the case above, is the interpolated part (shell or brain) which ensures that the disturbances of the environment (the cold, wet or hunting animal) do not affect the essential variables which ensure the survival of the gene-pattern. The survival of the organism depends upon essential variables, blood pressure, heart rate, body temperature etc., being kept within physiological limits (197). The better the regulator, the less the essential variables fluctuate outside of their normal parameters. The ability of a system to regulate this flow of variety to its essential variables depends upon the regulator’s capacity as a channel of communication, in that it needs to be able to interpret the disturbances coming into the system in order to counteract them. In brief, Ashby’s concern was the system’s relationship to the environment. He was concerned with how a system maintained

³¹ It is important to remember that early Cybernetics did not maintain as nuanced a description of the boundary between the system and its environment as critical complexity does. In other words, this paradigm of thought does not problematize the boundary between system and environment.

an internally *stable* state in a hostile environment; in order to survive long enough to be able to propagate.

For Ashby the more information or variety a system can internalise, the greater variety of circumstances it can deal with. In this regard, variety can destroy variety (207) as the “transmission (and storage) of information is thus essentially related to the existence of a set of possibilities” (124), within the system, for the system to react to its environment. In other words, the amount of variety internal to a system is able to counteract the same amount of variety of conditions it faces in its environment. This is why variety can destroy variety as the system’s experience with variety (internal variety) allows it to react to a greater variety of problems it may face. In this regard, ‘noise’ becomes problematic for the system due to the fact that a system can only interpret, and hence counteract, as much as it can understand and communicate to the reactive aspects of the system. Thus heterogeneity, as I have used the term in this dissertation so far, establishes the possibility for the system to learn, heterogeneity is not noise, but something a system comes to understand under the right frame of reference. Heterogeneity thus increases the pool of variety available to the system.

Information and learning implies constancy of the type or sequence of disturbances flowing into the system. Learning implies stability and consistency for Ashby. Therefore, for a system to learn, the environment within which it is operating needs to show constraint, a system cannot learn and hence adapt in an environment full of ‘noise’ and ‘chaos’ due to the fact that, without consistency, learning becomes both superfluous and impossible. In other words, a system can only transmit and store the information it receives from its environment from within a set of possibilities internal to the system and established in relation to the constraints which the environment shows³². The set of possibilities internal to the system implies limits to what a system can understand. So the amount of

³² Ashby did state, “it will be noticed that a set’s variety is not an intrinsic property of the set: the observer and his powers of discrimination may have to be specified if the variety is to be well defined” (Ashby1957:125) yet he did not seem to work the implications of this argument out further.

information, or internal diversity, available within a system is the key to its survival. A system's comprehension and responses to an environment depend upon this internal diversity in order for an organism to survive, as it must be able to block the flow of disturbances into the system. As Ashby (212) states:

... [A] species continues to exist ... primarily because its members can block the flow of variety (thought of as disturbance) to the gene-pattern...and this blockage is the species' most fundamental need. Natural selection has shown the advantage to be gained by taking a large amount of variety (as information) partly into the system (so that it does not reach the gene-pattern).

In my understanding, when Ashby states that a system requires a certain amount of internal variety to reach non-essential variables in order to protect essential variables (he uses the example of a fencer who learns how to react in a duel without risking loss of blood), he is simply referring to learning to avoid or react appropriately to danger.

A system then needs a certain amount of information inside of it so that it can block the flow of variety to its gene-pattern or whatever matrix the system may have. In other words, a system requires a certain amount of internal diversity so that it can react to its environment in order to ensure the survival of the species. This is what Ashby labels the Law of Requisite Variety (211). Yet, the question which we can ask of Ashby is, in a changing environment, what is considered requisite and at what time? The obvious answer seems to be that which allows the system to remain unchanged. To a degree this is correct, complex systems are robust and there needs to be resistance to an environment in order for us to be able to distinguish a system from its environment. Yet, this still does not explain how a system successfully changes in order to adapt to the changing or new circumstances it faces, especially when one takes the long term survival of a species into consideration. It is for this reason that we need to argue that, in order for a system to be successful over time, it needs more variety than would be considered essential at any time. This is not only so that a system is able to comprehend its environment but also so that it is able to react to ever changing or new environments.

2.2.2. Excess Diversity

In his descriptions of complexity, Peter Allen (2000, 2001; Allen, Strathern & Baldwin 2006) ascribes to a model of complex systems as akin to a network model in which a variety of actants constitute a single entity. In contrast to Ashby, Allen argues for a model of complex systems in which it is much more difficult to ascribe essential features to the system. This is because Allen's understanding of a complex system sees these systems as being constituted by a diverse array of interacting elements rather than by some essential core features. According to this, a species or system continues to survive within an environment due to the exploration of the diverse actors which constitute it (Allen et al. 2006).

Allen illustrates this with research he conducted on the fishing strategies of a fleet of fishermen on the coast of Nova Scotia (Allen 2000; Allen et al. 2006). In this research, Allen shows how the different skippers of different boats follow different strategies for maximising their catch. According to Allen et al. (2006:10), the strategies of these skippers range from 'ultra rationalist', in which a skipper, using the information he has received from other fisherman, always fishes in the area where his catch is likely to be maximised; to skippers who appear to disregard information and choose 'at random' where they conduct their exploitations for that day. The outcome of this research illustrates that although the 'ultra rationalist' strategy pays off in the short term, due to changing conditions, the long term gains of this type of skipper begin to diminish as they struggle to adapt to changing conditions. However, the cost of completely random fishing strategies is also high as the skipper gambles on his exploits on a daily basis. Diachronically and on average, the most successful strategy to come out of this research is therefore not the one which seeks to maximise profit in the short term but is rather one which operates at a lower level of efficiency in the short term and allows for the opportunity costs of exploration over the long term. For Allen et al (2006: 4), "ignorance and error making are very robust sources of such exploration. Clearly random changes in the design of any complicated entity will mean that most experiments are simply non-viable" yet this experimentation is essential for the long term survival of the system. Evolution will develop an appropriate capacity in which a balance will need to be found between non-viable actors or strategies and the improved

ability to survive or procreate which is a benefit of exploration (7). In this regard a system cannot infinitely produce variety or act at random (indeed it would be difficult to classify a system that acts as 'noise' a system), as the opportunity costs of exploration will at a certain point outweigh the benefits of such exploration. However, in contrast to Ashby we can see that Allen is pointing towards more variety than simply that which is requisite.

Therefore, in keeping with the theme of the previous chapter, there is a certain economy to exploration. Exploration may lead to further benefits. However, followed in excess towards either a 'purely' general economy (of course an impossible concept) or a strictly rationalised, restricted economy, experimentation may lead to the eventual death of the system. In order to survive then a system must be conservative at the same time as adventurous. The work of Allen et al. (2006:10) in this regard illustrates that:

... [T]here is no such thing as an 'optimal strategy.' As soon as any particular strategy becomes dominant in the system, then it will always be vulnerable to the invasion of some other strategy. More importantly, we see that the knowledge generation of fleets arise from their ability and willingness to explore. So, instead of this corresponding to ultra efficiency and rationality, it actually arises from the opposite – a lower level of rationality, and a freedom to take creative action.

The explorations of fleets thus imply a certain inefficiency, a certain 'waste'. However, this waste is what produces new outlets for growth and new sources of riches for the fleet. However, it is impossible to give a predetermined utility value to the notion of exploration; we can only promote the notion of exploration in general, not any exploration in particular. Because we always operate from a restricted economy we are forced to label exploration inefficiency or waste. If we could give a value to a particular exploration, we would be able to give it a utility value and thus reduce exploration to simply another utilitarian strategy which would be counterproductive to the exploratory nature of this action. Exploration implies uncertainty and thereby chance, both to succeed and to fail. The fact that we cannot know ahead of time the success or failure of a particular strategy is what gives the system choice (Allen et. al 2006:15; Derrida 2002: 31). The implication of this lack of predictability is that the value of exploration is always assigned afterwards. "It is through this process of

post-hoc explanation that we rationalize events by pretending that there was some pre-existing 'niche' that was revealed by events, although in reality there may have been a million possible niches and one particular one arose" (Allen 2000:102).

The success of exploration is dependent upon the ability of certain members of the fleet to take risks, on the insurance that a day's exploration without reward can be compensated by other members of the fleet's more conservative, perhaps more fruitful, efforts. In this regard, the success of the system depends upon the entire fleet being able to bear the costs of exploration across the system. In other words, the distribution of risk across the system establishes a form of insurance which ensures the system's survival beyond the risks taken by the individuals which constitute that system. The survival of the system thus rests in the relationships between the actants which constitute it. Allen (102) ascribes the development of the insurance industry as part of the success of the modern world, due to the fact that certain sectors of society are let free to take such risks whilst others behave more conservatively. However, in a world troubled by the major failings of such insurance mechanisms it becomes difficult to buy the continuing success of such a system. Rather, I argue, one should look towards alternative mechanisms for bearing the costs of exploration. Mechanisms such as sharing become pivotal as the net of safe links it establishes allows for the responsible flourishing of experimentation by individuals.

If a particular strategy then proves to be profitable, the more rationalist skippers will use this information to exploit that particular area until its stocks are depleted. Thus, the success of a system depends upon both exploration as well as the sharing of knowledge, the insurance of more conservative efforts along with the drive of radicals. In other words, the success of a new growth depends upon synergy between different, often antagonistic, members.

Allen illustrates the importance of an excess to a restricted, utilitarian economy for a system to exist in a changing environment. Exploration, experimentation and play are thereby not excessive in the sense of wasted energy but are necessary for the system's survival. In contrast to Ashby, who proposes a very rationalist or optimal amount of diversity, Allen (2001: 40) proposes, "a 'law of excess diversity' in which system survival in the long term

requires more underlying diversity than would be considered requisite of any time.”³³ In other words, the law of excess diversity demands an excess to what is considered requisite at any time. Innovation, change and experimentation are therefore important for Allen as this is what creates excess diversity. As Allen (2000:101-102) argues, “innovation and change occur because of diversity, non-average individuals with their bizarre initiatives, and wherever this leads to an exploration into an area where positive feedback outweighs negative, growth will occur.” It is as such that we can see that Ashby presents us with a model of internal diversity which operates very much within the realm of a restricted economics, that is, an economics which is limited to utilitarian values, to what is requisite or ‘essential’ at the time to the system. In contrast, Allen presents us with a model in which ‘excess’ is considered as integral towards understanding the survival of the system and the future ‘shape’ that system may take.

2.3. Feedback and Structural Attractors

Ashby and Allen present us with two models for understanding the internal diversity necessary for a system’s survival. In Ashby we encounter a model built upon the constraints of the cybernetic concern for maintaining homeostasis. This model is concerned with what is necessary for a system to maintain a stable internal state; it is not concerned with a system’s ability to adapt to changing circumstances. It is because of this focus on the *essential* variables of a system that Ashby presents us with a restricted economy of explanation which does not attempt to explain how novelty arises in a system. In contrast to this, Allen presents us with a model of the excess which a complex system relies on in order to adapt to a changing environment. Allen, through his concerns with complexity, does not

³³ Ashby does argue that in higher organisms the role of play or curiosity is important as it brings more variety into system than may be necessary at the time. However, he provides us with a very essentialist understanding of a system as he states, this “information is useful and should be made as large as possible; for, by the Law of Requisite Variety, the amount of disturbance that reaches the gene-pattern can be diminished only by the amount of information so transmitted” (Ashby 1957: 214). Ashby in this case is simply discussing learning in order for the system to *avoid* change.

share the demand for homeostasis which constrained early cybernetics. Rather, despite arguing for the necessity of reduction and thereby a certain form of stability, Allen's model moves away from a conservative economy towards a more excessive or general economy in which it becomes possible to explain change in a system.

In the following section I will propose a model through which we can understand how a system makes use of this excess which it produces. This will improve our understanding of exactly what is meant by the 'excessive' nature of such an economy. It is important to remember that the 'use' or direction which this excess diversity takes is not stable, it changes according to the conditions at hand and therefore takes on different forms and has different effects during different times and places. As I described above, we cannot prescribe a universal use to which this excess can be put. That would nullify its *excessive* nature and assume a utilitarian function for this excess. In other words, it would assume that this excess is a means to increasing the efficiency of the system. An implication of this is that prediction becomes difficult. As Allen et al. (2006: 7) explains:

We may remark in passing that this means that there will never be a completely clear understanding of any evolving system at a given time, because it will always contain micro-diverse elements that may or may not turn out to be successful. The understanding that we can have of reality is obtained by creating a 'system' of interacting entities that are sufficiently correct to describe the current situation, but inadequate to predict the future structural evolution that may occur.

In other words, we can state that certain aspects of exploration are utilitarian. A living organism needs to stay warm or feed and thus a certain restricted economy exists 'now' which tolerates a certain amount of 'excessive' behaviour, searching for food or experimenting with ways of staying warm. However, in the future this system may look radically different due to the workings of excess diversity, which shapes its future responses to unforeseen circumstances. We cannot simply demarcate an area of excess and claim that this is the trajectory the experimentation of the system will take. Due to the fact that complex systems are centreless, the activity of the system is distributed across the system through play and hence the excess is distributed across the system. Excess is not isolated to

certain facets of existence, even though certain areas of a system may display a larger propensity towards excess than others. However, even though these areas may illustrate a greater propensity for excess, the non-linearity of a complex system implies that these are not necessarily the areas which will result in the greatest change. Small changes in more 'conservative' parts of the system may, with time, have a greater impact on the system. It is impossible to determine the long term effects of excess.

What can be said though is that, due to the open boundaries of complex systems, a system will change due to the dynamic nature of the context 'in' which it finds itself operating. In other words, different time periods support different forms of expenditure. As Bataille (1985:106-107) notes with regard to human society:

History ceaselessly records the cessation, then the resumption of growth. There are states of equilibrium where the increased sumptuary life and the reduced bellicose activity give the excess its most humane outlet. But this state itself dissolves society little by little, and returns it to disequilibrium. Some new movement then appears as the only bearable solution. Under these conditions of malaise, a society engages as soon as it can in an undertaking capable of increasing its forces. It is then ready to recast its moral laws; it uses the surplus for new ends, which suddenly exclude the other outlets.

The context within which a society or system finds itself operating, impacts upon the outlet of the excess which it needs to exclude. There may be a myriad of ways the excess could be released determined by the possibilities available for such release. The system is constrained by these possibilities in order to constitute itself as coherent. A system cannot release its excess in *any way* in order to guarantee its survival if it wants to remain unchanged. A system can release excess in ways which lead to its own destruction, in such forms as a positive feedback traps (see below) or nuclear war depending upon which way the system is developing³⁴. During the history of societies this outlet has alternated between

³⁴ This "directionality" of a system's development will become clearer below where I discuss the notion of a structural attractor.

more humane sources of excess, charity or festivals, to more vicious forms such as warfare and repression. A system as such exists within a state of excess which contributes towards the changes one experiences and can witness within the system. But how can we conceive of these changes? In other words, how can we conceptualize this change from excess, which is non-utilitarian, to becoming useful for the survival of the system? How does the system make use of this excess? How does a system change?

A system of feedback must be developed in order to understand how excess in a system can contribute towards the survival or change of the system. Feedback is the process whereby the environment or emergent properties of a system influence the parts which constitute the system and thus begin to change the system in the direction of this influence (DeAngelis et al. 1986:7). A system thus changes because of its ability to make use of the excess it cannot help but produce. These changes begin in the excessive 'parts' of the system, they take shape in the accursed share, the heterogeneous matter which is excluded from the system and, if successful, they lead back to changes within the system 'itself'. However, the robustness of the system will resist changes which do not have runaway effects. A system which does not resist change cannot exist; there can be no system without resistance to change. Excess is then a component of a complex system, it engages with the economy of the system. This is partly because excess, by definition, only exists in relation to the robustness of the system. Excess cannot be defined in relation to itself; it can only be defined in relation to that which is non-excessive. Furthermore, the stability of the system is what produces the excess. A system which is not robust and stable cannot produce excess because it won't be efficient enough to be able to produce outside of its immediate needs. Robustness and excess mutually implicate one another. The feedback from the excess which is resisted is called negative feedback. Feedback which leads to change is referred to as positive feedback. As Morin (2007:15) argues:

Negative feedback is what makes it possible to cancel the deviations that unceasingly tend to be formed...Positive feedback develops when a regulation system is not able anymore to cancel the deviations; those can then be amplified and go towards a runaway, kind of generalized disintegration, which is often the case

in our physical world ... the positive feedback, i.e. increasing deviation, is an element that allows transformation in human history ... In other words, all the processes start by deviations that, when they are not suffocated, exterminated, are then able to make chain transformations.

Positive feedback is then the movement which the accursed share takes to result in 'the only bearable solution' in Bataille's terms. Thus, one can see that a system which exists in a state of complete equilibrium will not be able to adapt or evolve to changing circumstances. Therefore, the accursed share, the excess of a system, is not 'waste' in the sense of classical political economy. It is rather necessary for the continued survival of the system. Although systems resist certain changes and maintain a robust structure, they are equally invested, for their survival, in ensuring their adaptability. In other words, the paradox of complex systems is that, whilst at the same time ensuring their current stability, systems also maintain an interest in making themselves unstable. 'Dynamic instability' is the process that biologists have come to note in cells in which "the cell is investing enormous amounts of energy not in building structures but *in making them unstable!*" (Barbieri 2008: 588, emphasis in original). Dynamic instability can thus be seen as a mechanism which ensures the long term adaptability of the system. Within human life, dynamic instability can be seen in the massive investments governments make in research and the arts, depending upon the political climate under which the government is operating.

The idea of feedback implies that the possibilities for a system to change are the result both of factors internal to the system and of opportunities provided for and demanded by the environment. In other words, change is often the result of environmental constraints which demand the system to change. However, it is often the resources provided by the environment which make change possible. According to Barbieri (593), the environment plays three roles in determining the success of a particular movement. Firstly, the environment provides the building blocks for the manufacturing process of these outlets for growth. Secondly, the environment decides on the viability of these movements. In the history of a system one can witness a near unlimited variety of options for divergence or new paths to take, yet not all of them may work under the conditions in which they were

born. The system proposes alternatives “but in the end it is the environment that disposes of [its] products” (593). Finally, the “environment is not only the place where living systems exist. It is also the place that living systems tend to become adapted to” (593). As such, a system cannot be seen to be independent from its environment, but is rather intertwined and determined by the environment within which it finds itself operating. This intertwining of system and environment is what I was attempting to outline in the notion of context in the previous chapter. As Morin (2007: 14) argues:

For a living being to be autonomous, it is necessary that it depends on its environment on matter and energy, and also in knowledge and information. The more autonomy will develop, the more multiple dependencies will develop ... [thus] ... the autonomy cannot be conceived without its ecology. Moreover, it is necessary for us to see a self-generating and self-producing process, that is to say, the idea of a recursive loop which obliges us to break our classical ideas of product → producer, and of cause → effect.

This may seem a trivial enough point: systems are determined by their environment. But the apparent triviality of this point masks its radical implications. Notions such ‘sovereignty’, ‘autonomy’ and ‘independence’ therefore imply environments which support them. We can only act then in ways which our environment supports, we cannot stand above our environment as if we are free to manipulate it. The implications of this dependence upon an environment will become clear below.

Up until this point I have described the necessity of excess for a system’s survival. In other words, I have argued that a system cannot exist except by means of producing an excess. This is because a complex system does not exist within a vacuum but in an environment which consists of other systems producing excess of their own. The excessive nature of the environment within which a system operates implies that the environment itself is a dynamic system. Yet the openness of complex system’s boundaries results in the inevitable intertwining of the system and its environment. This intertwining, along with play inside the system, is what allows for the possibility of change. Change will occur if the feedback in the system can overcome the robustness of the system. However, how does a system adapt to

its changing environment or indeed move from one environment to another? In other words, I have established that it is within a system's interest to remain unstable in order to adapt to a changing environment. Furthermore, I have argued that systems are constantly making use of the excess they produce in order to propose new artefacts or developments, which an environment either allows to flourish or suppresses. But how can we conceptualise such developments? What does it mean to 'propose' new developments and why would a new development be able to overcome the resistance it faces as a result of its deviation from the stability of the system?

In non-linear dynamics the term 'attractor' is associated with the destination of system trajectories, in other words with the long term development of a particular pattern of growth in a system (see for instance: Allen 2001: 29; Hofstadter 1981: 17; Juarrero 1999: 152). An attractor therefore attempts to describe the path along which a system promises to develop. However, if we consider a system to be operating within a general economy or under the epistemology of general complexity, the notion of an 'attractor' must be adapted due to the fact that a system does not follow a linear, neatly marked out path because it is constantly adapting to a changing environment. In other words, we cannot develop a model for the future of the system accurate enough to meet the demands which the notion of an attractor implies. At the same time, however, a system does not consist of purely heterogeneous forces and actors. I have argued that the notion of general economy establishes a relationship to such forces but a system excludes such forces in order to maintain coherence and indeed robustness. I seem to be presenting a paradox or contradiction here. In other words, how can I combine the view that a system aims to exclude the heterogeneity within it while at the same time I have argued that a system develops towards the heterogeneity it aims to exclude?

If we follow the logic of the general economy we can note that a complex system does not inhabit a restricted and easily laid out schematic of parts and their interactions. The schematic we produce of such systems is a result of the exclusions we make. Indeed, if we could easily predict the workings of a complex system in a mechanistic way we would not have a complex system. The fact that we always find a complex system in context means

that there are a diverse range of actors acting both 'within' and 'outside' of the system. In other words, there are a diverse range of elements which cross the boundary between the inside and the outside of the system. Furthermore, these actors do not run at average rates nor do their relationships interact in a standard, uniform way (Allen 2000: 80-81). The behaviour of these actors cannot be reduced to some average rate or standard behaviour pattern which would adequately describe them. Their behaviours occur in a field of play which gives them an infinite³⁵ range of possible behaviours. Microdiversity and idiosyncrasies of individual sub-units are central to the behaviour of complex systems and, as has been illustrated, give the system robustness over time. The idiosyncrasies of individual sub-units provides the system with the play necessary for its survival. However, this diversity is not infinite in the sense that *any* actor could be involved with the workings of the system. The process of evolution decreases the total amount of internal diversity produced inside a system³⁶. Therefore, "evolution results in a selection process that reduces the types of individual or agent that can inhabit the system to those that can coexist with or have synergy with the other types present" (Allen 2001:31). The internal workings of the system thereby produce an environment in which its internal actants function. It is therefore that, as much as the factors found in the environment determine the success of certain evolutionary propositions from a system (see above), there are internal limits which determine which 'mutations' can influence the future of the system. This is due to the fact that an actor's success is determined by its ability to act in synergy with other actants within the system who shape the fitness landscape which allows them to survive (31). Therefore, the internal environment of a complex system is not a neutral space. This internal landscape is shaped by actants who establish or resist different forms of relationships made possible

³⁵ Infinite in the Derridean sense of the term, that is their behaviour can never be predicted or predetermined due to the play of their relationships

³⁶ It is important that we note a distinction between an 'external' game which admits a larger, near unlimited amount of responses to outside changes and an internal game, "where the division of labour, internal relations, and shared experiences play a role in the survival of the system" (Allen 2000:102) and thus leads to more restriction in the variety of responses a system may have.

within the constraints of the system. Positive feedback thus ensues when more actants act in synergy and thus increasingly influence and improve the conditions of survival for others with similar types of behaviour.

Peter Allen (36) has labelled the process whereby a system takes on a new path of development, after a process of exploration by heterogeneous actors, a 'structural attractor'. A structural attractor is a

... complex system of interdependent behaviours whose attributes are on the whole synergetic. These have better performance than their homogenous ancestors, but are less diverse than if all 'possible' behaviours were present... Those present result from the particular history of search undertaken, and on their synergy. In other words, a structural attractor is the emergence of a set of interacting factors that have mutually supportive, complementary attributes.

Structural attractors give shape to the system as it adapts to a changing environment. It is the success of positive feedback which reshapes the internal environment of the system. Prior to the development of a structural attractor certain propositions from the excess of the system would be resisted by negative feedback. Under the new conditions brought forward by the development of a structural attractor, these same propositions may now receive more favourable conditions under which to thrive. The failed behaviours of actants who did not work in synergy with others in the system can be seen as the pure loss of a general economy. This is the ever present and necessary fragility of a system adapting to a changing environment. Yet the actants which act successfully, in synergy, produce positive feedback which eventually leads to change within the system. The success of this change is as much 'demanded' by the environment as it is 'allowed' by the internal relations between actants³⁷. This relationship between the internal environment of complex systems and the

³⁷ This does not imply a simple demand/response relationship between the environment and the system. The system may produce mutations which may play no role whatsoever in the system's relationship to its environment nor have any function within the system's internal environment. These mutations may take on a role later in the system's life; mutations such as this are referred to as *exaptations*. Exaptations are "those

external environment within which such systems operate once again illustrates the difficulty of conceiving of a clear inside and outside to the system. Positive feedback depends as much on the opportunities provided for by the environment as it does on the internal workings of the system.

The outcome of this and the foregoing chapter is therefore that the economies of complex systems are not limited to simple restrictions of mechanical behaviour. Rather, the general economy we have to take cognisance of when faced with a complex system demands that we move to a new understanding of the world around us. This is an epistemology which is as fragile as it is robust, an ontology which cannot be easily separated from the epistemology we view it through. It is, furthermore, one in which time and history are not the neat, linear trajectory provided for us by classical science. Rather the past, as well as the future, disseminate behind and before us (see Chapter Five, page 219), leaving us with a model of the present which is nothing more than a model. Yet it is a model and therefore useful for the present we inhabit. However, the system 'itself', like our models should be, is constantly exploring new possibilities and other ways of behaving in an environment behaving in the same fashion. In this light the future is being shaped by the behaviour of the present, and experiences of the present give shape to the future 'structure' of the system (Allen 2001: 31). Therefore, it is our behaviour in the present which gives shape to the future of the system; it is our fears, dreams and desires which give shape to the future we will live in. It is as such that the actions we take now influence the future we will live in. If we act synergistically with a system we should resist, it makes it difficult for other actors to continue resistance as the system finds it easier to constrain its heterogeneity as it develops along a particular structural attractor. Of course, the same applies to systems we agree with and the support necessary to sustain these structural attractors.

structures which revealed themselves as useful throughout the course of evolution, but nevertheless arose either for other reasons or for no reasons at all, and which only later took on, more or less fortuitously, the functions which they now carry out" (Ceruti 1994:123, emphasis in original). The excess and intertwining of a complex system and its environment therefore problematizes an easy demand/response relationship between the two.

It is important to note that not any path to the future, any structural attractor, is as good as the next one. As Allen has shown with the notion of a positive feedback trap (Allen 2000: 91), some structural attractors end in disaster. “This trap results from the fact that any emergent trait that feeds back positively on its own ‘production’ will be reinforced, but that this feedback does not necessarily arise from improved performance in the functionality of the individuals.” This feedback is essentially narcissistic³⁸ and in many ways we can draw analogies between the capitalist system and the narcissism of the positive feedback trap, something I aim to do in the conclusion to this dissertation.

Luckily, fate does not feature in the scientific vocabulary. Therefore, as I will argue, complexity discourse allows us to begin to develop an ethic of action which will allow us to take action, whilst at the same time avoiding the trap of a fascist, totalising discourse, along with the disarming unconstructive approach of a complete relativism which seems to hamper liberal mindsets from taking constructive action. One means of achieving this is through acknowledging the openness of complex systems.

2.4. Possibilities and Potentialities

An important feature of the general economy upon which complex systems is built is that these systems are fundamentally open systems. That is, these systems contain a wealth of possibilities which cannot be captured by a restricted economy of analysis due both to the play within the system as well as the context in which these systems operate. However, in order to better understand what is meant by the notion that a complex system contains a wealth of possibilities which cannot be captured by a restricted economy we need to distinguish between a possibility and a potentiality. This distinction makes clear why a comprehensive description of the possibilities held by a complex system is impossible.

³⁸ The example Allen uses to describe this process is that of the peacock’s tail whereby female peacocks are attracted to males with larger and larger tails thus exaggerating the size of the tail eventually to the species detriment.

Roberto Poli (n.d, 2006, 2008, 2010) has written extensively on the nature of what he calls ‘anticipatory systems’. An anticipatory system for Poli (2008:2) is one which can use future-based information in order to act in the present. In other words, an anticipatory system is one which reacts to possibilities which may arise in the future. What is important for Poli (2006: 77, and I will further elaborate this below) is that we conceive of ontology as being open. Ontology needs to be open, according to Poli, in order for us to be able explain the novelties we witness. That is, if ontology were presented to us in its totality, we would not witness novelty and hence, anticipation would not be a phenomena necessary to analyse. That which makes anticipation difficult, the fact that ontology cannot be known completely, is also what makes it possible. If the system were determined by its past, or the present, it would not require mechanisms for anticipation, nor would it be able to react to novel events. It is only because a system is not entirely determined that it is able to react to the unforeseen. If the system were completely determined by its past, it would collapse in the face of the unforeseen³⁹. As Poli (77) explains:

This means that the ontological nature of entities is not thoroughly established. Something new can always happen; entities are never totally given in advance. All of them exhibit some kind of tendency towards the future.... “Categorical openness” means that the entity is only partially determined, some of its determinations are hidden or latent.

In this sense Poli recognizes that our models are limited by what they can say about the system. However, categorical openness is not an epistemological problem, as I tried to illustrate above, the openness of a complex system is as much an ontological phenomenon (77). This is because a complex system produces latencies which are context-dependent and thereby may remain hidden until the context allows them to be revealed. In other words, the excess a system produces may not immediately reveal itself or its possibilities. These

³⁹ Later in this dissertation though I will problematize what the notion of a past implies for determining a system (see Chapter Five).

possibilities may only be realized in the future. Such is the case with exaptations (Ceruti 1994:123, see footnote 25).

Poli (n.d:4) distinguishes between two forms of latencies. 'Possibilities' comprise of matured latencies which interact with one another. Possibilities in this regard can be recognized by a restricted economy of analysis. Possibilities are the tendencies or propensities which a system currently reveals and which we can see being developed in the history of the system. Possibilities then give us a glimpse as to what the future of the system could be like based upon current parameters. In contrast, 'potentialities' are still immature latents. That is, potentialities are latencies which are yet to reveal themselves under hospitable circumstances. This has an impact upon how we understand the systems' development.

From the point of view of the space of possibilities, the development is towards the entity's stable points, if any. On the other hand, from the point of view of the space of potentialities, the existence of something like pre-established stable points does not make much sense, because the state space of the entity is going to become different... What is needed is the idea of something that is neither reachable nor crossable. The concept of horizon – as opposed to the concept of boundary, used to distinguish the system of the entity from its environment– suits our purposes nicely. The entity's horizon outlines that fragment of the space of potentialities whose conditions are maturing. As its conditions mature, the entity's horizon moves ahead (4-5).

Potentialities can thereby not be determined beforehand, it takes intervention to realize potentialities into possibilities. But this does not mean, once again, that these potentialities are only hidden in the system, that if we uncovered enough and knew enough about the system we would be able to map out its horizon of potentialities. As Poli (2006:77-78) states:

'Categorical openness' means that the entity is only partially determined, some of its aspects are still hidden. Better: some of its determination may be latent. The difference between being hidden and being latent can be clarified as follows: hidden components are there, waiting for proper triggers to activate them. On the other

hand, latent components do not exist at all in the entity's actual state. Hidden and open components interact with each other. They form the entity's space of possibilities. Latent components relate to incompletely present conditions and aspects. Their incompleteness may be ascribed either to still maturing conditions or to new conditions that may subsequently arise. The constantly open space of potentialities is constructed around them.

In other words, hidden components can be found within an economy of analysis. It is possible for us to illustrate that under certain conditions these components can be realized into possibilities. In contrast, a latent component cannot be captured by an economy of analysis. Their existence is heterogeneous to the economy of the model we establish. Due to the fact that a complex system has latent potentialities, the 'space of possibilities' is impossible to comprehensively determine. Due to this open space of possibilities, due to the heterogeneity of the system, when we face a complex system we need to argue for a different form of impossibility, an impossibility which is distinct from the not possible. As Derrida (2007: 454) argues concerning the event, so we can say of the space of potentialities in complex systems:

We should speak here of the im-possible an im-possible that is not merely impossible, that is not merely the opposite of possible, that is also the condition or chance of the possible. An im-possible that is the very experience of the possible.

Latent potentialities, heterogeneous to the system, or our models of them, therefore present us with a relationship to the impossible which collapses the simple dichotomy possible/impossible. These latent components, once realized as a possibility in the system, provide the ground for the development of future possibilities within the system. Yet they cannot be determined as a possibility before their realization. *Post facto* we can see that these latents were the chance of the possibility which was realized in a dynamic environment. However, due to the dynamic nature of the environment and the excess diversity of the system, there will always be another wealth of (im)possibilities which could have arisen.

We can therefore state that the reason of an economy defines what the possibilities of an economy are and this reason contrasts this to what it perceives as impossible in order to maintain coherence. But we can see from the above that what is labelled impossible can also be that which is by necessity excluded from the economy. It is not impossible as 'not possible', but rather the impossible as that which is excluded or not counted in the economy as a possibility. This potentiality could be latent, if the economy accounts for the possibility of such a trigger as is implied by the term latent. Yet, hidden potentialities will never be revealed by current economies; they will always be heterogeneous to them and will only be revealed once the system or our models of the system are suited to deal with this heterogeneity. However, *possibilities* do exist, and, excluding the interference of an event, we are given a tentative glimpse into the future of the system from the present by means of these. This does not mean that the system is determined but rather that we do have an idea that based on current conditions; we can say such and such about a system as these possibilities develop. We can therefore, obviously always contingently, makes claims about the future. Prediction is a context-dependent activity.

When Poli (2006:77) speaks of the "entity's space of possibilities" this can never be comprehensively determined. We can never comprehensively state which possibilities or potentialities exist within a system. The danger with the current attempt at proving possible benefits of research, prior to the research process even beginning, is that it only acknowledges possibilities. It can only acknowledge possibilities, within the adopted frame. If this economy is focused around a general equivalent, money as is the case today, the only possibilities accepted will be those restricted to financial reward. The problem with a general equivalent is that it tends towards protecting itself; it establishes the economy in such a way that any event which may disrupt it is excluded as a possibility. This is because the general equivalent demands that the coherency of the economy be built around it. But we must think away from these restricted economies, not in an unreasonable way, but in a way which forces us not to be able to hide behind the narrow confines of the general equivalent. We must learn to think in a way which does not allow us the ability to hide behind notions such 'financial feasibility' which is increasingly becoming the argument against taking action in the world, despite the possible moral consequences such equivocal

justifications may hold. As Derrida (2005:144-145) argues, this is not an unreasonable position:

To think this and to say this is not to go against reason. To be worried about an ideocracy or a teleologism that tends to annul or neutralize the eventfulness of the event, and that does so precisely to immunize itself against it, is not to go against reason. It is in fact the only chance to think, rationally, something like a future [*venir*] and a becoming [*devenir*] of reason. It is also, let us not forget, that which should free not only thought but scientific research from the control and conditioning to which it is subjected by all sorts of political, military, technoeconomic, and capitalist powers or institutions....The same goes for "state" control of knowledge... For just as no power...will ever be able to justify through reason the control or limitation of scientific research, of a research for the truth, of a critical or deconstructive questioning, and thus of a rational and unconditional research in the order of knowledge and of thought, so also (or reciprocally), no knowledge as such, no theoretical reason, if you will, will ever be able to found a responsibility or a decision in any kind of a sustained manner....It is *necessary to know*, to be sure, to know that knowledge is indispensable; we need to have knowledge, the best and most comprehensive available, in order to make a decision or take responsibility. But the moment and structure of the "*il faut*," of the "it is necessary," just like the responsible decision, are and must remain heterogeneous to knowledge. An absolute interruption must separate them, one that can always be judged "mad," for otherwise the engagement of a responsibility would be reducible to the application and deployment of a programme, perhaps even a programme under the refined form of teleological norms, values, rules, indeed duties, that is to say, debts to be acquitted or reappropriated, and thus annulled in a circle that is still implicitly economic. (Emphasis in original)

We must then do the best we can to produce knowledge about a situation, to understand and thereby to attempt to work out which possibility would be the best to pursue. However, we cannot comprehensively calculate which possibility will be the best, it is an ethical as

much as a pragmatic issue to decide which possibility we should pursue, we can only attempt as best as we can to illustrate all the possibilities available to us and the futures these possibilities may hold. Yet, due to the fact that our models are always context-dependent, simply illustrating these alternative possibilities is only the first step to realizing them. As with deconstruction it is not enough simply to overturn the system, to show there are other possibilities. We must, as Derrida (1981: 41-42) argues, engage in interminable analysis

[t]o deconstruct the opposition, first of all, is to overturn the hierarchy at a given moment. To overlook this phase of overturning is to forget the conflictual and subordinating structure of opposition. Therefore one might proceed too quickly to a *neutralization* that *in practice* would leave the previous field untouched, leaving one no hold on the previous opposition, thereby preventing any means of *intervening* in the field effectively. We know what always have been the *practical* (particularly political) effects of *immediately* jumping *beyond* oppositions, and of protests in the simple form of *neither this nor that*. When I say that this phase is necessary, the word *phase* is perhaps not the most rigorous one. It is not a question of a chronological phase, a given moment, or a page that one day simply will be turned, in order to go on to other things. The necessity of this phase is structural; it is the necessity of an interminable analysis: the hierarchy of dual oppositions always reestablishes itself. (Emphasis in original)

Therefore, in order to realize potentialities we must constantly engage with the world. By not engaging, we maintain conditions as they stand. There is no such thing as complacency in the world due to (as I described above) the conditions one establishes for the maintenance or challenging of the particular structural attractor one is labouring under. Stating that there are more possibilities than are currently realized does not necessarily reveal these possibilities. We must change the restricted economy we are labouring under in order to make these heterogeneous possibilities *differences* within our system. We need

to change our economies in order to cater for these possibilities. Experimentation,⁴⁰ due to the changing landscape, changed often by feedback from sequences of experimentation of other living entities, is an inevitable necessity for the perseverance of life on this earth. An earth not producing, not subverting itself, is a dead earth. As such, we are driven to transgress, in order to make life possible, without ever breaking through to a utopia of stability. As Derrida (1981: 12) states:

There *is not* a transgression, if one understands by that a pure and simple landing into a beyond of metaphysics....Now, even in aggressions or transgressions, we are consorting with a code to which metaphysics is tied irreducibly, such that every transgressive gesture reencloses us— precisely by giving us a hold on the closure of metaphysics— within this closure. But, by means of the work done on one side and the other of the limit the field inside is modified and a transgression is produced that consequently is nowhere present as a *fait accompli*. One is never installed within transgression, one never lives elsewhere. Transgression implies that the limit is always at work. (Emphasis in original)

We are always trapped, we can never escape the limits of the positions we occupy. As I stated above, we can only operate from a restricted economy. However, due to the openness and play of complex systems, as well as our economies of thought, we can, and need to, push against the limits of these economies. At this point then we can only endorse the principle of transgression, we cannot endorse a particular transgression, if that were possible it would assume full mastery of the present we inhabit.

⁴⁰ In Chapter Five I expand on the idea of experimentation. As I will argue, the philosophical notion of experimentation opens up a way for us to think about acting in the world which will allow us to reveal the potentialities contained in our economies of thought. Borrowing from the notion of scientific experimentation, I expand the term to incorporate art, politics and love as means of experimenting in order to find alternative ways of living in this world.

Conclusion

In the previous chapter, I established that a system and the models we make of them can be regarded as operating under a particular economy. The strong reductionism of classical science tends towards an economy which is very limited in the possibilities it presents for novel behaviour or for deviation away from the current system. This restricted worldview, as was presented in the critique Bataille made of political economy, presents us with an economy of terms which is reduced to utilitarian values. Furthermore, as is the case with restricted complexity, we see an economy of terms which struggles to sufficiently deal with the problem of complexity. In this regard, the method of simplification, made possible by the assumptions of classical science, essentially avoids the problem of complexity in that it is unable to take into consideration the relationships between the system and its environment or the parts and the whole for instance. The interesting problems we find when faced with complex systems – emergence, the system's relationship to its environment and novelty, for instance – are fundamentally pushed aside by the atomistic and reductionist nature of restricted complexity.

In contrast to the restricted economy of terms, the new move towards understanding complex systems, general complexity, aims to face the problem of complexity by means of establishing a different conceptual toolbox for understanding such aspects of complex systems as the relationship between the parts and the whole. The general economy upon which general complexity is built, places us in a relationship to the impossibility of certain knowledge, it establishes a relationship to the absolute limits of our knowledge. This position reveals to us the restricted economy upon which many arguments within the world are based. However, this is not a debilitating position, nor is it an argument for finding something 'new' out there, a searching for replacement or a waiting for an event. Rather, the notion of a general economy aims to illustrate the amount of possibilities contained within a single system which may not be revealed to us by the models we establish. In this regard the notion of general economy, as much as it makes possible a new economy of terms, is not only limited to the search for the new. One can also use the notion of general economy, not only as a tool for deconstructing current systems to illustrate the biases upon

which they are built, but also to illustrate the alternatives which exist within the current system, the wealth of resources available to us 'now' which we can use to dismantle the problematics of the system under which we labour. The notion of general economy, in a certain sense, forces us to acknowledge the fragile ground upon which our models are built as they border on the edge of loss and destruction. It therefore also reveals to us the ideological position one has to adopt in the support of any position (Feyerabend 2002) and the necessity for constantly rallying against the restricted economies such ideological positions demand. Transgression thus becomes important as the danger of living without alternatives becomes increasingly apparent under a system working with an increasingly restricted economy.

In this chapter I tried to illustrate how a complex system produces an excess which opens up possibilities for transgression. The notion of a structural attractor gives us an ontological description of how the excess in a complex system produces change in the system. The possibilities or potentialities for change are then indicated by the growth of structural attractors in directions which are supported by the system and its environment. Whether it is positive or negative feedback, the relationship between excess and the system is determined by both the environment 'inside' the system and the environment in which the system is operating. It is therefore that the production of novelty is as much constrained by the system as it is by the environment within which the system operates. The excess of the system will then propose transgressions but whether these transgressions are able to have an effect is determined by the nature of that movement in relation to a set of dynamics both 'inside' and 'outside' the system.

It is because of the resistance of a system to radical change that classical philosophy has argued that there must be an event, a radical disruption of the structure of the system, in order for something novel to appear. Negative feedback, the robustness of the system as exemplified by Ross Ashby's approach to maintaining equilibrium, all illustrate models which make the thinking through of novelty under current conditions impossible. For there to be something new, then, the system must be radically disrupted, otherwise it will continue to maintain equilibrium which will not allow for novelty to appear, only small changes in the

form of learning. In contrast, following thinkers such as Georges Bataille and Peter Allen, I have aimed to illustrate that there is always an excess which challenges, and hence ensures, the survival of the system in its current form. The notion of equilibrium cannot be applied to a complex system which is always simultaneously resisting and pursuing excess in order to be able to maintain its structure and adapt to a changing environment. This excess is not some mystical force or vital spirit. It is, rather, a result of the wealth of local interactions within a complex system acting within a field of play which allows the system to adequately respond to the current conditions.

In this chapter and Chapter One, I have attempted to develop a model which begins to move away from dependence upon an event for change to occur. I have tried to lay the foundations for thinking about novelty in terms which do not necessarily depend upon the event. However, in the following chapter I will put the work done thus far aside in order to better explore the dependence of radical change, or novelty, on the event. I do this by means of exploring the work of Alain Badiou, especially his *Being and Event* (2007b). Badiou exemplifies a restricted style of thinking when it comes to notions such as novelty because of his dependence upon the notion of the event for novelty to arise. Following this introduction to the work of Badiou, in the following chapter, Chapter Four, I will offer a critique of Badiou's work based on what I argue is his restricted and metaphysical understanding of notions such as the event and novelty. In the final chapter of this dissertation, taking up the work done in chapters One and Two of this dissertation, I aim to better explore how the notions developed here can help us develop a theory of novelty not tied to the event. This work is done based upon the critique of 'evental novelty' which I develop in relation to the work of Badiou.

Chapter Three:

Badiouian Novelty

We must corrupt the youth; after all, that is the job of the philosopher – Alain Badiou

Introduction

In the first chapter of this dissertation, I outlined an argument for seeing complex systems as well as our thinking about these systems in terms of economies. In this regard I began to outline the limits of both complex systems, and thinking about complex systems, in terms of the relationship between restricted and general economies. I argued for seeing the general economy of complexity as always existing in relation to an excess which it must by necessity exclude in order to maintain coherence. However, I argued this excess is integral to the survival of the system as it provides the system with alternative possibilities in a changing environment. In Chapter Two, I formulated an argument, using Peter Allen's work on structural attractors and excess diversity, to explain how systems change based upon both the play of their internal relationships as well as the system's relationship with the environment. I argued that a complex system adapts to an environment by means of reacting positively to the excess which it proposes. This positive feedback is the result of both the environment's ability to cater for such changes as well as the system's internal environment which allows for such changes to take place. A result of this excessive nature of a complex system is that we must perceive these systems' space of possibilities as being categorically open. This openness is shaped by both the potentialities and possibilities which a system maintains.

In this chapter I will leave aside the work done in the previous two chapters on economies. Rather, I will introduce the work of Alain Badiou. As the concern of this dissertation is that of novelty, it is important to reflect on current work done surrounding this problem. In Continental philosophy, novelty is tied to the notion of the event. In other words, for novelty to arise in the world there must be an event which produces, if not the novelty

itself, at least the possibility for it to arise. I use Badiou's work as an exemplar of this style of thinking which has tied together the notions of novelty and event as inextricably connected.

As Badiou is still relatively new to the English speaking world, I dedicate the first part of this chapter to simply giving an outline of his magnum opus *Being and Event* (2007b [1988]) as it pertains to the theme of this dissertation. I do this in order to be able to contrast a position I am trying to develop from the viewpoint of complexity to that of Badiou's. However, I am not simply setting up an opposition between the complexity position and Badiou's. I give this extensive introduction to Badiou as I will be drawing on some of the themes and terminology he uses in the following chapters of this dissertation. My position on Badiou's work will become clear in the following chapters. However, let me briefly state that the ethic and strategy which Badiou is trying to develop is worthwhile. However, where I do critique Badiou is mostly in what I perceive to be the conservative⁴¹ concessions he makes in an otherwise radical project. In fact, part of the conclusion to this dissertation draws out the conservative implications of his work.

Of course, it is impossible to comprehensively cover an entire oeuvre spanning more than 40 years in a book or dissertation, let alone in just twenty odd pages (short of reading Badiou himself, the best introduction seems to be Hallward 2003). The discussion presented here is simply an introduction to Badiou's system, and is necessary due to the uniqueness of his work in relation to other contemporary philosophers. However, where the reader does not understand the work as I have presented it in this discussion, later in this chapter and those which follow, I will continue to expand on the terms he uses and hopefully this provides more insight into his philosophy. Furthermore, it is important to note that the detail given in this chapter is also to serve the needs of the following chapters. Finally, if the argument within this chapter appears repetitive, it is simply because many of the ideas

⁴¹ As will become clear in the Conclusion to this dissertation I claim Badiou's philosophy is conservative because, by resorting to notions such as "truth," he limits what is possible to only that which falls within the horizon of possibilities presented by his economy of thought (see page 257)

contained herein are interwoven to such an extent that it demands repetition, though I do acknowledge that a repetitively written chapter on the notion of an event is ironic.

3.2. Badiou: Being and Event

Alain Badiou (born 1937) has spent his life teaching at one of Paris' universities. Early in his career he was influenced by the philosophy of Sartre, which he believes is what marks his philosophy as unique in relation to the generations and concerns which followed (Badiou 2005). After Sartre, Badiou was heavily influenced by the work of Louis Althusser, and became “the leader of an extreme Maoist sect in the 1970's” (Lecerle 1999). His first publication was the novel, *Almagestes* (1964), written at the age of just 25. Following this, Badiou published another novel, *Portulans* (1967). Apart from these two novels, Badiou has also written a play (*Ahmed le subtil* (1994)) as well as authored the libretto of an opera, *L'Echarpe Rouge* (1979). His current political activities involve the establishment, with a few others such as Sylvain Lazarus, of *L'organisation Politique*.

The system of thought developed by Alain Badiou stands relatively alone in the recent history of contemporary French philosophy. Firstly, in the tradition of Plato and Hegel, Badiou aims to establish a *system* of thought which is comprehensive and universal yet which challenges dogmatic prejudice. In other words, Badiou has attempted to develop a systematic conceptual framework through which to understand the world. This does not mean that Badiou is a ‘systems’ thinker, in the style of Immanuel Wallerstein (1974, 1980, and 1989) or cybernetics⁴². Rather, Badiou is systemic in his approach. He tries to explain the world through a single system of thought. This unfashionable attempt at a total explanatory system had marginalised him from continental or critical schools of philosophy as well as from the analytical traditions in the past. Yet, Badiou draws from both the analytical as well as continental traditions as well as mathematics (set theory in particular for *Being and Event* (2007b) and later category theory in *Logics of Worlds* (2009b)) in order

⁴² For an introduction to cybernetics and systems theory see the four volume *Systems Thinking* (2003) edited by Gerald Midgley.

to establish a system of thought which is unique in contemporary philosophy. Never bowing to the trends of the time, Alain Badiou as work and as persona has spent many years on the margins of French philosophy and, up until recently, has been completely invisible to the English speaking world. However, in recent years, there has been a hungry reception of translations of his work amongst Anglo-Saxon philosophers as it provides alternative insights to current philosophy which is dominated by analytic, hermeneutic and (post) structuralist positions.

Badiou's work can be roughly divided into three phases. Beginning with early work in mathematics, and inspired by his then teacher Althusser, Badiou's first book in philosophy *Concept of Model* (2007a [1972]) aimed to establish science, and mathematics in particular, as a means through which to think the subtraction of novelty from the old, by means of mathematical formalization (see Fraser's 'Introduction' to the recently reprinted issue of *Concept of Model* for further elaboration (2007a)). In this work, mathematical formalization was a means for Badiou to escape the ideological underpinnings of science, and to show how novel approaches to the world could be created from existing knowledge. Following this, Badiou published *Theory of the Subject* (2009a [1982]), a Maoist philosophy in which his attempt to conceive of the subject as militant came to the fore. The next major work published by Badiou was *Being and Event* (2007b [1988]) which is described as his magnum opus. It is mostly this book and a few others after it that I will draw on in this dissertation. Following *Being and Event*, Badiou has published various works, including his much anticipated *Logics of Worlds* (2009b), which subtitled itself as *Being and Event 2*.

In *Being and Event*, Badiou argues for the ontology of mathematics, using mainly set theory. This does not mean that he is attempting a Pythagorean explanation of the world in mathematical terms but rather that the closest approximation we can get to ontology is through mathematics. At the same time, and this comes across quite strongly in the book, Badiou criticizes the work of both French philosophers and the analytical tradition. In fact, for most of his life, the only person whose work came close to a possible dialogue with Badiou was Gilles Deleuze. However, Deleuze died before this conversation could take place and subsequently Badiou wrote a book on the work of Deleuze (1999 [1997]). However, in

his more recent work, Badiou has come to acknowledge the contribution of philosophers such as Derrida in working towards novel approaches to the world. His mathematical interest in this more recent work has also shifted from set to category theory. Despite the coming together of a more post-structuralist style of philosophy in *Logics of Worlds* (2009b), where Badiou considers relationships as meaningful, the necessities of this chapter do not demand that we look at this work. In this chapter, I will only be considering the middle phase of Badiou's work, surrounding *Being and Event*, along with a few caveats from more recent work. This is because I am using Badiou in order to explain how novelty is tied to the event. Even though, up until recently, Badiou has been a marginal figure to French philosophy, in his philosophy we find a binding of novelty to the event which reflects a common trend in both philosophical and lay thought.

3.2.1. The Situation and Nothingness

In *Being and Event*, Badiou's primary target of criticism is the State. The State for Badiou is by nature oppressive and structures the lives of the populace under its control. As I will come to show, Badiou uses the term 'state' in both the traditional political economic use of the term as well as in the more generalized use of the term in such statements as "the state of things." In this sense, Badiou's major concern is how to give rise to individuals who act in the world against the powers which oppress them. In his terminology, Badiou's project is to give an account of the rise of a militant subject resisting the current state of the world. For Badiou, a person only becomes a *subject* once they adopt a militant stand against that which determines them (see below). Key to the realisation of this subject is the notion of event. Like Gilles Deleuze, one of Badiou's biggest concerns was how to give credence to the notion of event. This is largely because Badiou was heavily influenced by the events of May 1968 in Paris, having occupied university buildings himself and thereby experienced the existential/phenomenological power which such events hold. Due to this, and his Marxist/Maoist background, Badiou came to see the event as central to the realisation of new ways of behaving in the world. In a certain sense then, Badiou is attempting to give grounding to the phenomenological experience of taking part in emancipatory politics founded upon an event.

Badiou's primary or founding concept is the *situation*. The situation for Badiou forms the basis of any discussion, we cannot discuss the world except from within a particular situation, much like context for Derrida. Due to the foundational role that mathematics plays in his thinking, any situation is constituted by 'sets' or the process of counting as one that which we find within a particular frame of reference. In other words, due to the fact that anything we find in the world is a multiplicity⁴³ or is complex, there can be no one singular neat thing, there can only be a process by which things are counted as one, or framed (Badiou 2007b: 24). As we will come to see, the count-as-one is a product of the power relationships inherent in any situation. For example, despite the fact that I am a complex human being, who is many different things in different contexts, in the relationship between the institution of the university and me, I am counted simply as a student and not as the full multiplicity (as we shall see, the never complete, always excessive multiplicity) which I am, son, husband, football player, dance partner etc. In this regard, in any situation (and there are only situations at the foundation of Badiou's system, much like there are only frames in complex thinking, we cannot access ontology without thinking through a particular frame or situation) there are multiplicities presented as one. Badiou (24) defines a situation thus:

I term situation any presented multiplicity. Granted the effectiveness of the presentation, a situation is the place of taking-place, whatever the terms of the multiplicity in question. Every situation admits its own particular operator of the count-as-one. This is the most general definition of a structure; it is what prescribes, for a presented multiple, the regime of its count-as-one...When anything is counted as one in a situation, all this means is that it belongs to the situation in the mode particular to the effects of the situation's structure.

In *Being and Event* Badiou argues that a situation is simply that which is presented in it. The different elements within any situation are therefore simply counted as units without regard

⁴³ Badiou uses the term 'multiplicity' to describe what we would call a complex entity. Any multiplicity found in the social world is infinite for Badiou, meaning that it can never be comprehensively modelled or framed.

for their relationships (in later work (2001, 2009b) Badiou acknowledges that one must take into consideration the sets of relationships found within any situation). A situation is always presented as consistent, as structured, despite the fact that ontology is defined by inconsistency. Structured for Badiou “means to be presented according to a consistent process of one-ification, a coherent counting as one” (Hallward 2003:64). This is why structure for Badiou is a process, rather than inanimate. The situation is structured by power relations and ontology is incessantly escaping from this presentation. Therefore, ontology is the attempt to grasp multiplicity in its multiplicity. That is, ontology is the attempt to understand the world in its inconsistency and incoherence away from the structuring effect of the count.

Badiou argues that mathematics provides us with the best attempt at grasping this inconsistency even though we will always fall short. Mathematics closest approximates the excessive nature of ontology and therefore our best chance at understanding ontology will be through mathematics. However, from the perspective of the situation, the inconsistent multiple is unthinkable as such as it, by definition, escapes from the process of the count-as-one. In other words, our descriptions of ontology from the perspective of the situation will always fall short because we can only understand the world from the situation which structures ontology in a particular way. From this we can see that Badiou acknowledges the role which reason plays in structuring our economies of thought. As Badiou (2007b: 34) states:

... [T]he inconsistent multiple is actually unthinkable as such. All thought supposes a situation of the thinkable, which is to say a structure, a count-as-one, in which the presented multiple is consistent and numerable. Consequently, the inconsistent multiple is solely – before the one-effect in which in which it is structured– an ungraspable horizon of being.

We can thereby never grasp the inconsistent multiple which ontology is; it will always escape from our attempts at delineating it. This is because for Badiou, by means of using mathematical set theory, that which is presented in any situation always belongs to a set. In other words, anything defined or classified within a situation, anything counted-as-one,

always belongs to a set or grouping which is a product of the State (see below). We can never grasp a situation except through a structuring process which depends upon sets. This reduces the inconsistent multiplicity of the world to a system of classification.

We cannot accurately capture this inconsistent multiplicity of the world because that out of which multiples are composed is in itself always multiple as well. There are no elements or intrinsic values. For Badiou we can never reduce a situation to a group of primary elements or 'ones' (44). In this sense Badiou's thinking is strongly anti-atomistic or non-reductionistic due to the impossibility of reducing a multiple to a group of constituent elements. Therefore (52),

[n]othing is presentable in a situation otherwise than under the effect of structure, that is, under the form of the one and its composition in consistent multiplicities. The one is thereby not only the regime of structured presentation but also the regime of the possible of presentation itself.

If ontology is an inconsistent multiplicity, yet what is presented is always presented as consistent and counted as one, this means that there is not one but only a count-as-one. There is only an operation or a process through which that which is found in a situation is brought to be presented as one (24). Therefore, that which is presented in a situation is always presented under the effect of structure and something must always escape, everything cannot coincide with the result of the process of turning an inconsistent multiplicity into something that can be consistently counted as one. Something always escapes this process (53). This is due to the fact that ontology is always inconsistent or unreasonable (to the reason defined by the situation) and will thereby escape the 'reasonable' constraints of the structuring process. This can be compared to Althusser's concept of interpellation in which the identity of objects found in the world is determined by the powers that define those objects as certain objects. In other words, we cannot come upon a neutral, value free world, our perception of the world is always structured by power relations (Althusser 1969).

A classical philosophical concern for Badiou is the nature of *Being*. Being for Badiou is defined by this relationship between the inconsistent multiplicities which constitute

ontology and the structuring process of the situation. Due to the fact that the multiplicities found in any situation are infinite, their *being* can never be captured by a situation. Being is that which always escapes the situation. Being, from the perspective of the situation, is by nature excessive, it will always escape presentation because to catch the nature of the *is* of being (*être*) will be to only give it characteristics found within the reference of the observer which can never coincide with the full being of the object. For example, the situation of the University will never be able capture my full being due to the fact that it only understands, and describes me, in terms which it understands. My being can then never be fully captured by any situation due to the structuring process which defines such situations.

Due to the fact that ontology is inconsistent, another important consequence of the demand for consistency from the count-as-one is that we must acknowledge the existence of that which cannot be represented by the count. As Badiou states (2007b: 53):

To put it more clearly, once the entirety of a situation is subject to the law of the one and consistency, it is necessary, from the standpoint of immanence to the situation, that the pure multiple, absolutely unrepresentable according to the count be *nothing*. But being nothing is as distinct from non-being as the 'there is' is distinct from being. (Emphasis in original)

That is, from the perspective we are granted in situation, it appears as if there is nothing else, the view we have appears complete. That which escapes the count, that which escapes its interpellation, can thereby only be regarded as 'nothing'. However, this nothing is not non-existent; it is only not recognized in the situation. This nothing, this unrepresentable point, Badiou labels 'the void'. Yet this void is not a point in that it can be located or presented, in a certain sense the void is both everywhere and nowhere, as it is that which always escapes the count of multiplicities within the situation (55). Therefore (57),

[i]f the void is thematized, it must be according to the presentation of its errancy, and not in regard to some singularity, necessarily full, which would distinguish it as one within a differentiating count.

Due to the fact that every multiplicity is presented as *one* in a situation, and due to the fact that this one is always a reduction of a complex entity, the void is ever present due to this errancy of the count to account for an inconsistent ontology. However, perhaps paradoxically, due to this failure of the count the void is always located in a specific context or situation. The void in this sense is not universal in the sense that it can be located outside of specific situations, as if it is transcendent. When it is encountered the void is always situated, it is always local, due to the failure of a particular count in a particular situation to comprehensively determine that situation. Badiou is not arguing for a transcendental concept. His concern is to always situate the void. Yet, this failure of the count occurs by necessity in all situations; that is why Badiou states that the void is both everywhere and nowhere. The implication of this is that the void must always be examined *in* situation as we cannot locate it elsewhere. However, the void can never be neatly delineated or defined, it is not a point that one is able to identify or locate and thereby examine directly. This is due to the fact that the void is precisely the failure of attempts to localise and constrain. If one were able to examine the void directly, it would imply that it was a consistent 'thing' that one could grasp and draw knowledge from. Rather, certain procedures allow us to examine what happens around the void, what occurs on the edge of the void. As we will come to see, this is why Badiou places a great emphasis on so-called 'truth-procedures' (art, science, love and politics). Truth-procedures are the means for revealing the void to us in a particular situation by overcoming the current structure. As Fraser (2007a: xvii) argues, concerning the truth procedure of science and the void:

Knowledge of reality is a light that always casts a shadow in some nook or cranny. It is never immediate, never complete. Revelations of reality are always recurrent. It is only through the recurrent overturning of and rupture with what it thinks it knows, that science makes progress.

The void is a key concept in Badiou as it is 'around' the void, on its fringes, or margins, that politics happens⁴⁴. It is what the situation excludes that holds the possibility for challenging it. The void in this sense is the possible point of rupture or instability which one finds in any situation. In a certain sense, one can see the void as the excess of the situation. However, it is not excess in the same sense as Bataille uses the term. It does not have the same energy or process. For Bataille, excess is constantly making the system unstable and needs to be released; whereas for Badiou, the void is that which is suppressed within a system. In contrast to Bataille, the void would not be revealed to us if it were not for chance events. If a chance event did not occur and reveal to us the process of the count, the void would remain 'dormant'. For Bataille, excess will by necessity always explode on to the scene, excess needs to be released.

In sum, the situation is the basic concept in Badiou's philosophy. We have no access to reality except in situations, much like context for Derrida. As we shall see, ontology operates on a level prior to the situation except that we have no access to ontology except through situations, ontology is that which occurs before the situation and is inconsistent in contrast to its presentation as consistent in the situation. The situation is structured and in this structure one finds a multiplicity of elements, which are 'counted'. To be precise, the situation *is* structure or the counting operation. To exist is therefore to belong to the situation (Hallward 2003:64) but the situation cannot represent the *being* of this existence. Each multiplicity, or complex entity, counted as one, is therefore represented within the situation. However, due to the fact that each element counted as one is in fact a multiplicity, yet cannot be presented as the inconsistent multiplicity that it is, its multiplicity haunts the horizon of any situation. Because this phantom that haunts the margin is unrepresentable, it can only feature as 'nothing' from the perspective of the situation. In other words, from the view point of the situation, there is nothing that can resist the

⁴⁴ Politics, for Badiou, is that which challenges the State of the situation. In other words, politics is heterogeneous in the sense I have used this term. Politics aims to restructure the system, not simply to effect how the system is run.

operation of the count, nothing exists that cannot be presented in the situation (64). Furthermore (64-65),

... this nothing cannot amount to a mere absence of being, since its positive existence, over and beyond the horizon that circumscribes the situation, is a necessary implication of the (counting or structuring) operation that makes the situation what it is. It is perfectly coherent, then, to affirm the being of nothing. The nothing *is*; it is not mere nonbeing. As a nothing, however, this being clearly cannot be described or defined. This nothing can never be identified in a situation, it cannot belong to a situation as one of its elements or places (as nothing, it clearly cannot itself be counted as one) ... This nothing, which Badiou calls the “void [*vide*] of a situation,” is the unrepresentable link that connects, or “sutures,” any situation to its pure be-ing. (Emphasis in original)

This structuring of the situation via the count, which results in the exclusion of the *being* of multiplicities forms the foundation to understanding the rest of *Being and Event*. The notion of the void and nothingness is important for our understanding of how Badiou conceives of novelty arising in the world. Yet there is one more level of representation of the situation which we need to grasp in order to understand how power and politics play a role in Badiou’s philosophy. This is the level of the State.

3.2.2. The Language of the State

If the apparent order and consistency of the world is a product of structure, it is necessary that, in order to avoid inconsistency and chaos, confrontation with the void must be avoided. As I will come to show, for Badiou, confrontation with the void is what makes the subject realise that the world could be structured differently. This avoidance of confronting the void is achieved by a second ordering of structure which Badiou (2007b:95) labels the Metastructure or State of the situation⁴⁵. The situation, as the primary level of engagement

⁴⁵ For the sake of clarity, when using the word State in the Badiouian sense, I will adopt the capital “S”. In other uses, I will use the lower case.

with reality, does not sufficiently explain the order we experience as reality. This is due to the fact that the count is not accounted for in the situation. That is, why I am called a 'student' is not accounted for. The difference between me, the student, and say a plumber, is not explained at the level of the situation. The categories of 'student' and 'plumber', their 'separateness' are not explained at the level of the situation. I am only an individual student and the guy fixing my geyser is only an individual plumber within a situation. The *categories* that maintain us as two *distinct* entities are established at the higher level of the State. It is necessary therefore that the count be doubled, that structure be structured in order for the void not to be presented (93). If the count were not doubled, I would be able to question, once I am out of the client/service provider situation I am currently in with my plumber, say over beers in a bar, on what grounds these distinctions are maintained. Something needs to make the classifications we work with inside a situation seem universal; if these distinctions did not appear as universal we would question their existence. As Gillespie (2008: 8-9), illustrates:

At its foundation, Badiou divides the domain of experience into two distinct categories. On the one hand, there is the situation, which follows the lead of unified presentation (the 'count-as-one'); consistency (an order to the multiple terms that appear within it); and representation. The latter term can be said to supplement the situation at a distance in order to render the gap between consistency (that which comes to be presented or counted in the situation) and inconsistency (the void that escapes, or exceeds, the count for one) veritably null. It is from the position of the State of the situation that the representation of presentation occurs; the State of the situation is what structures the structure... Presentation, in other words, would be an operation of the situation (consistent ontological positing) whereas representation would be an operation of the State (the organization and distribution of that consistent multiplicity into various sectors or subsets that come to be represented).

The function of the State is to close off any possibility of the realisation of the void. It is to gather together the terms found in the situation so that it appears that the world is

consistently represented, not only in the terms found in situations, but also in larger systems of classification. In other words, the State's role is to ensure that individuals within a situation do not realise the excess of parts over the situation. This is in order to avoid the individuals which constitute the populace of a State confronting the void. The State does this by regulating the boundaries between multiplicities within a situation through the creation of subsets. The role of the State is to police the boundaries between complex entities in order to ensure that they fit into the categories which serve the interests of the State. The State's role is to prevent the unbinding of presentation, because (Badiou 2007b:109)

... if, in a situation ... it is necessary that the parts be counted by a Metastructure, it is because their excess over the terms, escaping the initial count, designates a potential place for the fixation of the void. It is thus true that the separation of the State pursues the integrality of the one-effect beyond the terms which belong to the situation, to the point of the mastery, which it ensures, of *included* multiples: so that the void and the gap between the count and counted do not become identifiable, so that the inconsistency that consistency *is* does not come to pass. (Emphasis in original)

The State then structures the structure in such a way as to prevent the realisation of the void. Despite the technicality of the argument, this is a more reasonable thesis than may at first appear. As Badiou states (94):

The thesis that all presentation is structured twice may appear to be completely *a priori*. But what it amounts to, in the end, is something that each and everybody observes, and which is philosophically astonishing: the being of presentation is inconsistent multiplicity, but despite this it is never chaotic..... The prohibition of any presentation of the void can only be immediate and constant if this vanishing point of consistent multiplicity – which is precisely its consistency as operational result – is, in turn, stopped up, or closed, by a count-as-one of the operation itself, a count of the count, a Metastructure. (Emphasis in original)

Badiou uses the term 'State' in both its philosophical and colloquial senses. In other words, for Badiou the State is both the political economic use of this term as a government or system of domination as well as a phenomenological term, as used in phrases such as the 'state of affairs.' The Metastructure or State recognizes 'parts' whereas the situation recognizes the 'individual' multiplicities counted-as-one. The State then takes the individual multiplicities of the situation and places them in larger categories in order to ensure their successful administration. The State establishes a system of classification in which compositions of multiplicities are *included* whereas multiplicities *belong* to the situation⁴⁶. For example, the State does not recognize individuals, the state only recognises classes of people, taxpayers, criminals, and licensed drivers et cetera (Hallward 2003: 96). The domain of the State is therefore parts, the composition of consistent multiplicities included in situations (Badiou 2007b:97). The State of the situation is in this sense very similar to the state described by Marxism as the 'State of the ruling class'. This is not to say that the State is possessed by the ruling class but rather that the effect of the State is always a structure, with a law of the count and a standardizing effect (105). The State is then a conservative force (106):

There is another advantage to the Marxist statement: if it is grasped purely in its form, in posing that the State is that *of* the ruling class, it indicates that the State always re-presents what has already been presented. (Emphasis in original)

The State in this sense holds as much a structuring function as a coercive one (106). The State maintains the existing structure which is historically constituted. It maintains that which is already established. We can see from this that the term 'State' is a broad one; it does not signify any state in particular, only the concept of this meta-structuring process of an existing socio-historical structure. The State could thus be a Communist one or the neo-liberal states we see today.

⁴⁶ In *Being and Event*, Badiou makes a technical distinction between inclusion and belonging. Elements are *included* in a situation whereas the groupings of these elements *belong* to the State (97).

The State prevents challenges to this socio-historical structure by establishing a language and a particular knowledge. The State blocks the revealing of the void by means of maintaining a language of the situation. The State's role is to maintain the order of the situation as it is found, to prevent the realisation of other possibilities, which is an inevitable consequence of an experience of the void. Language is the means through which this maintenance of order is achieved. By discerning parts of a situation, language allows the State to establish a "knowledge" of the situation. In other words, what the State discerns through language is what language marks and names (nominates). This process of nomination establishes a particular knowledge. This knowledge establishes sets of classifications. In other words, a language of the situation establishes a knowledge of that situation.

Knowledge is the capacity to discern multiples within the situation which possess this or that property; properties that can be indicated by explicit phrases of the language, or sets of phrases Knowledge is realized as an encyclopaedia ... Knowledge – in its innumerable, compartmentalized and entangled domains– can therefore be thought, with regard to its being, as assigning to this or that multiple an encyclopaedic determinant by means of which the multiple finds itself belonging to a set of multiples, that is, to a part. (2007b: 328, emphasis in original)

As the State establishes a knowledge of the situation, determined by the language of the situation, it appears as if the domination of the State over the situation is absolute precisely because the excess of alternatives in the situation can only appear as nothing. This domination is beyond measure, it is impossible to determine exactly to what extent the State has control over individuals, and it is this indeterminacy that ensures conformity from the members of the situation (Hallward 2003:96). For example, under the current neoliberal hegemony, the power of capital reigns completely over the destiny of the planet and the excess of this reign is completely indeterminate (97) as it appears that the only justification for action these days is an economic one. We struggle, therefore, to come up with alternative ways of relating between people which diverge from this dependence on capital. Therefore, it is difficult to measure the State's power; it is difficult to see where the limits to

this power lie. This is often why “the first task of any political intervention is to interrupt the indetermination of state power and force the state to declare itself, to show its hand—normally in the form of repression” (96-97) in order to determine where one can still act.

As has been argued it is not possible for each multiple to be entirely captured or completely counted-as-one by the State, parts of every multiple will escape this operation. Therefore, “no multiple is capable of forming-a-one out of everything it includes” (Badiou 2007b: 85). That which is not presented in the situation, that which is not classified or is not recognized within the encyclopaedia of the State, is problematic for the State because it is these points that allow one to realise the nature of the knowledge constructed by the State. That is, this excess grants those in the situation the realization that the situation could be structured differently. The role of the State is to suppress this excess, as it is this excess which gives rise to the realisation of an event.

So far, I have argued that for Badiou the starting point for analysis is the situation. We cannot analyse the world except as we find it in a situation. This is because the situation structures the inconsistency of ontology into individual multiplicities. This inconsistency implies that in order to be coherent the State must exclude. This exclusion, if realised by those in the situation, challenges the structure of the situation. This exclusion Badiou labels the void. However, in order for those in the situation not to realize this structuring process a second level of ordering is necessary so that the situation’s structuring remains consistent between different situations. This second level of ordering is what Badiou labels the State or Metastructure. What the Metastructure does it to establish a language of the situation in which the different individual units which are included in the situation are classified into groups which belong to the State. This thus ensures that the individuals in the different situations do not question their structuring into these different relationships. The State only works with the groups or parts which are established by its language. These parts then constitute the knowledge of the State. This knowledge prevents the excess of categories being realized. However, as a thinker concerned with novelty, Badiou needs a means through which those overwhelmed by the State’s classifications can come to realize novel ways of behaving in this world. He thus needs some rupture with the status quo. Badiou

does this by giving credence to the notions of 'event' and 'truth' in contrast to that of structure or repetition.

3.2.3. The Event

As was stated above, Badiou distinguishes two levels of order. The first is the situation or structure. Under this order one finds elements *belonging* to multiplicities which are counted-as-one. This level of order is in turn structured by the State or Metastructure. Under this order one finds the multiplicities which were counted-as-one, in the situation, being *included* into subsets or parts. The State of the situation recognizes parts in a situation, in this sense parts are included in the situation. For the situation, elements are said to belong to the situation, these elements are individual multiplicities. In other words, within a situation you may find my plumber and I sharing a few drinks. At the level of the State, we would be counted as either taxpaying citizens (my plumber) or non taxpaying citizens (me – the student – the barman and the unemployed). The role of this second order is to prevent the void being realised as it classifies the distinctions made between multiplicities outside of individual situations. But Badiou argues that, within any situation, the possibility of an 'evental site' exists (Hallward 2003:118):

An evental site is thus an element of a situation that, as inspected from a perspective within the situation, has no recognizable elements or qualities of its own (no elements in common with the situation). As a collective group this element belongs to the situation, but the situation has no means of meaningfully individuating particular members of this element.

In other words, an evental site is a by-product of the order established by the State, it is included in the situation, but it has no recognisable elements which belong to the situation. It is simply a product of the excess of the State's encyclopaedia.

In a certain sense, evental sites are categories without the possibility of decomposing these categories further into elements recognised or discerned by the State. An evental site can be regarded in similar terms to the idea of a stereotype (which is one way the State deals with the inhabitants of an evental site). A stereotype is simply a classification given to

someone without concern for their personal idiosyncrasies; they're simply viewed as 'feminists', 'Muslims' or 'the homeless'. Due to this, evental sites are foundational in that they cannot be decomposed into further constitutive elements. Importantly, Badiou argues that as evental sites are on the 'edge of the void', to attempt to decompose these sites into constitutive elements would put the State at risk as it would reveal the void. In other words, if we were to examine what constitutes these sites we would see how the State structures the situation in its own interest. As Badiou argues (2007b:175):

I will term *evental site* an entirely abnormal multiple; that is, a multiple such that none of its elements are presented in the situation. The site, itself, is presented, but 'beneath' it nothing from which it is composed is presented. As such, the site is not a part of the situation. I will also say of such a multiple that it is *on the edge of the void, or foundational*....It becomes clearer why an evental site can be said to be 'on the edge of the void' when we remember that from the perspective of the situation this multiple is made up exclusively of non-presented multiples. Just 'beneath' this multiple – if we consider the multiples from which it is composed – there is *nothing*, because none of its terms are themselves counted-as-one. A site is therefore the *minimal* effect of structure which can be conceived; it is as such that it belongs to the situation, whilst what belongs to it in turn does not. (Emphasis in original)

For, instance the *sans papiers* in France or 'illegal immigrants' in general, are labelled precisely that, immigrants. Individual traits or desires are overlooked, the singularity of the individual, for the sake of the stability of the order, cannot be further elaborated beyond their classification. A consequence of the recognition of evental sites is that instability is introduced into the structure. As Hallward (2003: 120-121) describes:

An evental site, then, is certainly in a situation, but it belongs to it as something uncertain, something whose own contents remain indiscernible and mysterious, if not sinister and threatening. The state of the situation is secure so long as the inhabitants of its evental site(s) can be safely dismissed under a collectively sanctioned label ("inhumane terrorists," "unreasonable fundamentalists," "enraged protesters," "hysterical feminists," "backward primitives," and so on). Each situation

is structured in such a way as to be incapable of analysing these inhabitants in any meaningful way: even to attempt to do so is already to risk the stability of the situation itself.

For example, to meaningfully examine the plight of immigrants in South Africa would be to call into question the fundamental principles upon which the neo-liberal capitalist model on which post-Apartheid South Africa and post-colonial Africa in general is built. As Hallward (121) explains:

... to consider them [immigrants] in ways that avoid facile recourse to the dismissive label of “asylum seeker,” or that take seriously the violence that creates an “economic migrant,” is already to call into question the cardinal principle that underlies political normality in the so-called advanced countries – the belief that the unrestricted pursuit of profits is a benevolent or at worst a neutral force of progress in the world.

The implications of this recognition of an evental site are important for how we think about change and novelty in general. As an evental site belongs to a situation, even as something uncertain, it is still situated and context specific. Change then cannot be transcendental; change is immanent to the situation. Change is always situated in a particular situation; it is not a universal force that overcomes the constraints of the present situation. There can be no total or global revolution. This realisation or acknowledgement of the situated nature of these sites refutes a certain ‘vulgar Marxism’ (Badiou 2007b:176):

... [T]here are in situation evental sites, but there is no evental situation. We can think the *historicity* of certain multiples, but we cannot think *a* History. The practical –political – consequences of this conception are considerable, because they set out a differential topology of action. The idea of an overturning whose origin would be a state of totality is imaginary. Every radical transformational action originates *in a point*, which, inside a situation, is an evental site. (Emphasis in original)

For Badiou, all transformation is dependent upon a particular point; change originates from a point and is characterized by that point. For this reason, the novelty which arises at this

point is marked by that site, change or novelty in this sense can never be total, something will always escape or be excluded from the novelty thus produced. In this sense Badiou's notion of transformation is not a totalitarian one; this point becomes especially important when we begin to consider his conception of truth, and the militant subject that carries this truth. This situated nature of change is exemplified by Badiou's notion of the event. That is, an evental site may exist, yet, in order to realise the possibilities for change presented by the evental site some sort of rupture is necessary. This is because the evental site is the suppressed part of any situation; the State is actively engaged in maintaining its invisibility. There needs to be some break with the ordinary running of things so that the effects of the evental site can be realised. However, as I will argue below, it is not inevitable that change will result, that novelty will come forth, simply because it is realised that the world could be ordered differently. What is equally important is that a *subject* comes forward who acts on the experiences revealed by the event. The concept of the subject is central for Badiou's project of developing an interventionist or militant philosophy. This is reflected in his concern with the analytics of the event in contrast to notions such as structure. As he states (178):

Ordinarily, conceptual construction is reserved for structures whilst the event is rejected into the pure empiricity of what-happens. My method is the inverse. The count-as-one is in my eyes the evidence of presentation. It is the event which belongs to conceptual construction, in the double sense that it can only be *thought* by anticipating its abstract form, and it can only be *revealed* in the retroaction of an interventional practice which is itself entirely thought through. (Emphasis in original)

An event for Badiou is a subjective experience. It occurs as an interval in the normal ordering of things but is never a neutral or natural occurrence, an event can only occur in *historical* situations, in the sense in which Badiou uses this term⁴⁷. A subject experiences an

⁴⁷Badiou argues that a natural situation does not contain an evental site whereas a historical one does (Hallward 2003:119). One can see in this distinction Badiou's bias towards a conceptualisation of nature as that which can be decomposed or reduced to constitutive parts which behave in Newtonian fashion. In contrast to

event when they come to realise the State's structuring of the situation sits in conflict with what Badiou labels 'truths.' An event, as we will come to see, is always marked by an intervention by a subject, its aim is always to change the situation in terms of what is revealed of the void.

Due to the fact that the evental site marks that which cannot be known, or is unknown, in a situation, the event's belonging to the situation cannot be decided from the perspective of the situation. This is because the existence of the void cannot be decided from the situation (181). Remember, the void appears as nothing from the perspective of the situation. This is why the event is a subjective experience, it cannot be determined or legitimized from the perspective of the situation which demands an objectivity based upon the knowledge of the State. It can only be experienced by an individual. Thus (192),

[t]he paradox of an evental site is that it can only be recognized on the basis of what it does not present in the situation in which it is presented. Indeed, it is only due to it forming-one from multiples which are inexistent in the situation that a multiple is singular, thus subtracted from the guarantee of the state.

The event in this sense is a difficult concept, an event is declared, there is no objective means of proving its occurrence. This is because proof and objectivity can only be recognised in a situation as approved by the State. The event cannot be predicted or cannot be proven in its time. It is a purely chance occurrence, it is the result of an aleatory point in the situation due to the inconsistency of ontology. The event is the presentation of inconsistency, which the State is aiming to suppress, in a situation. A subject realizes this inconsistency and begins to reshape the world, or 'form-ones' from multiples, from the perspective of the experience of the event.

If the structure of the situation is simply repetition, if part of the effect of structuring is to maintain a predictability based upon the knowledge of the State, the event is unique. It is

historical situations which reflect characteristics of what we define as complexity (non-linear, non-reductionistic, non-atomistic etc.).

this uniqueness in relation to the structure that implies that it can be the only source of genuine novelty. As Hallward argues (2003: 114-115):

It is its evental origin that ensures that true innovation is indeed a kind of creation *ex nihilo*, a chance to begin again from scratch, to interrupt the order of continuity and inevitability. For what is encountered through an event is precisely the void of the situation, that aspect of the situation that has absolutely no interest in preserving the status quo as such... It is thus futile to wait for, let alone try to anticipate, an event, 'for it is of the essence of the event not to be preceded by any sign, and to surprise us by its grace'. We must instead accept that 'everything begins in confusion and obscurity': the emergence of clarity is always the result of an active and never-ending clarification.

The event as such illustrates the inconsistency of any situation, it brings to the fore that which is not counted, that which escapes or is suppressed by the count. The event is a disruption of the consistency of the count, a disruption of the repetition of what Badiou understands by structure. In order for the event to be recognised, the role of those inspired by the event is to re-order thought in order to account for what happened. In other words, those inspired by the event need to account for the experience of that which was previously excluded or suppressed in their thinking about the situation by means of trying to re-order the world in order to accommodate this experience. As has been stated, due to this, the event cannot be proven; its occurrence can only be wagered on by those inspired by its occurrence. As Badiou argues (2007b: 201):

Since it is of the very essence of the event to be a multiple whose belonging to the situation is undecidable, deciding that it belongs to the situation is a wager: one can only hope that this wager never becomes legitimate, inasmuch as any legitimacy refers back to the structure of the situation. No doubt, the consequences of the decision will become known, but it will not be possible to return back prior to the event in order to tie those consequences to some founded origin.

The event thus stands outside the situation, “it takes place in a situation but is not ‘of’ that situation” (Žižek 2003:xxv). In Badiou’s mathematics, the event is said to be supernumerary (2007b:181). Thus (Badiou 2001:68),

[t]he event is both *situated*– it is the event of this or that situation– and *supplementary*; thus absolutely detached from, or unrelated to, all the rules of the situation... You might then ask what it is that makes the connection between the event and that ‘for which’ it is an event. This connection is the void [*vide*] of the earlier situation. What does this mean? It means that at the heart of every situation, as the foundation of its being, there is a ‘situated’ void, around which is organized the plenitude (or the stable multiples) of the situation in question. (Emphasis in original)

The event is always situated. It is never universal nor does it exceed the parameters of the situation. What localizes the event is the fact that it makes visible the void of the situation. Being situated, the void will differ from situation to situation and hence the event can only be a local phenomenon. The event cannot be transposed in another situation; it would be meaningless to those who are included in a different situation.

For Badiou, using set theory implies that to exist means to belong to a set. As was stated, every inconsistent multiplicity is reduced into a consistent classification or group of classifications according to the knowledge of the State. Badiou (2007b: 202) labels *intervention* the procedure by which an event is recognized as such by challenging the classifications upon which the State is built. An intervention is the procedure by which that which was revealed by the event comes into existence and challenges the sets which are defined by the State. In other words, an intervention is the process by which one confirms the occurrence of the event in the situation by actively challenging the sets of classification established by the State in order to make space for that which was realised during the event. The knowledge of the situation, established by the language of the State, naturally resists the occurrence of the event. This is because the event appears as irrational to the State due to the fact that it does not suit the State’s logic. An intervention is then the proving possible of the impossibility of the event. However, the event cannot be named, the

event “has the nameless as its name” (205). If one were able to name the event, if the name was chosen from existing language, we would have to admit that the intervention is entirely structured by the situation and thus unable to produce novelty, it would simply be a repetition of the structure of the State.

This is a radical thesis. For Badiou novelty literally arises from nothing. There are no a priori grounds for determining novelty. In contrast to Deleuze or perhaps even Bataille, Badiou does not see novelty as arising out of an existing multiple which cannot help but appear as different or new (Gillespie 2008:8). This would imply the existence of only so many possibilities for novelty as these possibilities would be limited by what appears to us in the situation in which we use the language and knowledge of the State. Because novelty arises out of the void, Badiou sees novelty as coming from nowhere. As Gillespie (3) illustrates:

... it is from the inconsistency of the void that something new can appear within the realm of human experience as such: ruptures or breaks within knowledge that force us to redefine our general categories and standards of determination. These are Badiou’s events. Events, in the most rudimentary of senses, are derived from the inconsistent domains of human experience, and while events as such may be rare, there is also an ontological guarantee that what Badiou calls ‘historic’ situations contain the potential for an event insofar as the inherent multiplicity of any situation escapes the grasp of consistent presentation. Or rather, what is consistently presented in experience (and here we could refer to anything that could be classified, ordered, or regulated by language or intuition) cannot exhaust the ontological resources of inconsistency. It is this that allows for the possibility of an event.

As an event is the product of inconsistency, of the aleatory, it is clear why an event must be declared, why an intervention is necessary for revealing the event's existence. If it were provable or predictable, the necessity of proving its existence would fall into the language of the State. Thereby it would not be necessary to declare its existence, as its existence would already be affirmed by the language of the State. Furthermore, this affirmation of its existence by the State would annul the ‘eventfulness’ of the event due to the fact that the

State only recognizes repetition (structure). If it appropriates the event, it would have to do so in a way which confirms the structuring process of the count rather than the disruption of this process which the event implies. This has a consequence though (Badiou 2007b:207):

It will therefore always remain doubtful whether there has been an event or not, except to those who intervene, who decide its belonging to a situation. In short, there will have been some chance in the situation; however, it will never be legitimate for the intervener to pretend that the chance originated in a rupture of the law which itself arose from a decision on belonging concerning the environs of a defined site. Of course, one can always affirm that the undecidable has been decided, at the price of having to admit that it remains undecidable whether that decision on the undecidable was taken by anybody in particular. As such, the intervener can be both entirely accountable for the regulated consequences of the event, and entirely incapable of boasting that they played a decisive role in the event itself. Intervention generates a discipline; it does not deliver any originality. There is no hero of the event.

In short then, Badiou's concern is how to develop a radically transgressive philosophy which is not trapped by the total and excessive control of the State. In other words, Badiou is trying to develop a commitment to transgressing what he sees as the oppressiveness of the State by means of an account which is not dependent upon a position which can be deemed reasonable from the perspective of the State. This is because Badiou argues that reason is defined by the State. Badiou depends upon the event in order to conceive of a radical commitment to change which escapes from the demands of reason as imposed by the State. This allows Badiou to conceive of novelty as arising ex nihilo, as coming from nowhere. The event thus frees Badiou's philosophy from having to engage with the intricacies of the State, it allows him to conceive of a totalising state of affairs at the same time as conceiving an outside to this state. The door to this outside is the event. In other words, the notion of event allows Badiou to develop a philosophy dealing with novelty which asserts that the power of the State is excessive yet can be overcome by means of the force of some outside

which we have access to through the event. This 'outside' is made possible by Badiou's assertion that truths exist in the world, a postulate I will explore below.

3.2.4. True to the Cause

According to Badiou, the subject is not there to glorify the occurrence of the event but rather to follow through on its consequences (210-211). This is why we can conceive of Badiou's philosophy as being primarily concerned with intervention. A philosophy of intervention is what Badiou is trying to develop in order to overcome the constraints of the State. He achieves this by developing a philosophy which demands that subjects remain true to the aleatory chance of an event. This is because the event reveals possibilities which are outside of the State's knowledge. Following through on the consequences of the event, intervening in a situation to force change *based on the experience of the event*, is what Badiou terms fidelity to the event (232). A fidelity, or fidelity to the event, is the process by which a subject separates out those aspects of the situation which depend upon the event in order to bring them to light. These aspects are then differentiated from those which the State delineates. In conflict with the structuring role of the State, a fidelity reveals those multiplicities within a situation which did not exist, or did not exist in the same way, prior to the event. In other words, a fidelity is the process by which a subject re-orders or amalgamates aspects of existence, attempts to realise certain constellations, which previously seemed heterogeneous to each other. This reordering is based on the aleatory experience of an event. As Badiou states, "to be faithful is to gather together and distinguish the becoming legal of a chance" (232). For example, it was the events of the 1960's which gave rise to the feminist movement. The fidelity to these events made possible the realisation of the phallogocentric nature of science, sex and science previously being heterogeneous to each other.

Fidelity is inventive, as to think the situation from the perspective of the event demands that one think the situation in terms that are, or were, unrecognizable to the situation, and to gather together terms that were previously unconnected to one another. This forces the subject to invent new ways of behaving or acting in the situation (Badiou 2001:41-42) in order to cater for the amalgamation of these terms. The subject thus establishes a new

language and knowledge of the situation. Due to the fact that a fidelity gathers together all the multiplicities revealed to be connected by the event, it establishes another count and as such it operates on the terrain of the State. In other words, due to this re-ordering of the world based upon the experience of the event, a fidelity acts against the structuring of the State. It can therefore appear as a counter-state (Badiou 2007b:233).

Badiou speaks of the event, and of fidelity to the event in the Lacanian terms of “splitting the world into two.” That is, for the subject, the world becomes divided between the elements in the situation as it was pre-event; and the grouping together of previously heterogeneous elements found to be connected as a result of the event. This is why fidelity to the event forces change. What fidelity “does is organize, *within* the situation, another legitimacy of inclusions. It builds, according to the infinite becoming of the finite and provisional results, a kind of *other* situation, obtained by the division in two of the primitive situation” (Badiou 2007b:238 emphasis in original). The subject is therefore split between the world as he/she perceived it prior to the event and the world as it could be, based upon the insights gleaned from the event. However, as much as a subject maintains fidelity to an event and intervenes in the situation due to it, fidelity is still described as a “disinterested enthusiasm, absorption in a compelling task or cause, a sense of elation, of being caught up in something that transcends all petty, private or material concerns” (Hallward 2001:x). This is not simply a question of maintaining faith, the disinterest of fidelity marks out for us how Badiou (2001:42-42) understands notions such as truth and subject, terms which are central to his entire project:

I shall call ‘truth’ (*a* truth) the real process of a fidelity to an event: that which this fidelity produces in the situation... Essentially, a truth is the material course traced, within the situation, by the eventual supplementation. It is thus an *immanent break*. ‘Immanent’ because a truth proceeds *in* the situation, and nowhere else— there is no heaven of truths. ‘Break’ because what enables the truth-process – the event – meant nothing according to the prevailing language and established knowledge of the situation... We might say, then, that a truth-process is heterogeneous to the instituted knowledges of the situation... I call ‘subject’ the bearer [*le support*] of a

fidelity, the one who bears a process of truth. The subject, therefore, in no way pre-exists the process. He is absolutely nonexistent in the situation 'before' the event. We might say that the process of truth *induces* a subject. (Emphasis in original)

The subject, for Badiou, only comes into being in the liaison between the event and the procedure of fidelity (2007b:239). Therefore, under Badiou's system, you can only become a subject if you intervene in the situation to change it, there is no possibility of being a conservative subject, a subject is always militant.

As has been stated, there is a particular knowledge of each situation. What a fidelity does, and the subject who carries this fidelity, is to gather together new multiplicities, new elements, in the light of the truth revealed by the event. This implies a disruption of the language of the situation, and thus a disruption of the knowledge of the situation. It is here that the notion of truth becomes pivotal for Badiou. A truth for Badiou is this gathering together of elements that were previously not connected prior to the event. The notion of truth in this sense is very closely connected to the generic, to that which is common in the situation yet which is not recognized as such by the encyclopaedia of the situation (2007b:327). In fact, Badiou uses the terms interchangeably. The generic can be seen as being traces which are similar to each other despite the fact that they fall into different classifications by the State. Therefore, despite the fact that the event is particular to the situation, the notions of truth and the generic reveals Badiou's Platonic tendency. That is, despite saying that one can never comprehensively give content to truth, Badiou argues there exist truths in the world which cut across all boundaries. It is for this reason that Badiou states that truth is subtractive. This is because the process of following a truth through means that one is constantly subtracting multiplicities away from the classifications which the State makes, subtracting the generic away from groups classified by the State. As Badiou (2007b:327) states:

The term 'generic' positively designates that what does not allow itself to be discerned is in reality the general truth of a situation, the truth of its being, as considered as the foundation of all knowledge to come. 'Indiscernible' implies a

negation, which nevertheless retains this essential point: a truth is always that which makes a hole in a knowledge.

However, it is important to remember that the State's control over a situation is always exorbitant. This is partly why the radical act is to 'make a hole in knowledge,' to break open this apparently comprehensive economy. Yet, this puncture cannot come about by itself. The event in this regard is pivotal for the realization of truth. It is the event which makes one realise, or forces one to acknowledge, that the world could be ordered or structured differently and this new structuring of the world is built upon Badiou's idea of truth. However important the event is as a mechanism or a trigger for the realisation of the State's excess, it does not in itself reveal the truth. It is, as Gillespie explains (2008:9),

... from the fleeting appearance of an event that something anterior to the presentative immediacy of the known or discerned within the situation can appear. In and of themselves events do not signal the advent of a truth; rather, they inaugurate subjects who intervene in a situation to the extent that these unique individuals remain faithful to an event by seeing its consequences through to a restructuring of the situation... Truth for Badiou is essentially an empty category: in itself, it contains no content. Its 'materiality' is given through the hole it produces in knowledge. It is only through the action of a subject who is faithful to an event that truth can come to be spoken of in the situation, and truth per se is produced only if it avoids coinciding with what can be known or discerned.

In this sense, a fidelity cannot be a matter of knowledge, as the process of fidelity is a dedication to that which punches a hole in knowledge, in what disrupts knowledge. One cannot therefore maintain fidelity to what the State knows, precisely because fidelity is the process of subtracting from that knowledge. Fidelity is then an experiential as well as experimental phenomenon, an experience of the contingency, or the violence, which the State's classification imposes on the world revealed or triggered by an event. It is experimental or inventive because no statute exists, no models exist in the language of the State, which one can imitate or draw inspiration from. In fact (Badiou 2003:46),

...one of the phenomena by which one recognizes an event is that the former is like a point of the real [*point de reel*] that puts language into a deadlock....What imposes the invention of a new discourse, and of a subjectivity that is neither philosophical nor prophetic, is precisely that it is only by means of such invention that the event finds a welcome and an existence in language. For established languages, it is inadmissible because it is genuinely unnameable. (Emphasis in original)

The inability of the State to explain the event, the inadequacy of current models to explain what was revealed by the event, is why an event must be declared. Yet, the declaration of an event forces a new language into existence and a new means of recognizing objects in the world. It is fidelity to this event that brings about the recognition of this novel world, by grouping together multiples which are connected to the event yet unexplainable or unclassifiable under the current knowledge which governs the situation. When the subject recognizes that a multiple is or is not connected to the event, he or she is performing the minimal gesture of fidelity, “the observation of a connection (or non-connection)” (Badiou 2007b:329 emphasis in original). This minimal gesture is the beginning point of what Badiou (330-331) labels an enquiry or 'truth-procedure':

We will term *enquiry* any finite set of such minimal reports. An enquiry is thus a 'finite state' of the process of fidelity.... As such, just like knowledge, an enquiry is the conjunction of a discernment— such a multiple of the situation possesses the property of being connected to the event (to its name) – and a classification – this is the class of connected multiples, and that is the class of non-connected multiples. (Emphasis in original).

An enquiry can appear to be very similarly structured to that which Badiou labelled the encyclopaedia or knowledge of the State. An enquiry is also a structuring mechanism which attempts to order the world in a particular way. How does Badiou then escape the trap of a truth-procedure being nothing more than the replacement of one form of knowledge by another? In other words, how does one get around reinstating the form of the previous order, if not its content? Badiou does that by quite simply arguing that a “truth (if it exists) must be an infinite part of the situation, because for every finite part one can always say

that it has already been discerned and classified by knowledge” (333). Truths thus slip from the coherency which is defined by the State and the process of enquiry or the intervention demanded by an event can never be total or complete. Badiou therefore defines truth as follows (338):

... [A]truth is the infinite positive total... of a procedure of fidelity which, for each and every determinant of the encyclopaedia, contains at least one enquiry which avoids it. Such a procedure will be said to be generic (for the situation). (Emphasis in original)

Truth for Badiou is excessive, if we try to give content to that which escapes, we once again institute a knowledge which calls upon a system of classification which will inevitably be disrupted or questioned again by the 'generic' in this classification. Due to this, the use of the word 'truth' for Badiou is very different from the totalizing or essentialist conceptions of this term adopted in the history of philosophy. In contrast to the history of truth in Western philosophy, truth for Badiou is that which makes totalization impossible, truth is anti-totalizing.

In certain ways this definition of truth coincides with Badiou's definition of novelty, which argues that, “for an infinite truth thus conceived... to genuinely be a production, a novelty, it is necessary that the part of the situation obtained by gathering the [positive terms of an enquiry] does not coincide with an encyclopaedic determinant” (335-336). It is necessary that a truth break the law of the State, that it not simply acknowledge the encyclopaedic determinants but actively challenges them to produce novelty. This novelty in turn cannot agree with any State sanctioned definitions, it must escape easy definition. Truth in this sense is hollow, it is that which subtracts from knowledge. Nobody in this regard can claim to have access to 'the truth', there can be no prophet or Messiah of truth as it is precisely 'the truth' which undermines the possibility of such declarations. In fact, in his book *Ethics* Badiou (2001:73) labels the use of the notion of truth by parties such as the Nazi's, the simulacrum of truth as these parties give 'truth' content and discriminate based upon this supposed content. However, if a truth is the infinite part of a situation, and if it escapes every determinant of the situation, it implies that the notion of truth escapes differences as

found within the situation. This is not to deny that differences exist. Indeed Badiou argues that differences may be all there is (Badiou 2001:25; Badiou 2003: 98). However (2001: 27),

... genuine thought should affirm the following principle: since differences are what there is, and since every truth is the coming-to-be of that which is not yet, so differences are then precisely what truths depose, or render insignificant.

As truth renders differences insignificant, and as Badiou sees the realisation of truth as a process, it is such that, the “same, in effect, is not what is (i.e. the infinite multiplicity of differences) but what *comes to be*. I have already named that in regard to which only the advent of the same occurs: it is a *truth*. Only a truth is, as such, *indifferent to differences*... a truth is *the same for all*” (27-28 emphasis in original). This is why it is impossible to discriminate in the name of truth; truth is that which destroys the possibility of discrimination. The State produced knowledge of the situation therefore governs differences, maintains differences. In contrast a truth breaks with these differences and illustrates that what were thought to be differences prior to the event, can in fact be seen as similarities. Under this conception of truth, Badiou therefore believes in the existence of some sort of universal, that there is something underlying the world of appearance which is common. In contrast to the State which maintains differences, truth breaks with the situation (2003:11):

... [E]very truth procedure breaks with the axiomatic principle that governs the situation and organizes its repetitive series. A truth procedure interrupts repetition and can therefore not be supported by the abstract permanence proper to a unity of the count. A truth is always, according to the dominant law of the count, subtracted from the count.

This is why the realisation of a truth is a militant process. It is not enough to simply recognize a truth. For Badiou (2005:248-249) the recognition of a truth in a situation without carrying through its consequences amounts to a misrecognition. This is because when we recognise a truth, we recognise the necessity or the demand to break with the situation. If we do not act, we have not recognized the truth of the situation. This is why a subject declares itself in the wake of an event, an event does not found a subject (Badiou

2003:53) because it is possible to misrecognise or ignore the break in repetition demanded by a truth.

As was stated earlier, the subject for Badiou is always constituted in the divided form of 'not ... but', a form divided between the world as we find it and the world as it could be in the spirit of the event. We can understand the non-totalizing nature of this divided form better now. As Badiou argues (63-64):

We shall maintain, in effect, that an eventual rupture always constitutes its subject in the divided form of a "not...but," and that it is precisely this form that bears the universal. For the "not" is the potential dissolution of closed particularities (whose name is "law"), while the "but" indicates the task, the faithful labour, in which the subjects of the process opened up by the event (whose name is "grace") are the coworkers. The universal is neither on the side of the flesh as conventional lawfulness and particular state of the world, nor on the side of the pure spirit, as private inhabitation by grace and truth.

The divided form indicates the difficulty Badiou has in constructing a philosophy which calls for a militant subject who cannot justify action that would be totalitarian. The subject then must actively resist what is reprehensible in the State's domination, this is reflected in the 'not' pole of the divided subject. The 'but' pole reflects the attempt to challenge this total system by means of attempting to create a non-totalising system. There is then a conceptual tension in Badiou's development of the subject which is reflected in the difficulty of challenging systems in a determined way by means which would be inclusive, even though this inclusiveness runs counter to the ability to take decisive action. Badiou tries to overcome this tension by means of hypothesizing a universal truth which the State attempts to suppress.

From the above discussion one can see that a huge concern for Badiou is the problem of developing an interventionist philosophy which does not harbour the pitfalls of totalization and arrogance found in modernist interventionist strategies. In contrast, despite (or perhaps because of) his use of the notion of truth, Badiou has developed a philosophical system which grants agency to actors in the world without granting them the ability or the right to

totalitarian means of action. In this sense, Badiou's system establishes an ethics which is built upon the responsibility which actors need to take for their actions in the world.

In brief then, the above discussion of Badiou can be schematised as follows. The foundation of Badiou's system is the situation or context. One cannot operate except within a situation, there is no transcendence of this context. Ontology, which is inconsistent or excessive (some aspect of the world will always escape our attempts at classification) can only be accessed through the situation. The inconsistency of ontology leads to the possibility of an event due to the fact that we realise that the world could be ordered differently. The space opened up in which this inconsistency is revealed is called the evental site. The evental site marks the void of the situation (which is the point at which the inconsistency is revealed). How this world is differently ordered, according to Badiou, is determined by the universal generic underlying ontology. The act of following through on the realisation of the generic is called a truth procedure and the dedication to this procedure Badiou labels fidelity. The State of the situation actively works against the realisation of the generic as it is in its own interest to maintain the distinctions it uses to govern. Badiou labels those inspired by the event and actively challenging the State of the situation *subjects*. Subjects aim to bring about novelty, which for Badiou is a process not an end. It is a process because the act of following through on the truth implies that it can never be completed because the truth is infinite.

3.3. The Economy of Alain Badiou

So far, in this chapter, I have given an introduction to the work of Alain Badiou focusing on his book *Being and Event*. In this final part of the chapter I will briefly discuss some of the aspects of Badiou's work in relation the work of Derrida and complexity thinking more broadly. I do this to give a better understanding of Badiou's work and how it relates to the problem of this dissertation. That is, I aim to outline how, according to this view, novelty is inextricably tied to the notion of an event. I do this as in the following chapters I will aim to develop a model of novelty which is not tied to the event.

It is clear from the above that Badiou's project is to open up the restricted economy of the State. In fact, the radical nature of Badiou's philosophy demands a doing away with the economy of the State and replacing it with an economy built around the Platonist idea of truth. For Badiou, due to its desire to maintain separation between the different groupings which fall underneath it, the State as an entity is inherently oppressive. Through the use of the notion of encyclopaedia, Badiou argues that the State only acknowledges the existence of that which is represented in the language of the State. The State prevents challenges to its power by maintaining the authority of this body of knowledge. In other words, the State's legitimacy rests on maintaining the presentation of what is represented by the language of the situation. The State will react violently towards anybody who challenges this set of classifications.

As the State's control or classification is excessive, in Badiou's terms, the count of the State is incalculable; the restricted economy of the State's encyclopaedia appears comprehensive. It is precisely this indeterminacy, this excess of control over the situation which maintains conformity amongst those entities found inside the State's boundaries (Hallward 2001:ix). In many ways this is true of all restricted economies. These economies appear comprehensive because the situation is always structured in a way that will prevent the general economy from 'appearing' or making its mark. The protrusions of the general economy are perceived by a restricted economy as noise. However noise does not challenge the economy of epistemology we use. As I will come to show, the success of restricted economies of analysis rests partly on their ability to predetermine what it is possible to ask of them and what not. In other words, the success of restricted economies rests partly in their ability to predetermine what is noise and what not. This is why, for Badiou, a questioning of the State's power often appears as incomprehensible from the perspective of the State. That is, when there are popular uprisings against the State, the State often ascribes such actions to an indeterminate 'criminal element' or mysterious 'foreign power.'

Badiou's strategy to overcome this excessive State control, this restricted economy, is to point towards the event, made possible by the eventual site, a point which is situated and supplementary within a restricted economy. The event disrupts the usual repetition of the

economy, disrupts the working or relations within an economy to reveal other possible sets of relations. The evental site, in terms of the concepts laid out in the previous chapter, can be seen as the point at which the general economy intrudes into the situation – Bataille's 'shit' or, as I will argue, Derrida's supplement. This 'point', this mark, seems to be common in arguments of proponents who argue against restricted economies of thought. In these arguments, this point appears as a weak point in an otherwise comprehensive economy, a site or point at which the stability of the restricted economy becomes unstable, appears weak. For example, it is the strategy of deconstruction to 'find' these points and to open them up, to reveal the general economy which the discourse aims to hide. However, it is important to note, and I will expand upon this below, that this lack of foundation for a structuring discourse or State is envisioned very differently by Derrida and Badiou. Suffice it to note for present purposes that Derrida is radically anti-foundationalist; there is no true grounds upon which knowledge of the world could be based because claiming such a ground is always the product of a particular discourse. In contrast Badiou, sceptical of the hermeneutical tradition, argues that knowledge of the world can be based upon what he calls 'truths.' That is, the evental site, the supplement of the situation, is foundational because opening this site up reveals to us the truth upon which the world should be built. Later on in this dissertation I take issue with Badiou's notion of truth.

The evental site or supplement, this 'point' which is common to the structures of both Derrida's and Badiou's philosophies, can be seen to be subject to the effects of non-linearity. That is, it is a point which appears as inconsequential from the perspective of the State and those who support it. Yet, it is from the perspective of these marginalised terms that we can reimagine the world. It is these small, apparently inconsequential points which reveal to us the limits of the restricted economy. As Derrida argues, in relation to words such as '*hymen*' or '*pharmakon*', these apparently inconsequential terms, once broken open, once revealed as in play, expose the entire structure upon which the restricted economy rests (Derrida 1982; 2004; Said 1978:94-96). For example, as Derrida (2004:103-104) writes on Plato's use of the term *pharmakon*:

It is not enough to say that writing is conceived out of this or that series of oppositions. Plato thinks of writing, and tries to comprehend it, to dominate it, on the basis of *opposition* as such. In order for these contrary values (good/evil, true/false, essence/appearance, inside/outside, etc.) to be in opposition, each of the terms must be simply *external* to the other, which means that one of these oppositions (the opposition between inside and outside) must already be accredited as the matrix of all possible opposition. And one of the elements of the system (or of the series) must also stand as the very possibility of systematicity or seriality in general. And if one got to thinking that something like *pharmakon* –or writing– far from being governed by these oppositions, opens up their very possibility, without letting itself be comprehended by them....if, consequently, one got to thinking that writing as a *pharmakon* cannot simply be assigned a site within what it situates, cannot be subsumed under concepts whose contours it draws, leaves only its ghost to a logic that can only seek to govern it insofar as logic arises from it – one would then have to *bend* [*plier*] into strange contortions what could no longer even simply be called logic or discourse. All the more so if what we have just imprudently called a *ghost* can no longer be distinguished, with the same assurance, from truth, reality, living flesh etc. (Emphasis in original)

For Badiou, this supplement, the evental site, is foundational, as in a certain sense it is with Derrida. Yet it is not foundational in the sense of a structuralist reading of foundation, in the sense that one can reduce a system to this essential point. Rather, this point is foundational in that any further investigation beyond it results in the dissolution of the structure. This is the point at which the contingency of the system is revealed, the point at which a system reveals the context-dependent nature of its existence. In many ways this is the reading Derrida gives of the notion of structure or foundation where structuralists used the notion of foundation to arrest the play of the system (Derrida 1978: 279). In contrast, Badiou and Derrida, each in their own way, see the ‘foundation’ of a system (or lack thereof) as the place where the possibility of change ‘begins.’ In a restricted economy, under a Metastructure, it is the role of logic or reason to arrest this play, to prevent the dissolution of parts. The important thing is that everything stays in its place which is why evental sites

or supplements are sites of the greatest oppression, even if this oppression is marked by the lack of regard or marginalisation paid to them by the State. As Derrida observes (2004:128):

Apprehended as a blend and an impurity, the *pharmakon* also acts like an aggressor or a housebreaker, threatening some internal purity and security....The purity of the inside can then only be restored if the charges are brought home against exteriority as a supplement, inessential yet harmful to the essence, a surplus that ought never to have come to be added to the untouched plenitude of the inside.... In order to cure the latter of the *pharmakon* and rid it of the parasite, it is thus necessary to put the outside back in its place. To keep the outside out. This is the inaugural gesture of "logic" itself, of good "sense" insofar as it accords with the self-identity of that which is: being is what it is, the outside is outside and the inside inside. (Emphasis in original)

The role of reason, as was stated in the first chapter, is to maintain this order, to keep the excess or heterogeneity out of the economy. As Derrida argues in regard to the supplement, the role of logic is to maintain the distinction between the inside and the outside. Badiou's philosophy could be seen to agree with this argument, the State must maintain *Apartheid*, must maintain the distinctions between multiplicities found inside its encyclopaedia and keep out that which challenges the coherence of this economy. This is why the State, and the encyclopaedias it defines, will always see the actions of *subjects* as unreasonable due to the fact that these subjects are, by Badiou's (2007b:237) definition, transgressing the established classifications.

Due to what Badiou describes as the inconsistent nature of ontology, the demand for consistency within a restricted economy will always give shape to eventual sites, as the excess of the world constantly has to be dealt with. In other words, the eventual site is an inevitable by-product of a system which tries to capture a world full of inconsistency and excess in a form which does not acknowledge this excess. From Badiou's concern with consistency, we can see that rationality is the limits we place on our ability to think together certain features of the world. However, these limits themselves have limits, as the world constantly pushes against them; rationality in this sense has boundaries. In order to be

rational there must be irrationality. This is why the event of a truth, the discovery of an infinity point is so important to Badiou, as it reveals these limits which aim to protect the rationality of the system. As Frazer (2007a: xxxii) argues:

The creation of a new infinity point in a given domain is no trivial matter; it takes place on the very cusp of the domain's rationality, which it threatens to tip into a maelstrom of contradiction, and once accomplished effects a radical *remaking* of the entire domain, which is always, Badiou insists, a 'theoretical violence, a subversion'... the threat to rationality as such involved in the inscription of an infinity point— bears on the very concept of logical consistency. The concept of logical consistency that Badiou adopts is informed by the definition formulated by the great American logician, Emile Post. In contrast to the traditional definition of consistency as non-contradiction (a system is consistent if it does not allow the derivation of a statement *and* its negation). Post identifies a system's consistency with the existence of a statement that cannot be derived for that system, a statement whose derivation is impossible. (Emphasis in original)

Therefore, for Badiou, the State's consistency depends upon certain features of the situation remaining separated, for it to be 'impossible' to group together certain features of the situation. This is the use Badiou makes of the term rationality, to be rational means that certain features of the world remain separated from one another, that two opposing terms cannot be thought together. Yet, as Badiou argues, novelty depends upon grouping together the non-existent and the impossible. That is, novelty depends upon a process of gathering together both that which the State deems unreasonably connected as well as revealing and classifying that whose existence the State denies, that which is located around the void. Thus, from the perspective of the State, novelty arrives *ex-nihilo*, which is impossible. It is impossible because for Badiou, novelty literally comes from nowhere. Yet, as Derrida (1989:60) argues, this is what is central to our understanding of notions such as invention and the novelty it creates:

So it would be necessary to say that the only possible invention would be the invention of the impossible. But an invention of the impossible is impossible, the

other would say. Indeed. But it is the only possible invention: an invention has to declare itself to be the invention of that which did not appear to be possible; otherwise it only makes explicit a programme of possibilities within the economy of the same.

Badiou's (2007b:333) system is not to replace one restricted economy with another. This is why Badiou postulates truths as being infinite, that is, a truth cannot be comprehensively determined by a subject, no subject can have a complete grasp of truth. Badiou's system, despite the use of words such as 'truth' attempts to be non-totalizing, subjects act in the world, maintain a fidelity to truth but their actions can never be justified by a truth, they can only take responsibility for it (207). The infiniteness of truth, the fact that a truth cannot be discerned by knowledge is comparable to Bataille's position on religion. Bataille argues that God must be an atheist due to the fact that the Christian conception of him, and the ability to preach what God said, to believe in God as a single entity, implies a very restricted economy. In this regard God would stop believing in himself because the restricted economy of identity simply does not account for the all-seeing, all-powerful, excessive general economy which should be 'God'. In many ways Badiou's conception of truth displays a similar logic. That to define what truth is, in order to deploy it for one's own gain, it is necessary to claim a restricted understanding of it such that one is able to exclude those who do not fall under the economy which one is governing. In contrast, as infinite, truth is open to all, it appeals to all as the generic within any situation.

It is thus that one can state that Badiou is attempting to open the restricted economy of the State up to heterogeneity. Yet the State only recognizes this heterogeneity as noise. His project is to open up this economy to what is not known, not to replace it with another economy. However, from the perspective of this dissertation, a shortfall in the project of *Being and Event* is that it presents a relatively static model of the restricted economy of the State⁴⁸. In other words, Badiou does not recognise *play*. This may be a result of a reliance on

⁴⁸ In Chapter 4 I will discuss the theological sounding use of terms such as 'truth', 'event' and 'grace' Badiou adopts to illustrate the limits the notion of event places on our ability to conceive of novelty.

mathematics where something is either counted-as-one or not counted at all. In other words, there is no opacity in the mathematical logic of *Being and Event* and this results in both a blindness to opportunities presented, as well as, the possibilities which conservative institutions, such as the State, maintain for behaving in ways which are irrational, even by their own standards. The notion of play may help us to think through interventionist strategies a bit better. Play helps us to realise, in Badiou's terms, that any multiplicity counted-as-one holds the potential for deconstruction. It is not simply evental sites which hold the possibility for radical change, but also the play which undermines and hampers any attempt at totalizing, which in a certain sense, situates every aspect of the situation 'at the edge of the void'.

Conclusion

In this chapter I have introduced the work of Alain Badiou, as it relates to his magnum opus, *Being and Event*. I have tried to illustrate how Badiou, borrowing from mathematics, has developed a philosophy concerned with the possibility of bringing about novel political and economic systems. To do this Badiou has had to develop a model of social order which is repressive and static. The State for Badiou exemplifies this model of social order. In order to overcome this excessive State control Badiou has to develop an 'outside' to the State so that there can be a starting point from which action can spring. Badiou achieves this outside by means of hypothesizing that ontology is inconsistent and therefore the State's system of classification will always fall short of capturing this inconsistency. The moments in which this inconsistency is revealed are what Badiou labels events.

However, it is not enough to simply hypothesize an event in order to develop a militant interventionist philosophy; there must be some grounds on which to base this militancy. These grounds are achieved by Badiou's 'truths.' The notion of truth provides Badiou with certain grounds on which to carry out resistance to the State whilst making this action non-totalitarian. Novelty, as Badiou uses the term, comes about due to this intervention of a subject to change the world as it is inspired by the truth. Novelty for Badiou is a process which is brought about by the recognition of an event and the truth it reveals.

In the following chapter I will discuss the notion of event in relation to the work of Derrida and Critical Complexity. I do this in order to illustrate the metaphysical premise upon which Badiou bases his work. The notion of an event, I argue, cannot be done away with. If we follow the work of Derrida and that done in Critical Complexity we come to see that the idea of an event holds important insights for our understanding of complex systems and the histories which define them. However, what we must move away from are models of novelty built upon metaphysical assumptions, such as that developed by Badiou. In contrast, the next chapter will lay the ground for a theory of novelty which does not depend upon the event. I do this by developing a model of the event which would be acceptable to Critical Complexity. This reworking of the notion of an event results in a description of what I mean by the term ontology. Under this new definition of ontology we can begin to conceptualize how to conceive of novelty in a way which does not depend upon the event.

Chapter Four:

Complexity and Evental Novelty

The paradox must be sharpened: the more the new erupts in the revolutionary crisis, the more the period is in crisis, the more it is 'out of joint,' then the more one has to convoke the old, 'borrow' from it- Derrida

Introduction

In the previous chapter I introduced the work of Alain Badiou by focusing on a book central to his enterprise, *Being and Event*. In this work, Badiou introduces some of his key concepts for understanding the processes necessary for novelty to arise. In this regard, Badiou develops a system for understanding the State-centred structuring of our understanding of possibilities held in the world. He hypothesizes that overcoming this excessive State domination, in order to realise novel approaches to the world, is made possible by the experience of the event. This move, tying novelty to an event, although variably theorized, is a commonsensical and classical explanation for novelty's appearance in the world. For the sake of clarity, I will label this type of novelty, evental novelty. Following the structure of the foregoing discussion of Badiou, I will now attempt a more generalised description of terms such as event and novelty. The aim of this discussion is to further draw out the debate and, borrowing terms from both Badiou and Derrida, help us come to an understanding of evental novelty in terms of complex systems.

I am attempting to describe notions such as novelty and the event in a manner which is not restricted to Badiou's system (below I will give reasons why Badiou's system is not sufficient for explaining complexity). I strategically adopt certain terms from Badiou and attempt to nuance these terms in order for them to be of use in thinking about complexity. Despite my critiques of various aspects of Badiou's system there are aspects of it which remain useful for this dissertation. Even though I disagree with Badiou's attempt to develop an interventionist philosophy, based in what I have argued is a metaphysics, there remains ideas which he has developed which can be adapted to a materialist philosophy without having to concede to metaphysics. These ideas, as I will demonstrate below, are useful for thinking through some of the problems I have laid out in this dissertation. Furthermore, this

part of the discussion on complexity is concerned with notions such as events and the novelty to which they give rise. In other words, here I will give a description of how novelty arises out of the event in a complex system. This entails describing what an event is and why it would produce novelty. In this chapter then I attempt to provide a more generalised description of novelty as it is tied into the idea of an event. This more general description will allow us to begin to deal with these terms in relation to Critical Complexity.

This complexity inspired description of the event and novelty is important because in the following chapter I will begin to draw out the benefits of complexity thinking as it pertains to the possibility of thinking about change and novelty in a way that does not depend upon the event, yet maintains a radical definition of novelty as not simply a product of change or a modification of the existing system. This chapter then sets the stage for a move away from tying novelty to the event in order to establish a more proactive stance towards producing novelty in the world. However, it also argues that we must not be too quick in trying to remove the notion of an event from our understanding of novelty. Restricted science has discarded the event as a possibility in its explanatory economy due to its reliance on laws, which leaves only models of modification with descent. In other words, science's reliance on laws has resulted in the view that anything new must be the product of gradual change rather than a radical intervention in our understanding of the world. I therefore look at a critique of science's rejection of the notion of the event in order to avoid the pitfalls of conceptualising novelty as something which is simply the product of change and come to a different understanding of ontology which will escape from such conservatism.

4.2. Evental Novelty

From the previous chapter it is clear that we are working with a specific use of the term 'event'. This is not an event in terms of the occurrences which occur in history but a much more specific, philosophical use of the term. It is clear that in Badiou the notion of event plays a specific role. The event is a radical concept in which the encyclopaedia of the State is revealed to be a contingent construction serving the interests of those in power. Events, for Badiou, occur relatively rarely and are not influenced by our previous experiences. This reading of the event is only possible because Badiou subscribes to a philosophy which does

not consider the hermeneutical tradition as a valid discipline. In contrast, below, I aim to come up with a definition of the notion which is suited to our understanding of complexity. Because our understanding of complex systems is always structured by some form of interpretation, we have to take cognizance of this when dealing with complex phenomena. In this regard, using the work of Derrida, I begin to rework the notion of event in such a way that it can cater for this interpretive dimension to our understanding of complexity.

The notion of 'event' is treated by Derrida in the double-handed movement which is the hallmark of deconstruction. Firstly, for both Badiou and Derrida, in order to be an event it must remain unseen, unpredicted or unpredictable. The horizon of possibilities presented by the situation, presented by context and knowledge, must not be able to account for the event. As Derrida (2007:451) states, the event must 'come from on high':

I insist on the verticality of this coming, because surprise can only come from on high.... Why? Because if it doesn't fall on me, it means that I see it coming, that there's an horizon of expectation. Horizontally, I see it coming, I fore-see it, I fore-say it, and the event is that which can be said [*dit*] but never predicted [*prédit*]. A predicted event is not an event.

The event cannot appear as a possibility within the economy of the situation as it would then be simply the result of the repetition of the structure. The event must disrupt this repetition, this is especially important if one wants to use the event as a trigger for novelty to arise. The event, as unpredictable, must be disruptive as it does not feature in the economy of possibilities presented. In his work on the gift, Derrida (1992:122-123) illustrates the similarity between the gift and the event as follows:

The gift, like the event, as event, must *remain* unforeseeable, but remain so without keeping itself. It must let itself be structured by the aleatory; it must *appear* chancy or in any case lived as such, apprehended as the intentional correlate of a perception that is absolutely surprised by the encounter with what it perceives, beyond its horizon of anticipation – which already appears phenomenologically impossible. Whatever the case may be with this phenomenological impossibility, a gift or an event that would be foreseeable, necessary, conditioned, programmed, expected,

counted on would not be lived as either a gift or as an event, as required by a necessity that is both semantic or phenomenological. That is why the condition common to the gift and the event is a certain unconditionality... The event... must be irruptive, unmotivated— for example disinterested. They are decisive and they must therefore tear the fabric, interrupt the continuum of a narrative that nevertheless they call for, they must perturb the order of causalities: in an instant. They must, in an instant, at a single blow, bring into relation luck, chance, the aleatory, *tukhē*, with the freedom of the dice throw....The gift and the event obey nothing, except perhaps principles of disorder, that is, principles without principles. (Emphasis in original)

In order to be an event, an event must therefore disrupt the continuum of activity and, importantly, appear as phenomenologically impossible. That is, an event that abides by the repetition of daily life would not be marked as an event. As Badiou also noted, an event cannot be motivated or have an interest. An event simply appears without motivation, if it was motivated the event would lose its exceptional character and remain as a programme within a system of repetition. Yet an event cannot be 'non-programmatic' either, as this would just be noise, the event must be 'anti-programmatic,' it must disturb repetition in a way which influences the structure of a complex system. The event, in order to be an event, must have an *effect* on the system. The event in this sense must be exceptional; in fact Derrida goes so far as to say that the event can be defined by this. "An event must be exceptional, an exception to the rule. Once there are rules, norms and hence criteria to evaluate this or that, what happens and what doesn't happen, there is no event" (Derrida 2007:457). As I will illustrate below, it is due to this exceptionalism to reason that science has rejected the concept of event from its purview as it does not abide by the linearity of classical scientific thought.

If the event is an exception, if it comes from on high and obeys no rules, then one of the phenomena by which one recognizes an event is that it puts language into a deadlock (Badiou 2003:46) and as such forces the invention of a new discourse:

What imposes the invention of a new discourse, and of a subjectivity that is neither philosophical nor prophetic...is precisely that it is only by means of such invention

that the event finds a welcome and an existence in language. For established languages, it is inadmissible because it is genuinely unnameable.

As Badiou illustrated, for the event to be recognized and acknowledged in language implies that those who declare the event need to develop means for accounting for the event in the language which could not explain the event prior to its occurrence. In this sense, as Derrida (1989:34-35) argues, the event and the novelty it produces is marked by a fundamental instability, as it navigates between the conventions from which it breaks and the new order it demands to comprehend it. The event opens up the possibility for the new, for new conventions and new statutes which are able to account for it. In fact, the event *demand*s that new conventions are created in order to account for it. The experience of the event as anti-programmatic forces one to account for its disruption. In order to make sense of this disruption, we must reinscribe it into the restricted economies we use to explain history and understand the present.

In his work on invention, Derrida (1989:34-35) appears to come very close to Badiou's notion of fidelity. That is, invention demands the reordering of the world according to the insights provided by the event, to 'test' the parts of the world as we find it and accord them a place within conventions and statuses which the new invention demands. Yet, for Derrida, this is simply so that we can understand the event; it is not an imperative demanded by the event but a necessity demanded by the disruption of repetition, which the event created.

The fact that an event disrupts convention, that it forces new means of acting in the world, implies that there can never be a legitimate (legitimacy is a value defined by the State) event, the event can never in its 'eventness' be legitimized in its time. Of course, an event can always be legitimized in a historical reading of the situation but, once again, this historical reading can never be deterministically proven, only declared. Furthermore, a legitimized historical reading of an event will lose the radical rupture or 'eventness' of the event as it is incorporated into the possibilities of the current status quo. Thereby, it is questionable if a legitimized event can really still be labelled an event. In order to be an event it must be subversive, it can only be declared. An event cannot be proven to have existed.

To be subversive therefore implies to be situated. There is no universal subversion. In a similar manner to ethics (Badiou 2001), subversion is always the subversion of something, it is never just subversion⁴⁹. There is no such thing as universal subversion. This implies that in order to declare an event, in order to upset authority and violate convention an event always takes place within a context. There cannot be a universal or totalizing event; an event depends upon a restricted economy of repetition so that it cannot be accounted for. There are no events in the space of the general economy as this economy cannot be disrupted. An event depends upon heterogeneity intervening, which can only exist in relation to a restricted economy. Therefore, as Badiou (2007b:176) argued, eventual sites are always local, an event always occurs at a particular point and any radical transformation will occur from that point and be dependent upon this point for its content. Change is then context specific, our actions in the world start from a specific place. This, along with the illegal nature of the event, is why one cannot arrogantly make totalizing claims in the name of the event. As Badiou argues (2003:42):

It is impossible that the starting be the Whole, but just as impossible that it be an exception to the Whole. Neither totality nor the sign will do. One must proceed from the event as such, which is a-cosmic and illegal, refusing integration into any totality and signalling nothing. But proceeding from the event delivers no law, no form of mastery, be it that of the wise man or the prophet.

So, despite being inspired by an event, by declaring the event and maintaining fidelity to it, one cannot claim any reward, be it the luxury of wisdom or the certainty of prophecy. The event, in fact, instigates a fundamental uncertainty as it subverts the reassuring embrace of conservatism. An event in this sense stands against certainty; it represents the impossibility of determinacy. Due to the fact that very little can be comprehensively stated as to why the

⁴⁹ For Badiou (2001), ethics can never be universal as it is always dependent upon a particular context. In other words, there can be no universal ethics, only ethics of a particular problem in a particular context. We cannot then, for Badiou, prescribe universal values to what is ethically correct or incorrect we need to judge each action within its context.

event occurred, the event itself is open to being appropriated. The risk involved in declaring an event is that the event simply be reappropriated into the language of the existing situation. As Badiou contends (2007b:202):

Scarcely has the decision been taken than what provoked the decision disappears in the uniformity of multiple-presentation. This would be one of the paradoxes of action, and its key resides in decision: what it is applied to— an aleatory exception— finds itself, by the very same gesture which designates it, reduced to the common lot and submitted to the effect of structure. Such action would necessarily fail to *retain* the exceptional mark—of—one in which it is found. (Emphasis in original)

The event in this sense has a ‘double bottom,’ in order to exist it must be doubled, must be repeated, its singularity lost the very moment it declares its existence (Derrida 2004:321). However to be doubled implies that something must be lost which described the *singularity* of the event. In other words, if the event stands as anti-programmatic, its reincorporation into a restricted economy implies that the singularity which the event is, must be lost. In Badiou’s terms, the singularity of the event stands outside the ability of an encyclopaedia to define and contain it. Yet, events happen and we are able to account for them historically. However, something is lost in this repetition, in the accounting. What is lost is the uniqueness or singularity of the event. Yet Derrida (2004:399) argues that, “the unique—that which is not repeated— has no unity since it is not repeated. Only that which can be repeated in its identity can have unity. The unique therefore has no unity, is not a unit.” What, then, is the unique of an event? If, in order to exist, an event must be doubled, if it must be reinscribed into the repetition of economy, how can we understand the event and that which marks it as unique?

In the beginning of the first chapter, I argued that an economy consists of a relationship between resources and what a system is able to do with these resources. An economy then has both form (how a system deals with resources, what a system does with resources) and content (resources/materials) which are not independent of each other but exist in a relationship of mutual feedback. Now, if we consider that the event disrupts our economies of thought, we can state that it disrupts the relationship between the form and content of

our thinking about the world. That is, if our economies of thought are directed towards a particular purpose, they carry a certain forward looking or future orientated form. The relationships within the economy, the form of the economy, thus structure a particular style or type of thinking. The style or shape that this thinking takes is the rationality of the system. The relationship between the form and content of an economy is an embedded one. The two terms are hard to distinguish because they mutually implicate one another. This embeddedness is a feature of especially restricted economies which are often quite successful at making this relationship appear as matter of fact or natural. In a restricted scientific or religious view, features which do not support this relationship are seen as nonsensical or devil's work. In a more general or self critical economy these two terms struggle to hide behind the apparent naturalness of their relationship.

An event disrupts this relationship between form and content. The singularity of the event sits in the disruption of this relationship between form and content. So, whereas an event does disrupt the content of an economy (as Badiou illustrates, the event reveals the suppressed parts of a situation), the singularity of the event sits in the moment when the form and content do not sit as neatly together as was initially believed. What we find in the world and what we are promised by our thinking of the world are not in sync during an event. We can, post-event, rewrite history (this is necessary if we want to think about the world which necessitates a form of reason) but the singularity of the event can never be explained as a unit of analysis, as its uniqueness is this dislocation. It belongs to neither the economy prior to the event, nor post event. The uniqueness of the event is anti-economy. Both the despair and the hope of the event sits in this disjunction, as the possible future promised by the form is no longer reflected in its relationship with the content. Witnesses to the event see both an infinity and a dearth of new futures offered simultaneously. This is often why events which occur in social systems are always presented with contradictory scenarios for the future. The immediate future of a coup or revolution always promises the possibilities for both more bloodshed as well as a prosperous future.

If we argue that the form of the economy is a set of constraints on the resources, we can see that the relaxing of these constraints also amounts to a relaxing of the possibilities

promised. It is always possible, post-event, to reapply the same rules if the system still exists. But the doubt in the relationship between form and content has been sowed, which is why the system is always again especially vulnerable. In the same sense though, a radical change is never guaranteed by an event. The lack of guidance provided by the event often results in the revolutionaries reinstating the same laws, only more repressively carried out, in order to quench their own uncertainty about the contingency of their creation. You will notice that this view of the event differs from Badiou's, as for him the event only reveals the truth and a possible new, better order. Yet, if we grant the contingency of any system, which Badiou does due to his dependence on the notion of 'truth' does not, the revelation of this contingency is both exciting as well as disconcerting. If we do away with notions such as 'truth', the future of the event is radically open as the foundation upon which we have been working is done away with. The event then does not necessarily promise a bright future. The view of the event adopted here then is purely descriptive. I am not attempting to do away with the notion nor support it; I am simply trying to describe it and the experience of those who live through it.

Due to the disconnect between the form and content of the event, and its defiance of the determining encyclopaedia of the situation, the event *itself* cannot be given any verifiable content (Hallward 2001:ix). What *actually* happens during an event can only be attempted to be explained post-event, can only be declared in the wake of the event. "Whence the obvious conclusion that 'memory' cannot settle any issue. There invariably comes a moment when what matters is to declare in one's own name that what took place, took place, and to do so because what one envisages with regard to the actual possibilities of a situation requires it" (Badiou 2003:44). The event, therefore, is always unaccountable in terms of the calculations internal to the situation; it is irrational from the perspective of the situation. However, that does not imply that the event is *itself* irrational or that it presents irrational characteristics (Badiou 2001:125). Rather, as the event breaks with conventions, it must itself re-establish conventions and a rationality to account for it. It must, as history demands, be reinscribed into a restricted economy.

An event, between its 'irrational' eruption and its reinscription into repetition, into the restricted economy of explanation, can be seen as an interval (Badiou 2007b:206). This interval of the event is a space of possibilities, a space of play. I here diverge from Badiou and draw more on Derrida. For Derrida, the fact that there is no origin to our understanding of the world, our interpretation of the world is structured by relationships between the traces which constitute meaning and the play which makes the existence of meaning possible, implies that the disruption of this repetition reveals to us the world in play. In other words, because Derrida does not prescribe to some foundation on which meaning is built, that meaning is always dependent upon the relationships within a context rather than fixed or containing an essence. This implies that in an event, our interpretation is disrupted as it cannot depend upon the context we are used to, to structure our thinking. In an event, we cannot resort back to some essence which will give us the security of a foundation. This is why the event reveals possibilities in the plural. If we were to follow Badiou, the event would reveal only the 'truth' to us, the event then would be constrained to simply revealing an underlying structure. Yet, this structure cannot be proven, hence Badiou's reliance on terms such as fidelity and hope, to keep those inspired by the event working towards its realization. In contrast, I propose that events illustrate to us the complexity and non-linearity of the world as what we conceived of as being a simple, neat, linear history suddenly erupts into the possibilities which it has suppressed.

The event in this regard is marked by a 'trigger' and can be seen as a trigger for new possibilities to re-establish an economy, as the interval of the event produces a space of play. What Derrida (2004:378) argues concerning meaning, can just as well be applied to the possibility of an event in its relationship with daily life:

Here, on the contrary, it is always possible for a text to become new, since the blanks open up its structure to an indefinitely disseminated transformation. The whiteness of the virgin paper, the blankness of the transparent column, reveals more than the neutrality of some medium; it uncovers the space of play or the play of space in which transformations are set off and sequences strung out.

As I argued in the first chapter of this dissertation, our economies are not built upon a neutral space. A system's economy is always built upon a field of play and heterogeneity. The *différance* of the system regulates the relationship between the structure of the system and this heterogeneity. An event opens the system up to this heterogeneity. If complex systems existed in a vacuum, there would not be transformations or events as something needs to disrupt the system. The same would apply if economies were completely restricted, no change would occur because there would not be space for play. The event is both a product of play and the space of play, a move or interval in the continuous play of the world which makes possible not only the success of the restricted economy (the fact that the world can be 'squeezed' and relatively successfully organized into a restricted economy) but also its failure.

History, as it is presented by a restricted economy, always places a linear line between two moments, the assumption being that what occurred between these two points was simply the linear process that led from the one to the other. The explained historical event in this case is always a mark, limited by reason and occurring in a restricted economy, thereby revealing none of the complexity and possibilities which were opened up by the event. If history is written by the victors, and then rewritten by revolutionaries, there is always a stake in the writing of that story. History, in this sense, necessitates the oppression of "the madman of the day" (Derrida 1978:74) in order to prevent another opening, the declaration of another event, the disruption once again of present stability. This is the oppression of the general economy of history. In terms of general complexity, the event needs to be declared due to the wealth of interactions in a complex system, due to the occurrence of a rich network of interactions. Whatever a system is 'doing', and this includes a written history of the system, it will always be possible to declare that certain things have happened and others not, depending upon the frame one uses and how we interpret the evidence presented to us. As we will come to see, in theories of evolution, the phyletic graduation school of thinking argues that the radical changes one sees in the fossil record is simply due to a lack of, or missing, evidence. In contrast, the punctuated equilibrium school argues that the radical changes we witness in the fossil record are a result of events. In a sense then, this school declares the possibility of an event. In a different example, from the perspective

of racialized law in South Africa, one can argue that the release of Nelson Mandela or the 1994 general elections were events that led to change. However, a more economic and less racialized reading of South African history will not demand that these same events be declared. They were non-events, as the lives of many poor South Africans remains largely unchanged in the last twenty years.

This does not mean that we can simply draw just any history of a complex system. Some histories are *impossible* and some more verifiable than others. But it does mean that the histories we draw of systems depend upon the particular present we inhabit (Scott 2004) and the politics of that time, including or especially, the politics of possible futures to come. Yet these futures, and the pasts reflected in them, can only be written in the conventions of the time, and this is the paradox of the event, its necessity for breaking conventions at the same time as being reinscribed into them. As Derrida (1989:28) argues:

So, then, the unique structure of an event.... It will be so, on the one hand, insofar as it is unique, and on the other hand, inasmuch as its very uniqueness will produce the coming or the coming about of something new.... Never does an invention appear, never does an invention take place, without an inaugural event.... It will only receive its status of invention, furthermore, to the extent that this socialization of the invented thing will be protected by a system of *conventions* that will ensure for it at the same time its recording in a common history, its belonging to a culture: to a heritage, a lineage, a pedagogical tradition, a discipline, a chain of generations. Invention *begins* by being susceptible to repetition, exploitation, reinscription. (Emphasis in original)

This reinscription into the history it aims to surpass is the inevitable threat of declaring an event. Yet it is also the necessity for its existence, the normalization of its occurrence so that we can mark it in both time and place. However, for Badiou what is important is not so much that the event be declared but rather that one follow through on its consequences. In a social system, events are often declared in order to bring about some change. In this sense, in an event, the intentional and the aleatory meet. As Derrida (1992:123) states:

There must be chance, encounter, the involuntary, even unconsciousness or disorder, and there must be intentional freedom, and these two conditions must – miraculously, graciously – agree with each other.

The event then is possible, even if it is indeterminate. One must be able to declare an event, one must be able to recognise an event and carry it through even though one has no control over its occurrence. This is why Badiou states there can be no hero of the event but only those who take responsibility for it. In complexity terms, one can see that the event is a product of a world which is open rather than closed. That is, due to the fact that something always escapes our frames of reference, due to the sheer complexity of both local and global non-linear relationships, events will occur which we cannot claim to understand yet which, due to the fact that events are always local and bear consequences for the world we inhabit, we are forced to take responsibility for them. An example of this is revolutionaries who blame their history of oppression for the lack of ability to deliver on the promises the event held. Events are not an excuse for not taking responsibility; they are the call to responsibility.

4.3. The Void of *Différance*

A key aspect of Badiou's philosophy is the idea of the 'void.' This is an interesting concept which provides us with a useful means of thinking through problems such as what gives rise to novelty. As has been argued, the void for Badiou cannot be given content. The void is the space around which politics is structured precisely because it is the foundation on which the situation is built. Therefore it cannot be analysed from the perspective of the situation except to challenge that situation. There is a stake for the order of the situation in anything that threatens to reveal the void. Because the void cannot be localized, it appears as nothing from the perspective of the situation:

It would already be inexact to speak of this nothing as a point because it is neither local nor global, but scattered all over, nowhere and everywhere: it is such that no encounter would authorize it to be held as presentable.... I term *void* of a situation this suture to its being. Moreover, I state that every structured presentation

unpresents 'its' void, in the mode of this no-one which is merely the subtractive face of the count (Badiou 2007b:55 emphasis in original).

In this sense the economy of analysis which the situation establishes, the 'count' in Badiou's terms, harbours the same discrimination for heterogeneity which I argued for in Chapter One. We cannot see what our economies oppress or discriminate against, from the perspective provided for by the economy, due to the fact that the language of the economy harbours this discrimination. Taking heterogeneity into the economy would lead to incoherence in the economy. In the *form*, as the term was adopted above, of a restricted economy, we see the limitation or constriction of heterogeneity; we can see that the form limits what can be asked of the content. In other words, the form or reason of an economy determines which relationships are possible between entities in an economy and which are not. This is partly revealed in restricted economies' reluctance to acknowledge play. This is because play challenges any strict conception of boundaries between entities. Therefore, the questions which are made possible, the critiques which could be made against the economies we use, are always dependent upon being reasonable from the perspective of the economy. Or, as Badiou (2007a:7) argues "we pose only those questions whose answers are the pre-given conditions of the questions themselves."

The void cannot be localized because to do that would be to challenge the structure of the economies on which we rely and thereby reveal their contingent nature. In other words, that which is excluded from an economy, that which appears as nothing from the perspective of the economy, is so precisely because to reveal or include it would change the economy of the system. Yet, once again, this is a very static view of an economy. If indeed economies were restricted simply by the relationship between what we find 'inside' them and the 'impossibilities' found outside them, we could end this argument here. However a benefit, albeit only metaphorical, of conceiving of analysis as economies rather than, say, simply frames, is that it allows us to conceive more clearly of the sets of relationships both inside and outside the economy and not simply in terms of framing as an inside/outside dichotomy. A strong distinction between an inside and an outside is the image produced in one's mind by the metaphor of a frame. An economy allows us to conceptualise the

relationships both 'inside' the economy and the relationships the economy maintains with the 'outside.'

Badiou (2007b:57) argues that if we want to thematize the void, it must be in its errancy rather than as a concept or singularity which would only draw it back into the restricted economy of the situation. We must then always present that void as the point of error of the situation, as that which escapes the encyclopaedia of the situation. *Différance* as Derrida conceived of it, falls at least metaphorically, into a very similar definition. *Différance* is that which occurs beyond calculation, as that which escapes the alternative between presence and absence (Derrida 1982:20-21). Yet, the benefit of Derrida's conception of *différance* is that it is seen to be a product of play, and it is the subversive nature of play which is of interest to this dissertation rather the simple inside/outside dichotomy which Badiou's notion of knowledge and truth implies. As Derrida (21-22) explains:

... [D]*ifférance* is not. It is not a present being, however excellent, unique, principal or transcendent. It governs nothing, reigns over nothing, and nowhere exercises any authority. It is not announced by any capital letter. Not only is there no kingdom of *différance*, but *différance* instigates the subversion of every kingdom....And it is always in the name of a kingdom that one may reproach *différance* with wishing to reign, believing that one sees it aggrandize itself with a capital letter. (Emphasis in original)

Différance operates, for Derrida, in a very similar manner as the void does for Badiou. It is a concept that challenges conceptualization and thereby it allows both philosophers the possibility to set up a total critique in a non-totalizing fashion. By highlighting these points, or this 'motion', both authors are given the ability to challenge the system they face without being forced into the same totalitarian conditions in order to replace it. Yet it is difficult to see, in Badiou's system, where he argues that the logic of the situation is excessive over the situation to such an extent that it is difficult to see otherwise, how a person would come to realize an event. In fact, I would argue that this is why, when discussing the event, despite his atheism, Badiou adopts a semi-religious language, using words such as 'grace', 'resurrection' or 'hope'. If the system is that rigid, if the system is that total, transgression

would indeed be a rare occurrence. Badiou does not acknowledge play, he sees the structuring of the State as simply suppressing the void. He does this because he establishes a very simple inside/outside dichotomy between that which is inside the count and that which falls outside of it.

It is the advantage of *différance* however to allow us to see how transgression becomes possible. Using language as an example, and the words I have referred to previously, *hymen*, *pharmakon* et cetera. Derrida (2004[1972]:153) has illustrated how transgression becomes possible precisely because these words present other opportunities for interpreting the text. These words are examples of the play of text in its relationship to context and I believe we can use the process of *différance* which these terms represent to explain how novelty arises.

In a completely restricted economy, as the economy of Badiou's State seems to be, a transgressive politics would be impossible. It is precisely because we can play with the terms we are given, because we can bend and reinterpret the orders given to us by the State (as done by many comedians or satirists even in extremely totalitarian states), that we can see alternative possibilities to exist within the world. However, this is not simply the realization of the transgressive; the State realizes the possibilities of play as well. Hence one often finds very loosely termed or phrased laws in extremely totalitarian states precisely in order to allow the State to bend and shift its responses to changing patterns of resistance. The void in the sense of *différance* thereby makes the making and breaking of rules possible. The *différance* of a complex world is what creates the ability to change due to the fact that it presents the possibility to us of answering questions differently, or of posing questions differently, even if these questions and answers are comic, ironic or tragic. What *différance* does is to allow us to re-interpret and re-order the content of our economies, to re-think our economies from 'the inside'. Even if the connections we make are deemed comic, doing so will still challenge the *form* of the economy, thus opening up new possibilities and potentialities for divergent forms of thinking.

Furthermore, if we consider that the 'outsiders' inside the situation, illegal immigrants existing at the edge of the void for instance, continue to persist despite the best attempts of

the State to squelch dissent, we can see the excess of the world over the attempt at restricting it to encyclopaedias of knowledge. In fact, in regards to Badiou's 'truth procedures'; art, science, politics and love, we can state that they all depend upon and reveal this play of the world. In later work, Badiou seems to acknowledge this play of boundaries. In an interview with Oliver Feltham (2008:138), Badiou states that transgressive possibilities do not only rest in the excluded elements but also in possibilities of what he calls a 'grand alliance' in which the subjective barriers of the State disappear between different groups rallying against it. However, even here, Badiou does not acknowledge the play within what he terms multiplicities. For Badiou you are either inside the system or outside of it, part of a grouping or not. The mathematics upon which Badiou depends does not allow for greyness.

4.4. The Metaphysics of the Event

From the above, we are led to question Badiou's dependence on the event for novelty to arise. *Différance* and the processes of play imply that we no longer need some outside or the event to reveal other opportunities for transgression (see below). If we acknowledge that our economies are always simultaneously closed and open to forces which we cannot calculate, it implies that potentialities exist which remain hidden or latent. The play of the economy means that we will not require an event to reveal these latencies but rather these can be realized in the continual delay and deferral which structures any economy. At this point it is important to note that I am not trying to dispute the existence of events as phenomena found in ontology, nor am I trying to deny the possibility that an event can give rise to novelty. My intention here is to illustrate that the assumption that novelty *necessarily* arises from an event, that the event is a *necessary* condition for novelty, is the product of metaphysical assumptions⁵⁰. In particular, Badiou's project is dependent upon a metaphysics of presence⁵¹, which I believe is an unnecessary concession to make in an

⁵⁰ I use the term 'metaphysical' here in the Derridean sense as discussed in footnote 15 (page 35).

⁵¹ In short, metaphysics of presence is a term Derrida developed to describe western philosophy's desire for immediate access to meaning without regard for previous experiences and interpretations. In this regard,

otherwise mostly worthwhile project. I am therefore not arguing against the event, but rather for a project which does not depend upon an event. I am arguing for an endeavour towards novelty which empowers individuals to act from the here and now, and to contingently adapt to the changing circumstances which are an inevitable product of acting in a complex world. This attempt will also allow us to move away from the mystical language which a reliance on the event demands, words Badiou routinely uses such as, 'faith', 'confidence', or 'hope'.

Badiou assumes that all experience prior to the event by the subject is State-mediated experiences of reality. The event, as I illustrated in the previous chapter, is a rupture with the encyclopaedia and language of the State. But there are a few questions which the otherwise commonsensical statement that an event reveals something new in the world brings forth. From the perspective of deconstruction, one can argue that Badiou's project assumes a metaphysics of presence in that at a single point the world can reveal something to us which was not the product of prior experiences. In other words, one gets the impression that the event is a moment of enlightenment in which we get unmediated access to the truth of the world. That we stand, sovereign, interpretation free above the world. Badiou states that the event reveals the truth or what is generic to us, yet it is not clear why suddenly this event would count above other experiences in the world. Why would we recognize what is generic, suddenly, without prior experiences of a similar sort? Is it even possible to recognize something without prior experience of it or something similar to it? It seems that for an event to have any meaning to us would imply that we've had similar experiences to which we can relate the current event. If we were truly trapped in the encyclopaedia and knowledge of the State, we would not be able to recognize the generic of the event as it comes about (Skempton 2010:13):

philosophy has assumed that it is possible to have direct access to the meaning of words without having to go through a process of interpretation. This is also why western philosophy has privileged certain terms above others, primarily speech over writing. For Derrida this is a metaphysical assumption as it does not take into consideration the processes by which we interpret meaning, including previous experiences, and the current context (See Culler 2003; Derrida 1977; 1997).

A genuinely free decision, one that dislocates the given order of presence, cannot be the product of a self-identical being with a unified 'consciousness'. Such a 'subject' would be trapped in the narcissistic closure of given presence and would only be capable of making pseudo-decisions that perform a functionality within the given systematic order.

In other words, the event becomes impossible in a situation where the State is as comprehensive as Badiou claims. In a situation where the individual does not recognize the possibility of excess to the categories they use. Badiou does state that the event appears impossible from the perspective of the State and those not inspired by the event, yet this does not sufficiently explain how the event is possible at all. If the State were as excessive as Badiou argues, we would be trapped even if we were faced with the inconsistency of ontology or the void as we would not be able to recognize it without at least some form of experience of it. However, above I have argued that what makes the State's efficacy possible, as well as the subversion of the State possible, is the possibility of play. In a complex world, where there is always excess to the economies we establish, it would be impossible to programme completely. Therefore bureaucracy and State control are premised on the possibility of play. The realization of the possibility of resistance to the current situation comes about due to the experiences we have of this excess, due to the experiences we have both inside the law and outside of it. We therefore recognize or declare an event, as an event, based upon the previous experiences we have had which have slipped into the excess of our economies, into the heterogeneity of that which we otherwise have reasoned into our economy of experience.

In this sense, dependence upon an event in the form Badiou ascribes to it implies that we have some access to the world which is not already mediated by previous experience. It implies the possibility of a radical rupture, yet the dangers of such a rupture were marked out earlier in this dissertation. In contrast to this, because we inhabit the world and our thinking about the world (remember inhabitation is made possible by contingency), we are forced to engage with the situation from inside the situation. Using the resources provided by the situation. There is then no direct cause of our experience of the event, no 'origin' to

our subversion of the situation. We cannot reduce the inspiration we take to change the world to a single point or experience. All experiences and events are mediated by those which preceded them. Therefore, despite stating that the subject and novelty arise from the void, Badiou still assumes that the subject arises somewhere, at a point. Derrida's concept of the trace helps us out of the simple cause/effect logic on which Badiou depends upon. As Derrida argues (1982:12):

If such a presence were implied in the concept of cause in general, in the most classical fashion, we then would have to speak of an effect without a cause, which very quickly would lead to speaking of no effect at all. I have attempted to indicate a way out of the closure of this framework via the "trace," which is no more an effect than it has a cause but which in and of itself, outside its text, is not sufficient to operate the necessary transgression.

We cannot then isolate the origin of subversion to a particular point. Nor can we take guidance from this point in the development of a programme as nothing is revealed to us in an event as in the Badiouian sense of the universal or generic which inspires our subversion. The event is simply that which presents a simultaneous wealth and dearth of opportunities. The event is both a promise and danger. Under the ontology, which I will try to establish below, the event becomes an unnecessary condition for novelty to arise. If we follow the work of Derrida or Critical Complexity we can see that the world consists of a wealth of possibilities which are constantly slipping from the models we establish to understand this world. Under this framework we can begin to establish a conception of novelty which is not tied to the notion of an event. I will pursue this conception in the following chapter.

4.5. The Evolution of Novelty

The notion of *différance* then begins to break with the radical dichotomy Badiou establishes between that which is found inside the State's count and that which is suppressed by this count, as illustrated by the notion of the void. The scientific or mathematical logic on which Badiou builds his philosophy allows him to establish such neat distinctions. However,

Derrida's notion of *différance* gives us a better understanding of how transgressive politics is possible. It is due to similar limits or a similarly restricted economy which has prevented scientists from working with a radical understanding of novelty. Classical science, built upon the strictures of laws and reason, has struggled to come up with an understanding of novelty which is not simply the product of change or evolution. For classical science, for something to be explained meant that it needed to abide by the strict dichotomies on which it depends. However, in contrast to classical philosophy, the restrictions of classical science have meant that the notion of an event has been excluded as an explanatory tool. This equally has its shortcoming in much the same manner as the dependence of classical philosophy on the notion of an event for novelty to arise, as I have attempted to demonstrate in the case of Badiou. In this section I will explore science's exclusion of the notion of event from its economy of possible explanations. I will illustrate that the notion of *différance* once again helps us to develop a means for understanding novelty as it relates to complex systems. In this part I argue that we should not completely remove the idea of an event from our epistemological economy, as it is necessary for our understanding of complex phenomena. However, what this argument also does, perhaps paradoxically, is to continue questioning the implicit assumption that an event is a necessary requirement for novelty to appear.

We must be careful not to exclude the notion of an event too quickly from our thinking about novelty. This is because, despite wishing to remove the idea of an event from our thinking about novelty, we should be equally concerned about resorting to definitions of novelty which abide by restricted economies. We must not do away with the event at the expense of a radical definition of novelty. The reductionist tendency in science has resulted in a type of thinking which argues that any novelty in the world is simply a product of evolution or 'modification with descent'. Under this conception there is nothing new in the world, there are only products of change. We need therefore to develop another approach to novelty which avoids this reductive error. Part of developing this approach to maintaining

a radical definition of novelty without the event is to look at the critique of science's exclusion of the event as a possibility within their economy⁵².

For Badiou, novelty is tied into the notion of an event. In other words, nothing novel can appear in the world without an event. As Badiou (2001:122) has argued, for there to be something new, something must happen. Otherwise, there would only be repetition or small change and no radical novelty (Gillespie 2008:7). Yet, even though the event marks a rupture or interval with what came before it, even though it disrupts repetition, it is still necessary that the new maintain some identifiable features of that which preceded it in order to be recognizable at all. This is a view Badiou would disagree with as it is precisely the inability to recognize the novelty that an event heralds which forces into existence a new language (remember that Badiou is critical of philosophies built upon problems of interpretation). However, in order to make any sense to us, the new must have some features which will allow us, firstly, to recognize it, and secondly, to recognize it as different from the repetition which preceded it. There must be marks or features which straddle the old and the new. There must be a continuity which maintains a recognizability between the radically new and that which preceded it. In archaeology, a 'skeuomorph' is a feature of this kind:

A skeuomorph is a design feature, no longer functional in itself, that refers back to an avatar that was functional at an earlier time.... Like a Janus figure, the skeuomorph can look to both past and future, simultaneously reinforcing and undermining both. It calls into a play a psychodynamic that finds the new more acceptable when it recalls the old that it is in the process of displacing (Hayles 1994:446- 447).

I would extend Hayles' definition and state that a skeuomorph is not simply reassuring but is rather essential for our ability to recognize the object which stands before us. We would neither recognize nor be able to use something which is truly new, radically alien to us. We

⁵² For a definition of novelty see Chapter Five

would not be able to deal with such an object due to the fact that we have no frame of reference through which we can deal with this phenomenon. It will appear as noise and it will only be with reference to other experiences that it becomes familiar to us. Therefore, when we recognize something as novel, it means that there are elements of that object which bear some resemblance to aspects found within our own economies. Another difference between noise and heterogeneity is therefore that heterogeneity maintains some form of recognizability or relation to the economy we deploy.

For Badiou (2007b:237), a truth, from the perspective of the situation, is always nonsensical. A truth appears as noise to the economy of the State. Due to this, actors acting in fidelity to the event from the perspective of the event have no *telos*; they must simply act without reassurances as they bring the new into existence. This is because any recognizable goal would only be one from the perspective of the State. Yet, except for 'grace' and 'fidelity' it is difficult to see how we will act when faced with something radically new. Badiou in this sense argues for an almost religious dedication to bringing novelty into the world where we must simply have faith in the truth of our endeavour without an understanding of the novelty we want to bring forth.

A restricted economic view of novelty would be novelty as a *telos*, as an end or utility of a process. In contrast, a more general economic view of novelty sees the impossibility of giving novelty an end. It sees the futility of giving novelty a utility or law but rather sees it as the constant disruption of law. This is why for Badiou (2005:253), the event does not produce novelty – novelty is a process. As he states, "I am convinced that the new can only be thought as process. There certainly is novelty in the event's upsurge, but this novelty is always evanescent. That is not where we can pinpoint the new in its materiality." Even though process is important to the realization of novelty, a process must still arise from the event. Otherwise we can conceive of novelty in terms of change or 'modification with descent' which would do away with the radical nature of novelty which arises from the

event⁵³. This is why classical science has struggled with a radical conception of novelty. Classical, Newtonian science, operating from a restricted economy has always considered change as something which should be reducible to some invariant, consistent law. At the very most, science has attempted to deal with chance events by means of probability theory which still depends upon certain restricted economic assumptions (see Ulanowicz 2009: 42-43). Therefore, we "are unable to encompass true qualitative change within the description of nature because we have turned a blind eye toward the existence of complex chance events" (43).

In contrast to classical science, Robert Ulanowicz (2009:117) has argued that, when we face a complex system, such as a particular ecology, it is better to think in terms of propensities and processes. Classical science has traditionally depended upon sets of 'physics like' laws. Process is key to Ulanowicz's conception of the means through which we can think about complexity. Ulanowicz (29) defines a process as, "the interaction of random events upon a configuration of constraints that results in a nonrandom but indeterminate outcome." He illustrates this definition of process through the example of Polya's urn. Yalinctas (2006:58) describes the Polya urn process as follows:

The process runs as follows: suppose there are initially equal numbers of red and black balls in an urn. We randomly draw a ball. Then we return the ball to the urn, with another ball of the same colour. That is, if the ball that we draw is red, we return the red ball with another red one. If there were initially one red and one black ball in the urn, there would now be three balls in the urn – two reds and one black. We draw another ball. We repeat the game. The consequence of the process is that, as we make further draws, the probability of drawing the same coloured balls

⁵³ For the sake of this dissertation I must make a distinction between change or modification and novelty. As will become clearer in Chapter Five, the two are not, in fact, as distinct from each other as it may at first appear. However, at this point, I use the term 'change' to refer to processes which allow the system to adapt to an environment without radically changing that system. Change in this sense allows the system to maintain itself without challenging the history of that system as is the case with novelty (see Chapter Five).

increases. The process, in other words, is reinforced by the small event of drawing a red ball from the urn.

The Polya urn example is used by Ulanowicz to reveal various things concerning the notion of process. The first is the sensitivity of a process to initial conditions. If we draw a red ball, and thus place another red ball in the urn, our chance of drawing another red ball increases and so on. "In other words, any particular series [of draws] becomes progressively more constrained by what has gone before, i.e. by its history" (Ulanowicz 2009:32). A process is therefore defined by the contingency of its history. This, secondly, implies the contingent and indeterminate nature of a process. Through computer simulations, Ulanowicz illustrates that after two test series, each with a thousand random draws of the balls, the processes do not converge, that is, the number of red and blue balls do not reach a point of equilibrium. Thus the process, although structured, is indeterminate (29-30). Therefore (32):

Serendipitously, this simple example tells us three important things about processes in general:

1. The process is subject to stochastic inputs, but the outcome over time becomes less random (by definition).
2. The process is self-referential in that the ratio of balls at the time of the draw affects the outcome of that draw.
3. The change in ratio of the balls is progressively constrained by the actual history of draws that have already occurred.

For Ulanowicz, process leads to a result, as the balls are drawn from Polya's urn the process becomes increasingly constrained to produce a particular result. Novelty, in sum, is the process which began at an event, and carries the contingent history of that event towards a new synthesis of previously disparate elements in the world. But a novel process is indeterminate; one cannot predetermine the outcome of the process. This is because the event has opened up new possible relations between the entities which constitute the economy. Thus we do not have any resources or means for accurately predicting the outcome of the process. As the novel process is not a possibility within the existing

economy, and thereby, based upon the system's history, more or less predictable, we have very little means of determining the outcome. In this sense, the radical contingency of novelty born(e) by the event strives towards an uncertain future which can only hold promises without certainty.

One can see the debate in biology between the different schools of thinking about evolution as occurring within similar terms. 'Phyletic graduation' is the name given to the process of evolution outlined by some neo-Darwinists. This theory conceives of evolution as being a process of gradual, even change leading to increasing optimization of a species' characteristics reacting to an ever-changing environment. Robert Ulanowicz has argued that this theory of evolution is very much based within a restricted, Newtonian conception of the world. That is, that the evolutionary process is built upon a universe dominated by *closure*, *atomism*, *reversibility*, *determinism* and *universalism* (20-24). According to Ceruti (1994:118) the fundamental assumptions of the phyletic graduation process of evolution are:

- New species arise following the transformation of an ancestral population into its descendants characterized by modifications
- The transformation is even and slow
- The transformation involves large numbers, usually the entire ancestral population
- The transformation occurs over all or a large part of the ancestral species' geographic range

Evolution under these constraints is conceived as 'descent with modifications' (Ulanowicz 2009:27) and, as such, exponents of this view treat evolution in the same fashion as a law of physics. That is, the proponents of this school see biological processes as conforming to a set of laws which imply that we can neatly retrace the evolution of a species. Due to the Newtonian assumptions built into conceiving evolution as a law, this model of evolution struggles to explain how true novelty emerges (39). In contrast to phyletic graduation, Niles Eldredge and Stephen J Gould (1972) present a theory of evolution they have labelled

'punctuated equilibria'. Ceruti (1994: 118-119) argues that the basic characteristics of this theory are:

- New species arise following the splitting of lineages
- New species develop rapidly
- A small sub-population of the ancestral form gives rise to the new species
- The new species originates in a very small part of the ancestral species' geographic extent— in an isolated area at the periphery of the range

A consequence of the theory of punctuated equilibria is that it is able to explain the existence of absolute novelty in contrast to relative novelty (Barbieri 2008:591). That is, the theory is able to account for the appearance of radically new forms of life which occur in the fossil records. In contrast, exponents of phyletic gradation account for such leaps in the fossil record as being a product of incomplete records. The restricted economy under which these theorists thus work would not allow them to think beyond the conservative, Newtonian law-like rationality upon which their analysis was based and thereby read the possibilities for radical change in the fossil record as being simply lack of evidence. In contrast to this, by allowing contingency to play a role in their economy, by opening their economy up, exponents of punctuated equilibria have developed a theory of evolution which is capable of explaining the radical changes one witnesses in the history of life on this planet.

Furthermore, as Ulanowicz (2009:43-46) points out, chance events are not rare occurrences, they happen often. The postulate that chance events are a regular feature of ontology (47)

... is also meant to affirm the ontic nature of chance. That is, chance is not merely an illusion to be explained away by the operation of laws, if only one knew matters surrounding the event with sufficient precision ... To the contrary, the postulate is implying that the world is not a seamless continuum. The fabric of causality is porous... Put in other words, the universe is not causally closed, but open.

More importantly, if we consider the politics of framing history as it relates to the possibilities of futures of the present, theories in the style of punctuated equilibria maintain the possibility of radical change. As Ceruti (1994: 121) puts it:

The theory of punctuated equilibria tells us that, for the same mechanism of speciation, the tendencies, directions, and morphological and behavioural fluctuations within the history of a specific species do *not* allow us to predict anything of its future history (or rather, the next event of speciation). Instead, this will largely depend on a *particular ecology* in a particular space-time *singularity* and probably on very few *events* produced in this ecology. (Emphasis in original)

Interestingly, the point of change is not the grand-scale, totalizing evolution imagined by the some Darwinists. In contrast, in agreement with Badiou, the change of punctuated equilibria always occurs in a *local* setting, in response to local conditions (Ceruti 1994:119). Change in this sense begins in a point and it is marked by the contingencies of that context, it is not a total, universal revolution but rather a contingent mutation to a particular circumstance carrying the marks of that context.

Novelty as simply a product of change, as a product of phyletic graduation, always occurs within a horizon of possibilities. Novelty in this sense is 'polysemic,' it puts forth its changes within a horizon of expectations, within a set of possibilities. As Derrida (2004 [1972]: 384) states, "polysemy always puts out its multiplicities and variations within the *horizon*, at least, of some integral reading which contains no absolute rift, no senseless deviation" (emphasis in original). In this conception of evolution, of change, no real novelty erupts; nothing ever disturbs the horizon of meanings or possibilities which were harboured by the system's restricted economy. Polysemy is the set of explanations which sit comfortably within a restricted economy; it is the change or variation acceptable to the 'attending' discourse (385). Novelty, however, by definition must disrupt this economy, what we experience when we witness novelty is a disruption of the economy we are working with, it is an experience of the fragility and contingency of our economy. Novelty upsets our horizon of possibilities; it is not simply one of those possibilities.

The commonsensical nature of the equation between an event and novelty, that something needs to happen for something new to arise, hides the radical implications of this simple thesis. That the aleatory plays a necessary role in the existence of life on earth challenges many of the presuppositions on which restricted, classical scientific thinking is built. It also radically changes the relationship of the human species to the earth it inhabits, discarding the arrogance of predictability and control and replacing it with chance and modesty. If we are to discard the event it must not be at the cost of the possibility for radical change. This means that we must develop a view of the world which will do away with the uncertainties created by an event but remains open enough for novelty to arise. I have laid the grounds for this ontology which I will expand upon below.

4.6. The Ontology of Novelty

In the first chapter I discussed the concept of a structural attractor as it is laid out by Peter Allen. In this discussion, I argued that a structural attractor is the excess of a system which leads to positive feedback, thus changing a system according to the demands and hospitality of the environment within which it finds itself operating. I also argued that one can see the excess of a system as the *différance* of that system. The excess of a system is thus supplementary to the system, it engages with the system whilst not, at any particular time, constituting it. In this regard, we can see the play of novelty, which results from positive feedback, as analogous to supplementation. As Badiou (2005: 249) states:

Let us not underestimate the fact that there is something that appears as such and that in a way was not there before, so that there is supplementation, or a creation, a positive dimension, and that remains the point around which everything hangs together. But, at the same time, we would not understand what is at issue, if we did not see that this supernumerary element has a completely deregulating function in the regime of appearance of the situation itself and, thus, in a certain sense, it does destroy something after all, namely, it destroys a regime of existence, if I can say so, which was previously given.

One can easily see how a structural attractor can be conceived of in the same terms as supplementation. Novelty can be seen as supplementation, as supplementary to the economy which it disrupts. It is the supplementary nature of novelty which makes it appear as impossible and yet still makes sense, as still having meaning. Novelty is that which we can understand yet which challenges our understanding. Novelty is not noise, what we witness is meaningful, it does not, *not* make sense to our economy of analysis. It must make sense in order to be understood as novel, noise with a few skeuomorphs stuck into it is still noise. How then can we conceive of the relationship between novelty and the economies of analysis we use to analyze the world? In other words, what is novelty when we speak about it ontologically and not simply as the product of limited frameworks?

In *Given Time: 1. Counterfeit Money* Derrida (1992) describes the relationship between the gift and the economy of obligations which it disrupts. The gift, in order to be a gift, must remain outside the circle of obligations; it must disrupt this economy in order to be a gift. A gift that is given under the assumption of a return is no longer a gift, it is simply a transaction. In this regard (30-31):

For finally, the overrunning of the circle by the gift, if there is any, does not lead to a simple, ineffable exteriority that would be transcendent and without relation. It is this exteriority that sets the circle going, it is this exteriority that puts the economy in motion. It is this exteriority that *engages* in the circle and makes it turn. If one must *render an account* (to science, to reason, to philosophy, to the economy of meaning) of the circle effects in which a gift gets annulled, this account-rendering requires that one take into account that which while not simply belonging to the circle, engages in it and sets off its motion. (Emphasis in original)

The gift in this sense is supplementary to the circular economy, it is that which, while not belonging to the economy of science or reason, engages with it and renders its completion or finality impossible. Derrida's work on the supplement is, in this sense, very useful for the relationship between novelty and a system which I am trying to establish here. Derrida argues that the supplement is not simply something which is external to the text, an extra added on. Rather, the supplement becomes central to the text as it completes an

'incomplete' text'; it is that which makes the text 'complete' and possible. Therefore, the relationship between novelty and a system is not simply that novelty remains outside or external to the economy under which a system operates, novelty does not simply appear as something without relation to that which preceded it. Excess, and the novelty it produces, engages with the economy of a system, it maintains a relationship with this system. This engagement can be seen as the suppressed possibilities one finds within any system, the action of heterogeneous actors which constitute Allen's 'law of excess diversity'.

Following the insights developed in this chapter, it appears as if the concept of structural attractor belongs to the realm of a restricted view of change in that it comes across as if positive feedback is a process which does not affect the fundamental nature of the system. In other words, if we conceive of a structural attractor as a process which constantly offers up alternatives to the system, it appears that a structural attractors' role is simply to maintain the system as we find it, with modifications. Thus, a structural attractor seems to fit more easily in a model of change as descent with modification rather than the radical rupturing of something new. The notion of an event helps us out of this problem. First, it is necessary that we conceive of the relationship between the form and content of an economy as a system of feedback. That is, the form of an economy cannot simply determine the content, and vice versa. For example, with the same set of ingredients, but different recipes I can cook very different things. Likewise, with different ingredients, I might need different recipes. If I find something fresher or tastier at the market, my recipe will need to change. My shopping for food is thereby based upon both the recipe I want to make (the form of the dish) as well as the available ingredients (content). My success in making a tasty dinner is therefore dependent upon the resources offered by my cookbooks as well as what is available at the market.

When a system receives positive feedback, which leads to change, it can either produce relative novelties or absolute novelty (Barbieri 2008). A system, through its interactions with an environment and processes such as 'dynamic instability' discussed in the second chapter, is constantly proposing changes but the robustness of the system maintains the system as it is, except for the small changes which ensure its survival. An event, as defined

as the moment of disconcert between the form and content of a system, is what can produce absolute novelty. This is because the event produces a new form of the economy; it establishes a new future and horizon of possibilities which did not exist within the reason of the economy prior to the event.

In this regard absolute novelty is produced by the radical reordering of the form of an economy, a challenging of the reason of the economy and what that economy aims to do with the resources it holds. Yet this reordering is made possible because the possibility for its change already existed within the content of the system, within the play and excess produced by the system. The form of the economy cannot radically change without the content being susceptible to this change. This is often why if a new form of government comes into being the success of this government is not guaranteed simply because the government changed. For example, in South Africa, the institution of a new constitution does not alone guarantee that the population's attitudes towards gender or homosexuality will necessarily change because the state has changed. The population's relative conservatism will determine the success of the constitution. This is why it is not always simply a question of overthrowing the existing order. There is always more work to be done. If the possibility for new relationships to exist does not, in some form, already exist within a system, the system cannot change. This means, that neither form nor content can determine the outcome of an event, either side of the economy is predicated upon the other. As absolute novelty promises a different future for the system, these promises pre-exist within the content of the system⁵⁴. A structural attractor can now be seen as one of the promises (albeit only one of the promises, there may have been many others) which pre-existed in the system prior to the event.

⁵⁴ It is important to remember that when I state that novelty promises a different future for the system this is not a teleological statement, as a system's future, especially now that we have granted a role to aleatory events, is radically indeterminable. Rather, what happens under eventual conditions is that alternative possibilities for the system arise.

Marcello Barbieri (2008:590) has argued that the discovery of the genetic code illustrated that there exists two forms of evolutionary mechanism, copying and coding. In sum, without going into the details of the biological mechanisms at work in these processes, the process of copying amounts to natural selection whereas coding amounts to what Barbieri labels 'natural conventions' (590). The copying mechanism, within the reproduction of DNA, produces either exact or similar copies of the original DNA. In other words, this process maintains a very close fidelity (in the biological sense) to the original DNA code. Copying in this sense reflects the robustness of a biological system and its ability to adapt to an environment. Copying is reflected in the process of natural selection and descent with modification (590). Copying is the repetition of the system through time.

In contrast, coding does not maintain fidelity to the original code but rather reinterprets the original code. Through the biological school of thought known as biosemiotics, Barbieri has come to demonstrate that processes of 'interpretation' occur within the biological world. Therefore, the processes we witness in biology, such as genetic reproduction, do not simply rest on a mechanical or physical basis. Rather, there is a process of translation which occurs in the reproduction of genes. What is remarkable about coding is that it is based upon natural conventions (582), which are conventions which determine the nature of the protein being produced. In other words, the process of coding is the process whereby different nucleotides are put together in a specific sequence in order to produce a specific type of protein. The distinction between copying and coding is that copying simply copies, as closely as possible, the convention; mutations are produced by small errors in this process. In contrast, coding re-writes the rules of this transcription. Whereas copying transcribes what it receives, the coding process does not simply mimic the original code, it reinterprets it and thus produces absolute novelties as it strings together nucleotides in a unique manner (591) due to the new convention established. As Barbieri demonstrates (591):

The rules of a code are not dictated by physical necessity, and this means that a new code can establish relationships that have never existed before in the Universe. The objects that are assembled by the rules of a new code can have no relationship

whatsoever to previous objects. Natural conventions, in short, create *absolute* novelties, not relative ones. (Emphasis in original)

Coding, in this sense, produces the events of evolutionary history, it is not reflected in moments of gradual change but rather in the punctuated nature of this history. Both copying and coding have roles to play in evolutionary history (592). From my above discussion, we can see that coding and the form of an economy as I have discussed it are analogous. That is, if we consider that the view of novelty adopted in this chapter is one connected to the event and – as I have argued – the novelty arising from the event is due to a new form being given to the economy, we can see that it is very similar to the biological proof Barbieri has established concerning absolute novelty. Barbieri does not argue that the nucleotides which build up the gene are the source of the radical rupture. Rather, this 'content' of the genetic economy is given a new form (convention) which results in a novel entity. New possibilities arise from the same content. A new future is provided for by its re-coding, but the possibility of realizing this future must already exist within the relationships between the content (even if they are not explicitly recognized under the previous regime).

Novelty, as it is defined by its relationship to an event, is thus a process which follows through the future promised by the event. It is for this reason that, for authors such as Badiou and Ulanowicz, the notion of process becomes key to our understanding of novelty and the eruption of novel entities into the world. However, the problem with Ulanowicz's definition and the example he uses to describe it, is that they are very restricted. And, as I shall argue in the conclusion to this dissertation, Badiou's philosophy is plagued by a similar restricted economy. One gets the impression that process for Ulanowicz does not account for aleatory events. That is, process for Ulanowicz results in an outcome, it converges at a point, even if that outcome is indeterminate. However, what about processes which do not converge but disseminate? Processes which produce more than one outcome or result in more processes?

I have argued that the viewing of novelty as an end is the product of a restricted economy which seeks to restrict and determine that novelty. If we were to adopt Ulanowicz's definition of process we would be making the same mistake. If novelty surprises us because

it results from a convergent process with an indeterminate outcome, we would still establish a form of novelty with end. This would be similar to saying that I would be surprised by my outcome of playing Poker, that I would see winning or losing as novel results due to the fact that they result from an indeterminate process. But what if processes did not converge? What if Polya's urn had a hole in the bottom through which balls fell out? It seems as if we will need to expand Ulanowicz's definition of process for a more general view of the problem which would agree with the problems we face in a complex world. In Chapter Five of this dissertation I shall deal with a redefinition of process which is better able to deal with the problems we face in complexity. However, it is firstly important that I establish ontological grounds upon which complexity is built before we can continue with the problem of novelty.

4.7. Ontology

Below I will outline a possible means through which to view the ontology of complexity. In this dissertation so far, I have often used the term ontology and epistemology. I have also often spoken about our economies of complex systems and the economies of these systems *themselves*. Yet I have not been very clear about what the relationship between the ontological and epistemological aspects of complexity are. How, or Can we, distinguish between our models of systems and the systems themselves? And, if so, what does it mean to speak of the system *itself*, especially after I have highlighted the always already incomplete nature of systems and our models of them?

Ontology is a concept which has been touched on in this dissertation but has never been explicitly dealt with, despite the fact that the three main protagonists in this dissertation (Derrida, Bataille and Badiou) share different understandings of the term. It is important for the rest of this dissertation that I begin the process of fleshing out what we can understand by the notion of ontology as it relates to complex systems. I will do this by first setting up an opposition between Georges Bataille and Alain Badiou as to their understandings of the notion. I will attempt to settle the dispute there by once again calling on Jacques Derrida's possible insights into the nature of ontology. I say 'possible insights' as Derrida seems to have written very little explicitly on the notion, yet I will illustrate how we can apply the

style of thinking which Derrida exemplifies in order to come up with an initial hypothesis as to what the ontology of a complex system could be.

4.7.2. Bataille's Charged Matter

In the first chapter I explored the notion of excess as laid out by Georges Bataille. For Bataille, the problem with a restricted economic view of the world was that it did not take into consideration the general economic forces which would inevitably impact upon the system. This view of the general economy relies upon a model of ontology as an active force, in that, that which a restricted economy does not account for is not passive but is active and thereby intrudes into the restricted economy. Bataille's ontology is dependent upon the material of the world being active or charged. The matter of ontology cannot be passive because in order to have consequences it must act on the world in some way. Bataille's conception of ontology revolves around his understanding of 'charged matter' which he labels the heterogeneous (Bataille 1985; Stoekl 2007: 19). In a sense Bataille follows de Sade's model of an ontology of charged matter which must be released (Stoekl 2007: 20-21). This much was made clear in the first chapter of this dissertation where I presented Bataille's argument that in order for something to be labelled 'shit' or 'rotten', it must maintain a relationship to a coherent system of thought. The exclusion of this matter is a result of the fact that its presence disturbs the coherence of the system.

If this matter were passive, it could be incorporated and safely labelled within the system. However, it is due to its activity that it resists a passive incorporation as it actively challenges the coherence of the system. Bataille in this sense problematizes the relationship between ontology and epistemology as his 'science of heterology' does not distinguish between charged matter and intellectual processes. Rather (20),

[t]he process of "scientific heterology" entails nothing other than the rigorous study of all forms of rejection of inadmissible elements, be they "intellectual" (monstrous theories, grotesque art works, hideous poetry) or "physical" (shit, flies, big toes, spiders, spit).

For Bataille our understanding of ontology cannot be separated from the economies we establish to understand this ontology. What we decree to be shit, is charged matter which surprises us by its impact upon the physical world because of our rejection of it from the intellectual world (see Stoekl 1985).

4.7.3. Badiou and Being

In contrast to Bataille, Badiou proposes a view of ontology which is not charged but is placid. This does not mean that it can be captured in a single frame or model. In Chapter Two I tried to show how Badiou's use of mathematics allows him to hypothesize an ontology which is inconsistent and thereby always beyond the grasp of a single viewpoint. The category and its excess, the object and the excess of the frame which attempts to catch that object, together form what Badiou labels 'being.' However, this does not mean that the excess is active, it cannot itself activate an event, or result in consequences as does Bataille's excess. This is because for Badiou (2007b:241) the world cannot reveal itself except through a situation or event: "ontology, the presentation of presentation, is itself presented exclusively in time as a situation, and new propositions are what periodize this presentation."

In other words, our only access to ontology *itself* is through situations or frames. Badiou's ontology is in a sense a realist ontology plagued by Platonism. That is, we have access to the world but it is always limited by the State of the situation. Behind this presentation lies the generic or universal which is revealed by an event. As Badiou (2001:128) states:

What I call ontology is the generic form of presentation as such, considered independently of the question as to whether what is presented is real or possible....it is of the essence of ontology, as I conceive it, to be beneath the distinction of the real and the possible.

In this sense Badiou is able to draw a distinction between epistemology and ontology in that ontology, as the presentation of presentation, is most closely analyzed by mathematics. The relationship between epistemology and ontology is not problematized as he maintains the distinction between the two terms; ontology exists independently of our attempts at

understanding it. It is this distinction between ontology and epistemology which allows Badiou to establish his idea of 'truth' or the 'generic'. Due to the fact that epistemology is always structured by the situation, it will always fall short of understanding the inconsistency of ontology and thereby miss the possibility of comprehensively grasping the truth.

For Badiou, the inconsistency of ontology is important as it allows him to establish a non-totalizing system with a foundation. He achieves this through his notion of the 'generic.' Badiou rotates between the notions of 'truth' and 'generic,' seeing them as describing the same thing. The generic for Badiou is a means of giving 'content' to the being of an entity. In other words, rather than being hollow in its 'thingness,' the notion of generic allows one to distinguish the different beings of different things. However, this generic element is indiscernible (see below). As Badiou (2007b:327) states:

The term 'generic' positively designates that what does not allow itself to be discerned is in reality the general truth of a situation, the truth of its being, as considered as the foundation of all knowledge to come. 'Indiscernible' implies a negation, which nevertheless retains this essential point: a truth is always that which makes a hole in a knowledge.

The generic is then always excessive and thereby subtracts from current knowledge as it undermines the comprehensiveness of any term, as it escapes from the predicates ascribed to it by the knowledge of the situation.

The generic subset contains, so to say, a bit of everything, such that no predicate can ever group all the terms. The generic subset is subtracted from predication *by excess*. Its multifariousness and predicative superabundance mean that there is nothing gathering it together that depends upon the power of a state or the identity of its evaluation. Language fails to construct its contour or gathering. The generic subset is a pure multiple of the universe; it is evasive and indefinable by any linguistic construction at all. It indicates that the power of being of the multiple exceeds that which such constructions are capable of fixing according to the unity of an evaluation....The generic is therefore a subtraction from the predicative constructions of a language authorized, in the Universe, by its own infinity. The

generic is, at bottom, the superabundance of being such as it evades the hold of language, when an excess of determinations brings about an effect of indetermination. (Badiou 2008a:117-118 emphasis in original)

Badiou thereby follows a form of Platonism⁵⁵, which believes that the universe is divided before our work begins. To wit, there are divisions in the universe, even though they always exceed predication by the situation. Except for the obvious critique of assumptions of generic divisions in the world, the question that is more pertinent to our case is, what predicates are not excessive in some sense or another? Badiou seems to argue that the predicates of the encyclopaedia are not excessive, that the bureaucracy of the State is so stable as to never waver in its predications. This may be true for a certain developed world conception of the State, but it certainly is not universal. This conception of the unexcessive nature of the State is guided, I believe, by Badiou's inspiration from mathematics. Badiou's model, which limits itself to the 'either/or' logic of mathematics, does not acknowledge the possibility of play, the consideration that in order to have meaning in an always excessive environment, all terms, even those of the State, need to be excessive. The State may not see itself as being excessive, the success of a bureaucracy depends upon this. However, at the level of interaction between the State and its populace, perhaps even at a level internal to bureaucracy (this is what creates the possibility for corruption), in order for a bureaucracy to cater for the complex environment it functions under (even if it excludes this excess), the State's success is dependent upon play. In fact, once again, Derrida's conception of *iterability* precisely describes the State's excess of predication. For a word to have meaning in different contexts, like a State's apparatuses, it needs an excess of possibilities so as to effectively function in different contexts.

Despite this, it is important to note that Badiou (2008a:132) does not conceive of the generic in the classical form as some sort of essence, as something deep within the

⁵⁵ By Platonism I mean the assumption that there is some truth or foundation which exists independently of human thought, veiled behind a world of imperfect representations and which only certain enlightened humans can have access to.

situation. “Nor is the concern to discover or uncover the truth as if it were a secret buried, if I may say, in the deep exteriority of the situation. This is the point in a nutshell: that there is no depth, and that depth is only another name, one dear to hermeneuts, of transcendence.” This is due to the fact that if the generic were some essence, we would be able to find a predicate which would mark this generic element. As Badiou states (138):

A truth is a subset of the situation that is formed in such a way that its components cannot be totalized under a predicate of language however sophisticated that predicate may be. A truth is therefore a nondescript subset, and so also indeterminate since the way it brings components together rules out their having any common trait that would enable this set to be identified in knowledge.

However, even though Badiou does not ascribe a notion of essence to the idea of the generic, it still seems to assume too stark a contrast between terms found inside the State’s encyclopaedia and the excess found outside of it.

In Bataille’s writing the excess cannot help but reveal itself; in Badiou’s this excess is only revealed to us by an event. Yet an event can only be declared, it cannot be proven and thereby Badiou grants no activity to ontology itself. However, when reading both these philosophers we are forced to accept that ontology is either active (Bataille) or inconsistent and passive (Badiou). For Bataille, we can never know this charged matter, nor the general economy from which it springs we can only experience the consequences and effects of this ‘unknowing’ (Bataille 1986a; 1986b; see Chapter Five below). For Badiou, the event which reveals the inconsistency of being is something that happens to some but not others, as stated, it is supernumerary. Except to state that an event is declared, Badiou does not explain to us why an event would reveal anything at all, other than the fact that ontology is inconsistent. How then does an event come about unless we ascribe some kind of force to this inconsistency? Badiou is not clear whether what he terms the inconsistency of the world is a product of our frames of the world or some aspect of the world itself. This is especially called into question when he defends the Platonist notion of the generic. Ontology for Badiou is the ‘be-ing’ of objects in the world, free from the predicates observers ascribe to them. For instance a blue pen has certain qualities, it is blue, smooth,

plastic and it *is* (Hallward 2003:50). For Badiou ontology “is the science that concerns itself with this last and seemingly elusive quality, which is not properly a quality at all: the be-ing (in the verbal sense) of beings (in the substantial sense)” (50). In a certain sense, both authors, in their descriptions of ontology, are forced into an ontology which presents us with a mystical quality. For Bataille, we must just accept that matter is charged; for Badiou we must accept, in a very classical philosophical sense, that objects have a quality of being free from our predications. Mystical because we are forced to accept its existence in *itself*, its existence beyond the relationships which constitute the meaning of terms, beyond even the frames we use to analyze the world.

4.7.4. The Ontology of Complexity

What can we hypothesize as the ontology of complexity, which escapes this mystical quality, yet is not so conservative as to declare that the world is as we find it? In contrast to the above two world views, we can see in Derrida an understanding of the relationship between epistemology and ontology which lies somewhere between these two viewpoints. I hypothesize that as a starting point Derrida would first of all argue that the distinction between epistemology and ontology is the product of a particular frame of reference or interpretation. A first consequence of this is that we would not be able to ascribe either an essential passivity or an activity to ontology itself as these descriptions would be products of the frames we apply. This is the same as saying that all we have of a complex system is a model, and that in order to be a model, it has to exclude aspects of reality to allow us to think about the system at all. Therefore, ontology can be neither active nor passive, as each viewpoint depends upon the position of the observer. However, this is not a solipsistic position, because if we grant that we are constituted by our relationships to the world and to each other, it implies that neither we, nor the world, could exist except in a relationship to one another. Our very existence is dependent upon the constraints of the world. If just anything whatsoever were possible or could happen, we would not have form or shape; the same applies to our statements about the world.

As I argued above, we can conceive of ontology in similar terms to a constellation of concepts which Derrida (see 1982; 1997) develops around the notion of *différance*,

especially the idea of a *trace*. In this sense our perception of the world, and the world itself, is always structured by a movement of difference, deferral and deference. The advantage of a model of ontology built around the process of *différance* is that we do not need to give this ontology any agency; we need not grant it either a passivity or activity. We need not describe charged matter, nor monist elements. Rather, our perceptions of the world are shaped by a process in which we emphasize or accentuate certain features above others, depending upon the model we apply. As Ferguson (2007:320) argues:

Both text and world are similarly touched by the distributions of emphasis that come from our inability to register all that we perceive and by the constructive devices we develop to endorse or overcome that partiality. There is nothing outside the text not simply because context is illimitable but also, and more importantly, because the entire process of reading is one of distributing substantiality *within texts*. (Emphasis in original)

As I will come to show, the distribution of emphasis becomes important in our understanding of the alternative possibilities which complex systems may hold. To state that ontology is deferred, to state that we distribute emphasis differently depending upon context is not a move against structure; the world cannot be *anything* we want it to be. As Derrida argues (1981:27-28):

Differences are the effects of transformations, and from this vantage the theme of *différance* is incompatible with the static, synchronic, taxonomic, ahistoric motifs in the concept of *structure*. But it goes without saying that this motif is not the only one that defines structure, and that the production of differences, *différance*, is not astructural: it produces systematic and regulated transformations which are able, at a certain point, to leave room for a structural science. The concept of *différance* even develops the most legitimate principled exigencies of “structuralism.”

To state, then, that we have only partial views of the world, that we distribute emphasis unevenly over the world, does not imply that the world is open to any reading or interpretation. We can distribute emphasis incorrectly, such as to blame a single portion of a population for a country's woes. The world would speak back then. The 'regulated

transformations' made by the structure of the world will not allow just any distribution of emphasis. The fact that we can be wrong, and detrimentally so, illustrates this. This discussion of ontology, however, still seems to be limited to our epistemological systems of the world. It seems fine to state that our perception of the world is incomplete because the world is incomplete but how can we conceive of that incomplete ontology *itself*?

Above I argued for the limits of a Newtonian worldview, I am not going to repeat this argument here, except to point out the possibilities for reductionism, which this worldview made possible. Classical restricted science assumed that, at base, the world was reducible to a set of laws and it is the incapacity of the human mind to grasp these hidden principles which would explain our suffering in this world. Scientific and classical philosophical thought has maintained a conservative – religious in character – view of the world in which man has but a partial perspective on a world which in its 'truth' is perfect and harmonious in its following of laws. The Newtonian universe is the scientific Garden of Eden from which man has been banished and through which we can only once again gain access by means of following the scriptures of mathematics and physics.

However, this neo-Platonic view of ontology is currently being challenged. Robert Ulanowicz (2009), for instance, has argued that the process of evolution cannot be reduced to changes in the base materials of organisms. Rather, in the process of evolution one can witness how apparently secondary or emergent⁵⁶ entities of an organism feedback changes into the elements which constitute this property. Evolution therefore does not move from changes in the constituting materials of an organism up to the emergent properties of this system. Rather, change is effected in a system of feedback between different parts or 'levels' of the organism and is therefore irreducible to any aspect of that system itself. The implication of this is that we cannot have an easily defined ontology existing out of elements which directly affects all above it.

⁵⁶ For a definition of an emergent property see footnote 23 (page 61).

We cannot, under this understanding of ontology, grant any form of agency or action to a single element of the system. Rather, the action of the system is distributed across the system and its environment. In other words, we cannot reduce ontology to base, charged matter because there is no base. Any activity in the system is distributed across the system. Ontology is both active and passive at the same time depending upon what you are examining in the system. This process can be illuminated by what Derrida has said about the '*trace*.' The trace for Derrida (1982:8-9) is neither active nor passive, it is below the distinction between activity and passivity. This is due to the process in which a word is used and, as it is used, it changes its meaning slightly. This shift in meaning reverberates throughout the system of words due to the fact that a word's meaning is dependent upon its relationship with other words along with its uses in different contexts. There is therefore no active element in the notion of trace as its reverberations throughout the system are the product of the context under which words are used. However, neither is it passive as it is that 'element' which reverberates through the relationships in the system due to its changing uses in different contexts. This model allows us to move away from models of change which struggle with the problems of agency, models such as certain Darwinian forms of evolution. There is no single 'force' within this system, it is simply the consequences of sets of relationships feeding back upon one another and consequently having an effect across the system as a whole. A consequence of this is that we cannot ascribe an origin to the trace (Derrida 1997:61):

The trace is not only the disappearance of origin – within the discourse that we sustain and according to the path that we follow it means that the origin did not even disappear, that it was never constituted except reciprocally by a nonorigin, the trace, which thus becomes the origin of the origin. From then on, to wrench the concept of the trace from the classical scheme, which would derive it from a presence or from an originary nontrace and which would make of it an empirical mark, one must indeed speak of an originary trace or arche-trace. Yet we know that that concept destroys its name and that, it all begins with the trace, there is above all no originary trace.

The implications of this are important for a dimension of novelty which I will point out in the following chapter. For now it suffices to illustrate that a model of ontology premised on the constellation of terms “*différance*, trace, feedback” implies a different conception of time to that which we are used to in classical science. As Derrida (66) argues:

Since past has always signified present-past, the absolute past that is retained in the trace no longer rigorously merits the name “past.” Another name to erase, especially since the strange movement of the trace proclaims as much as it recalls: difference defers-differs [*diffère*]. With the same precaution and under the same erasure, it may be said that its passivity is also its relationship with the “future.” The concepts of *present*, *past* and *future*, everything in the concepts of time and history which implies evidence of them – the metaphysical concept of time in general– cannot adequately describe the structure of the trace. (Emphasis in original).

A final implication of conceiving ontology as a product of *différance* is that one can no longer view the relationship between ontology and epistemology as a simple dichotomy. In a vein very similar to that discussed in the first chapter, one can see that the absolute distinction between ontology and epistemology is a metaphysical distinction drawn along a boundary between what is ‘inside’ our knowledge and what is ‘outside’ in the real world. However, due to the excess which always intrudes into our knowledge – and this excess includes the tacit knowledge of the experienced scientist or the corporeal knowledge of the doctor making a difficult diagnosis (Human 2011) – the boundaries between what we know and what exists are always products of a certain frame. The only way of determining this comprehensively will assume a sort of metaphysics of presence whereby we stand sovereign over our knowledge and the world. This seems to me to be the only way of avoiding solipsism, the fact that we inhabit (see below) this world and are therefore tied up in it and hold only partial perspectives of it.

If we acknowledge that our world exists in a relationship to us, that we cannot but exist within a system of relationships which establishes the world as we find it, how can we move beyond this world? If the State, classical science as well as religious conservatives all partly establish the world as it is found around us, how can we move beyond these more

conservative relationships out of which we cannot simply step? In Chapter Five I will propose a 'philosophy of experimentation' as a means of moving beyond these constricting relationships.

Conclusion

I began the previous chapter with a discussion of the work of Alain Badiou and his dedication to the problem of how to bring novelty into the world. Badiou is indicative of a style of thinking which argues for the inextricable linking of novelty with the event. Although agreeable in its aims, and interesting in its content, Badiou's reliance on Platonistic and metaphysical concepts makes it difficult to empirically apply much of his work. Due to this, I have attempted (in this and the following chapter) to reread this work through the lens of Derrida and complexity theory. This has resulted in an adoption of some of his terms and a discarding of others. A result of this reworking of the concept of the event is that it begins to lay the groundwork for another understanding of the notion of novelty which does not tie it explicitly to the event.

In brief my concern with the event or what I have termed evental novelty is twofold. Firstly, the event in the Badiouian sense is a product of metaphysical assumptions. That we can understand the event without prior experiences of it is only possible because of the Platonistic nature of Badiou's assertions. Despite Badiou's assertions to the contrary, the truth, which is revealed by the event, therefore results in an exclusionary mechanism whereby those enlightened by the truth stand opposite those who are still bound to the knowledge of the State. In Badiou, one gets the impression that, despite the constant reminder that the event is open to all, those who partook in an event and maintain fidelity to an event, form a sacred club elevated above those who have not experienced this aleatory phenomenon. This reliance on the event produces a conservatism whereby all actions and visions of the future must ascribe to the truth revealed by the event. This conservatism is, however, equally true to an understanding of the event in the terms of complexity. The interval which is the event, the simultaneous wealth and dearth of possibilities, opens the space for a conservatism of the revolutionary party which would be agreeable to the state which preceded the event. There can be no guidance from the event

if we are to take my definition of the event seriously, all the event reveals is the play of the world. It is because of the unique nature of the event that it needs to be declared in both the Badiouian and complexity informed model. This process of declaring an event is a restriction on the possibility of radically changing our plans for the future based upon changing circumstances. At the same time, we must be careful that our exclusion of the event as a necessary condition for novelty does not result in resorting to a model of novelty which suits classical scientific restrictions. In contrast to this reductionist approach it is important that we are able to imagine and act in a way which challenges our understanding of the world so that we can produce novelty. We must keep open the possibility for radically different ways of behaving.

Furthermore, under conditions of late Capitalism, where emancipatory politics is increasingly weighed under, as much from State policing and surveillance as from the mass consumer market and industries built to distract from any real engagement with politics, art or love, the possibility of an event seems to be ever further away. Exclusion is as typical of current capitalism as it is of Badiouian radical politics. We need therefore to develop a theory of novelty which is not tied into the event, a theory which is truly possible for anybody to engage in. This is what I will attempt to do in the following chapter.

In this chapter I have given an account of what I mean by novelty and how, for the philosophers discussed in this chapter, it is tied into the notion of an event. In contrast, in the following chapter, I will attempt to free the notion of novelty from the constraints of an event but still maintain a definition of novelty as a radical rupturing of an economy. I will attempt to do this by drawing the outlines of an 'experimental ethic' in which the idea of process will be expanded upon beyond the convergent definition used above and will rather reflect a reading of the concept which is more attuned to the effects of Bataille's general economy.

Chapter Five:

Possible Worlds, Potential Economies

For the waking there is one world, and it is common; but sleepers turn aside each one into a world of his own-

Heraclitus

Introduction

In the previous two chapters I explored the notion of novelty as it arises out of the event. In this regard I provided an introduction to the work of Alain Badiou. Following this, I explored the interrelations between Derrida and Badiou as their work concerns the event and the possibilities for thinking about the alternative futures made possible by events. In this chapter, I aim to pursue a course of action one may take towards producing novelty which does not depend upon the event. In other words, I attempt to maintain a radical definition of novelty as a disruption of the economy of our thinking (and I extend this definition) yet one which is not dependent upon an event. This is not to deny that events happen, nor to diminish the value of novelty as it appears in the aftermath of an event. The style of thinking which ties novelty to an event and which maintains the possibility of such radical change happening is important. It is the staple of many revolutionary projects, whether past or present. Instead of establishing an opposition between 'evental novelty' and 'non-evental novelty', my aim here is rather to increase the stock of available resources offered to those interested in some form of emancipatory politics. What I aim to establish can be seen as a (non)programme for the establishment of a form of praxis which is non-foundational. That is, I aim to develop a praxis which is not grounded in some always already uncertain foundation such as an event or truth. I use the term *(non)programme* because I will attempt to paradoxically inhabit the divide between the certainty of a project dedicated to some form of *telos* and one which rejects the certainty and exclusion always made possible by such an end. I will attempt to develop a programme of action which is disciplined and restricted, thus making some form of collective action possible, in order to move away from a current mode of liberal politics which endorses the notions of 'each to his own', inevitably resulting in a conservative concession to the status quo.

I aim to do this by arguing for what I term a 'philosophy of experimentation' in which I give content to what I see as the basic principles underlying processes of experimentation. It is important to note that I do not limit experimentation simply to science. In contrast I see experimentation as being central to any field which aims to move beyond the current situation. I thus include the fields of art and politics in the process of experimentation. Imagination also comes to play a large role in this process and, in the second part of this chapter, I outline the role dreams and imagination play in our struggles to move beyond the state the world finds itself in.

This chapter adopts some of the insights and strategies from deconstruction and the work of Georges Bataille. I also borrow strategically from Badiou. Despite my criticisms of his work in the previous chapter I maintain that there are aspects of his work that can be useful for establishing a non-programme of action. In many cases, in both this chapter and the previous ones, I have adopted the insights he provides, nuanced with the work of post-structural philosophers.

5.2. What is an Experiment?

In order to outline a philosophy of experimentation, it is firstly necessary to define what an experiment is in the broadest sense. In the definition below, although I use work written on the philosophy of science, my interest is in developing a definition of experimentation which is broadly applicable to a range of fields. In this regard I consider the artist who pushes the boundaries of their art into another form, the activist who creates a new means of engaging with the world or the community that establishes new means of relating to one another all modes of experimentation very similar to that of scientific experimentation. My concern here is not the scientific *method*, my concern is with what it means to experiment in the broadest sense. The different methods used in experimentation, although important, are not of concern here.

An experiment, as I will elaborate on below, can be defined as a procedure which allows one to intrude into the general economy by means of working with or playing with available resources, be they material or epistemological. In other words, an experiment allows us to

move beyond our current knowledge by using the resources we have at hand. The process of experimentation means that one will constantly 'push away' from the resources, whilst depending upon them. Experimentation is a double handed movement of, at the same time, pushing away from what we have whilst increasing the stock of available resources (and of course forsaking another possible stock of resources). This definition of experiment is already anticipated in the first chapter of this dissertation where the notions of a general economy, excess diversity and structural attractors are discussed. As I argued there, any venturing 'into' the general economy of course implies that we establish a limit, a limit that must be transgressed. As Bennington (1995:48) argues concerning Bataille's general economy:

Traditional economics isolates particular domains for study, and when it tries to answer questions about the general milieu in which those domains are isolated and particularized, it always treats that general domain as just another particular domain. But that particular domain is necessarily situated in a general milieu which it cannot by definition *comprehend*. Put in this way, the problem is that of the logical structure of the frontier, and recalls the general principle of Hegel's critique of Kant: any drawing of a frontier presupposes a beyond of that frontier (and therefore the immediate transgression of it) which cannot be understood in the terms of the area on the *inside* of the frontier. (Emphasis in original)

This is because we can only operate from a restricted economy and thereby only understand phenomena which sit in some way within that economy. It is important to remember that when we speak of the general economy it is only metaphorically described in terms of an inside and an outside. Metaphorically, because the general economy cannot have a shape or a position, it is not a point. The effects of the general economy arise from a point, but the economy itself (whatever that may be) cannot be localized in a point as if it can be pointed out to say 'that is where it is'. This point, as argued in the previous chapter, is the unstable point in the system where the possibility for influences to come from the 'outside' exists. As was argued in the first chapter (Plotnitsky 2001:21-22):

It is crucial that general economy entails a deployment of restricted economy. These relationships are irreducible insofar as general economy is the science of the relationships between what is accessible by restricted-economic means and what is inaccessible by any means, whether those of restricted or those of general economy. The inaccessible itself can only manifest itself by means of particular configurations of effects, each of which effects is manifest within a restricted economic regime, without allowing itself to be comprehended by restricted-economic means, and thus establishing the relation to the incomprehensible, the unknowable, the inaccessible.

The unknown can only be described from the position of the known, from the restricted economy under which we operate due to effects it may be having on a system which we cannot explain. We can obviously say nothing about the unknown, except that an unknown exists, yet we establish a relationship with it when we experiment. Therefore Bataille (1986a:89) describes what he labels as the 'unknown', in precisely these terms:

Knowledge requires a certain stability of things known. The realm of the known is, in at least one sense, a stable one, in which we recognize ourselves, whereas although the unknown may not be in motion— it may even be quite immobile— there is no certainty of stability. Stability may exist, but even the limits of possible movement are uncertain. The unknown is obviously and always unforeseeable.

Our reaction on meeting with the general economy depends upon the context under which we operate, yet it will always be one of mixed or confused emotions. In science and research, facing the general economy evokes responses of bewilderment, despair and fascination as one treads once again onto uncertain grounds which may undo a lifetime's worth of work, confirm a new possibility or lead to nowhere and thus retard what looked like a promising experimental process. Bataille's interest in the unknown was connected to laughter, and the effects of the general economy on laughter. His writing on laughter corresponds well with the explication on experimentation which I am trying to develop here (and, again, I do not limit experimentation to science but rather extend the concept to notions such as politics, art (including comedy) and love in a vein I borrow from Badiou 2007b; 2008). As Bataille (1986a:90) argues on laughter:

We laugh, in short, in passing very abruptly, all of a sudden, from a world in which everything is firmly qualified, in which everything is given as stable within a generally stable order, into a world in which our assurance is overwhelmed, in which we perceive that this assurance was deceptive ... the surface of appearances conceals a perfect absence of response to our expectation.

Yet, this venturing into the general economy does not imply that we remain there; apart from being impossible, this would be pathological. This is why experimentation is a double handed movement, at the same time as pushing into the instability and uncertainty of the general economy, we depend upon the restricted economies upon which we build platforms of resources (material and epistemological) which make this exploration possible. We do not 'jump off' these platforms (assuming this would even be possible) and then return to them as they were. This would imply that nothing was learnt, that the venture into the general economy did not sufficiently upset the platforms we were using to develop them anew. Rather, we depend upon the instability of current platforms, on the general economy upon which current knowledge is built (material and epistemological), on the play inherent in knowledge, to simultaneously allow us to 'dip' into the general economy, while using current resources to provide security and sense to the uncertainty and risk produced by the general economy. As Bataille (97) claims on laughter:

Indeed, he who laughs does not, theoretically, abandon his knowledge, but he refuses, for a time – a limited time – to accept it, he allows himself to be overcome by the impulse to laughter, so that what he knows is destroyed, but he retains, deep within, the conviction that it is not, after all, destroyed. When we laugh we retain deep within us that which is suppressed by laughter, but it has been only artificially suppressed, just as laughter, let us say, has the power to suspend strict logic. Indeed, when we operate within this sphere we can also retain faith, and, conversely, we can know that which we simultaneously destroy as known.

Bataille maintains that we retain within us a *conviction* that that which is known is not really destroyed. I do not see the necessity in ascribing to such a phenomenological description of the process of experimentation. Rather, the point seems quite obvious, based upon

Bataille's own descriptions of the different economies, that we only have access to the general economy by means of pushing the boundaries, by means of playing with the form and content of current economies. We would not need conviction, for that which is known is not really destroyed, as that which is unknown is built upon that which is known. In other words, the unknown is only accessible by means of the known. The conviction then would be the same as saying that I maintain a conviction that a ladder is holding me up, despite being able to see over a high wall. I can only see over a high wall, we can only intrude into the general economy, because we are supported by a platform, despite how rickety that platform may be.

Georges Bataille has argued that only if the world were completed, so that by way of speaking there was a totality, would we be able to speak of things in their isolation. As Stuart Kendell (2001:xvii) claims on Bataille's work:

Isolated incidents ... could have meaning only if the world were conceived as a meaningful and completed totality. But, for the isolated consciousness, the world is incomplete, because objective reality is in constant flux, because objective reality consists of fragments that shift and change.

Therefore, paradoxically, it would only be possible to pass certainly into the general economy, into what was not known, if we had certain and complete knowledge, only if this were the case would conviction then be necessary. As Bataille (1986b:81) has argued in another piece he wrote on 'un-knowing':

It is only if I knew all, that I might claim to know nothing, only possession of this discursive knowledge would give me an ineradicable claim to have attained un-knowing. As long as I misunderstand things, my claim to un-knowing is an empty one.

There is then a relationship between the uncertainty, the necessary contingency and reductive nature of the models we apply to the world and that which we do not know. In contrast to the popular conceptions of science as at 'the frontiers of knowledge', knowledge and what we do not know are not separated by a frontier. The frontier, like the idea of

frame, assumes that, that which falls inside of it is known or complete. That is, that we can draw a neat boundary between what we know and what we don't and pass smoothly between the two as if crossing a border between two countries. However, as I illustrated in Chapter One, we are always already on shaky ground. We have necessarily always already excluded something which impacts upon our models and thus the general economy intrudes at every point. Our knowledge is 'perforated,' it is porous, constantly shifting between the known and the unknown.

In fact, it is the uncertainty of knowledge which makes experimentation possible. If knowledge were certain, we would not be able to experiment as we would be forced to follow the programme, the 'pattern' established by the certainty of this knowledge. Experimentation depends upon us being able to manipulate our current stock of resources, it depends upon there being play and uncertainty in the relationships between both epistemological and material resources. The tools we have in a laboratory, for example, must be able to be used in different ways, must at least initially, be able to be adapted for experimenting with a new connection between ideas and thereby produce new experimental procedures. Yet, play between resources does not mean we can do *anything*, this amounts to the same as saying we can do nothing. Play depends upon constraints, it depends upon the limits of the laboratory as it is these limits which not only inspire the experiment in the first place but also that which makes it possible. We can only conceive of alternative means of using existing tools because we are limited by these tools, because we have used these tools in all possible ways and have reached their limits, we are forced into creatively using them differently. If we had all the tools available, we would not be able to come up with new means. For example, post-structuralist social science arose out of the well worn path of structuralism. It was because the limits of structuralist ideas and theories had been reached that a new reading of these ideas became possible in the form of post-structuralism.

Yet, play does not only 'open' an economy up, it is not the case that if we 'played' enough we would have a completely free economy. Play makes possible new experimental procedures or inspires new ideas only by at the same time, contingently, closing other

possibilities off. Furthermore, as I will come to illustrate, play does not contribute towards new knowledge unless we pursue, and thereby constrain, the consequences of this play. Therefore (Hans 1979:823),

[i]f freeplay is literally pure chance, then anything is possible, if freeplay has rules of its own, anything may be possible, but some things are more possible than others. And this, I suppose, is but another way of saying that it seems to be as fatuous to argue for a totally indeterminate freeplay as it is to argue for a totally centred freeplay. Freeplay is precisely the continual working out of the relationship between various “non-centres” and complete randomness. However nostalgic it may be, it seems irrefragable that freeplay limits itself through its own play, that the very process of freeplay confirms some things and denies others.

Play is dependent upon constraints as much as freedom. When we experiment it is not simply that anything can happen, that we can conduct *any* experiment. Experimentation is constrained by the tools we have at hand. We cannot create *anything* simply because we experiment. Experimentation is contingent upon the context under which we experiment.

When we experiment, we are constantly following the traces and excess produced into the general economy. Due to this we cannot neatly mark the separations between experiments. So it is contingent where we draw the line between one experiment’s end and another’s beginning. The distinction will be arbitrary, or assume a restricted economic analysis to be possible. However, the borderless nature of experimentation does not mean that anything happens; experimentation depends upon rigor and discipline. This is especially because when we experiment we intervene in the world. We change the world in which we experiment due to the fact that we use the resources of this world. As Radder (2009:3) argues:

In order to perform experiments, whether they are large-scale or small-scale, experiments have to *intervene* actively in the material world; moreover, in doing so they *produce* all kinds of new objects, substances, phenomena and processes.
(Emphasis in original)

Yet there are different ways of acting in this world, of intervening in the world. In a restricted economy, in the case of what I label technology, one's intervention reproduces the current conditions as a restricted economy does not grant possibilities beyond those recognized by this economy, by the ideology of the time. Acting from the perspective of experimentation, however, forces one to push against the limits of the current economy, against current ideology. Experimentation always acts to produce novelty in the world. As Frazer (2007:xxi) argues concerning Badiou's early work:

Indeed, the difference between science and ideology is the difference between a 'process of transformation' and a 'process of repetition'; the work of science is not primarily affected through representation, but 'through the ruled production of an object essentially distinct from the object that is given— distinct, even, from the real object'.

Yet we cannot constantly transform, we cannot only intrude into the general economy without further developing our tools to do so. An experiment which constantly scratches the surface of possibilities does not produce any excess, neither does it create the community necessary for experimentation (see below). As Radder (2009:4) argues:

Clearly, not just any kind of intervention in the material world counts as a scientific experiment. Quite generally, one may say that successful experiments require, at least, a certain stability and reproducibility, and meeting this requirement presupposes a measure of control of the experimental system and its environment as well as a measure of discipline of the experimenters and the other people involved in realizing the experiment.

However, this should not be read as implying a universal prescription, that we are able to standardize across all experimental processes what 'stability' and 'reproducibility' mean. The reproducibility required for a scientific experiment is very different from that demanded

in art for instance⁵⁷. Yet, a work of art, in order to be recognized as the particular intervention which it seeks to be recognized as, must still fall within the constraints of that particular movement's mode of critique or manifesto. This is also true within the different sciences where different economies accept different criteria for reproducibility and stability. It is important to note though, that the critique of the restricted economy of developing technology is not against the development of knowledge produced by this means. We need to develop technologies, such as medicine, in order to intervene and actively change the world and also to allow for more possibilities to be pursued. The distinction between science and technology made earlier is easier to make theoretically than practically because there are many cases where the simple improvement of technology has unintentionally led to radical changes in sciences.

Experimentation then simultaneously disrupts while it affirms. It 'discovers' new territory whilst at the same time making that territory possible through existing resources. The process of experimentation, as Derrida (1989:33) argues with the process of invention, "distributes its two essential values between these two poles: the constative – discovering or unveiling, pointing out, saying what is – and the performative – producing, instituting, transforming." This distribution does not lead to a higher synthesis, does not lead to some deeper knowledge in the sense that there could be some bottom to experimentation. Rather (34-35),

[t]he infinitely rapid oscillation between the performative and the constative, between language and metalanguage, fiction and nonfiction, autoreference and heteroreference, etc. does not just produce an essential instability. This instability constitutes that very event – let us say, the work – whose invention disturbs normally, as it were, the norms, the statutes, and the rules. It calls for a new theory and the constitution of new statutes and conventions that, capable of recording the possibility of such events, would be able to account for them.

⁵⁷ As I will argue below, consensus around stability and reproducibility are formed within the community which is established by a particular experimental 'sequence'.

The constative and performative, the oscillation between exploration and refinement in experimentation, creates a fundamental instability. This instability forces one to establish new means of dealing with knowledge so that it can be reincorporated into a restricted economy. However, the effects that experimental knowledge carries, along with the fact that when we experiment, we intervene in the world in some way, implies that there is no a priori place for this knowledge. We cannot determine beforehand what these statutes will look like, nor do we have control over the effects that this knowledge may carry. In this sense, the interventions of experiment enter into what Morin has labelled an 'ecology of action'. As Morin (2007:25) states:

The principle of ecology of action is, in my opinion, central: from the moment an action enters a given environment, it escapes from the will and intention of that which created it, it enters a set of interactions and multiple feedbacks and then it will find itself derived from its finalities, and sometimes to even go in the opposite sense. The ecology of action has a universal value, including for the development of sciences, whose destructive nuclear consequences were absolutely unexpected.

Experimentation exists within an ecology of action because the resources we use in an experiment exist in relationship with a broader environment. This principle forces the discipline of pursuing experiments to that point at which new statutes are made in order to deal with the effects of our knowledge. If we do not 'follow through' on the knowledge we create, it is entirely possible that this knowledge be co-opted for the system we are labouring to undermine. Experimentation, then, is not pure play, it is disciplined and dedicated play. We have a certain responsibility in the process of experimentation to account for possible effects that the knowledge we produce may have in the world. This responsibility is shared by the community around which sequences are established, but it is still the concern of the individual producing the knowledge as to whether he or she agrees with the ethic of the particular community which validates the claims made. In fact, this is essential for the process of science, as I have illustrated in the first two chapters: dissent is an important resource for maintaining the success of the experiment. In fact, once the sequence of experiments becomes too rigid for the exploration made possible by dissent, it

stops being experimentation and becomes technology, which does not allow for divergence.

As Feyerabend (2002:31) once argued:

Unanimity of opinion may be fitting for a rigid church, for the frightened or greedy victims of some (ancient, or modern) myth, or for the weak and willing followers of some tyrant. Variety of opinion is necessary for objective knowledge. And a method that encourages variety is also the only method that is compatible with a humanitarian outlook.

Furthermore, it is for this reason that the knowledge produced in experimentation subtracts from the current statute of knowledge. It subverts this knowledge because it aims to maintain the possibility of subversion from within, rather than as a challenge from the outside as some form of alternative knowing. In other words, because experimentation relies on a current stock of resources, it does not challenge the current order as something foreign or alien. Rather it challenges it as something familiar yet strange. In a sense then, experimentation resembles deconstruction and the knowledge of experimentation is similar to the outcome of a deconstructive process. The results of a deconstruction, being the product of that which it deconstructs give it an uneasy status. It is not 'the other', or 'the outside' which maintains a certain status in its relationship to 'us' or the 'inside.' The process of deconstruction challenges such simple appropriations of dissent. As Derrida (1989:61) argues:

Passing beyond the possible, this *différance* or writing is without status, without law, without a horizon of reappropriation, programmation, institutional legitimation, it passes beyond the order of demand, of the market for art or science, it asks for no patent and will never have one. In that respect it remains very gentle, foreign to threats and wars. But for that it is felt as something all the more dangerous.

(Emphasis in original)

In this sense, like experimentation, "Derridean deconstruction ... effects a disjuncture in the given conceptual order of the present that opens it up to novelty, to the future" (Skempton 2010:5). Deconstruction opens up the restricted economies we are labouring under to the possibility of novelty. But the novelty produced by deconstruction is not the product of

radical breaks, it is not the post-evental novelty so favoured by the likes of Badiou. This, as I described in the previous chapter, can often lead to an unacknowledged complicity drawn along the lines of the previous order. As Derrida (1981:24) argued concerning deconstruction:

Doubtless it is more necessary, from within semiology, to transform concepts, to displace them, to turn them against their presuppositions, to reinscribe them in other chains, and little by little to modify the terrain of our work and thereby produce new configurations; I do not believe in decisive ruptures, in an unequivocal “epistemological break,” as it is called today. Breaks are always, and fatally, reinscribed in an old cloth that must continually, interminably be undone. This interminability is not an accident or contingency; it is essential, systematic, and theoretical. And this in no way minimizes the necessity and relative importance of certain breaks, of the appearance and definition of new structures.

The fact that we always operate from a restricted economy, implies that we exclude. The ever changing conditions under which we work means that we need to constantly reveal the new possibilities for action as they appear and this process can never end. Experimentation then reveals what Gibson labelled affordances. That is, what possibilities are available in an entity if one were skilled enough to use them (Harré 2003:37). More importantly, deconstruction illustrates to us the possible affordances which exist already within our economies, those we already have the skills to use. It is important to reiterate at this point that sequences of experimentation can occur in any domain which seeks to subvert current conservatism. The important thing to note at this stage is that the type of knowledge which can be produced by experimentation is not limited to the formulas, axioms or results classically associated with science. Therefore, when I argue that experimentation reveals certain possibilities to be pursued, I do not imply that this type of knowledge is necessarily written knowledge. The acknowledgement of tacit knowledge is essential to the pursuit of experimental knowledge. This tacit knowledge is often expressed in the discipline necessary for a successful experimenter in the early stages of an experiment, in order to learn to correctly deal with the complex system one is teasing. Experience cannot be separated from

dealing with complexity. Tacit knowledge is gained by experience and experience is made possible by discipline.

5.3. Inhabiting Sequences

When we experiment we are always acting simultaneously on uncertain and certain grounds. Our experimental interventions always straddle, without overcoming, this paradox. When we experiment, we produce results as much as we move away from these results. Yet we are not at a remove from our experiments, we do not exist at a distance from these experiments, in a certain way we inhabit our experiments. As a result of the choices we have made, which have made the experiment possible, we cannot comprehensively stand back and state *exactly* why we have done what we have done. Our choices in experimentation are often influenced by tacit knowledge and hunches built upon previous experiences. This inhabitation is also a result of the fact that we build current experiments on top of previous ones, we depend upon the knowledge and material resources left available from other experiments, which also left behind the excess of the choices they made. In other words, we always experiment in a context with a history and not in a vacuum. In a certain sense then, inhabitation is a product of the contingency of our knowledge, the fact that we have 'chosen' or find ourselves in one particular school of thought above others. In this sense, experimentation is similar to the way Derrida (1997:24) discusses deconstruction:

The movements of deconstruction do not destroy structures from the outside. They are not possible and effective, nor can they take accurate aim, except by inhabiting those structures. Inhabiting them *in a certain way*, because one always inhabits, and all the more when one does not suspect it. Operating necessarily from the inside, borrowing all the strategic and economic resources of subversion from the old structure, borrowing them structurally, that is to say without being able to isolate their elements and atoms, the enterprise of deconstruction always in a certain way falls prey to its own work. (Emphasis in original)

In experimentation, we follow certain sequences of possibilities above others, we pursue lines of interest or promise and thereby always produce an excess. There is always some other experiment we could have made, some other line of research which we could have followed, which once again produces new excess. We cannot in this sense, as I will elaborate on below, conceive of knowledge as being teleological, as having direction or moving 'forward'. Rather, our knowledge of the world disseminates in all directions at all times. Yet this does not mean that we experiment without aim. At one scale, our knowledge disseminates, if one assumes that there is no direction to knowledge as in the modernist conception of knowledge as having an end. Yet at a smaller scale, we pursue an end, we move forward in an experiment towards solving some need.

I have adopted the term 'sequence' from the work of Alain Badiou (2008a) in order to describe how we pursue a particular direction of experimentation. Badiou uses the term to describe political processes and I will similarly adopt it to give content to what I have described as particular direction or line of experimentation. As Badiou (162) states:

... [E]mancipatory politics exists through sequences... It is never the incarnation or historical body of a trans-temporal philosophical category. It is not a descent of the Idea, nor a destinal figure of being. It is rather a singular pathing (*tracé*) ... But this pathing has no principle linking it to the traces that have preceded it.

Rather than stating that the pathing of a sequence has *no* principle linking it to the traces that have preceded it, I would rather argue that the links between the sequences are always contingent and provisional. As we pursue a particular sequence of experiments and new knowledge is brought to light, we may find that what we thought was related was entirely unrelated and vice versa. As stated above then, we do not pursue a sequence as if by law, we cannot predetermine what future experiments we will make based on current knowledge (this does not mean that we cannot imagine a future towards which we work, see below). Also, this does not mean that an experimental sequence is itself lawless, that we can do anything and consider it an experiment.

As Badiou (2007b) argues concerning truth procedures, I argue concerning experimentation, the 'experimental ethic' does not deliver a hero, but a discipline. Experimentation does not

deliver a hero because of the contingency of experimentation. It is always uncertain whether the particular discovery brought about was discovered by an individual or the product of propensities already existing in the history of ideas. The desire to mark the great men of history and 'their' discoveries is the product of a romantic vision of individual 'genius' existing in isolation and not as the product of social interactions or historical contingency. Experimental discoveries come about through the discipline of following through on a sequence of experiments⁵⁸. Therefore, from this discipline, we are able to determine what is considered a positive result, a worthwhile trace to follow, but this (394),

... does not prescribe in any way whether such a term should be examined before, or rather than, any other. The procedure is thus ruled in its effects, but entirely aleatory in its trajectory. The only empirical evidence in the matter is that the trajectory begins at the borders of the eventual site. The rest is lawless. There is, therefore, a certain chance which is essential to the course of the procedure.

I do not think it is necessary to begin an experimental sequence at an event. Rather, as I argued above, we 'begin' at a point we inhabit and thereby cannot mark that particular site as the 'beginning'. If we cannot pre-mark the end of a sequence (this does not imply that an experiment does not end), if the trajectory of the sequence is lawless, it implies that experimentation cannot simply be considered as a means to an end. The use of experimentation as a means to a particular end, I label technology. The excess of a sequence, the results it produces, the opportunities it provides for other diverging sequences, all imply that we cannot conceive of experimentation as coming to an end, a particular sequence may end but it becomes difficult to place where this sequence ended and the next began. Rather, as was Bataille's intention in conceiving of the general

⁵⁸ It is important to note that when I use the term "discipline" I do not use it in the Badiouian sense of a fidelity or faith. In contrast, I use the term discipline in the sense of rigor or restraint in the process of experimentation. Discipline implies operating under the constraints which make the sequence possible. It implies limiting oneself to the reason of the sequence in order to test the viability and limits of the sequence.

economy, experimentation cannot be conceived of as having calculated ends (Richardson 1994:94).

I am, of course, not arguing that we do away with calculation. Rather, I am trying to develop a philosophy of experimentation that diverges away from the narrow confines of the calculated rationality of current capitalist society. The over-emphasis on ends, on expected and beneficent results, negatively constrains the possibilities which may arise in a more open and free conception of experimentation. We cannot experiment simply to improve current technology; we need to experiment to open up other possible avenues, other possible ways of inhabiting this world and science which means that we need to do away with a conception of science as aiming toward particular, calculated ends. This is also a move against hegemony, as hegemony always defines which are ends and which aren't. Hegemony determines which ends of current scientific programmes are meaningful and which are waste or unnecessary expenditure.

In brief then, an experiment is the broad term I use to describe explorations of the unknown, intrusions into the general economy. We do this by building upon current platforms of knowledge; we cannot abandon knowledge in order to develop new possibilities. A sequence is a particular set of experiments which builds upon a potentiality, which pursues a particular direction. The open ended nature of experiments and sequences means that these two terms are not easily separated, they both indicate the same thing but at different scales. The distinction between science and technology is equally arbitrary. Yet this distinction is a critical one in that we need to distinguish between experiments which open up new possibilities for living, be it in art, experimental forms of politics or different ways of living with the people we love. From modes which claim to be experimental yet trap us within the same set of possibilities as before, such as most Hollywood films, party based politics and the routine of daily life. Discerning between the two modes is therefore only possible in context, it is not universalizable.

A result of the notion of experimentation I am trying to develop here is the necessity to move away from an idea of knowledge as being universal, as if what we produce in the experimental procedure can be applied uncritically to any context, forever. Knowledge

gained from experimentation is always the product of a set of sequences and therefore always the provisional result of a particular place. When this is not recognized, when knowledge is implemented and pursued under the guise of the imperative that it is universal an unrecognized violence is carried out. This is quite clear in the detrimental centralized, modernist conception of a State which carries out its universal policies despite perhaps starkly contrasting contexts. This does not mean that we should abandon what I, following Bataille, have termed the stability of knowledge. Rather, we should grant that the stability of this knowledge depends upon its play, depends upon the sequences which hold it up and thereby, could be heterogeneous to the context in which it aims to be forced. Like the creation of that knowledge, brought about through a particular pathing, when brought to a context, one does not *apply* knowledge. Instead, that knowledge is the starting point for another series of sequences, the ‘beginning’ point of a continued investigation, not the end point of a simple application.

As the initial definition of a sequence I presented above illustrates, a sequence also produces a collective activity. This is because similarities are produced between what were different economies of thought. A sequence is not an isolating experience, rather it serves as a point of divergence and convergence in which relations are lost or made. It is this meeting of different economies in a sequence which establishes a different rationality, which gives cause to another economy as the different members participating within the economy need to deal with both the certainties and uncertainties of the new sequence they are involved in. What Badiou (2001:117) argues concerning truth procedures could equally apply to sequences:

Every time a plurality of individuals, a plurality of human subjects, is engaged in a process of truth, the construction of this process induces the construction of a deliberative and collective figure of this production, which is itself variable.

However, it is important to note that this collectivity and the deliberative processes it produces are an ideal case. What one often finds, rather, is that the deliberative process makes dialogue possible but only because it needs to express differences amongst the scientists operating within the ‘same’ economy. Collective action then, among participants

in a sequence, is in a constant state of convergence and divergence as individuals find similarities and differences in the results of their experimentations. Yet this is a necessity for the continuation of experimentation in general, different strands could not be followed if the excess of the process were not differently valued, if different results were not emphasized. Were it not for such divergences, experimentation would have ended the first time the first sequence of experiments ended.

Experimentation follows potentialities. In this pursuit, latent and hidden potentialities are constantly revealing themselves. Experimentation produces excess. This implies that the experimental sequence can never be perfect; one can never comprehensively determine the results of an experiment. An experimental sequence will of course produce a result but there will always be excess to that result, there will always be another set of sequences one may follow. In fact the listing of further possible experiments is the mainstay of conclusions to scientific papers.

This does not mean that an experiment is only excess, that the production of excess is the end of an experiment. A sequence produces a particular rationality and discipline, constraints which make an experiment possible. However, these constraints also imply that an experiment must be able to fail. An experiment which was not open to the possibility of failure would be the following through of a programme, the following through of a possibility already existing within a restricted economy. In a certain sense, of course, an experiment cannot fail. One can only get results which could not have been predicted from the restricted economy one is operating from. However, as I will elaborate on further below, when we experiment we have a certain intention in mind, there is a project towards which we are working (note, this does not imply a teleology, we do not experiment towards a final end). If we grant this, then we have to acknowledge that our experimental procedure is always open to a certain pervertibility, whether it be in a good sense (the results lead us in a new fruitful direction) or in a bad sense (in which our project seems further away and less possible). In this regard, the structure of an experiment is similar to how Derrida (2007:459) conceived of the promise:

Pervertibility has to be at the heart of that which is good, of the good promise, for the promise to be what it is. It must have the capability of not being a promise, of being broken, for it to be possible, to have the chance of being possible. This threat is not a bad thing; it's its chance. Without the threat, there would be no promise. If the promise was automatically kept, it would be a machine, a computer, a computation. For a promise not to be a mechanical computation or programming, it must have the capability of being betrayed.

In this sense, the pervertibility of the experiment is the ground for its very existence. If it were not pervertible, it would simply be the following through of a possibility already in existence; it would produce nothing new in the world. In a restricted economy, the development of a possibility is what I have labelled technology. In this case, you do not take into consideration the excess which the process produces. There is no wandering so to speak, technology is a teleological process, there is an end in sight and that end is more or less predetermined by the possibilities presented by the economy.

5.4. Defining Novelty

In the restricted economy of technology, there are no surprises. The history it produces is a linear one in which there is a neat line drawn from the starting point up until the *telos* or goal is reached. In other words, in a standard history of a technology a neat line is drawn from the current situation to the desired goal. Excess is not considered in this process. As Derrida (2005:128) argues, this leads to an annulment of history:

Whenever a *telos* or teleology comes to orient, order and make possible a historicity, it annuls that historicity by the same token and neutralizes the unforeseeable and incalculable irruption, the singular and exceptional alterity of *what (ce qui)* comes, or indeed of *who (qui)* comes, that without which, or the one without whom, nothing happens or arrives.

Technology therefore, can be said not to have history, it is a history without event. There is no acknowledgement of excess, of the divergences which occurred or alternative routes

along which that history could have been drawn. In a certain sense then technology is anti-history.

In the previous chapter, I argued that the event was the disruption of our current economy, that the event forces us to re-reckon the relationships between the resources which constitute these economies. We can now extend this definition to state that novelty not only disrupts our economies of thought but furthermore forces us to redraw the history of our current position. That is, when we are faced with novelty, we are forced to reread our history, we are forced to acknowledge the excess which we inevitably excluded from our reading of how we got to where we are, yet which bore some weight on the events leading up to the present. In fact this is how I would define novelty, novelty is that which forces a rereading of the history of the system, a reading which is different from the one currently held and projected into the future. This is due to the fact that a novel discovery surprises one by the fact that it was not anticipated based on the given history of that system but rather requires that one look at what was thought of, or unseen, as the excess of that system.

We face a difficulty here. Acknowledging that a reading of a system's history is contingent and context-dependent means that it becomes difficult to state when a reading of history is correct or incorrect. Of course, we cannot have just any history of a system, empirically we can note that certain events in history did carry more weight than others. However, the implications of these events, the weights we ascribe to them are defined by the reason we adopt to structure the economies we use to think with. In other words, if we consider that reason structures an economy according to certain aims we are always excluding certain possible interpretations from others. Every history is simultaneously accurate and inaccurate, correct and incorrect. This is difficult terrain. If reason and evidence are products of a particular hegemony at any time, the wealth of possibilities for analyzing a complex system lends itself to this manipulation. It is then difficult to speak of a 'correct' or 'incorrect' reading in any categorical sense. These terms should perhaps be written under erasure and can only be determined through critical engagement.

The value of a particular reading of history can be judged however in terms of the work it does in the present with regards to the possibilities it holds open for the future. Readings of history, which hold the possibilities of the future open we can regard as more worthwhile than others. This is due to the fact that the future is categorically open. There are always potentialities which we cannot realize from the present. We cannot make predictions except for the relatively short term and contingently. The fact that we cannot make entirely accurate predictions suggests that keeping our readings of the past open will allow us to deal better with the uncertainties of the future. Eschatological or end of history scenarios are the least useful to us as these close off possibilities for both rereading the past and dealing with novelties in the future. This does not imply that we must not try to write histories, in many ways history is all we have. This is because complex systems are constituted by their histories. However, we must always take the excess into consideration when writing a history; we must remember that our histories are constrained by our reason. We can be neither positivistic nor idealistic in our reading of history for conservatism lies in either pole. Keeping our imaginations and possibilities open implies engaging with the relationship between the real and ideal, the actual and the possible.

If history is dependent upon the reason of an economy constraining the alternative possibilities of that reading, what is excluded from this history impacts upon the reading of possible futures a system may have. All economies are therefore influenced by desire, indeed, as I argued in the first chapter in agreement with Feyerabend (2002:114), desire is often necessary in order to ensure the success of a novel economy until the evidence is collected to support it. However, one can say that certain economies are guided by a fierce desire (often manifested by a 'with us or against us' attitude), a desire which begins to exclude the possibility of critical self analysis. This is why self criticality is crucial to understanding complexity. Criticality then does not do away with the magic of the world; it is not pessimism or unbridled scepticism. Rather, criticality reveals the magic of the world to us by means of keeping our economies open to the possibility of surprise.

The necessity for self criticality thereby once again points to the importance of the collective built around an experiment. This collective though, is not that of the mass market or

hegemonic regime, it is the collective of scientists with diverging opinions refusing the possibility of an uncritical world view yet converging sufficiently to be productive. A consequence of this collective production of novelty is that novelty can only be recognized by a collective.

There is perhaps then a distinction which can be made between the new and the novel. When an individual sees something for the first time, it may appear as a novelty to them because it escapes their economy of thought. Yet, this new object may be familiar to another and thereby not novel to the world. It would be difficult to claim this object to be novel except in a very phenomenological or experiential sense of the word. Novelty is a product of recognition from a community, primarily the collective established around the particular sequence of experiments, who have critically engaged with that field. Novelty is a rare phenomenon and one which can only be relationally realized. This relationality sits in the fact that our economies are constituted by terms and concepts which maintain traces of relationships with other concepts. For these concepts, and hence the economies they constitute, to have meaning implies they must have relationships with other economies, which grant them validity or resist against them. It is then important to note that the idea of a community is not tension free; in fact, it is constituted simultaneously by tensions and congruence. For example, it is the realization that an art has reached a new point which forces a novel economy of terms to deal with this development, often revealed by a manifesto. This recognition is first bestowed by the specialists in the field whose economy is the closest to understanding the novelty before them and gradually this recognition may expand beyond the community into the larger public⁵⁹. However, the temporality of the initial recognition may not be immediate; developments may exist long beyond the particular lifetime of its creator before being acknowledged. Equally so, novelty does not need to be a product of the contemporary. We can recognize, quite reasonably, that in

⁵⁹ By specialists, it is important to note that I am not making an elitist argument. Experimentation is a broadly defined term, in many cases a novel discovery or development will come from practitioners in the field, be they “lay” or specialized. The recognition of this novelty can just as well then come from others facing similar problems as much as from academic or scientific specialists.

history certain features of the world lead to a radically different reading of the future and past of that world. For instance, we can still recognize Darwin's theories as a novel discovery in which the history of the world was upset.

Yet if we acknowledge that our view of the world is always provisional and contingent, that we inhabit our experimentations, even a collective acknowledgement of novelty may be contingent on a time and place. We need, therefore, to add another dimension to the acknowledgement of novelty. If we collectively state that something is novel because it forces us to reread the history of our economy, we may still have only reached a point that another art or science had previously reached in terms of its understanding of the future. Therefore we have not produced anything new in terms of our understanding of the present or future world. In a certain sense then this definition of novelty is a backward looking definition, all it asks is for us to reread our history. When novelty appears then, we must not only reread the history of the system but also its future. A novel discovery opens up a set of potentialities not realized yet, within any field. However, in a certain sense, this is saying the same thing. Our readings of the future are always based upon the history we draw of the system, if we are therefore forced to reread our history, it assumes that we must reread the possibilities we believe to be held in the future. Novelty is a disconcerting experience; it provides us with alternatives we cannot be geared to deal with.

Novelty must be distinguished from the *neophilia* demanded by the capitalist economy. Under a consumerist economy the pathological desire for the new demands that we desire new objects constantly, the next iPhone, Kindle or Smart car. The irony of this is that these objects are only technological improvements of existing technology and thereby do not, by definition, introduce novelty into the world. We must therefore distinguish the desire for new consumer goods from true novelty. Firstly, it appears as if this desire for the 'new' is not so much a desire for the new than for the 'next.' The next consumer craze will not be novel but it will be desired, masquerading its repetition as new.

More importantly, though, I believe we can distinguish true novelty from the 'next' or the 'new' by means of a temporal notion. In the previous few chapters I have given an argument to novelty as tied into the event. The assumption made about novelty in relation to the

event is that it arises suddenly. That is, true to modern consumerism, that novelty comes with speed, all of a sudden something new is on the scene which grabs you, surprises you and which you must have. However, as I illustrated above, there is a difficulty with equating novelty with an event if we accept that an event radically disrupts the economy of our thought. Revolutionaries often then restore the system they aimed to overcome due to the inadequacy they experience as a result of the incongruity of their economies. In fact, we need to question the assumption that novelty necessarily arises from an event, a revolution. As Hannah Arendt (2006) has argued, many revolutions in history were simply a desire to reinstate or restore an order which existed prior to the one they were seeking to overturn, even if it was a romanticized past which may never have existed. This is not surprising as we can only act from a position we know. If we strive for something, our goal must have originated in some existing imagination. However, it would be difficult to state that the outcome of a revolution of this sort is novel precisely because of this dependence upon that which already exists.

Novelty, as I am trying to conceive of the process here, demands a different tempo from that of the capitalist desire for the 'next' and the revolutionary zeal for the eruption of an event. It demands "a certain slowness" (Cilliers 2006). The restructuring of our understanding of history brought about by an experience of novelty cannot be instantaneously undone. The event, as interval, is simply this instantaneous undoing and then reinstating of an existing order without anything novel being developed. We must first understand what a system's history means; we need to understand how history is embodied within a system so that we can understand exactly what is demanded by a restructuring of that history. A complex system cannot be a system in which all the elements which constitute that system are evenly distributed. A system must have hierarchies and redundancy in order to act in the world. If the system did not internally prioritize certain aspects of its existence over others it would not be able to survive as it would not be able to act. Acting demands some form of privileging of resources whilst making other options redundant. In the lifetime of a system, it would repeatedly make similar choices as the environment within which it exists illustrates a fair amount of stability. In other words, the

system is able to learn. The ‘use principle’ or ‘Hebb’s rule’ illustrates how this is possible (Cilliers 1998:17). Cilliers (17) explains:

Hebb suggested that the connection strength between two neurons should increase proportionally to how often it is used. Consider three neurons, *A*, *B* and *C*. Each time both *A* and *B* are active simultaneously, the strength of their interconnection (let’s call it *W_{ab}*) should be increased slightly, but when not active *W_{ab}* should decay slowly. In this way, if *A* and *B* are often active together *W_{ab}* will grow, but if *A* and *B* are only associated spuriously and *A* and *C* more regularly, *W_{ab}* will decay and *W_{ac}* will grow. In this way, a network will develop internal structure, based only on the local information available at each neuron.

A complex system is constituted by the different uses to which it regularly puts its components. The fact that a neuron decays when not in use does not imply that the system can simply go back to a clean slate. The fact that a complex system is constituted by its relationships implies that in order to be a system at all, it cannot have a *tabula rasa*. This is why the system can be said to be its history: the system embodies its history. This robustness implies that we cannot easily rewrite the history of that system. Instantaneous novelty then would imply that a system does not have any stable memory or hierarchies or that – like Badiou seems to believe – a system has something else which it is apart from its history. Bringing about novelty is a resistance to the memory of the system. Novelty is resistance to that which the system *is*. Novelty attempted too quickly and without a programme⁶⁰ would result in the memory inherent within the system being the failsafe. That is, when we are faced with a radically uncertain future, it is easiest to make similar choices to that which we have made in the past. This is because there is comfort in thinking that we will be able to determine the outcomes of our choices, having experienced similar phenomena in the past, and thus we take comfort in the apparent routine of our decisions. The danger of the event lurks in this fact: when faced with the infinite possibilities opened

⁶⁰ See the notion of ‘forcing’ below for how we can conceive of a non-programme of action.

up by the event, the history of choices which constitutes the system is the easiest path to follow.

Realizing novelty takes time because rereading a past is not a simple matter. This is especially true for systems which are in dire need of replacement. The long, embodied history of many systems implies that the struggle against them cannot be an instantaneous one. It demands that we patiently engage with these systems to bring about change. We need to act within the constraints implied by a sequence. The reason of such an economy implies a future promised. If we simply act against a system and 'see what happens' we are left to the mercy of the existing use principles. Conservatism is the default or failsafe in uncertain times. In contrast to Badiou, the model I am trying to develop here takes seriously the fact that we inhabit the world in a particular way. We cannot work out all our complicities with the system we could or should be challenging. We are always in a certain sense inscribed into that system. An event, or truth in Badiou's sense, cannot help us out of this complicity, we are always trapped.

In summary, novelty challenges linearity and a reading of history as a line along which you place yourself. This realization of excess, and the loss of teleology, grants the system a certain youthfulness. This is not to deny the history of a system, as systems are nothing but products of their history, but what that history is and how it constrains the future of the system, is made over in the face of novelty. Rereading the history of the system, being presented with a new horizon of (infinite)possibilities, grants the system and its observer a new range of possibilities, which had up until then remained hidden. This is the product of experimentation, when we experiment, and we come up with unexpected results, we reread the history of our experiment. We pick up on excess and divergences we did not realize exist. In successful experimentation, we deal with a conception of time which disseminates as experimentation which produces novelty forces us to constantly reread the history of the process.

It is important to remember that we always operate from a restricted economy, and therefore the disturbance we experience in our history when faced with novelty, when we experiment, is a product of the reason constraining that economy. We cannot therefore act

against this economy except from within, which is also why I argued we always inhabit an experiment. As Derrida (1978:42) wrote in critique of Foucault's *History of Madness* (2006):

Since the revolution against reason, from the moment it is articulated, can operate only *within* reason, it always has a limited scope of what is called, precisely in the language of a department of *internal* affairs, a disturbance. A history, that is, an archaeology against reason doubtless cannot be written, for, despite all appearances to the contrary, the concept of history has always been a rational one. (Emphasis in original)

In this sense, we cannot escape being disturbed by novelty. The experimental process demands a rationality; in order to be productive we must constrain and exclude. This is why novelty will always disturb us; there is no alternative to form or reason from which we can operate (48) if we want to produce results from the experimental process. The particular sequence of experiments we pursue is made possible by the constraints of reason. As such, reason, necessary for the appearance of novelty, sets itself up for the surprise of novelty; it is what makes novelty possible at the same time as being disturbed by it. It is important at this point to note that the use of words like surprise does not necessarily imply that novelty is an immediate phenomenon, an event which suddenly appears. Rather, novelty as a process can also be seen as a slow moving phenomenon. This is often why we are excited by the next exhibition an artist may produce or the next few years of life with a lover. Novelty then is not necessarily here today and gone tomorrow, we can be constantly challenged, constantly forced to reread our history.

In a certain sense this conception of novelty can be seen as pulling oneself up by one's own shoe laces. This is because, in pursuit of novelty, we follow a sequence of experiments along a particular rationality but when we 'achieve' a novel discovery or process it subverts the process we have relied on to get there. This is only possible because the reason we depend upon for experimentation is not perfect, it is not complete. As was argued, the decisions we make (conscious or not) when acting in a complex environment always results in the incalculable affecting the economies of our analysis. In fact, Derrida (2005:151) argues that this is the very means by which we can define reason:

If I had to attribute a meaning, the most difficult, least mediocre, least moderate meaning, to this well-worn, indeed long-discredited, word *reasonable*, I would say that what is “reasonable” is the reasoned and considered wager of a transaction between these two apparently irreconcilable exigencies of reason, between calculation and the incalculable. (Emphasis in original)

In a complex system one is confronted with the conceptual difficulty of time as being non-linear. The linearity of time is, perhaps, possible in a complicated system with a single, reducible centre in which a single history of change can be drawn for that system (in a certain sense such a system is impossible because it assumes that it exists in a noncomplex environment). Such a system, running in such a programmatic fashion however, would not be able to produce novelty.

In a centreless complex system there is a wealth of non-linear interactions reacting at different rates to different inputs from their relationships with each other and the environment. Whatever history we write of such a system will only be the history of a single part of that system and an abstracted history of that part excluding the complex interactions it may have had with an environment. In a certain sense then, the drawing of a history is the distribution of emphasis on different events or aspects of the system and its environment. The emphasis can always be redistributed in history but never conserved or disseminated. That is, there cannot only be a conservative single history of a system, and a history of everything, a disseminated history, is a history of nothing. The distribution of emphasis in an account of history provides certainty to those inhabiting the present as it assures “a greater security and greater possibilities of capitalization in a dangerous and anguished world” (Derrida 1997:85). A certainty about the past provides a sense of certainty concerning the future. History is therefore a process of limiting its delinearization in order to be able to capitalize on the possibilities which this particular understanding of history provides us in the present. When we experiment, therefore, we carry out a double movement. We have to maintain a faith in the history we have drawn, the faith we have in understanding how we reached the point where we are at in knowledge, in order to be able to continue with the experiment. We have to act as if our knowledge is complete. However, at the same time we

are attempting to undermine this history, we are trying to develop another reading of this knowledge which may provide us with new possibilities for acting in the world. We simultaneously guard or police the linearity of our understanding while we attempt to subvert this understanding. We police in order to subvert. This is the paradox of experimentation.

We come then to another view of time which is not dominated by the model of time as linear (86). This is time as that which disseminates before and behind us yet which we can only access through the idea of history, through the reduction of this dissemination into some form. Yet, at the same time, this is not a history in which things happen simultaneously, as if there were different dimensions to time which we could collate, as if the different writings of history could be put side by side and collated into a pluri-dimensional object, which captures the full depths and quality of this dissemination.⁶¹ *Simultaneity* assumes presence, it assumes that these dimensions of time could be said to be comprehensively compared, as if they happened at the same time witnessed by a person sovereign over time. This is because “[s]imultaneity coordinates two absolute presents, two points or instants of presence, and it remains a linearist concept” (85). In this sense, simply collating a bunch of different histories makes the same mistake as with Laplace’s Demon; it assumes that it is possible to know all that happened. Simultaneity once again assumes a reduction of history. This view of history does not consider the contingent, context-dependent, writing of that history in the present.

5.5. Forcing the Dreamworld

In this chapter I have outlined a philosophy of experimentation. In this regard I gave a general understanding as to what an experiment is and its relationship to current knowledge. In this regard, I argued, we always inhabit our experimentations due to the

⁶¹ Dissemination is perhaps not the best word for this understanding of history as it conjures up a point from which events disseminate and to which events lead. When I use this term I use it under the understanding that the present equally disseminates. In other words, I take seriously the consequences of Derrida’s critique of a metaphysics of presence.

contingency of current knowledge. An implication of this inhabitation is that novelty can be defined as that which forces a rereading of the history of the system. An advantage of the model drawn out in this chapter is that we can move away from a reliance on events. In fact, I have argued that events rarely give rise to true novelty due to the embedded nature of the history of the system. However, I have given little content as to how we should determine which is a worthwhile experiment and which not.

The notion of experimentation endorses transgression as a principle, in order to pursue potentialities that may remain latent or hidden within the current system. However, this does not allow us to determine which subversive acts are more worthwhile than others; it still does not guide us in deciding which excess of experimentation we should pursue. Indeed, one can say that the wholesale destruction of life on earth that we are currently witnessing can be seen as subversion. How can we distinguish this from another, perhaps more beneficial process? If we state that a system is open, that its horizon of potentialities is indeterminate, how can we distinguish which is a worthwhile sequence and which not?

We need to establish some mechanism for determining which potentialities are worthy of pursuit and which would only lead us into further trouble. In other words, we need a measure for possibilities in order to be able to determine whether a particular sequence would be worthwhile or not. This implies that we need to establish a goal, even if it is a non-teleological one, for an experimental sequence so that the sequence is not determined by current economies which would only pursue possibilities recognized by the general equivalent. This is the only possibility of intervention, that our action be distinguished from the *modus operandi* of the current system. Therefore, we need to *imagine*, not only to establish a goal, but also to create the possibility of examining the features of the world as we find it, away from the economy which dictates our current possibilities so that we can measure our actions against the imagined world. As Feyerabend (2002:22) so eloquently puts it, “we need a dreamworld in order to discover the features of the real world we think we inhabit.” However, dreaming does not entail doing nothing; it is not a product of the distraction of the masses, of television, malls and Hollywood blockbusters. Dreaming entails pursuing passions, having the time to pursue passions, to sleep in order to dream. In this

acting we create, in the experimentation of art or music for instance, we imagine another world.

This was what we both lost and gained with the end of modernism. Modernism's drive towards the future created an imagination of utopia, created the possibility to conceive of a different world. Unfortunately, this drive was constructed around a very restricted economy, which was a State based and forced collective endeavour. What we gained with postmodernism, despite the dystopian critiques it made possible, was the possibility of imagining worlds free from the restricted economy of modernism, worlds built on models separated from restrictive science and economics. In one sense, this critique individuated the possibility of utopia, it moved away from utopia as the collective, restricted endeavour of bureaucratic or financial elites to the dreamworlds of individuals. A consequence of this was that postmodernism lost the possibility for collective action, for shared dreams which unfortunately makes real resistance to current conditions, where resistance is dependent upon a collective refusal of the market, impossible. Postmodernism then discarded the *telos* of modernism, it argued for the radical openness of the future, which is both optimistic and despairing. Its optimism lies in the radical openness which makes alternative modes of life possible. It is despairing because with the loss of this *telos* our future has, ironically, become determined, perhaps not teleologically in the sense of a future goal but restricted in the sense of lack of alternatives to the current market economy (Bauman 1992:53). The loss of a *telos*, in an artistic, scientific and political sense has forsaken us to current conditions and possibilities. We need a *telos*, not teleology. Not teleology because that implies a restricted economy, but a *telos* that can shift and change as the conditions we labour under while working towards it changes.

Badiou's notion of 'forcing' may help us in an initial attempt at conceiving of such a non-teleological *telos*. In an interview with Bruno Bosteels (2005:252), Badiou describes forcing as the "extremely complex and hypothetical way in which truths, including political truths, influence and displace the general system of our encyclopedias, and thus, of knowledge." As Peter Hallward (2001:87-88) explains in a footnote to Badiou's *Ethics*:

... Badiou explains that 'forcing' is the process imposed by the affirmation of a truth, whereby the order of knowledge in a situation is transformed such that this previously 'unrecognizable' affirmation can be made to *belong* to the situation... (Emphasis in original)

Or as Badiou (2007b: 403) states:

A term forces a statement if its positive connection to the event forces the statement to be veridical in the new situation (the situation supplemented by an indiscernible truth). Forcing is a relation *verifiable by knowledge*, since it bears on a term of the situation (which is thus presented and named in the language of the situation) and a statement of the subject-language (whose names are 'cobbled-together' from multiples of the situation). What is not verifiable by knowledge is whether the term that forces a statement belongs or not to the indiscernible. Its belonging is uniquely down to the chance of the enquiries. (Emphasis in original)

For Badiou, forcing arises out of the truth revealed by an event. It is made possible by what Badiou termed 'the generic,' which is the universal connections between certain terms revealed in the event. What is important to note from the above quotation though is that a forcing is verifiable by knowledge; it is possible to empirically determine the validity of a statement which forces a change in the encyclopaedia. Forcing is not then a process of making unverifiable statements and outlandish imaginings and discarding current knowledge. The terms that force a change are verifiable. Remember, that for Badiou, the post-evental subject stands radically outside the encyclopaedia of the State; it is the realization of something the State can never understand. In contrast, I propose that a forcing can be seen as the possibility of playing with the resources provided by an economy in order to change that economy; a forcing then is verifiable and subversive at the same time as it simultaneously borrows and undermines.

However, Badiou argues that a forcing cannot be entirely verifiable by the knowledge and encyclopaedia of the present; otherwise it would be another product of the State. It would simply be a possibility which the State recognizes. This is due to the fact that a forcing arises out of the generic which is infinite and thus, from the perspective of the situation, we can

never fully determine what a forcing is trying to establish. One can understand the concept of the generic but it will always appear as if it could only exist in another world, due to the dislocation and infinity of the generic under the current situation. A forcing comes forth in the situation as a promise or the “announcement of a new art to come” (Hallward 2003:135). In the terms I have laid out in this dissertation, one can say that the generic is heterogeneous to the current economy. In order for this promise to be realized, the economy must be changed to begin to cater for the new demands held in the forcing. This involves reorganizing the economy in order to make room for the novelty promised by the forcing.

In the previous chapter, I critiqued Badiou’s notion of the generic on the grounds that it assumed a Platonistic conception of the world only revealed to those enlightened by the event. Furthermore, I critiqued this notion on the grounds that it viewed current knowledge as too static in contrast to the excessive nature of the event. How then can we rework the notion of forcing so that it is not premised on some foundation? It seems important to acknowledge that at all times our knowledge of the world is partial and contingent upon previous knowledge. We have no choice in this but to work from this uncertain ground. This includes the possibility of our working towards the future. We do not need to ascertain notions such as ‘truth’ to argue for a stand against what is wrong with the world today. We can, based upon current knowledge (indeed what else would inspire us to develop a means of moving beyond the current condition?) state that we need another order, another way of behaving in the world. An imagination helps us to ascertain which terms within our current economies need to be forced and which rejected. In many ways, this was the role of the manifesto in modernist art. The manifesto was there not only to declare that a new art form is being born but also to make place for that new art form to take shape in. The manifesto begins to imagine a future in which this art form will take place. However, the manifesto often precedes the art and it cannot thereby dictate what the art would be, indeed the eccentricity of the artist often defies such a programme (Badiou 2008b:138). As Badiou (139) argues:

It is thus in the nature of declarations to invent a future for the present of art....But a programme is neither a contract nor a promise. It is a rhetorical device whose relation to what really takes place is only ever one of envelopment and protection.

The dreamworld we establish is not a programme for action and it is not a method. It is simply a tool for examining the present from the perspective of the ideal we have imagined. But this ideal itself transforms as we interact with the world – some aspects of it may be lost, others may be emphasized. This is because our imagination is always a product of the contingencies of the present. But it is important to have this imagination in order to create the space for the project to begin. Adhering too strongly to the manifesto is the failure of zealots, not having an imagination is the failure of conservatives.

So a forcing can be seen as the realization of a potentiality in a situation, however this realization, like the horizon of potentialities, can never be fully determined. Furthermore, as our *telos* of the future shifts with the conditions at hand, we can never fully state what the future will look like. In a sense this is a sort of *iterability* (Derrida 1977) orientated towards possible futures. As Badiou (2007b: 406) states:

... [F]orcing does authorize partial descriptions of the universe to-come in which a truth supplements the situation. This is so because it is possible to know, under condition, which statements have at least a chance of being veridical in the situation. A subject measures the *newness* of the situation to come, even though it cannot measure its own being. (Emphasis in original)

Remember that being for Badiou is always excessive in the situation, so the last sentence in the above quote entails a statement something like “the subject can measure whether the newness of the situation agrees with the imagined future even though this cannot be done comprehensively.” Forcing then contains an anticipatory dimension, even though this dimension is not anticipation in the sense of a final product to be completed, a forcing is never completed, it is always partial.

Forcing concerns the point at which, although incomplete, a truth authorizes anticipations of knowledge, not statements about what is, but about *what will have been if the truth reaches completion* (Badiou 2008a:138, emphasis in original).

In other words, a forcing, based on a model I will describe below, allows us to pursue a particular sequence under the authority that this sequence will be rendered veridical in the new order brought forth. A forcing allows an anticipation such as, under the new situation, such and such an art form/ mode of living/ statement, will be acceptable. In other words, as Badiou (138) puts it, a forcing is “a method that limits the correctness of statements to the anticipatory condition of the composition of an infinite generic subset.”

A forcing then is premised upon the *hypothesis* of what will have taken place (193) if this forcing were successful. As I described in the first chapter, this hypothesis does privilege certain notions above others, it by definition excludes. Yet this is necessary for the possibility of action, in order for an action to be distinguishable it needs to exclude other possibilities. However, in contrast to the modernist use of hypothesis, the type of forcing I am trying to conceive of here, in contrast to the foundationalist/universalist conception used by Badiou, is of a hypothesis which is fundamentally open. That is, it is a hypothesis which allows for an anticipation of a result yet which is willing to modify itself based upon the feedback it receives from the result that actually materializes. Perhaps we would need to adapt the style of thinking we use or the concepts and resources we use to make possible the forcing. Of course, were the anticipation and the hypothesis completely congruent, one would not need to adapt the hypothesis. However, due to the openness of the future and the fact that the future is built upon the ‘present’, the hypothesis will always need to be adapted to the changing circumstances which the present imposes upon the future.

As with a sequence, a forcing follows a pathing which reveals potentialities not realized under the current economy. It therefore follows an im-possible pathing, in the sense of impossible I described above. As Badiou (151) argues:

But we are nevertheless not speaking about some utopia: since, in its very impossibility, the politics that is described, the mythologized *politeia*, actually has a *real*. This real is that subjective prescription, of a prescription that carves out with

regard to the world not nothing at all but what it is possible to do (even if it is in accordance with the real law of the impossible). (Emphasis in original)

In other words, the dreamworld of the forcing is not some utopia, in the Greek sense of the term as 'no place', as the impossible as the not possible. Rather, the collective produced by a sequence pursues a possibility or potentiality which is impossible in terms of the dominant economy of thought but is revealed as a potentiality within the situation.

We can see that a complex system maintains a certain horizon of possibilities towards which it develops. A restricted economy will only recognize possibilities as constituting this horizon, whereas from the perspective of a general economy this horizon is fundamentally indeterminate, due to the possibility of events as well as the existence of latent and maturing potentialities. We anticipate the future of the current system based upon the possibilities which it, itself, matures towards. Based upon the present and past of this system we are able to anticipate what the future of this system may look like. The more we accept the horizon of a system as the teleological future, the more we exclude and close down the hidden and latent potentialities which may be available to us. As Poli (2009:5) argues:

The entity's horizon outlines that fragment of the space of potentialities whose conditions are maturing. As its conditions mature, the entity's horizon moves ahead ... The category of horizon is a teleological category... Horizons have fronts, "areas" where novelties appear. The front is the growing, maturing, changing section of the horizon.

This is why we need to constantly illustrate that there are more potentialities than possibilities in order to keep imagining what could be possible. This is so even with aspects of the system's development with which we may be agreeing. If we abide strictly by current possibilities, we may miss opportunities which could lead us into a better future. Restriction of the imagination to the current horizon of the system also incapacitates us in dealing with unforeseen circumstances, in dealing with events and changes which may have remained latent in the environment. Pursuing the excess of the system, pursuing the excess of the

possibilities pushing the system's horizon may help us in dealing with such unforeseen circumstances.

Yet pursuing this excess also contains a strategic or subversive value. As I described in Chapter One, the excess is always that which is discarded from a restricted economy in order to maintain the coherence of that economy. It is that which is discarded because it upsets that economy. We can see then that pursuing the excess or excluded of the possibilities towards which a horizon is developing may give us clues as to where a system's weaknesses lie. It may guide us in which strategies actively challenge the horizon of possibilities of the system and where we could 'poke' the system in order to produce alternatives.

Conclusion

In this chapter, I have outlined the importance of experimentation as a means for bringing novelty into the world. This was done in order to overcome a reliance on the event which is typically deemed necessary for novelty to arise. Cutting the event out of the equation is important in a world increasingly dominated by a restricted economy (cf. Marcuse 2007) which may not open up the possibilities for the realization of events in the future. This is because of the linearity by which restricted economies of thought understand processes such as history and the future to come. The aim of a philosophy of experimentation was therefore to empower thought to bring about novel ways of seeing the world, rather than waiting for an event to reveal to us which possibilities should be pursued. I argued that the process of experimentation brings forth new potentialities which remain latent within a complex system. This is done by the actions of individuals experimenting with the resources they have at hand in contrast to grand scale schemes to overthrow the current system. The realization of these latencies leads to a definition of novelty as that which disrupts our economies of thought and forces us to reread the history of the complex system we were facing. I thus distinguished between what was novel and what was simply new based upon the collective recognition of novelty by a group of experts (broadly defined) pursuing similar sequences of experimentation. Furthermore, I have argued that the exploration inherent in

the process of experimentation not only brings forth the possibility for novelty but also reveals to us the weak points of systems we may be challenging.

The process of experimentation argues for the necessity of the imagination as a tool to improving current living conditions. If we cannot rely on the future promised under the current model and if we only have the resources at hand to improve the conditions we labour under, we must be able to use these resources creatively. An imagination implies a breaking away from the models of the present based upon the possibilities and potentialities held in the present. The imagined future establishes a means for distinguishing between those excesses which are worthy of pursuit and those which are not. However, the *telos* of this imagined future is constantly shifting as our relationship with the potentialities of the world changes. If we were simply to follow through on realizing an imagined future, we would be producing technology. As the alternative future we imagine today is built upon the possibilities of the present we must then be willing to shift our imaginations of a better world as we realize it in order to constantly move away from the system as we find it today. The *telos* of a forcing is not the end of the process of bringing about novelty, it shifts as new potentialities are opened up by experimentation. It is simply a tool to help us make decisions in the present about which path to pursue, it shifts as the decisions we make in the present reveals new sets of possibilities to us.

In the conclusion to this dissertation I will aim to examine the possibilities which this dissertation holds for undermining the capitalist system as it is found today. In this regard, I aim to develop a complexity based understanding of this system through the lens of the concepts I have adopted here. I do this by exploring what has become the new form of conservatism in the world, which is forward looking and scientifically orientated in contrast to the backward looking conservatism of the past. Following this, I will aim to demonstrate how understanding Capitalism as a complex system can contribute towards undermining its dominance in this world. As a starting point, to begin understanding how we can undermine this system, I propose we that we pursue passions to the point of exposing ourselves to others, in an argument I borrow from Georges Bataille.

Conclusion

A traditional scholar does not believe in ghosts - Jacques Derrida

In this dissertation, I have attempted to present a model of novelty, which is not dependent upon the event (see below). In this regard, I have adopted the approach of Critical Complexity and post-structuralist philosophy. I began this dissertation by presenting the notion of an 'economy'. Any complex system, and our thinking about the system, can be thought of as operating within a particular economy. These economies are always excessive, they contain an excess which cannot be reduced to some essential core. In other words, these economies are open. The advantage of conceiving of complex systems as economies is that it allows us to begin to conceive of the relationships within a system and the system's openness to its environment in ways which the metaphors surrounding frames do not. In other words, an economy emphasizes relationships over closed boundaries, be it the relationships 'inside' the system or the system's relationship to its environment. In this regard, I emphasized the two sets of relationships which an economy establishes. The first are those relationships which can be defined as difference within a system. Difference emphasizes the sets of relationships which a system acknowledges. In contrast, I argued that heterogeneous relations are those relationships which may have an influence in the system, yet which the system cannot comprehend in terms of its current model. In other words, in order for a heterogeneous relationship to make sense in terms of the model of the system, one would have to radically alter the coherency or reason on which the model depends. The notion of an economy is a tool which helps us to speak about this dynamic of complex systems. I have adopted these terms in order to help develop the notion of novelty I am attempting to put forward.

Following this, in Chapter Two, I gave some content to the very theoretical understanding of an economy I presented in the first chapter. That is, I discussed how a system operates under an economy which is simultaneously restricted and general. The 'law of excess diversity', a term Peter Allen adapted from Ross Ashby's 'Requisite Variety', describes the excessive nature of systems in order to allow them to react to changing environments. Excess diversity is the result of diverse individuals pursuing lines of interest which do not

necessarily bear influence on the current system but may carry weight as conditions change. I did this in order to illustrate how a system changes by adopting the term 'structural attractor' another term which I borrowed from Peter Allen. A structural attractor gives us insight into how a system, which needs repetition, which needs to resist change, is able to change through pursuing the excess created by play both internally and within its environment. It is important to remember that there is both an internal environment inside the system and the environment in which the system operates, which both offer different opportunities. The internal environment in which actants have to behave is often more constrained than the environment within which the system finds itself operating. The concept of play is key to understanding much of the argument I have attempted to make in this dissertation. The concept of play opens up the horizon of possibilities available to the system. I emphasized this open horizon of possibilities by arguing that a system consists of both possibilities and potentialities. Possibilities are those attractors which the system currently presents and towards which it may still develop. Latent potentialities are those potentialities which we can draw from the model of the system based upon those possibilities the system may pursue. Possibilities and latent potentialities allow us to give some form of prediction as to what shape the current system may take, even if that prediction is context-dependent and situated. Hidden potentialities are the always open horizons which remain heterogeneous to the model of the system. Hidden potentialities are what make accurate long-term predictions of the system impossible. It is those elements of the system which, by definition, remain heterogeneous to current models.

In Chapter Three, I put aside discussions of complexity and gave an outline of the work of Alain Badiou. Badiou, I argued, is a good example of a thinker who tries to conceive of the possibility of novelty as arising out of the event. Despite his, until recently, marginal status in French philosophy I argue that Badiou epitomizes a style of thinking which is 'classical' or 'traditional' in continental philosophy, as it makes the event a necessary condition for novelty to arise. I therefore devoted an entire chapter to giving an introduction to this philosopher, partly out of his relative newness to English speaking audiences and partly due to the fact that his paradigmatic equation of novelty and the event is typical of continental philosophy. Badiou argues that novelty arises due to the fact that the event reveals the

truth of the world to those inspired by the event. I have termed the model of novelty dependent upon the event, such as Badiou aims to develop, 'evental novelty'. Badiou presents us with an interesting body of work, and in certain ways it contains useful insights. However, as I express in the fourth chapter of this dissertation, Badiou's work has some serious shortcomings which primarily revolve around his lack of recognition of the concept of play and his hypothesizing of the 'truth'. I will elaborate on my criticism of Badiou below as I argue that the model which he establishes is in fact a relatively conservative one.

My concerns with evental novelty are spelt out in Chapter Four. I argued that we must not do away with the concept of the event, as it is an essential feature of a universe which is open to the aleatory and unpredictable. However, what we must be concerned with is the classical philosophical dependence on a certain understanding of the event for novelty to arise. This classical conception of the event, as Badiou adopts the notion, is beset with metaphysical assumptions and conservative implications. In contrast, if we use the insights provided by Derrida and complexity theorists, we can see that the event, although an ontological possibility, does not necessarily contain the possibility for change. In fact, as Derrida (1981:24) argues, the desire for a sudden rupture often contains conservative assumptions in itself. However, if we adopt the definition of an event I present in Chapter Four, we are forced to begin to reconsider our understanding of ontology as it relates to the event. The model of ontology which I develop here, although compatible with a certain understanding of the event, begins to pave the way for a model of novelty which is not dependent on the event.

In the final chapter of this dissertation I have attempted to provide a philosophy of experimentation as a means of overcoming the shortfalls of event-based novelties. In this conception of novelty, I have attempted to move away from novelty as a sudden rupture, as the result of a sudden revolution. Instead, I gave novelty a temporal dimension which was much 'slower'. This slower tempo is the result of the difficulty of overcoming the memory inherent within the system to the extent that we could conceive of a novelty which is radically different from the economy of the system. That is, novelty defined as a rereading of the history of a system implies that the novelty challenges the memory inherent within

the system. This is a far greater demand than may at first appear; complex systems are nothing but their histories. However, the greatness of the demand illustrates to us the radical nature of novelty; it explains to us the rareness of its occurrence and the difficulty we face in instituting an order which is different from the one we have today.

As a form of conclusion, I would like to apply some of the insights gained in this dissertation to the world as we find it today. In particular, I am interested in how we can conceive of and overcome the current capitalist hegemony. I do this by first of all giving a description of the capitalist system and the type of thinking it promotes. In this regard, I examine the work of Francis Fukuyama (1992) as an example of the restricted economy of thinking he supports. In doing so, I develop a definition of conservatism which is not tied to the traditional notion of conservatism as that which aims to conserve the past. In contrast, I try to illustrate that conservatism claims a future and progress-orientated position which tries to conserve the present and which in essence closes off the possibilities of the future. I argue that we can move beyond this conservative position by means of pursuing interests which open us up to others and to alternative possibilities. The way out of capitalism then, I argue, is not to hypothesize an outside *ideal* or *truth* in the style of Fukuyama or Badiou but rather to engage with the wealth of possibilities which are open to us within the complex system we inhabit.

Capitalism as a Complex System

In conclusion, I would like to put to work some of the concepts I have developed within this dissertation. I will do this in relation to how we can arrive at novel approaches to understanding the world, approaches which depart from the hegemony of capitalism and hence open up the possibility for a novel economy to arise. In order to do this, we need to describe what we mean by capitalism and what kind of economy this system works under. Below I will try to develop a model of capitalism that illustrates the intertwined nature of the material base of the system and the ideology which emerges from it. I argue that we cannot separate these two facets of the system. However, we need to begin challenging the system somewhere, and for this reason I give a description of the economy of thought that capitalism adopts as a starting point.

At its root or base capitalism is a system of relations between people. Modern day conceptions of capitalism, as being constituted by a system of global flows and transnational networks of abstract commodities, are correct to a certain extent. There is a 'metaphysical' dimension to capitalism, currently its global relations are governed by abstract shares and indexes traded in urban metropolises globally (Lash 2007). The recent economic recession proves the effect such an abstract system can have on the concrete material relations that exist in the world. We have thus two levels which can be easily discerned in the capitalist system, the one physical and material and the other idealist or ideological (Gramsci 1973, Marx 1977). For the success of the ideological relations to be possible, there must be a system supporting it and vice versa. In contrast to the Marxist model of a base and superstructure, these two 'levels' are intertwined to such an extent that it makes little sense to regard them as vertically related, the one level supporting the other. Instead we must regard these two aspects of the system as being 'horizontally' related to one another, so that neither can exist without the other. Therefore, we have two fields which constitute one another, and where we draw the boundary between either is arbitrary. Therefore, due to the fact that capitalism is as much an ideological system as a material one, it becomes difficult to discern 'true' needs from 'capitalist' ones or which desires are innate and which simply support the sale of commodities (Goux 1990a:212). Where capitalism begins and ends is a matter of the model one applies. However, as there is no outside to capitalism anymore, it becomes increasingly difficult to define a state free from this system. It is therefore important that we look at the models capitalism uses in order to maintain the coherence demanded by economies. This is an important point to take note of, especially when we begin to look at the restricted economy deployed by proponents of capitalism.

In this regard then, one can see ideology as being an emergent property of sets of relationships which produce a particular approach to managing affairs at the physical level. The ideological level, being emergent, places constraints on the level from which it emerges. It determines the interaction between the two 'levels' as much as the possibilities of the material world determine the possibilities held by capitalism. There is a system of feedback which determines the system and this feedback relays between these two facets of the system.

Consisting of a set of relationships which interact in a non-linear way, being robust and open to its environment, constituted by emergent properties and being non-reducible, it is easy to see that capitalism can be defined as a complex system. It is not easy, then, for us to give a description of this system in comprehensive terms, indeed political philosophers have been trying to do so from Adam Smith (1977 [1776]) onwards. We can only provide models of this system which are provisional and context-dependent. Many of the features of a complex system which I have presented within this dissertation can be seen to be exhibited by capitalist economies. A certain form of 'excess diversity' results in the success of the system as it allows for experimentations with new markets and means of commodification. This can be seen in many capitalist corporations in the form of research and development. Being able to respond quickly and efficiently to a changing environment marks many companies as successful.

What is unique about the capitalist system in comparison to other examples we have of complexity is that it, in many ways, defines the environment within which it survives. We struggle to find an 'outside' to capitalism, which challenges Badiou's contention that truth exists. What is interesting here is that it becomes impossible to mark where capitalism ends and begins. If we cannot conceive of an 'outside' it is because we are constrained by an increasingly restricted economy which can think only in relation to the market. We know this economy is restricted due to the fact that despite the obvious failures of this system on all fronts, be they the dangerous situation we face in confronting climate change or global food insecurity, we find no means of solving these problems except in the most prosaic and short-terms ways, for example by instituting carbon trading or supplying countries with emergency relief in times of mass shortages of food, instead of dealing with the long-term roots of these problems. In this conclusion, I will look at this restricted economy of thought, the ideology of capitalism, and then attempt to begin to find ways out of this restricted economy.

The Ideological Economy

We can begin looking at the restricted economy of capitalism by what it excludes. Georges Bataille (1985)⁶² argues that the quantification of the world, which was a product of the rise of the capitalist bourgeoisie, resulted in a desire not to expend, to only conserve for the sake of utilitarian gain and personal wealth. In contrast to the earlier societies Bataille drew inspiration from⁶³, where excess was expended in carnivalesque or orgiastic festivals, bourgeois capitalist expenditure only looked toward gratifying the self and then only so long as it led to further utilitarian gain. This is because quality of life, under capitalism, began to be seen as quantity of life; it was no longer about how much you expended but about how much you consumed (see below). This is why (120-121):

... [a]s dreadful as it is, human poverty has never had a strong enough hold on societies to cause the concern for conservation – which gives production the appearance of an end – to dominate the concern for unproductive expenditure. In order to maintain this preeminence, since power is exercised by the classes that expend, poverty was excluded from all social activity. And the poor have no other way of reentering the circle of power than through the revolutionary destruction of the classes occupying the circle – in other words, through a bloody and in no way limited social expenditure.

For Bataille, bourgeois capitalism then wasted only to the extent that it increased the advantage of the classes that expend. All expenditure has to be utilitarian and must further the individual. In contrast to Bataille, I do not think that it is necessary to engage in *revolutionary* destruction of the class system. Indeed my aim in this dissertation has been to move away from such *evental* thinking. I argue for non-bloody but in no way limited social

⁶² It is important to note that the reading I adopt of Bataille's notion of an economy is largely in line with that developed by Jacques Derrida (1978) and Allan Stoekl (2007) in contrast to the reading which has been to given to Bataille by Jean Joseph Goux (1990a).

⁶³ Bataille was especially interested in Aztec society and pre-colonial indigenous North American societies.

expenditure. As I will try to show, the complexity of capitalism makes it difficult to overthrow in a single movement; this is why novelty can only be brought about by expenditure of the kind I will explicate at the end of this dissertation.

The exclusion of poverty from the model proponents of capitalism deploy allows the model to be coherent. This is achieved by poverty being turned into the pathology of individual countries or individual people, rather than being a result of the pathology of the model. As a leading proponent of capitalism argues, inequality under a global capitalist system in ideal conditions would be less attributable to inheritances than to “the natural inequality of talents, the economically necessary division of labor [sic] and to culture” (Fukuyama 1992:291). As Bataille argued, the coherence of the model is guaranteed by the exclusion of the poor. This exclusion is legitimated by means of reasons which exist inside the model in order to make that exclusion possible. To be poor is therefore to suffer from a pathology which is your own doing.

If one were to acknowledge that poverty were a structural feature, a result, of capitalism, the model would no longer appear as coherent as the apparent human-rights and individual-liberty approaches promoted by capitalists would no longer sit neatly with free market economic approaches. The atomism on which the model is premised cannot cater for such relationality. The individual, as an atom of economic activity, is responsible for, and capable of, making ends meet; if not, there must be a pathology concerning their ‘talents or culture’, the thinking goes. This exclusion is made possible by the rationality or reason which structures the economy. The utilitarian nature of this reason reduces the problems it faces to a merely technical image. Badiou (2007a:11-12) has also argued that the ‘disorderly’ aspects of capitalism are excluded by the development of a technical image:

This is an occasion to indicate what, in a general fashion, bourgeois political economy accomplishes through the constructions of models of balanced expansion ... here again, the model wards off capitalist ‘disorder’ – not through knowledge of its cause ... but through the integrated *technical image* of the interests of the bourgeois class ... As a portable image, the model externally unifies a political economy, legitimates it, and conceals its cause and rule. (Emphasis in original).

Despite its failures, the hegemony of capitalism results in the fact that, global politics today only looks towards a technics to improve the living conditions of man. We must make it possible, the logic goes, for the excluded to participate, we fix policy so as to allow more access to markets (in other words open markets up); then, if the poor still fail to participate, it is their own fault. The restricted and conservative or unimaginative economy of capitalist thought does not allow thinking beyond the possibilities it presents. It reduces everything to a technical image, as it cannot imagine beyond its own possibilities. The solution, the thinking goes, is in the system, the system is coherent, and therefore, the problem must lie elsewhere.

In this regard, capitalism has led to a desacralization of life. Bataille (1985:124-125) has argued that as the bourgeoisie came into existence, it was under a model which ceased to recognize the qualitative nature of expenditure and instead attempted to establish a system which only recognized the possibility for quantitative relationships. Man was no longer seen as an end in himself but rather became a means to an end. This was due to the concern of capitalists for efficiency and utilitarian gain. A human being's relationships and concerns which do not bear on their ability to create wealth, their happiness, love and passions are of no concern to the utilitarian economy of the desire for the improvement of man⁶⁴. As Bataille states:

The rationalist conceptions developed by the bourgeoisie, starting in the seventeenth century ... meant nothing other than the strictly economic representation of the world – economic in the vulgar sense, the bourgeois sense, of the word. The hatred of expenditure is the *raison d'être* of and the justification for the bourgeoisie; it is at the same time the principle of its horrifying hypocrisy In trying to maintain sterility in regard to expenditure, in conformity with a reasoning that balances accounts, bourgeois society has only managed to develop a universal meanness. Human life only rediscovers agitation on the scale of irreducible needs

⁶⁴ I state improvement of man here to illustrate that communism shared a similar restricted economy, which excluded these non-utilitarian facets of life.

through the efforts of those who push the consequences of current rationalist conceptions as far as they will go.

The sacred for Bataille, the ultimate 'waste' of energy so ubiquitous in the historical societies Bataille studied, has been removed from capitalist society. As such, the burning off of excess energy and wealth, in the form of carnivals, festivals and sacrifice has been abandoned for the sake of more restrained forms of expenditure which leads to the accursed share in the form of wars. According to Bataille, the loss of these forms of expenditure has resulted in a loss of the possibility of community, as expenditure is now limited to the glorification of the individual rather than to the joy of collective festival. The world, under the capitalist economy, has thus become 'flat', there is no more sacredness⁶⁵. Art is produced, bought and sold for financial gain. Films are judged by how much was earned, a blockbuster is classified by the amount of money it earns. 'Festivals' are defined by how much was consumed in terms of alcohol or products sold.

The utilitarian logic which restricts the capitalist economy can be seen to be a utilitarianism in the sense of the uses to which something can be put *in order to* further the grandeur of the self rather than as a means to create community or to expend to open oneself up to others. The utilitarianism of capitalism is a narcissistic one. An effect of the hegemony of this restricted economy is that needs and desires can only be realized within the constraints of this economy. It becomes difficult to discern which desires are 'true' to us and which operate within the confines of global hegemony:

The very basis of the capitalist economy lies in its dynamic nature, which enables the mechanism of the economy to utilize accumulation in a way that serves as stimulus to the desire for an expenditure that feeds back into the productive process. But this is something created by capitalism. Such desires have no real basis; capitalism has constructed them for its own reproduction (Richardson 1994:93-94).

⁶⁵ In short, for Bataille (1985:119), the sacred is that which is removed from an economy of utilitarianism. In this sense the sacred lies very close to the sacrificial. We sacrifice that which we expect to get no return on, it is a pure waste.

Or as Jean-Joseph Goux (1990a:212) has argued:

Supply precedes and creates demand: this means that there is no prior definition of need, no natural and preestablished demand founded on essential and rational exigencies that could be fixed in advance ... the capitalist economy is founded on a meta-physical uncertainty regarding the object of human desire.

In this sense, under conditions of current capitalist mass consumerism, it becomes difficult to discern what our needs and desires are. The economy we are forced to work under does not distinguish between what is necessary from what is 'excessive.' It may seem as if there is a contradiction here, that in fact capitalism represents the pinnacle of Bataille's concern for expenditure. Indeed, no other system has wasted quite as much as capitalism (Goux 1990a: 210). What is important to note is that it is not the amount of waste which concerns Bataille but the nature of that waste (223). *How* capitalism wastes is what is of concern. As Allan Stoekl (2007:56-57) has argued:

Raw material becomes, as Heidegger put it, a standing reserve, a measurable mass whose sole function is to be processed, used and ultimately discarded. It is useful, nothing more (or less), at least for the moment before it is discarded; it is related to the self only as a way of aggrandizing the latter's stability and position ... we deplete the earth's energy reserves as blandly and indifferently as the French revolutionaries (according to Hegel) chopped off heads: as if one were cutting off a head of a cabbage.... And yet, under this inanimate fuels regime, the very nature of production and above all destruction changes. Even when things today are expended, they are wasted under the sign of efficiency, utility. This very abstract quantification is inseparable from the demand of an efficiency that bolsters the position of a closed and demanding subjectivity. We "need" cars and SUVs, we "need" to use up gas, waste landscapes, forests, and so on: it is all done in the name of the personal lifestyle we cannot live without, which is clearly the best ever developed in human history, the one everyone necessarily wants, the one we will fight for and use our products (weapons) to protect. We no longer destroy objects, render them intimate, in a very personal, confrontational potlatch; we simply leave items out for the trash

haulers to pick up or have them hauled to the junkyard. Consumption (*la consommation*) in the era of the standing reserve, the framework (*Ge-stell*), entails, in and through the stockpiling of energy, the stockpiling of the human: the self itself becomes an element of the standing reserve, a thing among other things.

The human, under the current system is stockpiled; it is an object in the standing reserve of resources. In capitalism then, the human being is reduced to its utilitarian value. The sublime and the sacred are reduced to their quantification as possible products of the profane. We waste in such a way as to maintain the mundane rather than to challenge it. For Bataille then, bourgeois man, in his maintenance of the mundane misplaces his desire for the sacred. In the flatness of capitalist society, where everything is reduced to some utilitarian value, the desire for the sacred becomes misplaced. It is this for Bataille that explained the rise of fascism in the twentieth century. As Richardson (1994:93) explains:

Fascism is a perverted and nostalgic form, but it responds to a deep yearning for a meaningful experience of the sacred ... [fascism] had identified the Achilles heel of capitalism and its success showed that capitalism had to be confronted in its social forms, not in terms of its economic insufficiency.

Fascism is a product of the mundane of the modernist Twentieth century. Bataille illustrates to us the threat of not allowing excess behaviour to be realized in ways which satisfy the desire for the sublime. If the world is reduced to the homogeneity of the stockpile of consumables we may face accursed outlets of excess, as we have seen in the fundamentalist wars of Georges Bush and Osama bin Laden. This is because, for Bataille, excess can only be released in ways which break with the homogeneity of the everyday, and therefore, as I tried to illustrate earlier (see page 62), this release can take either malicious or beneficial forms. The advantage of the experience of the sublime in the mundane, of the experience of laughter and tears, is that it leads one to question the taken for granted, forces one to reveal potentialities not realized within the restricted economy which excludes emotions as a viable commodity. When we experience emotions which challenge us, the mundane of our world is challenged. In this light, the capitalist system adheres to what Herbert Marcuse (2007) termed desublimation. This 'flattening' of our economies has disrupted the ability to

critically engage with the mundane features of our daily life whereby our free time seems like it is wasted if not spent working or consuming. The human in this desacralized form becomes just one object amongst others. It craves an outlet of expenditure, to the extent of accepting the 'sacredness' of a leader or a people despite the dangers these views hold.

The Future under a Restricted Economy

A second aspect of this restricted economy of capitalism, and I will show this to be a product of all restricted economies, is that it believes itself to be at the pinnacle of human development. Due to it only acknowledging the possibilities it presents within itself, the capitalist economy does not allow one to see beyond its horizon. As such, the future is essentially closed off. The future only exists as the coming realization of possibilities currently promised. A future that should be open is closed off by the hegemony of capitalism which demands that we be tied to the dominant forms of the moment. As Badiou (2005:238) has pointed out:

I am surprised to see, for instance, that today everything that does not amount to surrender pure and simple to generalized capitalism, let us call it thus, is considered to be archaic or old-fashioned, as though in a way there existed no other definition of what it means to be modern than, quite simply, to be at all times caught in the dominant forms of the moment.

To be caught in the dominant forms of the moment implies that we cannot move beyond these possibilities, the economy of the future is closed. Capitalist logic traps one in the present by only allowing present possibilities to be seen as viable options. In capitalism there is then a claim to be concerned with the future, but it is a future entirely defined by the forms of the present. The openness of the future, alternative possibilities, are entirely closed off. We are faced then with a conservatism which is tied to the present yet which claims to be forward-looking. This is a different form of conservatism than that which we have witnessed in the past. Bourdieu (1998:125) describes the situation as follows:

Let us acknowledge the fact that we are currently in a period of neo-conservative reconstruction. But this conservative revolution is taking an unprecedented form:

there is no attempt, as there was in earlier times, to invoke an idealized past through the exaltation of earth and blood, the archaic themes of ancient agrarian mythologizers. It is a new type of conservative revolution that claims connection with progress, reason and science – economics actually – to justify its own reestablishment, and by the same token tries to relegate progressive thought and action to archaic status.

Progressive thought is then heterogeneous to conservatism. However, it is not simply heterogeneous; restricted economies work to actively exclude this heterogeneity. The reduction to economics creates a homogeneity which works to actively exclude heterogeneous modes of thinking. These heterogeneous modes of thought, utopianism for instance, are seen to be modes of thinking of the past. The only possibilities that exist today and are regarded as current are ones which are recognised as coherent within the capitalist economy. This does not mean that these options are uniform, remember an economy recognizes differences. The spread or variety of possibilities presented as viable are those which can be catered for as differences within the restricted economy of capitalism. In the capitalist system, which reduces possibilities to economic options, the spread of recognized possibilities for the future are those which already exist within the economy. Those options which cannot be constituted as differences in the economy are discarded as archaic, and whoever holds these ideas is held to be against progress.

The most famous proponent of the above thesis is Francis Fukuyama. Fukuyama's (1992) book, *The End of History and the Last Man*, makes the argument that we have reached the end of history as there is no greater system than that of the combination of free-market economics and liberal democracies in the style of the United States of America. For this reason, this book presents a good example of the restricted economy under which many proponents of capitalism today work.

Fukuyama's thesis is that world History has come to an end. This does not imply that events have ceased to happen but rather that History, "understood as a single, coherent, evolutionary process" (xii) has come to an end. Fukuyama argues that when one looks at History (note the capital 'H'), a general pattern has arisen which points towards the victory

of a universal model of liberal democracies. For Fukuyama, following a certain reading of Alexandre Kojève's reading of Hegel (in fact Fukuyama creates a philosopher 'Hegel-Kojève'), it is the *idea* of liberal democracy which has won and therefore, empirically, it may still be some time before the rest of the world concedes to this. That is, the dialectical process of History has worked through the contradictions it has faced and has found the idea of liberal democracies to be the most free from contradictions on a scale large enough to disrupt the system. For Fukuyama, liberal democracies represent the realization of the dialectical process. As Fukuyama (45) argues:

The apparent number of choices that countries face in determining how they organize themselves politically and economically has been *diminishing* over time What is emerging victorious, in other words, is not so much liberal practice, as the liberal *idea*. That is to say, for a very large part of the world, there is now no ideology with pretensions to universality that is in a position to challenge liberal democracy, and no universal principle of legitimacy other than the sovereignty of the people. (Emphasis in original)

The options then, as Fukuyama states, for countries to adopt political and economic systems which diverge from the American model are diminishing. In this regard, History must have a means for eliminating divergent choices, a *Mechanism* which drives history forward in a particular direction. The Mechanism which drives and gives direction to this historical process is natural science (72). This is because, as Fukuyama (xiv) argues, modern natural science "is the only important social activity that by common consensus is both cumulative and directional." That science is cumulative and therefore directional is a commonly held view. Scientists such as physicist Stephen Weinberg (2008:350) make a similar argument when he states that "there is a sense of direction in science [when] some generalizations are explained by others." For Weinberg this direction of science leads to the "very small," in other words, to particle physics. As he argues (351):

There are arrows of scientific explanation that thread through the space of all scientific generalizations. Having discovered many of these arrows, we can now look at the pattern that has emerged, and we notice a remarkable thing: perhaps the

greatest scientific discovery of all. These arrows seem to converge to a common source! Start anywhere in science and, like an unpleasant child keep asking “Why?” You will eventually get down to the level of the very small.

This directionality granted to science, and in the case of Fukuyama, to History as a process, is a common product of restricted economies of thinking and is an aspect I will return to below in my critique of this ‘end of History.’ It is the result of an unimaginative economy, which assumes to describe the world comprehensively, in which the only possibilities thought of are those which the economy presents, and hence the history of the system is read as a realization of these possibilities. For this to be possible, all evidence to the contrary must be excluded by some principle, the *idea*, for instance, in the case of Fukuyama or the laws of physics in the case of Weinberg.

Fukuyama argues that natural science has had a standardizing effect on all societies. Because Fukuyama is working within a restricted economy, he postulates local processes as being global and thereby sees the economic development of the West (or rather the USA) as being the standard to which all countries are developing. He argues that natural science is the standardizing tool for two reasons (xiv):

In the first place, technology confers decisive military advantages on those countries that possess it, and given the continuing possibility of war in the international system of states, no state that values its independence can ignore the need for defensive modernization. Second, modern natural science establishes a uniform horizon of economic production possibilities. Technology makes possible the limitless accumulation of wealth, and thus the satisfaction of an ever-expanding set of human desires. This process guarantees an increasing homogenization of all human societies, regardless of their historical origins or cultural inheritances.

As will become clear, science for Fukuyama is essentially the economic possibilities held by science. When Fukuyama speaks of science he speaks of what I have termed ‘technology’; that is, the realization of possibilities which only further the current system rather than challenging it. Due to this homogenizing of human societies, Fukuyama argues that science

dictates a horizon of possibilities which human desire then pushes forward. As he argues (131):

It should be evident by now that the Mechanism we have laid out is essentially an economic interpretation of history. The “logic of modern natural science” has no force of its own, apart from the human beings who want to make use of science to conquer nature so as to satisfy their needs, or to secure themselves against dangers. In itself, science (whether in the form of machine production or the rational organization of labour) dictates only a horizon of technological possibilities determined by the basic laws of nature. It is human desire that pushes men to exploit these possibilities: not the desire to satisfy a limited set of “natural” needs, but a highly elastic desire whose own horizon of possibilities is constantly being pushed back.

Fukuyama presents us with a very restricted economic reading of history in that the *idea* of liberal democracy dominates his reading of the past and hence the future. We can see in Fukuyama that the reason of his economy entirely limits what he is willing to concede, to the extent that the empirical content he attempts to use to support his argument ceases to carry weight in the argument itself. In fact, as Derrida (1994:17) argues, Fukuyama reduces the empirical challenges to his economy to mere empiricity, to that which simply happens but bears no effect on the Mechanism of global History. Speaking about Fukuyama’s thesis, Derrida (17) states:

... [A]ccording to a schema that organizes the argumentation of this strange plea from one end to the other, all these cataclysms (terror, oppression, repression, extermination, genocide, and so on), these ‘events’ or these ‘facts’ would belong to empiricity, they would belong to the ‘empirical flow of events in the second half of the century’... they would remain ‘empirical’ phenomena accredited by ‘empirical evidence’... Their accumulation would in no way refute the *ideal* orientation of the greater part of humanity toward liberal democracy. As *such*, as *telos* of a process, this orientation would have the form of an ideal finality. Everything that appears to

contradict it would belong to historical empiricity, however massive and catastrophic and global and multiple and recurrent it might be. (Emphasis in original)

There is, in this sense, an ideological orientation to Fukuyama's thesis, which allows him to hypothesize a process free from the demands of empirical evidence. However, we must not write Fukuyama off as just another rightwing ideologue too quickly. In certain ways, this thesis is popular amongst many proponents as well as critics of global capitalism and the process of globalization. That the world is becoming increasingly homogenized and reduced to a single system is a common critique of globalization. We therefore need to seriously engage with Fukuyama's economy in order to demonstrate the possibilities which the world holds for us. In this sense, we need to look at how Fukuyama treats the empirical.

Fukuyama looks at global history and the current capitalist system in terms which John Urry (2005a:244) has labelled as "reductionist globalization." That is,

... social science has mostly presumed an all-powerful global level or scales as integrated and homogeneous, transforming in linear fashion localities, regions, nation-states, environments and cultures. Globalization (or global capitalism) is the new 'structure', while nations, localities, regions and so on, comprise the new 'agent', to employ conventional social science distinctions but given a global twist. Globalization is often taken to be both the cause and the effect of contemporary processes. The global is a new larger and more powerful 'region' that is able to bend localities, regions, and nation-states, environments and cultures to its mighty will. Many different entities or scales are then reduced to globalization seen as a successful and dominant structure.

In this light, Fukuyama's thesis *sans* Hegel resembles a greater trend in social science bemoaning (or celebrating) the increasing reach of global capital. I must make it clear that in no way do I regard this apparent homogenization of the world as a positive feature of the current system. On the contrary, the increasing reach of capitalism is what I am arguing against. The reduction of everything to the homogenizing demands of the market destroys diversity and the more interesting aspects of human life and thus also divergent possibilities for reacting to changing environments. However, it is important to engage with the

complexity of the empirical world. If we reduce the empiricism of the world to our economies or the reason of our economies we close off any chance for alternative ways of seeing the world. We must always acknowledge that our models are limited and that the world is open. Our way out of conservatism, as I will argue, is by engaging with the empirical. Between our imaginations and reality is a wealth of potential. Therefore, as I will try to show, and in agreement with Urry, globalization and the capitalism that is seen to drive this process can be much more successfully analyzed if it is treated as the complex entity that it is. As Urry (245) states concerning globalization:

Overall, then, there is not so much a reductionist but a complex relationality (or global complexity). This involves a wide array of systems of networked or circulating relationships implicated within different overlapping and increasingly convergent mobile, material worlds or hybrids. The global, then, is comprised of various systems, operating at various levels or scales, and each constitutes the environment for each other. Thus, crisscrossing 'societies' are many other mobile, material systems in complex interconnection with their environments.

Critical Complexity is a tool which aids us in understanding the world in terms of its potentiality rather than as an object without hope. Following Derrida (1994:63) and his idea of developing a 'hauntology' of current capitalism, there is always an excess, there is always, to use the language of Marx, a spectre which escapes from such totalizing assumptions as were made by Fukuyama. These 'spectres', these potentialities, can be realized by engaging with the world; by the interaction between our imaginations and the actual conditions we face in the world.

Fukuyama argues that the empirical history of the world is not what we should concentrate on when developing the thesis that the end of history is upon us. Rather, what is pertinent is the fact that it is the *idea* of liberal democracy which is winning out over other ideologies. In this regard, the actual and ideal, the distinction between the real and the possible, between what is and what could be, is seen as a strict dialectic without excess. There is no excess to this working through of the dialectic. The victory of the idea of liberal democracy wins out over the empirical working through of the contradictions inherent in this empirical process.

However, the relationship between what is and what could be, between the present and the future, is marred by an excess. As I have tried to demonstrate⁶⁶, following in the spirit of deconstruction, time and history are always open; there are always aspects which escape our reading of the actuality of the current situation. As Derrida (1994: 78-79) argues:

If we have been insisting so much since the beginning on the logic of the ghost, it is because it points towards a thinking of the event that necessarily exceeds a binary or dialectical logic, the logic that distinguishes or opposes effectivity or actuality (either present empirical, living –or not) and ideality (regulating or absolute non-presence). This logic of actuality or effectivity seems to be of a limited pertinence.

We cannot simply separate or oppose actuality from ideality because we inhabit the world and our engagement with the world is structured by previous engagements. We cannot easily stand outside the current world and propose an ideology free from an actuality which exists. As I will describe below this apparent limitation is not a weakness, but a strength.

If we follow Derrida and deconstruction, as I have attempted to do in this dissertation, we cannot ascribe to the certainty of this opposition between ideality and actuality. A restricted economy of thought abides by such distinctions; it is built upon strict oppositions. In contrast (94),

[t]o put it in a few words, deconstructive thinking of the trace, of iterability, of prosthetic synthesis, of supplementarity, and so forth goes beyond this opposition, beyond the ontology it presumes. Inscribing the possibility of the reference to the other, and thus of radical alterity and heterogeneity, of *différance*, of technicity and of ideality in the very event of presence, in the presence of the present that it dis-joins a priori in order to make it possible [thus impossible in its identity or its contemporaneity with itself], it does not deprive itself of the means with which to take into account, or to render an account of, the effects of ghosts, of simulacra, of

⁶⁶ See Chapter Five, especially pages 215-225.

“synthetic images,” or even, to put it in terms of the Marxist code, of ideologems, even if these take the novel forms to which modern technology will have given rise.

Fukuyama abides by a certain set of distinctions, a certain logos, in order to develop his theory of the end of History. This is an economy which places ideality as the master of the economy; it is that which structures his thinking of the world. A restricted economy can be seen as abiding strictly by the reason which structures it. It is possible under this reason to comprehensively exclude certain possibilities which contrast with the reason defining the economy. The mechanism which makes this exclusion possible always comes from outside the economy, truth, the idea or fact. In contrast, a general economy is structured by a certain rationality; it does exclude possibilities; however, it is more open to these possibilities diverging from it. A general economy, acknowledging its openness and the exclusions that make it possible, confers much more strength to the content of the economy to give it shape. It is not simply a matter of what the reason of the economy is, different content will demand a different type of reasoning. This is why general complexity argues we cannot simply apply the reason or form of physics universally. There are aspects of the world which cannot be reduced to a simplified physicalist explanation, life, for instance, or societies. A general economy is as much structured by the evidence we provide for an argument as the rationality of that argument. In a certain sense this is to say that the approach of general complexity is a self-critical or self-reflexive position. How can we distinguish between a restricted and a general economy, especially in light of my position that we can only work from a restricted economy? If we are always working within a restricted economy, what then is better or different about the restricted economy of reductionist approaches and the restricted economy of general complexity?

Restricted economies, as I have attempted to show above, attempt to subject a plurality of approaches under a single master or meta-narrative which defines this economy. As I have argued, this is made possible by means of hypothesizing an outside which stands sovereign over the economy and determines its content. As Venn (2005:124) argues:

The danger inherent in the latter [restricted or totalizing theory] is typically expressed in the attempt to integrate a plurality of positions into the singularity of

one overarching theory or concept that would thus give them a transcendent, secret or sacred unity. The role of totalizing theory (and theology, often working together, as in the alliance of neoliberalism and Christian fundamentalism, or in the Talibanization of the political) is thereby privileged and its authority made sovereign, that is, dogmatic and absolute. Opposition to totalizing narratives is informed not just by the refusal of the privileging of epistemology or theology, that is, the determining role granted to the founding concepts of the one sovereign theory whose 'truth' is allowed to ground judgement, but equally by the history of the totalitarian and autocratic roads along which such overarching theories have travelled, with terrifying consequences in terms of political and ethical violences.

We cannot easily determine what is written in the spirit of a restricted economy of analysis and what is written from a general-economy perspective. We can look for certain hallmarks, certain traces, for words such as 'truth' or 'fact' and how they are used to exclude other forms of evidence in contrast to perhaps a more open approach. To give a certain answer would be to fall into the trap of totalizing theory. What this says is that at base, perhaps all that general or Critical Complexity argues for is a certain attitude in our approach to the complexity of the world (Cilliers 2005b). This attitude is reflected in a modesty and carefulness in our approach to the world, not in arrogant assertions which claim to know the 'truth' about the world. However, this does not imply a relativism but rather simply that our statements about the world need to be provisional (260). But this finding should not be seen as trivial. Attitudes and values are not external to the decisions we make. Values and attitudes assist us in, and make possible, decision making. They make our decision making process more efficient. To state that Critical Complexity produces a certain attitude or approach to the world is not to trivialize or to add another dimension to the problems we face. It takes place before those problems are revealed. It acts on a level prior to what we know about the world. In fact, it determines what we know. Our attitude to the world is then reflected in the work we produce; the hallmarks of this attitude are revealed in the style by which we approach problems. This attitude is reflected in a modest approach to the world which always keeps the possibility for revision and change open. As one does not have certain grasp of the future and what may arise, part of the attitude of critical

complexity is to embrace difference as a means to keep open possibilities to react to the unforeseen the world may hold. Furthermore, accepting that our models are limited and built upon exclusions does away with the destructive certainty witnessed in the 20th century as each attempt at radical change in the world must be made carefully and tentatively. However, this does not mean that we shouldn't act, only that we need to develop another ethic of action which keeps in mind the insights offered by critical complexity.

The Conservative Economy

In certain ways, the economy adopted by Fukuyama can be compared to that adopted by Alain Badiou. Both Badiou and Fukuyama assume a homogeneity within the situation that they analyze which does not exist. For Badiou, the relationship between the State and the situation is left unproblematic. That is, Badiou assumes that all States operate in the way he has described and that, therefore, all States are by definition oppressive. This is made possible because Badiou does not acknowledge that play exists. Badiou does not acknowledge that the sets established by the State are appropriated and used by those individuals in the situations in order to further aims which may not be entirely State-based. This is certainly the case in the South African example where the constitution allows for non-state actors to take actions which further their own aims and not those of the State. This was seen in the Treatment Action Campaign's litigation on behalf of HIV-positive people to receive free Anti-Retroviral medication based upon the set of rights enshrined within the constitution. For Badiou the state's classification constitutes an 'either/or' relationship, just as in mathematics where there are different sets which are neatly discrete from one another. The only outside to this economy is the *truth*, which is infinite. When we analyze any complex entity, things are never this neat. It is a weakness of Badiou's to depend upon mathematics as the reason giving his economy coherence. This reliance on mathematics reduces his thinking to a very strict either/or and universalizing logic. In contrast, complexity forces us to acknowledge that the world cannot be reduced to such neatness, especially when we begin to analyze different systems in different contexts.

Both authors, in this sense, do not take local contingencies and contexts into consideration. They both deny the possibility that local actors interpret the processes they are exposed to

and maintain an agency in their relationship to these processes. This is because both Badiou and Fukuyama hypothesize an outside that is universal, which results in local contingencies ceasing to matter. For Badiou, this outside is the 'truth' or the 'generic'; for Fukuyama it is the 'idea' of liberal democracy. In a certain sense, this outside allows both philosophers to work with a closed economy of terms, in that they are not forced to reckon with the relationships inside their economies. That is, the truth or idea allows both philosophers to regard local contingencies as nothing more than minor deviations to a much larger goal, the ideal or truth, for instance. Their economies are entirely determined by the rationality this outside demands; hence, these are restricted economies, as I have defined the term in the first chapter. They operate under the assumption that all that occurs within the empirical realm that challenges the coherence of their economies can be reduced or discarded by means of this hypothetical outside they have established. In this regard, both of these philosophers operate with conservative economies, as they refuse to acknowledge any possibility which may deviate from that economy.

I define a 'conservative' as somebody who only acknowledges that a system can pursue the possibilities that are presented within the economy they are using. That is, a conservative outlook will not grant the possibility of any divergence from the economy of terms it adopts. Incoherence is not acceptable. Such strict reduction is only made possible by hypothesizing an outside, by limiting the economy to 'truths' or to 'facts'. Incoherence is made intolerable as it conflicts with the greater 'truth' of the economy. Without this outside, without this general equivalent, we are forced to acknowledge that our economies are indeed open; that potentialities exist which are both latent and hidden, that, indeed, the future is open because there is nothing to comprehensively falsify these possibilities.

The definition of conservatism I am trying to develop here is not hampered by the popular markers of conservatism so relished by 'liberals'. Religion, sexual preferences and habits, narcotic or alcohol abuse are all superficial indicators of liberalism or conservatism. In the definition I am trying to establish, we cannot easily mark a religious, teetotaler, monogamous, middle-class man as conservative. We have to look at the possibilities they maintain towards keeping the future open. We have as many drunk, sexually liberal and

atheist conservatives as we have liberals. Conservatism is a position closed to alternative futures. By this definition, we can have conservative positions that look toward the future, that adopt science and economics as means for defining this future. It is possible in this regard to look forward to the possibilities of science yet be conservative.

What the future is that conservatism claims a connection to is limited to the possibilities exhibited in the present. Capitalism is the future of the world because it is currently the system which dominates. In a certain sense, the demand for a science and reason which only recognizes the possibilities of the present traps us within the present. So despite the claims for progress and reason, conservatism today works on the principle of a *positive feedback trap*, in that it recognizes and reacts to only those possibilities which suit it. That is “any emergent trait that feeds back positively on its own ‘production’ will be reinforced” (Allen 2000:91). However this feedback does not improve the functioning of the system in its relationship with its environment. A positive feedback trap is narcissistic; it rewards behaviours as measured by the system itself rather than by the effects these changes have on the system’s relationship with its environment. In fact it only allows the system to flourish as it currently is. A positive feedback trap then does not allow a system to react to a changing environment. This is what makes it possible to make such complexity uninformed statements such as ‘we have reached the end of history’ as these statements take into consideration only those possibilities which currently exist. As such, the economy only rewards those behaviours which further propagate the current system without concern for its survival or its environmental sustainability. In this regard, even though the intentions of those operating within this system may be good (e.g. the desire to produce more environmentally-friendly cars to help the planet), to do *something*, may result in unsustainable practices in the larger sphere. The internal environment of the system, being narcissistic, argues that one should buy more environmentally-friendly products rather than arguing for the unsustainability of the consumer system.

The notion of a *general equivalent* is essential to understanding conservative economies as these economies depend upon something which sits within their economy yet which operates as a measure for all others. This function is found in capitalism as *money*, or in the

idea for Fukuyama or in *truths* for Badiou. It implies the possibility that there can be an all-determining factor by which we can measure any action in the world. Yet it does not necessarily have to come from outside the economy. A general equivalent could be open to all, as Badiou's *truth* and Fukuyama's *idea* are. As Goux (1990b:3) has argued:

The general equivalent pertains first of all to money: what is in the beginning simply one commodity among many is placed in an exclusive position, set apart to serve as a unique measure of the values of all other commodities. Comparison (essential to equitable exchange) and the recognition of an abstract value despite perceptible difference institute not simply an equivalence but a privileged, exclusive place, that of the measuring object ...

The general equivalent is then removed from the homogeneity it creates in order to be a measure for such homogeneity. That which cannot be measured in these terms is excluded; it becomes heterogeneous to this economy, any attempt at including it demands that it conform to this reductive model. It is important to note that, although similar, the idea of a general equivalent does not operate in the same manner as reason. Reason, as Derrida defined the term, is a means of managing what to exclude based upon a wager between the calculable and the incalculable. In other words, reason is that mechanism which allows us to decide what we can 'safely' exclude from our economy and what we must include in order for the economy to be coherent. The general equivalent operates dogmatically; it assumes mastery and will thereby include certain facets within an economy, even if these facets create incoherence within the economy. For example, this can be seen in the attempted economical justifications for saving lives. Even though the concept of the economic value of life is incoherent within the human-rights model, economic justifications are often used to justify the rights of those seeking medications. Such was the case for 'justifying' anti-retroviral treatment for HIV in Brazil, for example.

The privileged position which the general equivalent is given in restricted economies points toward another conservative trend we pick up in both Fukuyama and Badiou. That is the conception of an awakening. In both authors we see the necessity emphasized that the populations of the world should awaken, or should have awakened to, the truth. In Badiou,

this awakening is brought about by an event; in Fukuyama it is the realization of ‘the good news’ that liberal democracies have won. This is a product of their closed economies and carries with it a hallmark of right-wing conservatism. As Dahl (1996:26) argues:

The key difference between the leftist and the rightist conceptions of revolution was that while the former called for a change in ‘structure’ – political, economic and social conditions – the latter emphasized the need for a different consciousness, a spiritual reawakening of both heart and mind.

Conservative economies then hold ‘until’-scenarios such as the following in mind: *until* the world reaches the contradictionless state of liberal democracies for Fukuyama or *until* the event reveals the truth for Badiou, it will continue to exist as it stands. “We are waiting for the magic hour of zero, a moment when linear time stops” (Dahl 1996:28) is the thinking. For Badiou the realization of a truth will bring about structural changes, yet he still depends upon this awakening. The necessity of this awakening is once again the result of a closed economy which does not acknowledge play and depends upon an outside or general equivalent to structure it. If these economies were open, there would not be a necessity for this moving to a beyond (assuming it was at all possible) because the traces of this beyond would already exist within the economy. We would then play with these economies, experiment and reveal their openness as a way of allowing new means of behaving in the world. In closed economies, where only possibilities⁶⁷ are acknowledged, proponents are forced to hypothesize an awakening to an outside as they do not see any possibilities to exist within the current economy.

The Real and the Possible

In the last chapter of this dissertation I argued that we need to establish a *telos* for our actions to maintain direction. However, this *telos* is not an end or inevitable product of the present; it is not *teleological*. *Telos*, as I use the term, is simply an imagining of the future on which we can base current decisions. This does not imply that we are inevitably going to, or

⁶⁷ See Chapter two, page 95-104.

must, reach this goal. It is simply a tool to help us make short-term decisions that will diverge from the economy we are labouring under. Therefore, in the previous chapter, I also maintained that we cannot simply follow a set plan to reach this goal. The assumption that we can follow a set plan to reach a goal is a restricted-economic type of thinking which excludes the possibility of chance or the effects of the general economy intruding into the programme of action. So we need to move away from models of thinking which reduce the world to a general equivalent and thus demand linearization in the form of a working out of the idea or the seeing through of a truth. That is, we need to move away from the demand to linearize, to state that if we have this now we simply need to move through these steps in order reach our goal there. In a general economy, we cannot make such linear claims. This is due to the fact that (Poli 2006:75)

[t]he past is what is maximally informative: the actual (internal or external) configuration of the entity presents traces of its past history (better: the entity's past history is retrievable as far as it has left traces in the entity's actual configuration). The future is minimally informative: its actual configuration excludes some of the possible choices, but for the rest almost everything is open.

It is as such that we cannot neatly predict what will happen and therefore our plans are always based on the contingency of the present. It is important to note, though, that this does not mean that we have no idea of the future. We can, based upon following through on the possibilities presented to us by our models, make certain predictions and we can make these predictions quite accurately. This is why it is possible to argue for the sustainability or unsustainability of any system. We are not forsaken, just uncertain. It is important, then, that we develop better models for dealing with uncertainty or better means of engaging with the uncertainty of the future.

Our situation in challenging the current capitalist economy is even more complicated as its hegemony makes it difficult to determine to what extent our decisions and choices are structured by the system under which we labour. It is because of this that I tried to formulate a philosophy of experimentation as a form of praxis. The necessity of this, Skempton (2010:16) describes as follows:

Only praxis can change things. Theoretical contemplation can only operate within the given, without being able to transform it. Imaginary utopias cannot avoid reproducing some of the repressive norms of the societies that reproduce them. A theoretical promulgation of a preordained programme of action would do the same ... This is not to say that theory is necessarily conservative, as there are different ways of 'operating' within the given. Concomitantly, praxis is not a blind and irrationalistic random spontaneity which would change nothing, but a lucidly immanent dismantling and transformation of the given order. The theory inseparable from praxis of a deconstructive 'practical-critical-activity' rigorously analyses and dislocates the instituted conceptual order revealing it to be founded on unsustainable self-contradictory aporias and thus on a non-conceptual force of institution and exclusion.

We need to move away from thinking about praxis as some form of programme, as if we were acting in an environment which does not respond to actions. As Morin (2007) argued, we always work within an ecology which reacts to the actions we take. We need then, as experimentation and deconstruction does, to engage and change with the world around us. We cannot simply state what we are going to do. A plan and a programme are, of course, vital, but we cannot adhere to that programme simply because it provides a sense of certainty and security. As Ferguson (2007:317-318) demonstrates concerning Derrida's work, we cannot abide by the certainty of a linear process:

The Rousseauvian model as it has repeatedly been understood and imitatively applied has yielded the line – what Derrida calls, in *Of Grammatology*, the enigmatic model of the line – of which we might say that the most enigmatic feature is our conviction of its efficacy. Derrida goes on, in that same passage in *Of Grammatology*, to discuss how the 'possibility [of the line] has been structurally bound up with that of economy, of technics and of ideology. This solidarity appears in the process of thesaurization, capitalization, sedentarization, hierarchization, of the formation of ideology by the class that writes or rather commands the scribes.' You will live your life in series ... As an observation about popular culture, Derrida's account provides

as good an explanation as we have for the popularity of advice books that don't so much give instructions as enable readers to follow a line ... Their readers are enchanted by the linearity of the line and the cool seductiveness of its crooning: "Do this and then that and then that and then ..." When we so clearly don't worry about producing results, when we exempt the diet plans from the effective causal schemes that we think we're pursuing by their means, it is hard not to begin to think that we must be enchanted by the line.

It is impossible to give a prescription for overcoming capitalism 'in seven easy steps' precisely because this is the type of thinking that forsakes us to a concern with following rules rather than producing results. This is the model of trends in the world today: buy these sunglasses, those shoes and that car and then you are cool. If we abandon the security provided by the model of the line and accept the radically open nature of the future, we will be left free to pursue alternatives to that provided by our plan. We keep our imaginations and our economies alive by the constant engagement between our plan and the empirical world in which we find our plans acted out.

So the way out is not easy. The fact that we cannot rely upon programmes and formulas, nor universals or generic elements, forces us to be open to other possibilities. This dissertation has argued that the position from which we act is always contingent. At the same time, I have argued for the necessity of producing knowledge through rigorous and scientific means. In this sense I am arguing for a form of critique which agrees with Edward Said (1978:690-691) when he argued that

... if it [criticism] is not to be merely a form of self-validation, real criticism ... must intend knowledge and, what is more, it must attempt to deal with, identify, and produce knowledge as having something to do with will and with reason.

The only way we can move beyond the current restricted economy is if we actively demonstrate that there are more possibilities than are currently allowed and that we argue, in a disciplined and rigorous manner, that the world need not be restricted to that which the capitalist economy deems to be possible. This, in fact, is the only chance we have of establishing an ethics and mode of life which is progressive and life-affirming. If we

constantly challenge the hegemony of the day it keeps possibilities open for divergent ways of thinking and behaving. In this progressive mode we constantly make room for others and ourselves to live in ways which may lead to happier or more fulfilling lives. By showing that alternative ways of life are possible, for instance that we can live lives not dominated by banks and debt we prove that which is deemed impossible possible, and thus keep open possibilities for the production of novelty. As I have tried to illustrate in Chapter Five⁶⁸, being forced to re-assess our history provides us with the youthfulness of rediscovery, of the possibility that the world could be made anew.

The reason of capitalism masquerades a concern for the future as a means to turn a profit in the present. The future is thereby less thought of in popular culture, except in terms of the end, Armageddon, because the reason of capital demands all thought be constrained to the present. The only beyond to this conception is the end. The reduction of a complex world to the needs of economics thereby loses a concern for real possibilities the future may hold. This was what was particularly reprehensible to Bataille, as Richardson (1994: 68) explains:

... [Bataille] therefore stands against any conception of social being that reduces society to its constituent parts. In this respect, the restricted concept of the economy based upon scarcity and the need for accumulation of precious resources is particularly reprehensible because it surrenders the possibilities inherent within society to immediately perceived necessities that are often illusory.

For Bataille, the way out of this restricted economy was to give, to spend, but not in the restricted and wasteful form currently witnessed. Indeed, the environmental and social destruction brought on by capitalism can be seen as a result of its wasteful expenditure and its selfish glorification of the individual ego at the expense of a greater social generosity. Bataille's model was one in which individuals would give as an end rather than as a means to another end, much like laughter as the end of an intellectual activity (Stoekl 2007:29).

⁶⁸ See especially pages 215-225.

There is then no higher goal for Bataille. We should not expend in the name of God or wealth, but simply for the orgiastic joy produced by the expenditure (30):

Bataille's mythical utopia of generosity, if we can call it that, transgresses Sade's rigorously fictional social (de)construction. The activity, the generosity, has no goal. The self spends, it spends itself; its will to spend is an energy that risks its very existence. But the after-effect, if we can call it that, is to open the possibility of a continuity of society: a society not of monads but of selves in contact, in "communication," selves that have broken the law and limits of selfhood, selves opened out and conjoining through wounds ...The after-effect of this movement may be a social construct, a "society," that reaffirms, that opens the possibility of this expenditure, this self-sacrifice. The attainment of this community is not the result of a purposeful generous act; such a thing is inconceivable because generosity by definition is purposeless. It happens, or it doesn't, but the very fact that, according to Bataille at least, it can happen, takes us out of the realm of all-pervasive fictionality and into that of history and politics – bizarre and mythical as they might be.

Bataille's utopia is heterogeneous to current forms of conceiving of community. Instead of developing a programme of action in which individuals are secured a place to belong to, Bataille argues for the necessity to expend oneself to the point of possible self-destruction. In other words, we must expend in ways which expand us as human beings, in ways which open us up to others. By expending energy in art, music, science, cooking or dancing, in any process which pushes the limits of us as individuals, we open ourselves up to the skills and knowledge of others. When we risk pursuing new traces of excess we open our worlds up to the skills of others, we become vulnerable to failure. Yet, we can only pursue this excess if we have developed our art to the point where we realize this excess exists. Beginners always begin with restricted economies. The skilled or advanced know how to use the affordances offered by this excess. If we have an interest in music, for instance, by learning about music and gaining the skills necessary, by pushing ourselves in this non-utilitarian mode of living, we open ourselves up to others, whether in the form of students, members

of a band or as teachers. If we spread ourselves 'thinly', in the mode of keeping up with current fashion, music and trends as is demanded by malls, we close off possible relationships as we have no reason, as equally skilled members, to engage with one another.

This places us in a unique relationship with ontology. We move forward and create new possibilities by not closing our economies off from the excess of possibilities which exist if we were to apply different economies of analysis. The world is not a void in which there is nothing but repetition and laws. Rather, as I have tried to illustrate with the notion of a general economy, the complexity of the world is always open to new possibilities.

Experimentation reveals these possibilities and makes them available to us. Possibilities exist in the engagement with the actual. The complex world presents to us possibilities for pursuing alternatives. Imagination and reality are not neatly separated realms. We develop an imagination by pursuing the limits of the world (Kember2005) precisely because these limits are simultaneously open and closed. That is, sealed in a room, isolated from the real world and allowing our imaginations 'free' to roam will produce little, as we have little to work with (Montouri & Purser 1995). The constraints of the world grant us the ability to imagine, and our imaginations allow us to push these constraints, to open these constraints up and find new ways of dealing with them.

The hypothesis of an ideal or truth, which exists completely independent of the world as we find it today, traps our imaginations to possibilities only found in the present as much as arguing for the ontological as something which does not contain an excess of potentiality which can never be realised in the present. This includes radical critiques of the notions of reality or empiricity as simply the products of frames, a form of solipsism popular with some post-modernists. The world speaks back; we have limits to what we can say about the world and the way we can act in the world, but these limits are what allow our imaginations to flourish. Equally, to concede to the world, to not take action based upon a model of "that is the way the world simply *is*," is also constraining. What we need to do--and Critical Complexity helps us to understand this relation in that it reminds us of the limited set of potentialities which our models present in a world with an excess of potentiality--is to allow

the dynamic between the actual and the possible, the dynamic between what is and what could be, to flourish. As Kember (2005:154) argues concerning the work of Francois Jacob:

The key point for Jacob is not so much to anchor the possible and the actual to demarcated realms such as myth and science, imagination and reality but to highlight the dynamic between them as it operates ... within and across such realms.

We must find tools which help us to keep this dialogue between the actual and the possible open. Critical Complexity, as I have attempted to argue in this dissertation, is one such tool for keeping this dialogue open. If we open up the economies we use to analyze the world, if we adopt the approach of a general rather than restricted economy, if we maintain a modesty in our approach to the world, if we maintain an openness to the complexity of the world in which our imaginations can roam, the possibility for us to act in novel ways remains open. As Bourdieu (1998:128) puts it:

So against the bankers' fatalism, that wants us to believe the world cannot be any different from the way it is – wholly amenable, in other words, to the interests and wishes of bankers – intellectuals, and all others who really care about the good of humanity, should re-establish a utopian thought with scientific backing, both in its aims, which should be compatible with objective trends, and in its means which also have to be scientifically tested.

In other words, we need to develop a system of thinking that engages with the empirical world which is neither positivist nor idealist. The difficulty we face is in keeping the possibilities of the world open, in giving our imaginations space to roam by engaging with the world. This means developing a rigorous and disciplined approach to the world precisely to reveal the richness and relationality that constitutes it. This is what I tried to develop with the idea of experimentation. Experimentation is a means of imagining new worlds whilst working with the conditions of the present. Examples of these approaches can be seen in a recent documentary and academic research by Joana Conill, Manuell Castells and Alex Ruiz (2011) which explores the response of Catalonians to the 2008 economic collapse. This film nicely illustrates much of what I written about in this dissertation as it explores the various small-scale projects in which people have attempted to develop alternative ways of living

and relating to each other. All these projects are realized by means of using existing resources rather than by relying on grand-scale projects or events. These attempts at novel ways of living in the world reflect the potentialities which are unrealised under the current hegemony. This illustrates that through sequences of experimentation with existing resources we can reveal hidden potentialities which would have remained hidden if not for the pursuit of alternative means of engaging with others. None of these projects came about through the realization of the 'truth' but rather through small-scale attempts at changing present conditions and thereby revealed an alternative history of the present, which allows for a different sets of possibilities in the future and novel ways of relating to each other. What these empirical examples demonstrate is that there is enough in the world. We need not wait for an event to allow for change, nor is the end of history upon us. By engaging with the world we keep alternative possibilities alive. As Ernst Bloch (2000) once began his famous book on utopia, so I will end this dissertation. "I am. We are. That is enough. Now we have to start."

References

- Aarn, A. 1961. *The types of folktales: a classification and bibliography*. Translated by Thompson, S. Helsinki: Communications Nr 3.
- Allen, P. 2000. Knowledge, ignorance and learning. *Emergence*, 2(4):78-103.
2001. What is complexity science? Knowledge of the limits to knowledge. *Emergence*, 3(1): 24-42.
- Allen, P; Strathern, M and Baldwin, J.S. 2006. Evolutionary drive: new understandings of change in socio-economic systems. *E:CO*, 8(2): 2-19.
- Althusser, L.1969. *Ideology and ideological state apparatuses (Notes towards an Investigation)*. [Online} Available at: www.marxists.org/reference/archive/althusser/1970/ideology.htm (4 August 2010).
- Ashby, W.R. 1957. *An Introduction to cybernetics*. London: Chapman and Hall Ltd.
- Atlan, H. 1993. *Enlightenment to enlightenment: intercritique of science and myth*. Translated by Schramm, L.J. New York: State University of New York Press.
- Badiou, A. 1999 [1997]. *Deleuze: clamour of Being*. Translated by Burchill, L. USA: University of Minnesota press.
2001. *Ethics: an essay on the understanding of evil*. Translated by Hallward, P. London: Verso.
- 2003 [1997]. *Saint Paul: the foundation of universalism*. Translated by Brassier, R. California: Stanford University Press.
2005. Can change be thought? Interview with Bosteels, B. In *Alain Badiou: Philosophy and its conditions*. New York: SUNY Press.
- 2007a [1972]. *Concept of Model: an introduction to the materialist epistemology of mathematics*. Translated by Frazer, Z.L. Melbourne: Re-press.

- 2007b. *Being and Event*. London: Continuum.
- 2008a. *Conditions*. Translated by Corcoran, S. London: Continuum.
- 2008b. *The Century*. Translated by Toscano, A. Cambridge: Polity.
- 2009a. [1982]. *Theory of the Subject*. Translated by Bosteels, B. New York: Continuum.
- 2009b. *Logics of Worlds: Being and Event 2*. Translated by Toscano, A. London: Continuum.
- Bailey Gill, C. (Editor). 1995. *Bataille: writing the sacred*. London: Routledge.
- Barbieri, M. 2008. Biosemiotics: a new understanding of life. *Naturwissenschaften*, 95:577-599.
- Bataille, G. 1986a. Unknowing: laughter and tears. Translated by Michelson, A. *October: Georges Bataille: Writings on laughter, sacrifice, Nietzsche, unknowing*, 36 (Spring 1986): 89-102.
- 1986b. Unknowing and its consequences. Translated by Michelson, A. *October: Georges Bataille: Writings on laughter, sacrifice, Nietzsche, unknowing*, 36 (Spring 1986): 80-85.
1985. *Visions of excess: selected writings 1927-1939*. Translated by Stoekl, A. Theory and history of literature, Vol. 14. USA: University of Minnesota Press.
- 1988 (1954). *Inner Experience*. Translated by Bodlt, L.E. New York: SUNY Press.
1991. *The accursed share volume 1*. Translated by Hurley, R. USA: Zone Books.
1993. *The accursed share volumes 2 & 3*. Translated by Hurley, R. USA: Zone Books.
1998. *Georges Bataille: essential writings*. Translated by Richardson, M. London: Sage.
- Bateson, G. 2000. *Steps to an ecology of mind*. Chicago: University of Chicago press.

- Bennington, G. 1995. Introduction to economics 1: because the world is round. In *Bataille: writing the sacred*. Edited by Bailey Gill, C. London: Routledge.
- Bloch, E. 2000. *The spirit of utopia*. Translated by Nassar, A.A. Stanford: Stanford University Press.
- Blood, S. 2002. The Poetics of expenditure. *MLN*, 117: 836-857.
- Boldt-Irons, L.A. (Editor) 1995. *On Bataille: critical essays*. New York: State University of New York Press.
- Borgo, D and Goguen, J.2005. Rivers of consciousness: the nonlinear dynamics of free jazz. *Proceedings of IAJE conference*, Long Beach, 5-8 January 2004. California: IAJE.
- Bourdieu. P. 1998. A reasoned utopia and economic fatalism. *New Left Review* 227, January/February 1998: 125-130.
- Byrne, D. 2005. Complexity, configurations and cases. *Theory, Culture and Society*, 22(5): 95-111.
- Ceruti, M, 1994. *Constraints and possibilities: the evolution of knowledge and the knowledge of evolution*. Translated by Montouri, A . Switzerland: Gordon and Breach.
- Chu, D; Strand, R and Fjellan, R. 2003. Theories of complexity: common denominators of complex systems. *Complexity*, 8(3): 19-30.
- Cilliers, P. 1998. *Complexity and postmodernism: understanding complex systems*. London: Routledge.
2000. What can we learn from a theory of complexity? *Emergence*, 2(1):23-33.
2001. Boundaries, hierarchies and networks in complex systems. *International Journal of Innovation Management*, 5(2):135–147.
2002. Why we cannot know complex things completely. *Emergence*, 4(1-2): 77-84.
- 2005a. Knowledge, limits and boundaries. *Futures*, 37: 605-613.

2005b. Complexity, deconstruction and relativism. *Theory, Culture and Society*, 22 (5):255-267.

2010. Difference, identity and complexity: a philosophical analysis. *Philosophy Today*, 54(1):55-65.

Cilliers, P; Human, O & Preiser, R. n.d. *Deconstruction and complexity: a critical economy*. Submitted to *Derrida Today Journal*

Collins English Dictionary. 9th ed. 2006. Glasgow: Harper Collins.

Homage to Catalonia 2. 2011. Producer, Conill, J; Castells, M and Ruiz, A. 2011. Available at: <http://www.homenatgeacatalunyaii.org/en> [DVD]

Culler, J. 2003 (1983). *On deconstruction: theory and criticism after structuralism*. Great Britain: Routledge.

Dahl, G. 1996. Will 'The Other God' fail again? On the possible return of the conservative revolution. *Theory, Culture and Society*, 13(1):25-50.

DeAngelis, D.L; Post, W.M and Travis, C.C. 1986. *Positive feedback in natural systems*. Berlin: Springer-Verlag.

Dekker, S. 2010. *Newton's bastards*. Unpublished paper presented at CSC reading group in Stellenbosch, South Africa

Derrida, J. 1977. *Limited Inc*. Illinois: Northwestern University Press.

1978. *Writing and difference*. Translated by Bass, A. London: Routledge.

1979. The Pargon. *October*, 9: 3-41.

1981 [1972]. *Positions*. Translated by Bass, A. Chicago: The University of Chicago Press.

1982. *Margins of philosophy*. Translated by Bass, A. Chicago: University of Chicago Press.

1989. *Psyche: inventions of the other*. In *Reading De Man reading*. Edited by Waters, L and Godzich, W. USA: University of Minnesota Press.

1992. *Given time: 1. counterfeit money*. Translated by Kamuf, P. Chicago: University of Chicago Press.

1994. *Spectres of Marx: The state of the debt, the work of mourning and the new International*. Translated by Kamuf, P. London: Routledge Classics.

1997 [1974]. *Of grammatology*. Translated by Spivak, G.C . Baltimore: The Johns Hopkins University Press.

2002. *Negotiations: interventions and interviews: 1971-2001*. Translated by Rottenburg, E. California: Stanford University Press.

2004 [1972]. *Dissemination*. London: Continuum.

2005. *Rogues: two essays on reason*. Translated by Brault, PA & Naas, M. California: Stanford University Press.

2007. A certain impossible possibility of saying the event. In *Critical Inquiry*, 33(2):441-461.

Dreyfus, H.L. 1999. *What computers still can't do: a critique of artificial reason*. London: The MIT Press.

Dreyfus, H.L. and Dreyfus, S.E. 1986. *Mind over machine: The power of human intuition and expertise in the era of the computer*. New York: The Free Press.

Durkheim, E. 1982. *The rules of the sociological method and selected texts on sociology and its method*. Translated by Walls, W.D . London: The MacMillan Press.

Eldredge, N. and Gould, S.J. 1972. Punctuated equilibria: an alternative to phyletic graduation. In *Models in Paleobiology*. Edited by Schopf, TJM , San Francisco: Freeman.

Ferguson, F. 2007. Jacques Derrida and the critique of the geometrical mode: the line and the point. *Critical Inquiry*, 33(2): 312-329.

- Feltham, O. 2008. *Alain Badiou: live theory*. London: Continuum.
- Feyerabend, P. 2002 (1972). *Against method*. 3rd edition. London: Verso.
- Flemming, M. 1969. *Introduction to economic analysis*. London: George Allen & Unwin.
- Fodor, J & Lepore, E. 1992. *Holism: a shopper's guide*. Oxford: Blackwell.
- Foucault, M. 2006 [1972]. *History of madness*. Translated by Murphy, J & Khalifa, J. London: Routledge.
- Frazer, Z.L. 2007. Introduction. In *The concept of model: an introduction to the materialist epistemology of mathematics*. Edited by Frazer, Z.L (ed.), Melbourne: Re-press.
- Fukuyama, F. 1992. *The end of history and the last man*. USA: Penguin.
- Gillespie, S. 2008. *The mathematics of novelty: Badiou's minimalist metaphysics*. Melbourne: Re-press.
- Goffman, E. 1974. *Frame analysis: an essay on the organization of Experience*. Massachusetts: Harvard University press.
- Goux, J.J. 1990a. General economics and postmodern capitalism. *Yale French Studies*, 78:206-224.
- 1990b. *Symbolic Economies: after Marx and Freud*. Translated by Gage, J.C. Ithaca: Cornell University Press.
- Gramsci, A. 1973. *Prison notebooks: selection*. London: Lawrence and Wishart.
- Hallward, P. 2001. Introduction. In *Ethics: An Essay on the understanding of evil*. Badiou, A. London: Verso.
2003. *Badiou: A subject to truth*. London: University of Minnesota Press.
- Hans, J.S. 1979. Derrida and freeplay. *MLN* 94(4): 809-826.

Harré, R. 2003. The materiality of instruments in a metaphysics for experiments. In *The philosophy of scientific experimentation*. Edited by Radder, H. USA: University of Pittsburgh Press.

Harvey, I.E. 1986. *Derrida and the economy of différance*. Bloomington: Indiana University Press.

Hayles, K.N. 1994. Boundary disputes: homeostasis, reflexivity, and the foundations of cybernetics. *Configurations* 2(3): 441-467.

Hofstadter, D.R. 1981. Strange attractors: mathematical patterns delicately poised between order and chaos. *Scientific American*. 245: 16-29.

Human, O. 2011. The rings around Jonathan's eyes: HIV/AIDS medicine at the margins of administration. *Medical Anthropology* 30(2): 222-239.

Jackson, M.C. 2003. *Systems thinking: creative Holism for managers*. England: John Wiley and Sons.

Johnson, C. 1993. *System and writing in the philosophy of Jacques Derrida*. Cambridge: Cambridge University Press.

Juarrero, A. 1999. *Dynamics in action: intentional behaviour as a complex system*. England: MIT Press.

Kember, S. 2005. Metamorphoses: the myth of evolutionary possibility. *Theory, Culture and Society*. 22(1): 153-171.

Kendell, S. 2001. Introduction. In *The Unfinished System of Nonknowledge*. Translated by Kendell, M and Kendell, S. London: University of Minnesota Press.

Knyazeva, H. 2004. The complex nonlinear thinking: Edgar Morin's demand of reform of thinking and the contribution of synergetics. *World Futures*, 60: 389-405.

Laclau, E. 2005. *On populist reason*. London: Verso.

Lash, S. 2007. Capitalism and metaphysics. *Theory, Culture and Society* 24(5): 1-26.

Laszlo, E. 1996. *The systems view of the world: A holistic vision for our time*. USA: Hampton press.

Lecerle, J.J. 1999. Cantor, Lacan, Mao, Becket, meme combat: the philosophy of Alain Badiou. *Radical Philosophy* 93: 6-14.

Levi-Strauss, C. 1969 [1949]. *The elementary structures of kinship*. Edited by Needham, R. Boston: Beacon Press.

1966. *The savage mind*. USA: University of Chicago Press.

Lyotrad, J.F. 1984. *The postmodern condition: a report on knowledge*. Manchester: Manchester University press.

Marcuse, H. 2007 [1964]. *One dimensional man: studies in the ideology of advanced industrial society*. London: Routledge Classics.

Marx, K. 1977. *A contribution to the critique of political economy*. Moscow: Progress.

Meyer, B. 2010. *Representations of female sexuality in fairytale illustrations and text, with specific reference to the Brothers Grimm's The Handless Maiden*. MPhil Thesis. University of Stellenbosch, South Africa.

Midgley, G. (Editor). 2003. *System thinking* (Vol 1-4). London: Sage.

Mol, A & Law, J. 2002. Complexities: an Introduction. In *Complexities: social studies of knowledge practices*. Edited by Mol, A & Law, J. Durham: Duke University press.

Montuori, A. 2004. Edgar Morin: a partial introduction. *World Futures* 60(5): 349-355.

Montouri, A. & Purser, R.E. 1995. Deconstructing the lone genius myth: toward a contextual view of creativity. *Journal of Humanistic Psychology*. Summer 1995 35(3): 69-112.

Morin, E. 1992. *Method: towards a study of humankind. Volume 1: the nature of nature*. Translated by Bélanger, J.L.R. New York: Peter Lang.

2007. 'Restricted Complexity, General Complexity'. In *Worldviews, science and us: philosophy and complexity*. Gershenson,C; Aerts, D and Edmonds, B. London: World Scientific Publishing.

Plotnitsky, A. 1994. *Complementarity: anti-epistemology after Bohr and Derrida*. USA: Duke University Press.

2001. Effects of the unknowable: materialism, epistemology, and the general economy of the body in Bataille. *Parallax* 7(1):16- 28.

Poli, R. nd. The Complexity of Anticipation. Available at:
http://robertopoli.co.cc/?page_id=12

2006. The ontology of what is not there. In *Essays in Logic and Ontology, Poznań studies in the philosophy of the sciences and the humanities*, vol. 91: 73-80. Amsterdam: Rodopi.

2008. Anticipation and conflicts. Available at: <http://robertopoli.co.cc>.

2010. The many aspects of anticipation. *Foresight* 12(3): 7-17.

Radder, H. 2009. The philosophy of scientific experimentation: a review. *Automated Experimentation* 1(2): 2-9.

Rasch, W. 1991. Theories of complexity, complexities of theory: Habermas, Luhmann and the study of social systems. *German Studies Review* 14(1):65-83.

Rhodes, C and Pullen, A. 2010. Editorial: Neophilia and organization. *Culture and Organization* 16(1): 1-6.

Richardson, M.1994. *Georges Bataille*. London: Routledge.

Said, E.W. 1978. The problem of textuality: two exemplary positions. *Critical Inquiry* 4(4): 673-714.

Saussure, F.de.1983. *Course in general linguistics*. Translated by Harris, R. London: Duckworth.

Scott, D. 2004. *Conscripts of modernity: The tragedy of colonial enlightenment*. London: Duke University Press.

Skempton, S. 2010. Derrida's praxis- philosophy. Paper presented at the 2nd Derrida Today Conference. Goodenough Club, London. July 19- 21 2010

Smith, A. 1977 [1776]. *An inquiry into the nature and causes of the wealth of nations*. Chicago: University of Chicago Press.

Smith, J. & Jenks, C. 2006. *Qualitative complexity: ecology, cognitive processes and the re-emergence of structure in post-humanist social theory*. London: Routledge.

Stoekl, A. 1985. Introduction. In *Visions of Excess: Selected writings, 1927-1939*. Edited by Allan Stoekl. Theory and History of literature, Vol. 14. USA: University of Minnesota Press.

2007. *Bataille's Peak: Energy, religion, and postsustainability*. London: University of Minnesota Press.

Wallerstein, I. 1974. *The modern world-system: Capitalist agriculture and the origins of the European world-economy in the sixteenth century*. New York: Academic press.

1980. *The modern world-system II: Mercantilism and the consolidation of the European world-economy, 1600-1750*. New York: Academic press.

1989. *The modern world-system III: The second era of great expansion of the capitalist world-economy, 1730-1840s*. New York: Academic press.

Weinberg, S. 1998. Newtonianism, reductionism and the art of congressional testimony. In *Emergence: contemporary readings in philosophy and science* Edited by Bedau, M.A and Humphreys, P. London: The MIT Press.

Ulanowicz, R.E. 2009. *A Third Window: Natural life beyond Newton and Darwin*. Pennsylvania: Templeton Foundation Press.

Urry, J. 2005a. The Complexities of the global. *Theory, Culture and Society*. 22(5): 235-254.

2005b. The complexity turn. *Theory, Culture and Society* 22(1).

Venn, C. 2005. Appreciations: Jacques Derrida 1930-2004. *Theory, Culture and Society* 22(2): 121-129.

Yalcintas, A. 2006. Historical small events and the eclipse of Utopia: perspectives on path dependence in human thought. *Culture, Theory and Critique* 47(1): 53-70.

Žižek, S. 2003. Hallward's fidelity to the Badiou Event. In *Badiou: A subject to Truth*. Hallward, P. London: University of Minnesota Press.