

Paul Cilliers
Rika Preiser
Editors

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Complexity, Difference and Identity

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COMPLEXITY, DIFFERENCE AND IDENTITY

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Complexity, Difference and Identity

An Ethical Perspective

edited by

PAUL CILLIERS

Department of Philosophy & Centre for Studies in Complexity,
University of Stellenbosch, South Africa

and

RIKA PREISER

Department of Philosophy & Centre for Studies in Complexity,
University of Stellenbosch, South Africa

 Springer

Editors

Paul Cilliers
Stellenbosch University
Dept. Philosophy
7602 Stellenbosch
South Africa
fpc@sun.ac.za

Rika Preiser
Stellenbosch University
Dept. Philosophy
7602 Stellenbosch
South Africa
rika@sun.ac.za

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Preface

Why Difference

The notion of Complexity has of course received attention for as long as we have been trying to understand the world, but, at least in the common perception, it has been identified as a distinct “discipline” for about two decades. Much has been said and done before, especially in chaos theory, but it was the publication of the two “popular” books by Waldrop (1993)¹ and Lewin (1993),² both entitled *Complexity*, which sparked wide-ranging interest in the field. This interest is, if anything, still growing. Serious discussions about the problems surrounding complex phenomena take place in virtually every discipline.

Despite, or maybe because of, this widespread interest, it remains a question whether one can refer to “Complexity” as a discipline. Is there a central body of ideas which form the core of some commonly agreed upon research programme? When a new paradigm is being established, it is normal that there will be lots of competing ideas and differences of opinion. After two decades of intensive and worldwide research one would expect, at least with reference to the development of science as described by Kuhn and Lakatos, that some convergence would have taken place. This may have happened in some small and technical sub-paradigms of Complexity, but for the “discipline” as a whole, this has not happened. It seems to be stuck in a pre-revolutionary phase. The differences do not want to go away.

The differences within the discipline manifest themselves in a number of distinctions. A persistent one is the distinction between “hard” and “soft” complexity. “Hard” refers to work done in the natural sciences: mathematical and computational models like cellular automata, genetic algorithms and Boolean nets, and the attempts to apply these models to specific problems. “Soft” refers to the work done in the social sciences, mainly in sociology, anthropology and organisational science – philosophy remained curiously aloof for a long time. The label “soft” was later replaced with the label “metaphorical”. The suggestion was that hard complexity was doing real work, and that others where interpreting these findings in a social context in a way obviously lacking the rigour of the natural sciences.

¹Waldrop, M. 1993. *Complexity*. New York: Simon & Schuster.

²Lewin, R. 1993. *Complexity*. Chicago: University of Chicago Press.

This kind of distinction between the natural and the social sciences is nothing new, and one solution to the problem may be to simply maintain this distinction. The result would be two separate “disciplines” of complexity, each with their own core of ideas. This may even be what we have at the moment, but it is not a good solution. The reasons for this, we would argue, lies in the nature of complexity itself. Complexity sits at the interface between the two worlds and allows them to interpenetrate in a way which leaves neither untouched. Two aspects of this interpenetration are relevant for our book.

The first concerns the truly trans-disciplinary nature of ideas from complexity. If one sees disciplines as hermetically sealed entities (as Luhmann does perhaps), then the transfer of ideas will never go beyond the metaphorical. What happens in one discipline will inspire ideas in others, but each discipline will have to work out the details in terms of its own internal procedures. Complexity, we think, allows for stronger interaction. It provides a language which allows different disciplines to *transform* each other. To explicate this point we can use another distinction between two kinds of complexity theory, namely what Morin (2007)³ calls “general” and “restricted” complexity. Restricted complexity is manifested in the scientific activities taking place in a well-defined context. This is the nitty-gritty work necessary to solve specific problems. Morin argues that although this kind of approach is required, it does not escape from a positivist and reductionist paradigm. It can therefore only deal with technical issues in an instrumental way. The “general” approach to complexity is vastly more difficult. Since it involves self-reflection, emergence, multiple non-linear feedback, even contradictions, general complexity cannot be caught in a formal language – as a matter of fact, we do not really have a language which can deal with general complexity. We can only approximate an understanding of such complexity by employing a plurality of descriptions. Trans-disciplinary activities are our only option.

The point to underscore here is that this does not hold for complexities in the social sphere only, but for all complex phenomena. If we talk about interaction between the two worlds, it does not mean that only the hard sciences generate the true insights which others can use (in a metaphorical way). Insights from the humanities can also transform the hard sciences. The emerging discipline of Biosemiotics is a telling example. Unfortunately there is, historically speaking, an epistemological “arrow” from hard to soft which will take some time to reverse. Although this book does not address issues in the natural sciences explicitly, it certainly embraces this “general” understanding of trans-disciplinarity. Thus the plurality of discourse to be found here.

The second, and perhaps the central implication of recognising the complex interpenetration of various disciplines concerns the role of ethics and normativity. One can argue for the all-pervasiveness of the ethical in the following way: Since we

³Morin, E. 2007. Restricted complexity, general complexity. In C. Gershenson, D. Aerts, B. Edmonds (eds.), *Worldviews, sciences and us – Philosophy and complexity*. Singapore: World Scientific Publishing Co.

cannot deal with complexity *in* its complexity, we have to reduce that complexity when we try to understand it. There is no objective way to do this reduction – that would imply a meta-position which *can* deal with complexity fully – thus we cannot reduce our encounters with complexity to calculations. There are always choices, and therefore always normative elements involved.⁴ What we call the “ethics of complexity” is again not something only at stake when we study the human, it affects our understanding of *all* complex phenomena.

A concern with the normative and with the ethical is central to this book. Ethics, however, is not seen as a list of pre-packaged strategies or standardised codes of conduct we as humans and organisations are obliged to adhere to. On the contrary, it is seen as those values and insights that arise as a result of our practices and encounters with difference. Ethics is that which constitutes us in the first place. This argument is developed in many of the chapters, and is unpacked in some detail in the final integrating chapter. It is built around the insight that our identity as individuals, or groups of individuals, is not an essential characteristic, it is a dynamic property which is constituted relationally. It emerges through the interaction of difference. Difference and asymmetry is necessary for the richness of a complex system, it is the most important resource of a complex system, not a problem to be solved. It is this constitutive play of difference which embodies the ethical. The book therefore concerns itself with the following questions: What is the importance of difference? How does identity arise from it and how do we understand identity? Why and how is this process ethical? What are the implications for the world we live in? How will these insights enrich the theory and practice of Business Ethics?

If we cannot understand complex phenomena without coming to grips with the notion of difference, we have to say a little more about how this term is understood. It is clear that there are a number of “differences” at stake in the way in which we approach the study of Complexity. Even if this plurality is required, it is not such a use of the notion which is of central concern in the book. What is primarily at stake are all the differences and diversities in the relationships between the components which constitute a complex system. It is in this sense that difference is a necessary condition for Complexity. Difference is, moreover, just as important in the interaction *amongst* systems, or between a system and its environment. In this case individual systems can be seen as the constitutive components of a larger system. Following this logic, we can extend the understanding of constitutive (micro) differences within singular systems like individuals to the understanding of larger groups like organisations.

We have therefore chosen to investigate the *applications* of the insights developed in the initial sections of the book in the world of organisations, again with specific reference to the ethics through which organisations are constituted. This gives a whole new spin to the notion “Business Ethics”. We are convinced that our

⁴For more detail see: Cilliers, P. 2004. Complexity, ethics and justice. *Journal for Humanistics (Tijdschrift voor Humanistiek)*, 5 (19): 19–26. and Cilliers, P. 2005. Knowledge, limits and boundaries. *Futures*. 37: 605–613.

future is determined almost exclusively by what we do collectively, in other words by the organisations we belong to. In order to think about a better future, we have to transform the behaviour of the organisations which have the most power. This transformation can only take place if we understand these organisations and their members in a sophisticated way. It does not help to assume that we know what they are, and then to develop simplified strategies to “apply” to them. The understanding we require starts by acknowledging that we are dealing with complex phenomena, and that this introduces a whole array of problems which cannot be dealt with through conventional means. We have to come to grips with the constitutive nature of the ethics of complexity.

This is why we compiled a book which is neither purely theory, nor one which can fit into the conventional world of applied ethics. It tries to demonstrate how these two issues are intertwined. The individual chapters may lean more to the one side than the other, but never exclusively. We also hope that the book will be read with this in mind, even if it is structured to progress from the more theoretical to the more practical.

The first section, *Complexity*, attempts to establish a key understanding of the “logic” of difference in complex systems, with specific reference to the idea of the self. This understanding is generated through an engagement with the basic characteristics of complexity. The chapter by De Villiers-Botha and Cilliers deals with the formation of identity, but it also introduces the general characteristics of complex systems, and can therefore serve as a good starting point for those who wish to deepen their understanding of Complexity. The first chapter by Cilliers introduces the philosophical significance of the notion “difference”, and serves as reference for several of the other chapters in the book.

In the second section, the idea of *Difference* is developed further in a more applied sense. Allen *et al* provide examples of the development of diversity through biological and social examples whereas Byrne develops a methodology for dealing with complex social phenomena in a way which respects difference. The third section analyses, on a mainly theoretical level, the emergence of *Identity* through the play of difference, albeit from two quite different perspectives. Grebe develops his position from the perspective of critical theory (focussing mainly on Adorno and Derrida) whilst Collier works within a more formal, analytic frame. We find these different approaches important and enlightening in the way their conclusions enrich each other.

The fourth section has a focus on the *Ethics of Complexity*. Wicomb investigates the problem of difference and identity in the context of larger (ethnic) groups and the relevance thereof for human rights issues. She argues that even ethnic identity cannot be understood in essential terms and shows how it is constituted and developed through diversity. Kunneman develops an insightful critique of the ethics of Complexity. For him this ethics is somewhat lean. Its consequences need to be fleshed out in more detail in order to address problems on the human scale. He argues that insights from a sophisticated hermeneutics (specifically those developed by Ricoeur) can provide narratives which enrich our humanity.

The final section of the book investigates the *Consequences* of an ethics of Complexity in specific contexts. Woermann is concerned with a detailed analysis of the implications of Complexity for Business Ethics in general. Müller also focuses on organisations, with specific reference to the issue of Trust. Swilling *et al* understand cities as complex systems and provide a detailed case study of the way in which an understanding of difference enriches the way in which we should engage with cities in the context of development. Praeg also engages with the developing world. He describes the different systems of differentiation required in order to develop an ethical understanding of Africa in a globalised world.

All the chapters contain much more than what is alluded to in this brief introduction. Although they explore related themes, each one has its own riches to unpack. Before the reader embarks on this, four final comments about the contents of the book can be made. Firstly, some understanding of Complexity is generally presupposed. For those with less background in the field, we recommend starting with the first two chapters. Secondly, many of the papers are influenced by post-structuralism. The basic arguments can, nevertheless, usually be adequately motivated from the perspective of Complexity alone. We hope that one of the contributions of the book will be to enrich what we find as the very fruitful conversation between Complexity and post-structural thought. In the third place, some of the papers engage with issues concerning the South African context. These examples are ultimately not local at all, but used to say something of what it is to be human for all of us. It is this concern with humanity which served as the motivation for the book in the first place.

In the fourth place it is important to understand that this is not a handbook in applied ethics. It is an exploration of the implications of accepting that the world is complex. In this respect, its primary aim is to enrich our understanding of such systems, including businesses and organisations. These insights undoubtedly have practical implications, and many of them are addressed. Nevertheless, it is important to realise that we should not move to the “practical” too quickly. A deep understanding based on a thoroughgoing critical reflection is a pre-requisite for effective action in the world. We hope this book will not only contribute to such an understanding, but also lead to more responsible behaviour in a world which has reduced the notion of responsibility to a much too narrow and instrumental concept.

On the 9th and 10th of June 2005, a workshop on Critical Issues in Complexity was held at the Stellenbosch Institute for Advanced Study (STIAS). The aim of this workshop was to offer a number of leading scholars in the field, the opportunity to reflect on important themes in the field which should receive attention. “Difference and Identity” was identified as one of them and led to the initiation of a research project. This book is the result. The continued support of STIAS for this project is gratefully acknowledged, as well as a generous award by the Ernest Oppenheimer Trust.

Stellenbosch, South Africa

Paul Cilliers
Rika Preiser

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Contributors

Peter M. Allen School of Management, Cranfield University, Beds UK,
p.m.allen@cranfield.ac.uk

David Byrne School of Applied Social Sciences, Durham University, Durham,
England, dave.byrne@durham.ac.uk

Paul Cilliers Department of Philosophy, Centre for Studies in Complexity,
University of Stellenbosch, Stellenbosch 7602, South Africa, fpc@sun.ac.za

John Collier School of Philosophy and Ethics, University of KwaZulu-Natal,
Durban, KwaZulu-Natal, South Africa, collierj@ukzn.ac.za

Tanya de Villiers-Botha Department of Philosophy, University of Stellenbosch,
Stellenbosch 7602, South Africa, tdev@sun.ac.za

Eduard Grebe Centre for Social Science Research, University of Cape Town,
Cape Town, South Africa, eduard.grebe@uct.ac.za

Amélie Guyot Sustainability Institute, Stellenbosch University, Stellenbosch,
South Africa

Harry Kunneman University for Humanistics, Utrecht, Netherlands,
h.kunneman@planet.nl

Hans Müller Centre for Knowledge Dynamics and Decision Making,
Stellenbosch University, Stellenbosch, South Africa, hpm@sun.ac.za

Leonhard Praeg Department of Political and International Studies, Rhodes
University, Grahamstown, South Africa, L.Praeg@ru.ac.za

Rika Preiser Department of Philosophy, Centre for Studies in Complexity,
University of Stellenbosch, Stellenbosch, South Africa, rika@sun.ac.za

Pierre Roux Sustainability Institute, Stellenbosch University, Stellenbosch,
South Africa

Mark Strathern Cranfield School of Management, Cranfield University,
Cranfield, England

Mark Swilling Sustainability Institute, Stellenbosch University, Stellenbosch, South Africa, swilling@sun.ac.za

Liz Varga Cranfield School of Management, Cranfield University, Cranfield, England

Wilmien Wicomb Legal Resources Centre, Cape Town, South Africa, wilmien.wicomb@gmail.com

Minka Woermann Department of Philosophy, University of Stellenbosch, Stellenbosch, South Africa, minka@sun.ac.za

Part I

Complexity

Chapter 1

Difference, Identity and Complexity

Paul Cilliers

Introduction

If the world we lived in, or more specifically, if the organisations we work in and with, were mostly symmetrical and homogenous, there would be a number of advantages. It would be stable and its behaviour would be predictable. It would also be possible to model them accurately, and thus to understand them fundamentally. “Knowing” them would lead to the possibility of controlling them. The problem is, such a world or organisation could only be a very uninteresting one. Living things and complex social systems are by their nature heterogeneous and asymmetrical. Complex systems are made up of a multitude of non-linear interactions which cannot be simplified (Cilliers 1998: 2–7). They are unpredictable and full of surprises. There are serious difficulties involved in understanding, let alone modelling, them.

But perhaps the complex behaviour of such systems is only epiphenomenal. Perhaps, underneath the multifaceted surface, there are general principles to which the seemingly contingent behaviour could be reduced. This would allow us to model the essential behaviour of these systems, and not be distracted by the contingencies. Finding these internal regularities was the hope of what could generically be called Modernism (Bauman 1992). This strategy was governed by the ideal to find universal, ahistorical and non-contingent principles which would describe complex systems accurately and thus allow for prediction and control.

If such an ideal was the guiding principle, diversity would be a problem. It would complicate our understanding and interfere with our planning. It would confront us with the surface of things, not with their essence. It will force us to deal with a countless numbers of factors, too many to handle. It will be argued, however, that such an understanding of diversity is not only misguided, but dangerous. Diversity is not a problem to be solved, it is the precondition for the existence of any interesting behaviour.

P. Cilliers (✉)

Department of Philosophy, Centre for Studies in Complexity, University of Stellenbosch,
Stellenbosch 7602, South Africa
e-mail: fpc@sun.ac.za

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The notion of “diversity” is used here in the context of post-structural theories of meaning and of the characteristics of complex systems. These contexts will be unpacked in more detail later, but the general argument is that in a post-structural understanding of language, meaning results from the *differences* between all the signs in the system. Sameness does not generate meaning. The richness of the system is a function of the differences it contains. Similarly, complex systems are made up of the non-linear interactions amongst large amounts of elements which are not necessarily complex in themselves. These interactions produce the “emergent” properties of the system, the higher order properties which make the system what it is. A good example is the way in which consciousness emerges from the interaction between neurons in the brain. For this to take place, there must be a large number of neurons which are non-linearly and asymmetrically connected. A small amount of homogenous neurons will just not do it.⁵

This “necessity” of diversity can also be explained by looking at an organisation. To be able to fulfil its role and to cope with a challenging and changing environment, an organisation needs diverse resources. The functions of the different components of the organisation are not simply interchangeable. The crane operator cannot do the job of the financial manager and vice versa. The more complex the role of the organisation is, the more diversity is required to perform it.

The problem to be addressed should now begin to emerge. For an organisation to have vital and dynamic properties, it needs a lot of diversity. If, however, we want to describe, understand, control or manage such an organisation, the diversity becomes a problem. We cannot reduce rich, nonlinear difference to simple descriptions, but we need descriptions nonetheless. It was the hope of Modernism that such simplified descriptions – descriptions which are accurate and contains the essence of the matter – could be found. The poststructural argument, and the argument from a critical understanding of complexity is that such reductive strategies are seriously flawed.⁶

What then can we say about difference and diversity? Are we reduced to waving our hands and saying “things are very complex”, or are we doomed to use flawed reductionist descriptions? This paper attempts to move the argument beyond this dichotomy through a philosophical analysis of the notions of “difference” and “diversity” – notions which are, in this context, used somewhat interchangeably. It will be argued that difference is not merely one of the characteristics of such

⁵Some knowledge of complexity thinking and of the earlier work of Derrida is required for the argument in this paper. Brief expositions will be provided, but for a detailed discussion of the characteristics of complex systems see Cilliers (1998). This text also develops the similarities between a critical theory of complexity and deconstruction exhaustively.

⁶It should be made explicit that not all forms of complexity theory share this critical sensitivity. Edgar Morin (2007) distinguishes between what he calls “restricted” and “general” theories of complexity. Restricted complexity acknowledges the relational nature of complex systems, but hopes that essential characteristics of these systems can be positively identified. This return to reduction is often encountered in forms of complexity theory which developed out of chaos theory. In particular, this includes many of the traditional positions on complexity associated with the Santa Fé Institute.

systems, but a precondition for their existence. The relationships of differences *constitute* complex systems. These differences are not only the observable differences on the emergent level of the system, but also, and perhaps primarily, all the small differences which provide the means for emergence to take place, that what Derrida calls “traces”.⁷ It will be argued that the identity (or identities) of the system is a result of these differences and interconnectivities, not something which precedes them. Although the notions of difference and identity are intertwined in an inextricable way (as will be argued below), one could say, as a kind of non-foundational ontology, that there are really only differences. Such an analysis will show that we can give much more content to the problem of diversity, that there is more to say about it than to simply acknowledge it.

There is an important reason why one should not *commence* the investigation of difference on the emergent level of higher order phenomena in social systems. The problem is that the differences on this level are already the result of smaller differences. Focusing on the large scale differences, like, for example, differences in race or gender, tends to underestimate the extent to which these are already divided categories. A superficial understanding of difference can thus lead to an eradication of differences *within* a certain group (see Sypnowich 1993). An over-emphasis on difference and otherness, on the social level, may paradoxically result in a ploy to protect us from the different by generating a discourse which emphasises an incommensurability between heterogeneous groups. To understand the “logic” of difference, we must first look at difference as a necessary condition for meaning at a “low” level, i.e. look at how the conditions for meaning and emergent characteristics are constituted.

Although this analysis is a philosophical one, one which engages with the “logic” of the notion of difference on a general and abstract level, the issues discussed here (the relational nature of difference, the necessity for the play of difference to be bounded and the relationships between difference and identity) have important implications for large scale systems like social systems and organisations. These implications will be examined in the concluding parts of this paper.

The “Logic” of Difference

In order to understand the general significance and implications of the notion “difference” in the context of complex systems, we need to develop a more nuanced “theory of difference”. This will be developed in three steps.

⁷“Nothing, either in the elements or in the system, is anywhere simply present or absent. There are only, everywhere differences and traces of traces”. (Derrida 1981: 26, see Cilliers 1998: 41–45 for a detailed discussion).

The Necessity of Difference

In the first place, the argument that difference is essential has to be substantiated. To merely insist on difference, as if it is necessary in some metaphysical way, is not sufficient. Such an argument can be built around the claim that difference is a necessary condition for *meaning*. For something to be recognizable as being that something, it must be possible to differentiate it from something else. Sameness (not to be confused with the notion of “identity” as it is used here) refers to an absence of difference. The more differences there are, the more distinctions can be made. Meaning is the result of these distinctions, of the play of differences.

In a philosophical context, this argument is best made using Saussure’s theory of language as a system of differences (Saussure 1974). Meaning, for Saussure, is not the result of an essential characteristic of a sign, i.e. some a priori identity, but of the relationships between all the signs in the system. To explain the way in which these relationships work, Saussure uses the example of a train, say the “8.25 Geneva-to-Paris” (108). Although the train itself, its personnel and its passengers are different every day, the “8.25 Geneva-to-Paris” maintains its identity by its relationships to the “8.40 Geneva-to-Dijon”, the “12.00 Geneva-to-Paris”, or the “0.38 Bombay-to-Madras” for that matter, irrespective of whether it leaves at 8.25 exactly, or reaches Paris in the same state as when it left. The train does not have any identity by itself, its identity is determined relationally. Similarly, a linguistic sign derives its meaning from its relationships to other signs. The signifier “brown” does not have a meaning because it can be identified with a concept that unambiguously contains the essence of “brownness”, but because it can be differentiated from the signifiers “black”, “blue”, “grey”, “hard”, “train”, etc. The sign is determined by the way in which it *differs* from all the other signs in the system – “in language there are only differences without positive terms” (120). The sign is a node in a network of relationships. The relationships are not determined by the sign, rather, the sign is the *result* of interacting relationships.

Similarly, Freud, in his early neurological model of the brain, also described neural interaction as a system of differences (Freud 1950). Freud’s model consists of neurons that interact through pathways which channel the energy in the brain. This energy comes from both outside the body (perception), and from internal sources. Pathways resist the flow of energy, unless it is used often. The characteristics of the brain are determined by the various patterns of energy flowing through it. Two important aspects of this model deserve attention. In the first place the role of *memory* should be underscored. “Memory” refers here to the physical condition of the brain: which pathways are breached (“facilitated”) and which are not. Memory is not a cognitive function performed by a conscious subject, but an unconscious characteristic of the brain (which is an organ, part of the body). Memory is the substrate that sets up the conditions for all the functions of the brain.

The second important characteristic of Freud’s model concerns the role of the neurons. No neuron is significant by itself. Memory does not reside *in* any neuron, but in the relationship between neurons. This relationship, Freud (1950: 300) declares, is one of *differences*. What we have therefore, is a model structurally equivalent to Saussure’s model of language: a system of differences.

Such a system of differences can also be used to describe how a complex system works (Cilliers 1998: 1–7). Such systems consist of a number of components which interact non-linearly. The complexity of the system does not reside in the components, but is a result of these interactions. If these interactions were ordered, homogenous and symmetrical, no interesting behaviour would arise. There has to be asymmetry. This is another way of stating that the relationships between the components are relationships of difference. Space does not allow for a complete development of a theory of complex systems from a post-structural perspective (see *op cit*), but for one important remark. If one sticks to a purely structuralist (i.e. Saussurian) understanding of complex systems, one ends up with a model which argues that things may be relational and very complicated, but if you work hard enough, with clever enough techniques, you can figure the system out – essentially the general structuralist claim. This understanding would correspond to what Morin calls “restricted complexity” (see footnote 2). A “general” understanding of complexity requires a more reflexive and transformative approach. It is exactly in this respect that deconstruction makes a vital contribution. It allows us to describe the *dynamic* nature of the play of differences.

Derrida’s deconstruction of the structuralism of Saussure centres around the concepts of *trace* and *différance*. The concept *trace* can be used to refer to the individual differences between the components in a system. Each trace has no meaning in itself, but through their interaction the meaning of a sign emerges. The notion of *différance* can be used to describe the *dynamics* of complex networks. The analogy works in the following way: the interaction between a number of components in the system generates a pattern of activity, traces of which reverberate through the whole network. Since there are loops in the network, these traces are reflected back after a certain propagation delay (deferral), and alter (make different) the activity that has produced them in the first place. Since complex systems always contain loops and feedback, delayed self-altering will be one of the network’s characteristics; a characteristic described quite precisely by Derrida’s notion of *différance* – a concept that indicates difference and defERENCE, that is suspended between the passive and active modes, and that has both spatial and temporal components (Derrida 1982: 1–27). Difference is therefore not simply the static differences between components in the system; they are constantly transformed.

This basic, dynamic model, can also be used to generate an understanding of how an individual comes to be (develops its identity) in a network of relationships with other individuals, or how an organisation comes to be as a result of the relationships between its internal components as well as the relationships with other organisations from which it differs.⁸ The identity or “meaning” of an organisation is not pre-given or complete. It develops and transforms as a result of the play of differences which constitutes it. We will return to this issue later.

The argument thus far can be summarised in what one could call the law of meaning: *without difference there can be no meaning*. If we accept this, it would follow that if we want a rich understanding of the world and of each other (i.e. a

⁸These arguments are detailed in Cilliers (1998). See especially Chapter 7.

lot of meaning), if we want resilient and dynamic organisations, then we need an abundance of differences.

The point to be emphasised is that an abundance of difference is not a convenience, it is a necessity. Complex systems cannot be what they are without it, and we cannot understand them without the making of profuse distinctions. Since the interactions in such systems are non-linear, their complexity cannot be reduced. The removal of relationships, i.e. the reduction of difference in the system, will distort our understanding of such systems. A failure to acknowledge this leads to error, an error which is not only technical, but also ethical. When we pretend that we can understand or model a complex system in its full complexity, such pretence is not only hubristic, it is also a violation of that which is being modelled, especially when we are dealing with human or social systems. Trying to understand complex systems involves a certain modesty.⁹

However, if we *merely* insist on an abundance of difference which is irreducible, we are not saying enough about how complexity is constituted. A *limitless* play of difference does not, as some postmodernists seem to argue, lead to the generation of meaning, nor can a complex system *function* without being constrained in some way. On the epistemological level (our descriptions of complex systems) as well as the ontological level (the functioning of complex systems in the real world), boundaries are required. This boundedness can be examined from two perspectives. The first will be referred to as the *economy* of difference. The second is concerned with the inescapable presence of some kind of identity. These two perspectives will be now examined further.

The Economy of Difference

Since the interactions in a complex system involve all the components, and since complex systems are open systems, the play of difference is potentially infinite. If this was actually the case, no meaning could emerge since the deferral would be absolute. Real systems, however, are bounded. There has to be a boundary in order to be able to identify a system as this system and not another. The boundary is thus constitutive of the system, it enables the system to be. It does not simply close the system off, it facilitates interactions between the system and its environment.¹⁰ However, if the characteristics of a system are a result of the interplay of differences, these relationships cannot continue to reverberate in an unconstrained way. At some stage they have to be reflected back upon themselves in order to consolidate into a

⁹A complex system is constituted through the relationships of differences. These relationships are non-linear. If the complexity is reduced, i.e. some of the difference is removed, it distorts our understanding of the system. Nevertheless, we have to reduce the complexity in order to be able to say something about the system at all. Because of the non-linearity, the magnitude of the resulting distortion cannot be predicted. Since we know this beforehand, we have to accept responsibility for these distortions. See Cilliers (2005) for a detailed discussion of this point.

¹⁰The nature of boundaries and the way in which they are enabling is discussed in Cilliers (2001).

pattern which constitutes some aspect of the system.¹¹ The constraints introduced by the boundary leads to what one could call an “economy” of difference. This notion needs to be unpacked in the context of complex systems.

A system does not have the capacity to be complex just because it is multidimensional or has many degrees of freedom. Complexity does not arise as a result of a chaotic free-play with infinite possibilities. Complex systems have *structure*. It is the structure of a complex system which enables it to behave in complex ways. If there is too little structure, i.e. many degrees of freedom, the system can behave more freely, but this freedom leads to activities which are meaningless, random or chaotic. The mere “capacity” of the system (i.e. the total amount of degrees of freedom available if the system was not restricted in any way) does not serve as a meaningful indicator of the complexity of the system. Complex behaviour is only possible when the behaviour of the system is constrained (Cilliers 2005). On the other hand, a fully constrained system has no capacity for complex behaviour either. This claim is not quite the same as saying that complexity exists somewhere on the edge between order and chaos.¹² A wide range of structured systems displays complex behaviour. Complexity is not simply a function of plenitude, but of interchange and relationships.

In order to say more about the nature of these relationships of difference and how they constrain and are constrained in a certain economy, it is necessary to realise that “difference” does not mean “opposition”. To say that A differs from B is not to say that B is not-A. There may be a lot of similarities between A and B, they may differ only in some small aspect. As a matter of fact, there has to be at least some common element between them (this point will be returned to below). Furthermore, is it possible to even talk about the difference between *only* two things? As long as we deal with just the two things, the difference between them is totally unconstrained. A differs from B in *everything* that B is not, and vice versa. The difference between them is boundless, or to put it differently, it would not be possible to give *content* to the difference between A and B if the two are the only entities taken into consideration. Difference is not a function of a binary opposition, but of a network of relationships framed in a certain way. A collection of differences is required to narrow down what is completely open to something that has an identifiable meaning. This is vital for the way in which the components of the system acquire meaning.¹³

¹¹A related argument is provided by Anthony Wilden (1984: 155–195) when he distinguishes, in a fundamental way, between the digital and the analogue. For a collection of “differences” to become a “distinction”, i.e. a carrier of meaning, it must become a “discrete element with well-defined boundaries” (169).

¹²This point can also be elaborated from the perspective of self-organised criticality. This perspective helps to resist a too close association between chaos theory and structured complexity. A non-linear interaction between a few components can produce chaos, but “chaos theory cannot explain complexity” (Bak 1996: 31). A complex network of interactions will constrain chaotic behaviour.

¹³A has meaning because of its relationship with B and C and D and F. Nevertheless, this list cannot be infinite.

Of the many relationships of difference associated with a component of the system, think of a specific one.¹⁴ This relationship does not *determine* the meaning, or part of the meaning in any way. Since it is a relationship of difference, it can only minutely indicate part of what the meaning is not, and thereby place a little *constraint* on the meaning of the relevant component. The meaning of a component at a specific point in the history of the system is therefore that which satisfies all the current constraints placed on it through all its relationships in the current context, i.e. as determined by the current boundary.¹⁵

It should be clear now that difference does not generate meaning in an unlimited way. Meaning is only possible when there are many differences interacting by constraining each other. Put differently, meaning is only possible if difference is confined. Again, this does not mean that we can now pin down the meaning of a component in the system. If there are only few relationships associated with a certain component, the associated meaning will have many degrees of freedom. If there are more relationships involved, the meaning is more richly constrained. In other words, if the set of relationships of difference associated with a certain component is underdetermined, the meaning of that component will be fairly arbitrary; it will be more open but somewhat lean. If the set of relationships is complex, the meaning of the component will be much more unique, but, and this is the crux of the matter, it will simultaneously be more rich and varied. The fewer constraints, the more possibility, but possibility left empty. The more constraints, the better we can get at the meaning, but the more bountiful it is. To take a social example: the life of a hermit can be fairly unconstrained, but it is difficult to give much social significance to her existence. It will be much easier to say something about the significance of somebody with a rich set of social interactions, interactions that will at the same time constrain that person's life. Possibility can only be actualised in the presence of constraints.

This "economy" of difference should be understood in the Hegelian sense. There is constant interaction between a bounded number of components. It is useful though to distinguish between a "restricted" and "general" economy (Derrida 2003), just as we can distinguish between a restricted and a general complexity. The fact that the system is bounded does not mean that the components involved remain the same – in the sense that the components do not change and in the sense that the same set of components remain involved. This would be a restricted economy. From the perspective of a general economy one would underscore the dynamic nature of the system, which includes that elements can and will change and that the boundary can shift. The boundary will also never be complete or exact. It will contain folds and gaps, elements which enable the transformation (or deconstruction) of the system.

¹⁴Such "one", specific relationship of the many relationships associated with a component is what I understand under Derrida's notion of the "trace". It is, of course, not possible to give conceptual content to a trace, despite the fact that there "is" nothing but traces. See footnote 1.

¹⁵It should be kept in mind that the constrained system of differences does not generate meaning in a static way, but that it is a dynamic process which could be described through the notion of *différance*.

The notions of constraints and boundaries remain indispensable nonetheless, even if these notions include the working of *différance*.

The necessity of constraining structures is highlighted from the perspective of deconstruction in a different way as well. For a text to have meaning at all, it must be *deconstructable* (see e.g. Caputo 1996). The constraining hierarchies in a text are necessary, even if the meaning which arises is not final. It is the occasional dream of deconstruction, Derrida claims in the Afterword to *Limited Inc* (Derrida 1988a: 136) to make an attempt to incorporate the absolutely complete context, and thus arrive at an exact meaning. However, this is not possible. Only a limited context allows for meaning, and because of these limits, the meaning can be deconstructed. "If things were simple" he says, "word would have gotten around" (119).

The argument thus far can be summarised by saying that although difference should be proliferated, it cannot be done in an unbounded fashion. There is a certain *economy* involved in the process whereby differences generate meaning in a complex system. This economy imposes limits on difference. We can, therefore, reformulate the "law" of meaning stated above: *without constrained difference there can be no meaning*. This now leads to a discussion of the relationship between the different and the same.

Difference and Identity

"Were one to write a general philosophical history of the concept of difference, one might be tempted to view it as the progressive emancipation of difference from identity" writes Gasché (1994: 82).¹⁶ He continues: "If at the dawn of philosophical thinking difference scarcely left the shadow of identity, identity now barely shows its face" (op cit). Some of the reasons for this are not difficult to understand. The postmodern flight from universal principles and unifying meta-narratives resulted in a strong emphasis being placed on the notions of difference and the other. To a large extent this criticism of modernity and the enlightenment is correct (see Sypnovich 1993), but to think that one could talk about difference without involving the singular or the same, is equally problematic.

The mistaken opposition between the notions of difference and identity is a further result of confusing the notion of "difference" with that of "opposition", i.e. to

¹⁶The word "identity" has a number of meanings, often shading into each other. It can refer to something singular (oneness) or to things which cannot be distinguished and thus are "identical". The notion of "personal identity" has to do with what makes a person identifiable as that person, and not another, with what it is which "makes up" a person (or an institution). In the critical theory of the Frankfurt School, identity thinking refers to the mistake which "aims at the subsumption of all particular objects under general definitions and/or a unitary system of concepts" (Held 1980: 202). Particular identities are sacrificed in favour of a universal identity. "Identity thinking" is therefore another example of a modernist resistance to difference. In this paper the term is used to indicate, on the one hand, the complexly interwoven relationship between the different and the same and, on the other, the construction of (personal) identity through relationships of difference.

think that to say A is different from B, is the same as saying A is *not* B (see above). In order to recognise a *difference* between A and B, they must in the first place be identifiable *as* A and *as* B (in their singularity), and secondly, they must, even if only slightly, share something that makes a comparison possible (there must be some element of identity). Moreover, as has already been argued, it is not really possible to talk of the difference between A and B if A and B are the only two things under consideration. The difference between apples and pears can only be understood in terms of what they share, e.g. that both are fruit. One can talk of the difference between apples and motorbikes, but this difference is so open that it will only have meaning in terms of a number of other factors that form part of the context of the comparison – perhaps that apples cannot be used for transport, or that motorbikes are not nutritious. To attempt to relate two things that are radically or absolutely “other” is something that cannot be done; the comparison will be totally meaningless in the full sense of the word. If we encounter something *totally* alien we will not be able to recognise it. Gasché (1994: 2) formulates this point in the following way:

... any encounter worth the name presupposes not only encountering the Other in all his or her singularity, but recognizing this singularity in the first place. Paradoxically, even the most radical singularity must, in order for it to be recognized for what it is, have an addressable identity, guaranteed by a set of universal rules that, by the same token, inscribes its singularity within a communal history, tradition, and problematics.

Let us consider briefly what the implications of this understanding of difference are for our relationship with the other in the social sphere.¹⁷ The realisation that differences are constitutive leads to the recognition of the importance of difference. If, as a result of this insight, the notion of difference is absolutised, it may lead one to think that *no* relationship between the self and the other is possible; that the other is absolutely other. However, in order to be able to recognise the other as other at all, some form of identity between the self and the other is required. As a matter of fact, the claim that the other is completely unknowable is nothing but an inverted insistence on *pure* identity – in the sense that the other has an identity which is not breached by any difference – in the same way that relativism is an inverted form of foundationalism.¹⁸ Does the insistence that the other must always already share something with the self before it can be recognised as other imply that the other can be fully appropriated? Not at all. There is an irreducible difference between the self and the other that will always complicate the relationship. But we are not lost in space. The moment we can recognise the other as other, there must already be a minimal form of identity (some small similarity) to make the recognition possible. The relationship will remain complex, and merely acknowledging this does not

¹⁷For a different, more political discussion of this issue in the context of Eastern Europe, see Matušík (1995).

¹⁸This insight can be used to criticise Levinas’ understanding of the Other as something absolute, as opposed to Derrida’s understanding of the other as something more richly differentiated. See Cornell (1992: 68–72).

guarantee that the other will not be violated. It merely provides a point of departure from where a relationship, even if it is a tenuous one, with the other can be attempted. Gasché again:

... if the singularity of the Other requires a minimal universality to be itself and to be recognized as such, then the Other's point of view, or private fantasies, become repeatable, risk being lost by becoming entirely mine. Yet without this risk no justice can possibly be done to the singular; without it, the very possibility of something singular would remain irretrievably lost. (16)

To summarise this section: meaningful relationships in a complex system develop through relationships of difference, not through opposition. For meaning to become possible, some form of similarity must already be there. This does not imply that the meaning can be fixed or exhausted in any way. The element of identity *inaugurates* the play of difference on the one hand, while on the other, it is the result of that very process. We cannot think identity without also thinking difference. We can therefore add a further refinement to the “law” of meaning: *without constrained difference and repeatable identity, there can be no meaning*.¹⁹ If we now want to talk of identity in the sense of “personal identity”, or the identity of an institution or system, the same law holds.

Complex Identity

After discussing some of the general philosophical aspects of difference on a micro level, an attempt can be made to see how they translate to the macro level of persons and groups of persons. The argument is based on the assumption that the general characteristics of complex systems (that they are constituted through non-linear interaction, that they operate in a state far from equilibrium, that they have the capacity to self-organize, that they have emergent properties, etc.) are applicable to systems on different scales. Although these characteristics do not allow us to pin down the behaviour of any specific system at a specific time, they do help us to understand some of the dynamics of complex systems, as well as providing reasons for why it is so difficult to model them.

The basic claim is the following: if, generally speaking, the meaning and function of a component in a complex system is the result of relationships of difference, this would also hold for social systems. In this context then, the notion “meaning” can be used to indicate the identity of the system. Thus, the identity of a person or an institution is the result of constrained differences. Identity is an emergent property resulting from the diversity in the system, and not something which exists in an a priori fashion. It is therefore a mistake to think of difference as something that exists in the difference between already established identities. Identity and difference mutually imply each other in an open dialectics.

¹⁹This position can also be formulated in terms of Derrida's notion of “iterability”. See *Signature, Event Context* in Derrida (1988a).

Such a position allows us to say a few things about social identity. In the first place, such an identity could be constructed from relatively few components, but it will then be somewhat lean and shallow. The more diversity there is involved in the construction of the identity, the richer it will be. A “rich” identity does not imply that such an identity is open, general or vague. This is exactly the nature of a *lean* identity. A rich identity is also richly constrained. It is more specific, and at the same time more nuanced. Take the example of a self-reliant minority. Such groups may tend to derive their identity by recycling internal, well-established differences, and by excluding outside influence. This may easily result in a “lean” and static identity. If, however, a minority finds its identity in a rich interaction with other groupings, such an identity will not only be richer and more specific, but it will also be more resilient.

More specifically, if identity is the result of diversity, and if differences are constantly being moved around in feedback loops and imposed from outside the system as the context changes, then identity is by definition a dynamic concept. Identity can, of course, be quite stable, but if it gets locked in (by ignoring, for example, important changes in the environment, or by deciding not to interact with other systems), such a fixed identity will most definitely be detrimental to the system. The fixing of relationships within a system, and the closing down of its borders, will introduce a rigidity which leads to senescence or pathology. At the same time, this does not mean that the identity of a system should change indiscriminately. Even if identity is dynamic, there should be an appropriate tempo of change. It is not possible to provide general guidelines to what this tempo should be since it will differ in different contexts. There is, however, a flag to be waved at this point: many analyses of complex dynamic systems in the social sphere tend to emphasise adaptability, and therefore argue for rapid change. It could be argued that, as a generalisation, this is wrong. In order to maintain any identity whatsoever, and not to merely reflect its environment, a system must change at a slower rate than its environment.²⁰ It can do this, and still cope with a changing environment – or rather, cope with it better – only if it has an abundance of richly constrained diversity.

This insight can be expanded by what Peter Allen (2001) calls the “law of excess diversity”. A system should not only have the “requisite variety” it needs to cope with its environment (Ashby’s law), it should have *more* variety. Excess diversity in the system allows the system to cope with novel features in the environment without losing its identity – as long as one remembers that identity is now a dynamic concept which is subject to change. What is more, if a system has more diversity than it needs in order to merely cope with its environment, it can experiment internally with alternative possibilities. The capability to experiment may just be another word for being creative. Thus viability, resilience, even survival, are notions intimately linked with the idea of creativity.

²⁰These ideas are developed in Cilliers (2006).

Difference, Organisation and Organisations

It is important to reiterate that the constrained play of differences is not simply one of the activities of the system, but that it constitutes the system. A meaningful way to look at the play of difference is to see it as the way in which the system is *organised*. The relationships constituting the system are not random or chaotic, they are structured. The complexity of the system is not simply a function of the interactions between many components, but of their organisation.²¹ The fact that some form of structure is necessary does not imply that the organisation of a system is ever static or complete, even if the organisation was initially determined from the outside. The play of difference leads to constant transformation of the relationships in the system.

This process of transformation can be fruitfully understood through the notion of deconstruction. Deconstruction never implies the destruction of structure, but the replacement of one structure with another, which can in turn be deconstructed. Deconstruction is also not an action performed on a system where the deconstructor is active and the system is passive; the process is suspended between active and passive. Interventions from the outside enter into the play of differences always already at work in the system. Derrida (1988b) sometimes refers to deconstruction as a characteristic of the system itself: *it* deconstructs.

We should, therefore, understand the organisation of the system as simultaneously something stable and something ready for change. It is this double movement which allows the system to maintain and develop its identity in a dynamic way. This understanding should also influence the way in which we think of organisations. Some of the implications, incorporating insights from the rest of the paper and with reference to more detailed discussions, are summarised in the following points:

1. Differences within the organisation should be seen as a resource. It is not possible to predict when a certain difference, previously seen as unimportant, may become vital.
2. The identity of an organisation is the dynamic result of the differences at work in the organisation and of the way in which they interact with the environment. This identity is intimately related with the generation of meaning, and not with pre-determined functions or definitions. It should be stable, i.e. it should resist some external influences, but at the same time it should transform (deconstruct) in order to remain vital. There is no objective way of calculating the tempo of change since both the organisation and its environment are irreducibly contingent (Cilliers 2006).
3. Organisations are not chaotic things. They need structure in order to be able to behave interestingly. The constraints necessary for this should be seen as

²¹The source of this organisation is a complex issue beyond the scope of our discussion here. Although some systems have a certain organisation imposed on them, complex systems can also develop their structure through processes of self-organisation and evolution, independently of an external designer.

enabling. At the same time, these constraints should be deconstructed continuously if they are to remain meaningful. The argument for the constrained play of difference is not argument for rigid control or for maintaining restrictive structures. The fact that some structure is necessary does not imply that all structures are good (Cilliers 2001).

4. If the organisation is seen as a complex system, every aspect of it contains normative elements. Ethics is not only something the organisation “does”, the organisation is *constituted* through normative processes. This is a result of the non-linear play of differences which cannot be reduced to a final or objective description. Which differences are allowed to flourish, how much structure is required, how the identity of the organisation is conceived, these are all issues which cannot be reduced to calculation. They rely on judgement and choice. An organisation does not simply *make* choices, it *is* its choices (Cilliers 2004).

The argument that an organisation is constituted through constrained difference also has implications for how one should manage a complex organisation. The elements which comprise the organisation should have a certain amount of freedom. This will enable the organisation to develop new differences, and to adapt to changes in the environment. Components of the organisation should also have a space in which to experiment, even if such experiments are not yet demanded by the environment. This will allow the development of “excess” difference which is an investment in the future of the organisation. At the same time, however, this freedom cannot be absolute, it has to be dynamically constrained. To find the balance between freedom and constraint is the role of the manager. If the management is too rigid, it will restrict the play of difference which will result in a loss of meaningful identity and capacity. If the management is purely *laissez-faire*, the play of difference will be directionless. An organisation does not thrive on chaos as such.

The responsible manager is one who can identify which structures and constraints are enabling. These structures, nevertheless, do not arise *simply* as an act of management. They are systemic properties. Management should be sensitive to the conditions from which meaningful structure could emerge. A certain structure allows a certain pattern of meanings. Such structures need to be continually deconstructed, i.e. replaced with structures which are in turn deconstructable, for the organisation to remain a dynamic entity. The translation of the points argued for in this paper into more specific strategies in organisational theory is a task left to specialists in that field.

Conclusions

The argument in this chapter is primarily one which resists an interpretation of deconstruction, and a post-structural understanding of difference, as an absolute free-play. Deconstruction acknowledges the inevitability of structure, and of its transformation. This “double movement” should be central when we think

of institutions and organisations. We cannot do without them, but we should be radically critical of what they should be and become.

If the upshot of all this is that diversity should be fostered, is this a process without risk? Certainly not. There may be certain differences we want to resist. We would not want to condone racism, for example, just because it constitutes a difference. The fact of the matter is that we can resist something like racism much more effectively from a richly nuanced position, i.e. a position informed by difference, than by simply rejecting it. The difference we want to reject must be subjected to the play of difference in such a way that a resilient resistance to it can be developed. Critique and dismissal is not the same thing. The way in which we conceive of differences and structures will determine the nature of our institutions, and thus of the world we live in.

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Chapter 2

The Complex “I”: The Formation of Identity in Complex Systems

Tanya de Villiers-Botha and Paul Cilliers

Who Am “I”?

Theories of the human subject (or self) have a long history in philosophy. In essence, such theories are an attempt to answer the kinds of questions we may have about ourselves: Who and what am I? Who and what are human beings? Where do I stop and where does the world begin? Our answers to these questions may determine how we think about ourselves, our neighbours, our enemies, people in general and even animals. The answers may also determine our ethics. After all, the justification for treating someone in a specific way often boils down to who or what we think they are, and who or what we think we are. Of course, the “we” that we are talking about here does not only refer to individuals, but can also refer to any instance where groups of people are identified as wholes, including organizations.

Traditionally, the self has been thought of as fixed, continuous, and indivisible – that clear-cut and intimately known essence that makes me “me” and accompanies me throughout my life. Our characterisation and understanding of the self inevitably changes with time, following changing fads, changing theories, and changing norms. One of the most influential views of the self that we have inherited is the Enlightenment conception of the irreducible, rational agent who, upon the rational assessment of a given situation, his own needs and desires and the available options, acts in a judicious manner to achieve an optimum outcome. If the actions of the agent in question turn out to be less than optimal, the assumption is made that something is amiss with the agent’s judgement and assessment of the situation – he did not act rationally. Of course, the Enlightenment ideal of the purely rational agent is a fantasy. Today, thanks to theorists like Freud, we are quite used to the idea that there are factors other than our rational self-interest driving our decisions and

T. de Villiers-Botha (✉)
Department of Philosophy, University of Stellenbosch, Stellenbosch 7602, South Africa
e-mail: tdev@sun.ac.za

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actions. We understand that factors that could be termed thoroughly “irrational” also drive our actions – subconscious, psychological, illogical factors that range from basic biological drives, to unfettered and ill-advised individual ambition, to undue influence from a master manipulator. This insight has been incorporated particularly successfully into one area of the business world in a drive to manipulate and exploit our irrational desires and quirks – advertising. One would be hard pressed to think of an advertisement that appeals to our rational selves only. However, there are other areas of the business world where the self (as an individual or an organization) is still primarily regarded as a fixed essence characterised by rationality and logical self-assessment; some economic theories comes to mind here. Even where this characterisation of the self is recognised as a caricature, it is assumed that the model of the rational agent is at the very least a fair approximation of the actions of participants in the economic context as such, irrespective of any less-than-rational proclivities in their personal capacity. Moreover, as an extension of this assumption, the actions of corporations as a whole are seen as rational in that they are based on the cumulative effects of the “business-related”, rational actions of the individuals that make up the corporation. However, we have to ask ourselves the question: is assuming a rational economic agent, even while acknowledging that that one is working with an idealised model, justified? Even more prosaically, is it wise? As the reader may have guessed, our answer in this regard will be “no”, or, more accurately, a qualified “no”.

Naturally, the foregoing description of economic theory and related theories is partly a caricature in itself. Today, many theories relating to economic and business practices, including ethical practices, do take a more nuanced view of what drives “agents” whether they be investors, customers, or companies. However, it is the contention here that in the business world, the Enlightenment’s ideal conception of the self still predominates. The psychological and practical factors that complicate this picture are seen as difficulties or obstacles that need to be factored into, and accounted for in, a realistic economic theory, business strategies, and ethical guidelines. Needless to say, we should not lose sight of the fact that any attempt to define the self will necessarily result in an abstraction. In fact, describing or demarcating the self is always a matter of narrative. It consists of the selection or recognition in a given context of certain aspects that make up oneself (or someone else) and the omission of others, which may seem less relevant in that context. As shall be argued here, this constructed quality of the subject is an inevitable and even necessary aspect of the self that has important implications for the way that we understand both ourselves and other people. By making use of complexity theory, it will be argued that the self has to be understood relationally in a system of differences, and the implications of this contention will be developed.

The view taken in this chapter, therefore, is that before we can develop a truly useful theory of business ethics, we have to re-evaluate our, perhaps implicit, assumptions about the most important aspect of any ethical theory – the ethical subject. Any ethical theory that is based on an idealised conception of “the self” is doomed to failure. Furthermore, our conception of the self is fundamentally a philosophical matter; philosophical hypotheses have always formed the basis of

how we think about what makes us human, and we often inherit and perpetuate these hypotheses for as long as they remain useful, or until better alternatives are found. The position being developed here is that the hypothesis of a complex self is such a “better alternative”. By way of introduction to the argument, a few traditional approaches to the self will be discussed. Thereafter, a detailed description of how complexity theory allows us to develop a more realistic conception of the self follows. Finally, some of the ethical implications of a complex model of the self are discussed. In essence, the main objective of this chapter is to develop a complexity-based model of the self. The task of incorporating this model into Business Ethics proper is left to other contributing authors in this volume (cf. Woermann’s discussion in Chapter 9 of this volume).

The Cartesian Standard

One of the most influential theories of the self remains that of Descartes. His argument rests on the claim that the only thing of which anyone can be certain is the mind and its ability to think – a capacity that operates independently of the senses and of emotions. Descartes’ argument represents one of the dominant paradigms in the discourse on the subject – the idea that “I” am that which I can experience through introspection. In the final instance, this argument is based on my identity/self as something that is “the same” – all selves are the same; they are that which makes us essentially human.

In keeping with the emerging tradition of his day, Descartes wanted to discover “only one thing that is certain and indubitable” (Descartes 1978: 85), something that Toulmin (1990: 14–20) refers to as the “primitive elements in experience”, available to any reflexive thinker in all cultures at all times. Descartes and his successors were concerned with developing a formal theory of the subject, one with universal validity. The assumption of universality makes it unproblematic for him to start with his own existence as paradigm example – existence would be a universal attribute of all selves, “certain and indubitable”. Yet, he is not entirely clear on what his universal self entails:

But what is a man? Shall I say a rational animal? Assuredly not; for it would be necessary forthwith to inquire into what is meant by animal, and what by rational, and thus, from a single question, I should insensibly glide into others, and these more difficult than the first; nor do I now possess enough of leisure to warrant me in wasting my time amid subtleties of this sort. I prefer here to attend to the thoughts that sprung up of themselves in my mind, and were inspired by my own nature alone, when I applied myself to the consideration of what I was (Descartes 1978: 86–87).

The Enlightenment ideal consists partly in framing questions in a purely “rational” manner that would render them independent of context. The results of these “rational” arguments could then be applied in other contexts as is (Toulmin 1990: 21–24). For Descartes, it is perfectly logical to focus only on those thoughts that are “inherent to his own nature” and hence “do not have their origin in anything other than his own mind” – only these thoughts would be independent of context.

His conception of the self is that of an essential mind, able to register (albeit with a degree of suspicion) and act upon the world, but not a mind *formed* by the world. For Descartes, the self is a timeless, permanent structure that does not change in a contingent world. The constitution of his mind is not even dependent on the body in which it resides. Indeed, it possesses independent faculties that are capable of being deceived by the rest of his body, especially his senses and imaginings.²²

The mind is not initially aware of its essential nature and only becomes aware of its susceptibility to deception upon reflecting on its own nature. It has to be “restrained within the limits of truth.”²³ For Descartes, “mental” life encompasses rational calculation, intuitive ideas, intellectual deliberations and sensory inputs – the subject cannot accept responsibility for the emotions that interfere with or influence these calculations and inferences (Toulmin 1990: 40).

The mind’s essence is its ability to think, a fixed and universal attribute. This essence is inherent to the mind and sufficient to know it with.²⁴ From here, it is not difficult to see that Descartes’ thought leads to a solipsism. An individual is trapped inside his own head and reflects upon images of the external world that reaches his mind. The accounts of other people cannot be trusted or taken into consideration in forming a cognitive picture of the world. Descartes, however, does not satisfactorily explain how it is possible for thoughts not to be inspired by anything beyond his own nature, to “spring up by themselves” in his mind, unless one is inclined to accept his recourse to the existence of God and to interpreting all our manifestly accurate perceptions as proceeding from Him. Other than presupposing the existence of God as “A Perfect Being”, where does Descartes’ own nature come from? How can his “true nature” exist in complete isolation from the environment in which he finds himself?

²²Descartes insists that the imagination and the senses do not belong to the mind (intellect) and cannot comprehend the world correctly:

.... it is now manifest to me that bodies themselves are not properly perceived by the senses nor by the faculty of imagination, but by the intellect alone; and since they are not perceived because they are seen and touched, but only because they are understood [or rightly comprehended by thought], I readily discover that there is nothing more clearly apprehended than my own mind (Descartes 1978: 94).

²³Descartes paints a picture of a mind which is naturally wilful and wayward and which needs to be constrained:

“But I see clearly what is the state of the case. My mind is apt to wonder, and will not yet submit to be restrained within the limits of truth. Let us therefore leave the mind to itself once more, and, according to it every kind of liberty [permit it to consider the objects that appear to it from without], in order that, having afterwards withdrawn from it from these gently and opportunely [and fixed it on the consideration of its being and properties it finds in itself], it may then be the more easily controlled” (Descartes 1978: 90).

²⁴In fact, the world and the rest of the body can be disregarded as superfluous and cumbersome:

“And there are besides so many other things in the mind itself that contribute to the illustration of its nature, that those dependent on the body, to which I have here referred, scarcely merit to be taken into account” (Descartes 1978: 94).

Zygmunt Bauman’s (1992: xvii) description of modernity as “a long march to prison” can conceivably be applied to the Cartesian understanding of the subject. Bauman asserts that the modernist approach to the world arose from the (shocking) realisation that there is no order *inherent* to the world, that everything is contingent. In order for events to be regular, repeatable and predictable (i.e. independent of context) order needs to be *imposed* onto the chaotic natural world. The same goes for the subject. Descartes wants to know what about himself is certain, indubitable, universal and timeless. In order for him to reach his answer he has to disregard “subtleties”; he has to become measurable, containable and knowable. Bauman asserts that modernity managed to order the world by “obsessively legislating, defining, structuring, segregating, classifying, recording and universalising” (xiv) so that it could reflect universal and absolute standards of truth. Descartes’ treatment of the subject also incorporates this strategy of structuring, classifying and universalising. He insists on elucidating the nature of the essential mind independently from the contingencies that the corporeal body is subject to. His attempt to impose order onto the mind – to show that the mind/self is the same for everyone – that which we encounter through introspection – leads directly to the dichotomy between mind and body and to the severing of the relationship between self and the world. This view on the self is more than a little restrictive; we are trapped in the prisons of our skulls. The Cartesian meta-narrative of the self leads us to disregard much of what it means to be human in the world. It also leads us to undervalue the relationships between ourselves and the world, and the relationship between selves. At the heart of this formal approach lays an insensitivity to the way in which the subject is constituted through ethical and political interaction. This issue will receive more attention in the final section, but let us first briefly examine a more contemporary and contrasting view, that of Sartre. This view appears to stress difference, instead of arguing for the essential, universal nature of the self. For Sartre, the self is constructed rather than deduced.

The Existential Self

The Sartrean view on the self is one in which “we will to exist at the same time as we fashion our image” (Sartre 1946: 29) and he rejects a universal human essence. But does this view escape the idea of the subject as an autonomous entity, an essential unity which ultimately has the ability to determine what it wants to be? Sartre declares his position as follows:

Man is nothing else but that which he makes of himself . . . [he] is, before all else, something which propels itself toward a future and is aware that it is doing so. . . [b]efore that projection of the self nothing exists; not even in the heaven of intelligence: man will only attain existence when he is what he purposes to be (Sartre 1946: 28).

Thus, we are not all essentially the same – the mind/self that makes us quintessentially human is as different as we want it to be.

Whilst the idea of freedom from determinism – including the fact that the ultimate responsibility for what man is lies with man – is an attractive one, it is not

altogether certain that this ultimate freedom is possible. The ability to choose your own image projection of self presupposes an autonomous “you” that can be distinguished over and above existence in a contingent world. This would compel Sartre to say that a person can “make” herself in complete independence from the circumstances that she finds herself in.²⁵ Although Sartre denies a universal human essence or nature, he presupposes a subject with the universal ability to freely determine itself and its existence.

Both Descartes and Sartre are certain of one thing: that there is a world “out there”, external to and independent of the world “in here”. In both cases the subject is clearly designated, and cordoned off from the world. Descartes’ cogito and Sartre’s man will have a universal structure, no matter where and when in the world they find themselves. Both these accounts of the subject lead to a number of questions: Where do subjects come from? What constitutes them? Are subjects with an immobile, essential nature able to deal with the contingencies of their environment? How does the environment affect them? Descartes purposely rejects the complexities (the subtleties) of his subject matter in order to discover what is essential to the subject. Saussure rejects essence altogether, which allows for endless complexities in constituting the self. If we were to argue that it is these very complexities that constitute the subject, it becomes impossible to talk about an essential mind, or a completely autonomous subject, as we shall see; it also becomes impossible to talk about a wholly self-determined conception of the self.

We wish to argue for a complex view on the self, a rich perspective on what constitutes the self, but also a perspective that takes the limits imposed on the construction of the self seriously. Before we do that, it may be useful to briefly examine another approach to the self, that of traditional analytic philosophy.

An Analytical View on Self and Identity

As a point of departure for our discussion of the standard debate on personal identity in contemporary analytical philosophy, we will rely on the discussion and critique offered by Stefaan Cuypers (1998). He focuses on two approaches to identity within this tradition: the bundle theory (which draws upon logical atomism) and the ego theory (which has an origin in Cartesian atomism). He argues that these positions overlap, since both rely on a foundationalist theory of knowledge that privileges *present* experience. The “I” is an object of direct knowledge (i.e. introspection), while external objects can only be known indirectly. The “I” here is taken to mean the mind only. The first person’s body is seen as part of the rest of the external world. Nothing but the first person’s mind can be relevant to the construction of

²⁵Sartre concedes that historical situations are variable and do place limitations upon the subject, but argues that the necessities of living in the world do not vary. One needs to labour and die in the world. These limitations “are lived and are nothing if man does not live them” (Sartre 1946: 46). By “lived” Sartre means that man freely determines his existence in relation to these limitations.

his identity. Atomistic identity is non-bodily identity; the mind is only linked to a particular body contingently.

Both of the theories that Cuypers discusses rely on a perceptual theory of self-knowledge. Knowing oneself is to observe one’s own mind and its contents. Ontologically, these theories rely on an external and an internal (immaterial) world that consist of separate particulars or atoms. Atoms are indivisible and stand in external relations to one another. The self is either a spiritual atom (the Cartesian ego) or a collection of mental atoms (a bundle of experiences). Cuypers criticises these two theories by showing that the perceptual model of self-knowledge, on which the two theories rely, is exceedingly inadequate.²⁶

Cuypers’ critique of these two atomistic theories rests on the argument that the problem of personal identity rests on an intellectual illusion. He argues that the standard debate on personal identity (in the analytic tradition) presupposes philosophical atomism,²⁷ which leads to epistemological foundationalism based on self-knowledge obtained through introspection. If the perceptual model of self-knowledge is untenable, then the atomistic idea of the self as object of introspective knowledge becomes impossible. Cuypers asserts that his epistemological criticism makes it impossible to interpret the problem of identity as the problem of the self-identity of the first person and that it also casts doubt upon the idea of the ontological separateness of selves and experiences.²⁸

Within the bounds of analytic philosophy, Cuypers postulates a person as “a bodily, public and dynamic agent who engages with other persons and the world” (364).²⁹ He believes that this conception of the person does not go far enough because it does not transgress “the bounds of descriptive metaphysics”. For him, there is nothing wrong with trying to render our experiences intelligible through postulating non-experiential metaphysical principles. He calls upon the “psychophysical personalism of the Aristotelian-Thomistic view,” where an existing substance, as an “active self-communicating presence, cannot *be* without *being*

²⁶In his attempt to do this, Cuypers argues that introspection cannot be modelled on external perception, as is the case in the perceptual model of self-knowledge. In his own words (1998: 355) “the use of the pronoun ‘I’ is *identification free*.” The self cannot be interpreted as an object. Similarly, he argues, the analogy between introspection and perception cannot be sustained in the light of the causal relation that exists between the phenomenological character of the perceived object and its perception. Introspection has no object. Cuypers (358) quotes Shoemaker in saying that, “from an empiricist standpoint the status of the self (the subject of experience) is suspect compared with that of such things as sensations, feelings, images, and the like.” Our perspective, the one from complexity theory, calls atomistic theories of representation into question altogether (cf. Cilliers 1998: 11–12).

²⁷Cuypers explains philosophical atomism with regard to identity as picturing “the self as a non-bodily, private and static object with which the first person is intimately acquainted” (354).

²⁸This will be a key issue in the discussion of a complex view of the self and we will argue that Cuypers does not manage to overcome this separateness adequately.

²⁹From complexity, we will argue that a subject can neither be “complete” nor can it be a “logical unity”. Within a complex view it is equally impossible to distinguish with finality between separate bodily and non-bodily identities.

related in some way” (Cuypers 1998: 365). Along the lines of this “Aristotelian-Thomistic validity anthropology”, Cuypers develops a non-atomistic view of personal identity. Because a person is a substantial psychophysical unity, personal identity has bodily identity as an essential aspect of that identity. A person manifests and communicates himself or herself to a community of other beings; s/he constitutes a web of relations around herself or himself. In this web of relations a being exists in himself towards others.

According to Cuypers, the bodily aspect of personal identity depends upon the spatio-temporal continuity of a personal body; however, this does not exclude a non-bodily personal identity:

Although bodily identity essentially realises (earthly) personal identity, the latter is not reducible to the former. As Rodin’s statue of ‘The Thinker’ is constituted by a particular lump of bronze without being identical to it, so a person is constituted by a particular human organism without being identical to it. In other words, bodily identity is a necessary but not sufficient condition of personal identity (ibid. 366).

Cuypers asserts that personal identity consists of an *agential* identity over and above *bodily* identity: a person is a dynamic, self-communicative agent in relation to a public world. An agent needs the powers of intellect, will and memory. These are self-consciously exercised and makes agential identity subjective; “a person is continuously and immediately present to himself” (ibid. 367). This self-presence occurs in a unitary spatio-temporal framework, a personal body. “In sum, personal identity, as agential identity, essentially consists in the narrative unity of the actions of a rational and moral agent in a social setting within a historical condition” (ibid. 367).

Cuypers’ argument helps us to make some important advances: He is sensitive to specific historical conditions, the role of the body in making identity possible in the first place and to the one’s relationships with others in constructing identity. However, an approach informed by complexity theory would also have a number of important differences: Cuypers views a person as a logical unity with a bodily identity which does not exclude a “non-bodily identity”. It is difficult to see why a non-bodily identity is necessary, given the rest of his analysis. What does a non-bodily identity do or accomplish except, perhaps, surviving the death of the body? He adheres to a distinction between the body – with its functions of intellect, will, and memory – and a separate, non-bodily identity that is fully present to itself and can present itself as an agent in social relationships. Is this position really that different from Descartes’ *cogito*? It seems that Cuypers does not manage to move much beyond atomism, still distinguishing between an external world, which the self experiences and acts upon, and an “in here” with an essential, separate identity (even though it is dependent upon its spatio-temporal body). The self is still identified with the ostensibly rational characteristics agency, intellect, will, and (to a lesser extent) memory. This characterisation provides no hint of the, at times, impenetrable, inexplicable, even irrational post-Freudian self. How does the seemingly chaotic subconscious with its psychoses and neuroses fit into the atomistic self? The short answer is that it doesn’t. More than a century of psychology

has made it clear that what is sometimes considered to be a coherent, unified self is, in fact, an extremely complex phenomenon – one that cannot be abstracted from its radical contingency. In order to develop such an understanding of a complex self, one that is relational through and through, a brief introduction to the theory of complex systems is required.

What Is a Complex System?

The burden of the argument so far was to show that traditional theories of the self seem to require a mind-body split, which makes them limited in their ability to account for an exceedingly complex phenomenon. Starting from essentialist features or distinctions fails to capture the intricacy of the self and leads to an impoverished account of what it means to be human. An approach which views the self as a complex system would, we hope, overcome some of these problems. Once we have established that the self is a complex system, we will analyse it in terms of complex systems theory in order to support our point that the self can best be described in terms of this theory.

Talking about a complex system requires that we take into account how constituents of this complex system interact amongst themselves, as well as with the environment that the system functions in.³⁰ A complex system has a large amount of components whose workings and interactions as a whole cannot be analysed precisely. Any analysis will have to impose limits on the description of the system, and will therefore distort aspects of the system. Examples of complex systems are usually living or social systems: the brain, living organisms, language, the economy, etc. What follows is a brief and general description of the characteristics of a complex system.³¹ The implications of this for the self will be returned to later.

1. A complex system consists of a large number of elements which by themselves could be simple.
2. The elements of a complex system are in dynamic interaction. This interaction need not necessarily be physical; they could also be thought of in terms of the transference of information.
3. The interactions between the elements are rich, where every element can influence many other elements in the system. The behaviour of the system is not determined by the exact number of interactions associated with specific elements.
4. The interactions between them are non-linear. Small causes can have large results (and vice versa).

³⁰When talking about the self, the term “environment” refers to the myriad of influences that the self is exposed to everyday: other people, the media, objects that it encounters, its own history, memories, perceptions, physical sensations etc.

³¹For more detail, see chapter one in Cilliers (1998).

5. The interactions occur over a short range, but can have long-range influence, mediated by other components. The influence interactions can have can be suppressed, enhanced or modulated along the way.
6. There are many loops and feedback paths in the system – the effect of any activity can feed back onto itself.
7. Complex systems are open systems. They interact with their environment and it often becomes difficult to define the borders of a system. The limits of a system are usually imposed on it by our description of it, not by some natural feature of the system. This is referred to as the problem of framing.
8. Complex systems operate under conditions far from equilibrium. Equilibrium is another word for death.
9. Complex systems have a history. They evolve through time and their past is co-responsible for their present behaviour.
10. Each element of the system is ignorant of behaviour of the rest of the system, or of the system as a whole – it can only respond to information available to it locally.

A complex system is not merely a passive reflection of its environment, nor does it control the environment. The relationship between the two involves a dialectic that is neither active nor passive.³² The environment is usually complex in itself, and in order to cope, a complex system needs to be able to do two things: it needs to be able to store information about its environment (memory) and it needs to be able to adapt its structure to changes around it. This means that a complex system needs to gather information about its environment. This information cannot be a random collection of elements; it has to be meaningful to be to the system's advantage. Interesting philosophical questions can be raised at this point: How does this meaning come about? Is it inherent to the environment, waiting to be comprehended by the system, or does the environment have no meaning, save for that which the system confers upon it? Important for or purposes is the question of how the system thinks about itself. It stands to reason that if the system needs to function in a particular environment, it has to factor its knowledge of itself into its knowledge about the environment. It needs to be able to predict with relative accuracy how it will fare in the environment. This ability requires knowledge of itself that is fairly accurate.

The environment that a complex system functions in changes continually and for this reason the system cannot behave in a rigid manner. It needs to be adaptable in order to cope with changes. Specific adaptations cannot be programmed into the system, nor can the system act according to inherent or a priori principles which do not take the external world into account. In order to deal with contingencies, the system has to be able to organise *itself*. This self-organisation relationally incorporates the history of the system (memory) and elements external to it. What is important here

³²This dynamic is captured best by Derrida's notion of *difference* (cf. Cilliers in Chapter 1 in this volume).

is that there is no central control; the network acts upon the relation between memory and external information to satisfy the constraints under which it operates.³³ Thus, the structure of the system cannot be completely determined by the environment in which it finds itself, nor is the environment important merely to the extent that it serves the purposes of the system. Meaning, for a specific system in a specific context, is the result of a process, and this process is dialectical (involving elements from “inside” and “outside” the system) as well as historical (previous states of the system are vitally important). The way in which a complex system cannot be clearly demarcated from its environment has obvious implications for our understanding of the self, to which we shall return.

The information that the system stores cannot be random, it needs to be useful for the survival and success of the system. The meaning this information has cannot be explained merely in terms of correspondence to some objective set of conditions in the world. If it merely mirrors the world around it, the system will have no separate identity that can be recognised. The system needs to interact with its environment; it needs to interpret what it sees in terms of its specific history. The relationships already established among the structural components of the system provide a framework that confers “meaning” upon what is perceived. Such “meaning” then, is in the world, but not *determined* by the world. This again has implications for how we understand ourselves in the world.

We cannot analyse all the parts that make up a system separately in the hope that we will capture the essence of the system. Because the characteristics of the system are established in the relationships between the components, we destroy such characteristics (often called “emergent properties”) when we divide the system up. Since emergent properties are the result of the interactions in the system, they cannot be predicted by an examination of the components of a system. Furthermore, the non-linearity of the interactions means that we cannot replace a set of interactions with another, simpler set of interactions. The law of superposition does not hold. This leads us to an important conclusion: a complex system cannot be broken up into its constituent parts, nor can it be replaced by a simpler system, without losing vital characteristics of the system. From this we can deduce that formal, a priori models of complex systems (like the self) will not fully capture their nature.³⁴

Before the implications of the theory of complex systems for our understanding of the self are examined in more detail, we will present some insights from the work of Derrida. It is illuminating to compare the remarkable affinities between deconstruction and complexity.

³³This point will be elaborated upon in order to argue that a complex system (and identity) cannot be seen as an arbitrary construct.

³⁴Such models can be helpful in developing ideas, as long as we are aware of their limitations. It is exactly in these murky waters – that of the status of formal models – that research into artificial intelligence has been floundering.

Deconstruction and Complexity

In a recent interview Derrida asserts: “. . . a pure identity which is identical to itself is simultaneously identical to death” (Derrida 1999: 36).³⁵ This statement, which may seem a little ambiguous at first glance, can be given content in terms of our discussion of complex systems. A complex system can only exist, and transform itself, if there is a flow of energy and information through the system. A system survives (and also flourishes) in terms of tensions, anticipations and investments that may or may not mature.³⁶ When it reaches a state of equilibrium, it ceases to exist. These tensions are exactly the kind of thing that deconstruction zooms in on – not to destroy or eliminate them, but to tease them out, to transform them. Deconstruction and complexity are both notions that cannot do without some form of engagement with the world – meaning is a result of engagement. As we will see, such engagement relies on the presence of differences within the system.

The relationship between deconstruction and complexity can be established in a more general way with reference to Saussure’s model of language. This model describes language as a system of signs which obtain their meaning through their relationships with all the other signs in the system. These relations are rich, non-linear (they are relationships of difference) and there are many feedback loops. It is not surprising that language can be described in terms of complexity. It is also interesting to follow how Derrida’s elaboration of Saussure’s model helps us to develop our understanding of complex phenomena.³⁷

The traditional way of viewing language, one to which Saussure adheres, is to take spoken language as the pure case. It occurs in a context where meaning seems to be *present* as a result of the illusion that the person who is being addressed can at any time, at least in principle, interrupt the conversation and ask for an explanation or clarification.³⁸ Someone reading a written text does not have this certainty. A written text is the representation of the words that would have been spoken. With the writer of the text absent, the reader is left to interpret the text as accurately as possible, but there is always room for misunderstanding. Derrida argues that written language provides us with a better understanding of language, and that we should see speech as a kind of writing.

³⁵This interview was published in Afrikaans in the South African philosophical journal, *Fragmente*. The translation is ours.

³⁶The Freudian contribution to the understanding of the self will not be elaborated upon, but should be clear from statements like these.

³⁷Refer to Cilliers (1998: 37–47) and Cilliers Chapter 1 in this volume for a more detailed discussion of Derrida’s elaboration of Saussure’s language theory, and its implications for complexity theory.

³⁸This idea of presence is similar to the idea that “pure”, unmediated knowledge of the self can be obtained through first-person introspection. Primacy is given to knowledge about oneself “seen” in the mind’s eye, because it seems, to some theorists at least, improbable that one may be mistaken about such knowledge.

Meaning is never present in an unmediated form, but has to be reconstructed. The spoken word is, like the written one, a material form which needs to be interpreted, and which gains its meaning from its differences from other material forms. We cannot conceive of meaning outside these conditions (as, for example, an a priori essence, or as an ideal representation). This dynamic would not only pertain to language as such, but to anything that can be given meaning. It is in this sense that our interpretations of the world and of ourselves are textual events. We, as subjects, become who we are, and have meaning, in terms of a set of relationships with others and the world. In Derrida’s terms “the assemblage to be proposed has the complex structure of a weaving, an interlacing which permits the different threads and different lines of meaning – or of force – to go off again in different directions, just as it is always ready to tie itself up with others” (Derrida 1986: 3).

A text’s meaning cannot be exhausted, nor can it be controlled or prescribed. Meaning is not *present* in the text itself, it lies in the relationships between elements in the system of which it forms part (which includes an interpreter). Derrida calls the relationship between any two elements in a system a *trace*. A myriad of traces work to generate, through their differences, a pattern of meaning which they constrain, but cannot fix.³⁹ Any trace can contribute to a different meaning in a different context since there will be a different *collection* of traces when the context changes. One can also see traces as that in which the history of the system is sedimented. To establish a meaning in a given instance is to alter the traces, and this will influence future interpretations. Meaning cannot be static – it is always changing and always the result of differences within the network.

It is useful to explain the way in which traces interact in order to constitute meaning in terms of Derrida’s notion of *différance*.⁴⁰ In French, this word corresponds phonetically to the word *difference* and in this manner encompasses three meanings, namely to differ, difference and to defer. Traces are different from one another and in the interaction between these differences meaning is generated. But meaning is not static or final – it is always deferred. The process in which meaning is generated is suspended somewhere between active and passive. The sign is produced by the system, but at the same time the meaning that is generated for it through the process of *différance* reverberates through the system, influencing other signs. The characteristics of the system are not inherent to it, but are the result of the process of *différance*.⁴¹ Thus, meaning (identity) is both formed by and constrained by meanings that already exist in the system.

Meanings are constituted in a context, in a discourse. There are many contexts which do not have an absolute centre and which cannot be exhaustively defined.

³⁹“A text presupposes an extremely complex textual field that branches off in space and time in all directions, and to which a text points to and relies on” (Jusseling 1992: 21).

⁴⁰See Cilliers (1998) pp. 43–46 for a more complete discussion of this important concept.

⁴¹“Since language, which Saussure says is a classification, has not fallen from the sky, its differences have been produced, are produced effects, but they are effects which do not find their cause in a subject or substance, in a thing in general, a being that is somewhere present, thereby eluding the play of *différance*”. (Derrida 1986: 11)

“A context can always and continuously be extended in all directions” (IJssling 1992: 17). The limits to the text with which one is working are continually shifting. IJssling (1992) makes the point that these limits are chosen (he calls this deciding the undecidable) and in choosing to demarcate or frame a text we are making an ethical and political decision, a point to which we shall return. It is worth mentioning that with regard to the self that the boundaries are chosen in this instance (attributing meaning to the self) by the interpreter and not by the self as an agential entity. It should furthermore be kept in mind that the interpreter of the self can be done by another or by the self in question. I interpret my “self” just as much as someone else does; however, it may be assumed that I have access to more information (in the form of memories and feedback from my body) than someone else would have.

From the perspective of deconstruction, we can therefore conclude that the self, as a complex system permeated with signs, is constituted in a network of meanings and cannot be separated from its context. The self is the effect of a textuality of sorts.⁴² We have seen, in accordance with Derrida’s conception of trace and *différance*, that identity cannot be pure; it cannot be present to itself. “[I]t is only on the basis of *différance* and its ‘history’ that we can allegedly know who and where ‘we’ are, and what the limits of an ‘era’ might be” (Derrida 1986: 7). The self can only be a pure, unified entity when it doesn’t exist by virtue of its relation to other elements, when it doesn’t change, when it isn’t interpreted and when it ceases to be part of a dynamic system – when it is dead. Derrida’s claim that “there has never been, never will be a unique word, a master-name” (1986: 27) can, in the light of our discussion, be reformulated to the following: There has never been, never will be a unique self, a master identity. A person is not the origin of her identity, nor can she have complete control over it (IJssling 1992: 21). The question arises; can we then be more specific about what identity is? We will return to complexity theory with this question.

The Self As a Complex System

We quoted Cuypers above saying that a person’s identity is not identical to her bodily identity, just like Rodin’s “The Thinker” is constituted by a lump of bronze, but not identical to it. By using a statue as a point of comparison, Cuypers raises a few interesting issues. A statue implies a sculptor. If identity can be thought of analogously to a statue, it would imply an external agent, someone or something that forms a self whom it is dependent upon, but not identical to the body in which it resides. Now this has something in common with our argument thus far: the self is dependent upon its world/environment and cannot be separated from the body. What does not sit well is firstly the idea of the self as something formed, a finished product,

⁴² Thus one comes to posit presence – and specifically consciousness, the being beside itself of consciousness – no longer as the absolutely central form of Being but as a “determination” and as an “effect” (Derrida 1986: 16).

cast in bronze; and secondly the idea of separate bodily and personal identities. We have argued that a complex system needs to be able to adjust to its environment if it is to survive and that contingent circumstances and a specific historicity makes up the environment. It would be preferable to develop an idea of identity that is dynamic and does not depend on an external agent for defining its nature.

Derrida asserts that: “*différance* is no more static than it is genetic, no more structural than historical” (Derrida 1986: 16). What he says about *différance* is also true for the self. To think of the way that we perceive the world as receiving (particles of) information about it, through our senses and ordering these perceptions into a coherent whole and then acting upon them as an abstract subject, is to disregard our own historicity and our own interaction with the world that we perceive. Our “intellect, will and memory” (to return to Cuypers’s argument) do not serve only to provide us with a spatio-temporal conceptual framework by means of which we order the world, they participate in and change the world. Furthermore, they originate from the world; the self has to form and operate within the structures and constraints provided by the environment, regardless of will, intellect and memory. In the process, we both participate in and create a world too diverse and complex to grasp or describe fully.

Part of this argument is that we cannot be born pre-programmed with an inherent idea of what it means to be human and how we have to be to get on in the world, nor with a fixed idea of what the world itself is. These ideas have to be developed through an engagement with the world. To be able to deal with the contingencies that form part of daily life, we have to be able to act upon information we are exposed to and adjust our ideas accordingly. It would seem more feasible to think of the self as a dynamic process, continually needing to adapt and change in response to its interaction with the world, while being influenced by its history through memory. Will, intellect and memory are all influenced by the world to a greater or lesser extent. This process can be given content by taking a more detailed look at how the different characteristics of complex systems (as discussed above) manifest themselves in the self:

1. If we think of the self as something that is constituted in a system of differences, then it does consist of a large number of elements. The self is not a singular thing, but divided in itself. This is not a schizophrenic understanding, but one that wants to give a voice to all the different, sometimes contradictory, aspects of personhood. What is more, all the innumerable traces in the textual field (the world and ourselves) contribute towards identity. The traces that make up our view of ourselves and the world include everything that we are exposed to in the world: other people, conversations, books, our education, our material circumstances, state of bodily health, our childhood memories and future prospects, everything. These things do not contribute to the self in a deterministic way, they interact and merge. We cannot identify all these components, and then fit them into a coherent whole in order to provide an exact description of our “self”.

2. Traces gain their meaning from the textual field in which they operate and are empty (meaningless) if they do not interact. A self cannot be meaningful in isolation. The self is constituted by its relationships to others and the world. Our environment (context) is continually shifting and changing and we need to adjust the sense we make of it and of ourselves. We interact with others and with the world and these relationships are never static. No person can be understood independently from her context and different aspects of the self can be relevant in different contexts.
3. The interactions between traces are rich. People and things that contribute to our conception of self can be numerous and divergent and we interact with them continuously.
4. Some influences have a profound effect on the self; others may pass without so much as a ripple. The influence that something has on us is not only determined by the size of the cause, our context and history also contribute to the outcome. Some people and events may therefore be a bigger factor in a person's identity than others (e.g. family members as opposed to shop assistants). Another way of making this point is to say that the interactions that constitute the self are non-linear.
5. We can only respond to the influences available locally. Interactions thus have a fairly short range. Our sense of self comes from things and people we have been and are exposed to. However, stories, songs, books, artworks, news broadcasts and travel mean that this exposure is not limited to our immediate environment, but rather to a kind of "first-hand" encounter with texts that fall within our cultural orientation or our field of interest. Much of how you think about yourself and the world is contingent on your spatial and temporal location.
6. There are many loops in the interactions with others and the world. Many of our actions feedback on themselves. We have seen in the earlier discussion of *dif-férance* that every instance of ascribing meaning (interpretation) is to already alter possible meanings. When we ascribe meaning to the world we interact with it. The world we are born into is not determined. Against our spatio-temporal background, education and economic means, we are able to choose at least some of the texts that we are exposed to. Our choice of literature or friends for example will be constrained by our view of the world and ourselves, and will also feed back upon this view. The way that we perceive things to be might be confirmed or called into question by texts we encounter. The world is not merely the origin of meaning – we participate in our world, and change it. In some instances we may have more control over this than in others. The effects of some of our interaction with the world can be quite unexpected and unpredictable.
7. The self is an open system. It is impossible to point to some precise boundary where "we" stop and where the world begins. To confine the self to the prison of the skull is a gross oversimplification.
8. The self is never in a state of equilibrium; our interaction with the world is dynamic. As our environment changes, we adapt. We are constantly reflecting

and acting. We do sometimes long for peaceful state in which no demands are made upon us; Freud refers to this longing the death-drive.

9. The self is greatly influenced by its history. The history and context of a person co-determines her identity. No two people have histories or contexts that are identical. Even if two people had very similar backgrounds, a host of other factors would contribute towards their view of themselves and the world. In a way, the self is nothing more than the sedimentation of its history in memory.
10. No person can be aware of her whole self. You are not aware of all the desires, needs, communications, fears and expectations making demands on you at the moment. Nor are you consciously aware of your complete history as a series of distinct events that chronologically make up your personal narrative. We are only conscious of parts of the self at any given moment. Much of what makes us what we are is not available to consciousness at all.

To summarise, the self is not a complete and coherent entity present to itself. It is constituted through the complex interactions amongst a host of factors, the significance of which cannot be pinpointed for each one. Our sense of self is the result of transient patterns in this network of traces, which we organise into a (temporary) narrative. Consciousness is an emergent property of this network, not a central control system that “causes” the experience of the self. Let us turn to this issue in a little more detail.

What Is Identity?

Viewing the self as relational makes for a more flexible way of understanding how we come to be who we are. Yet, it is still possible to talk about someone’s identity or beliefs in a meaningful way. By arguing that identity cannot be fixed we are not suggesting that identity is fragmented and arbitrary. A dynamic, open system cannot be discussed in isolation from the different discourses of which it forms a part, that influence and constrain it. Returning to the analogy of the text, we can describe this in the following way: Texts exist in a contextual field, a network of meaning. They refer to each other and they rely on each other. They bear a likeness to one another, but also distinguish themselves from one another. In short, texts are *intertextual* events. Because of this intertextuality, texts can be quoted in other texts, recited, reproduced, commented on, interpreted, clarified, improved, summarised, amplified, supplemented, condensed (IJsseling 1992: 26). A text comes into being in an already existing network, and this network places constraints upon its possibilities. The self is not fragmented into a multiplicity of selves, it is distributed over a network of meanings (traces), in which it can be identified, but never definitely so. Identity/self is never final; it changes as context changes (even if only imperceptibly). In a sense, the self is a narrative distilled from the multiplicity of possibilities available from the world of experience.

It should be emphasised that a complex system is not chaotic; it has structure, even if this structure is continuously transformed. Just as words cannot have meaning if they are not repeatable or iterable (Jsseling 1992: 25), the structures in a complex system must be identifiable. Transformation cannot be other than the transformation of something specific into something that can be recognised as a new form of the previous structure. There is thus no contradiction involved if we deny an essentialist understanding of the self, but still talk of someone's "identity". This "identity" is the result of the play of a specific, contingent, historically determined and changing set of differences, it is not a "source" in itself. This identity can also not be separated from its embeddedness in social conditions and will therefore always have an ethical dimension. And, since our social conditions are always in flux (to a greater or a lesser degree), our identity and that of others is always in flux, always adjusting and changing as circumstances change. As a result, as we construct our narratives that given meaning and identity to ourselves and to others, it falls to us to continuously reassess our perception of ourselves and of others and to always remind ourselves that we are only ever dealing with a small part of the whole picture, and as the picture changes, so should we. This is not only a normative (ethical) point, but also a pragmatic one – if we do not adjust our narratives in accordance with changing conditions, we tend to fall behind and become more out of touch with the realities, norms and values of those that surround us. We do not only risk becoming unethical; we also risk becoming obsolete. In many respects, an ethical sensibility equates with the survival of the individual in the social realm.

The Ethical Self

Wilson (1998) addresses an objection frequently raised against postmodernist theories and against deconstruction in particular; namely, that they do not offer "a positive project". Critics accuse these theories of being more concerned with negative criticism of Enlightenment or modernist projects than with offering any suggestions as to alternatives. In the words of Wilson: "These critical theories are deemed dangerously apolitical" (1998: 21). Wilson answers this criticism by asserting that it is possible to say that deconstruction *exceeds* such classical concerns (such as a positive project, for example). "What this means is that rather than negating, excluding, or preventing classical political and epistemological projects, deconstruction is engaged in an examination of the conditions that make such projects possible and the implications and effects of their operations" (1998: 22). This claim is also relevant when talking about the self. The modernist or essentialist understanding of the self works with the notion of a subject that is pre-formed, that first exists and then engages in a number of activities, including ethical ones. The understanding of the self that we propose is partly constituted by a personal narrative, constructed through social interaction and is therefore always already political in the Aristotelian sense.

An understanding of the self as a construct in flux cuts in two directions: In the first place, it argues that a “neutral and objective” view is impossible. It is a fantasy that disregards crucial components of what constitutes a person. It leads to delimiting the subject where certain aspects of the self are considered legitimate or desirable while others (the subconscious, irrationality, emotion) are disregarded or deemed secondary and incidental. This approach is not only unethical, but also counterproductive. It leads to an impoverished understanding of ourselves, others and our environment. Since we can only exist and operate in the social environment, a poorer, or less complex, understanding of the complexity of that environment and the individuals in it will severely limit our ability to successfully act and interact in that environment.

In the second place, an emphasis on the ethical nature of the subject reminds us of the inevitability of political (and ethical) involvement. Our identities as individuals or institutions are formed to a great extent by our social interactions (or lack thereof). We are not already-realised subjects that have to make ethical decisions; we come to be through those decisions.

As entities embedded within complex social environments, we have to make use of various meaning-given frameworks and assumptions. Since we cannot step out of our complex environment to view these frameworks omnisciently, we have to make choices based on the contingent, local knowledge and options available to us. Another way to formulate this point is to say that in the realm of the self, we are always already in the realm of engaging with making choices – the realm of ethics.

The Self, Organisations and Responsibility

The position developed here can be used to inform our understanding of the relationships between “selves” and “organisations”. The notion “organisation” can refer to many of the social structures we find ourselves in, including families, ethnic or cultural groups and political entities. It can also refer to the specific organisations we encounter in the workplace. It is to this latter context that we return with some concluding remarks.

The fact that the self is relationally constituted means that relationships at the workplace form part of what constitutes the identity of the self. What we do at the workplace cannot be compartmentalised or treated separately from the rest of our existence since it co-determines our identity, and vice versa, The self is also not constituted simply by the direct relationships with other co-workers, but also by the wider context in which the organisation one works for operates. An organization would do well to keep its employees’ broader context (narrative) in mind and not to operate based on the fiction that that one’s work self can be segregated from the rest of one’s identity. These will always inevitably affect one another, sometimes to the benefit of the company, sometimes not. This argument can also be inverted.

One can talk of the identity of the organisation as a whole as something constituted in a way very similar to that of an individual. The identity of the organisation is

the result of the contingent set of differences at play between the different members within that society and with its external environment – which will of course include other organisations. The organisation can thus be seen as a kind of “self” with a dynamic identity. This self is constituted relationally, and thus has the same ethical character as the identity of the individual self. The organisation’s choices cannot be reduced to a simple definition of what the organisation is or should be since this will imply a static understanding of what the organisation is. The whole argument from complexity indicates that this understanding will not create the conditions for a vital organisation which can deal with a complex environment.

The central insight should be the following: ethics is not something which a person or an organisation engages with over and above a number of other things, ethics *constitutes* the person or the organisation to a great extent. This we think has important implications for business ethics. The main question regarding the ethical aspects of a business cannot only revolve around whether our practices are acceptable. The main question is: What narrative are we working with? How do we constitute our identity and does it correlate with the changing environment in which we operate? Our identity is formed by how we answer this question. Accepting the responsibility for the answer, and for how it affects others, is not a burden we have to bear, it is what makes us who we are.

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Part II

Difference

Chapter 3

Complexity: The Evolution of Identity and Diversity

Peter M. Allen, Mark Strathern, and Liz Varga

Introduction

Our aim here is to explore the consequences of complexity science for our understanding of the emergence and evolution of identity and diversity. The study of open physical systems, systems subject to flows of energy and matter, led to the understanding that structure and organization can form spontaneously as a result of small fluctuations tipping non-linear dynamical systems into different possible regimes of operation – called attractor basins. These ideas were first presented in the papers by Prigogine and co-workers (Nicolis and Prigogine 1977) – as Dissipative Structures – and by Haken and his collaborators (Haken 1977) – as Synergetics. Initially though, these ideas were about “driven systems” – systems that were subjected to flows of energy and matter that generated structures and organizations. However, the bringing together of these ideas with those already existing concerning biological evolution led to the idea of complex systems, that not only were subject to flows of energy and matter, but which also evolved so as to obtain, maintain and increase these flows. Ecologies and human social systems could therefore be seen as the result of evolutionary processes in which successive behavioural explorations occurred and those able to capture resources were retained in the system. The mathematics of what could invade such a system was presented in 1976 (Allen 1976) and the theories of evolutionary stable strategies (Maynard-Smith 1974, 1982) were of course a simpler, more closed version of this.

Evolution is important for our reflections on identity because it is the origin and the motor of emergent features and behaviours that express different identities. Non-linear dynamical systems, on the other hand, just “function”. They may be capable of different regimes of operation, but essentially these are all present in the initial specification of the equations of the dynamical system. The real importance of “identities” only comes about in discussing how particular (temporary) dynamic systems emerge and exist for a time, before becoming unstable and giving way to

P.M. Allen (✉)
School of Management, Cranfield University, Beds UK
e-mail: p.m.allen@cranfield.ac.uk

some new system, with at least some new variables, relationships and emergent features. The underlying mechanisms of evolution were shown to involve micro-diversity within a system (Allen and McGlade 1987a) which drives an evolving, emergent system structure that is characterised by a changing level of structural diversity. This involves both the “selective” effects of interactions between species and the simultaneous mechanisms underlying micro-diversity that *discover* new “strategies” or “niches”. In Darwinian thinking the micro-diversity that occurs is considered to be “random” and independent of the selection processes that follow, while in human innovation we like to think that there is intention, calculation and belief that may “channel” diversity into some narrower range.

Diversity is a measure of the number of qualitatively different types of entity present corresponding to individuals with different attributes. It may be that they share some dimensions, but differ on others. This is an important point because it refers to a fundamental issue for evolution – it concerns the qualitative changes that occur in systems and structures over time. This also introduces another important issue – that of multiple levels of description. In evolutionary systems, the internal nature of the interacting individual entities changes over time, as does the configuration of the interactions between these types, leading to a changing overall system performance within its environment. These internal characteristics would include individual values and ethics. This presents us with a view in which individuals are bundles of their internal components, the local community or organisations they form are bundles of these individual types, and ecosystems and larger structures they form are bundles of these local communities. The essential feature is that of the co-evolution of successive layers of interacting elements both horizontally and between levels. The performance and resilience of a community will depend, among other things, on the ethical values of the individuals that make it up. The diversity of the different levels of structure arises through these co-evolutionary processes that are in turn driven by the generation of micro-diversity – diversity at the level below. To illustrate this, let us consider the simplest possible example. Let us consider how a population evolves. It evolves if new behaviour both invades a population and also grows to a significant level in the system.

Complex Systems Modelling

What happens if we try to model an ecosystem using coupled equations of population dynamics? We can identify the different species present and find out who eats whom and calibrate the multiple plant/herbivore and predator/prey interactions. Now, once this is established, we can put the whole system of equations on a computer, and run it forward. What happens is shown in Fig. 3.1.

The model collapses down to a simple, much reduced structure. This is an astonishing result. It means that although the model was calibrated on what was happening at time $t = 0$ it diverged from reality as time moved forward. The real ecosystem stayed complex, and indeed continued to adapt and change with its real environment. But this shows us that *the mechanical representation of reality differs critically from that reality.*

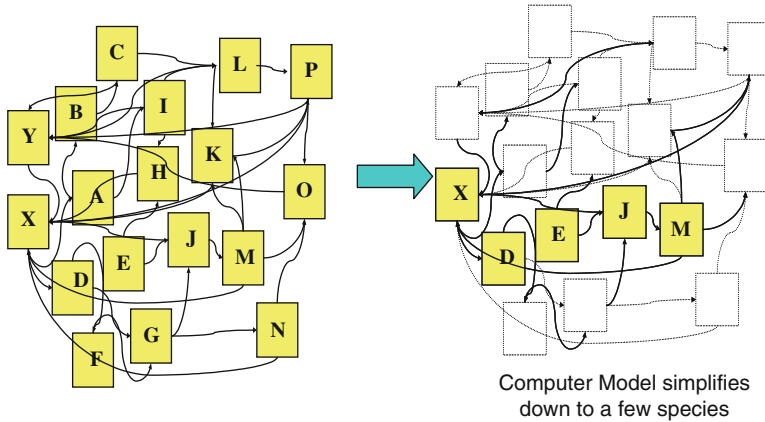


Fig. 3.1 A calibrated ecosystem represented by the population dynamics of its constituent species collapses when run forward in time

We can reveal the critical differences by carefully considering the assumptions that we made in formulating the model. In reality the interactions of a real ecosystem form parallel food chains, with cross connections and complications of course, but essentially with each level feeding on the lower one, some of these dying and others being eaten by the level above. The whole system of food chains loops back through death and micro-organisms that recycle all the carbon and minerals. The embodiment of these “food chains” is the identities of the different individuals that make up the populations. When we run the mechanical model – population dynamics with the fixed birth, death capture and escape rates that we have found on average in the real system (in analogy with chemical reaction rates), then the food chain with the highest performance simply eliminates all the others. In other words, selection between metabolic chains of *fixed identities* operates and this selects for the survival of only the highest performing chain. However, in reality this clearly does not occur! This therefore implies that a key property of a real ecosystem is the changing identities of its constituent agents! We need to understand how this is destroyed by the simplifying assumptions we make in building our “model” of the system.

This question has been examined in several papers (Allen and Ebeling 1983, Allen 1990, 1997) and they show that the evolutionary power of adaptive identities resides in the *internal diversity within the populations*. In reality, evolution leads to “populations” of sufficiently diverse individuals. Identities differ in age, size, strength, speed, colour, personality, and location etc. and this means that whenever a population, *X*, is being decreased by the action of some particular predator or environmental change, then the individuals that are most vulnerable will be the ones that disappear first. Because of this the parameter representing the average death rate will actually change its value as the distribution of identities within the population *X* increases the average “resistance”. In other words, the whole system of populations has built in through the internal diversities of its individual identities, a *multiple set*

of self-regulatory processes that will automatically strengthen the weak, and weaken the strong. In the same way that reaction diffusion systems in chemistry can create patterns in space and time, so in this more complex system, the dynamics will create patterns in the different dimensions of diversity that the populations inhabit. But neither we, nor the populations concerned may know what these dimensions are, the complex balance of heterogeneities changes as a result of evolutionary dynamics.

Reality emerges from micro-exploratory processes which we obscure whenever we deal in an aggregate variable X . Any description in terms of a “population” X automatically loses the different types of individual, the multiple identities present that actually allow the population to survive. An aggregate description cannot take into account the real interdependences between different types of agent or individual and a description, model, map or image of a complex, evolved system is only a temporary snapshot of its appearance.

A model constructed in terms of aggregate variables is like the famous painting of a pipe by Magritte called: *Ceci n'est pas une pipe* (This is not a pipe). We may look at the picture and recognize that it is a representation of a pipe, but it gives no idea of how the original came into existence, how it is affected by and affects other things, and certainly can never give the pleasure (or the danger) of smoking to anyone. Pedagogically it is interesting, since it enables us to recognise such objects as being pipes (while not being one) and we could certainly play wondrous academic games by considering different styles of “pipe”, collecting images and discussing the materials, ancestry, technology that lay behind them. But just as the picture is not the pipe, the mathematical model of the ecosystem or of the economic system is NOT reality and neither are the statistics and databases of all possible measurements of input, output, throughput, or stock.

Any model is a particular, culturally based interpretive framework of some piece of reality that will always be incomplete. We have to face the fact that we can never fully create a representation of something that is fully that something, but may nevertheless hopefully allow some useful discussions or insights concerning it. That is really the hope of intelligence, since we can hope that by possessing language, and the capacity to label and discuss different objects and situations, then we can “do better” than if we couldn't. Of course, we may be wrong but what have we got to lose? In going from “reality” to some useful interpretation of that reality we actually make successive simplifying assumptions. This is shown in Fig. 3.2 which sets out the kind of models that result from a particular set of assumptions.

This succession of models arises from making successive, simplifying assumptions, and therefore models on the right are increasingly easy to understand and picture, but increasingly far from reality. *They also are shorn of their capacity for the participating identities to evolve – their real underlying exploratory, error-making processes.* The operation of a mechanical system may be easy to understand but that simplicity has assumed away the more complex sources of its ability to adapt and change. They become more like “descriptions” of the system at a particular moment, but do not contain the magic ingredient of micro-diversity that will really allow the system to undergo structural change and create a new, qualitatively different system, with some new variables and some emergent performance. The ability to adapt and change is still present in the “evolutionary” model that only makes assumptions 1

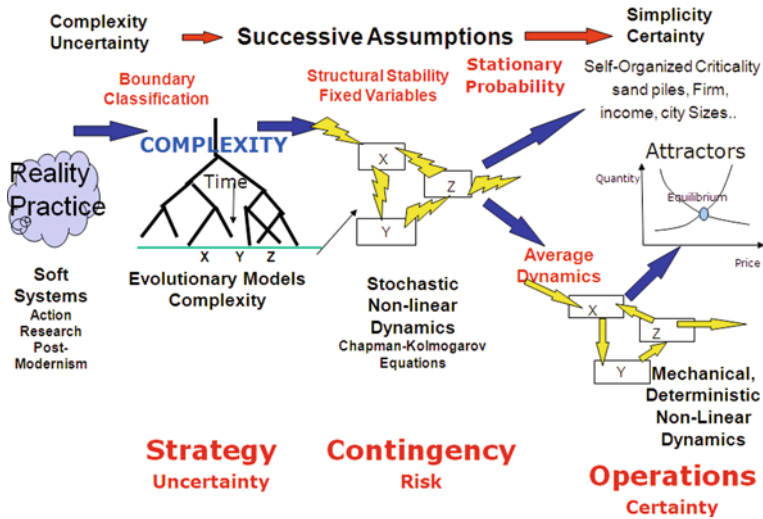


Fig. 3.2 This shows the results of successive simplifying assumptions that take us from a complex evolving system to its mechanical representation

and 2, but not those of average type and average behaviours. This therefore tells us that the evolutionary capacity is generated by the behaviours that are averaged by assumptions 3 and 4 – average types and average events – and therefore that organizations or individuals that can adapt and transform themselves do so as a result of the generation of micro-diversity and its interactions with micro-contextualities. This tells us the difference between a reality that is “becoming” and our simplified understanding of this that is merely “being” (Prigogine 1980).

Table 3.1. The different kinds of model that arise from successive assumptions

Number	Assumption made	Resulting model
1	Boundary assumed	Some local sense-making possible – no structure supposed
2	Classification assumed	Open-ended evolutionary models – Identities change over time
3	Average types	Probabilistic, non-linear equations – Identities are assumed fixed
4a	Stationarity	Self-organized criticality, equilibrium
4b	Average events	Deterministic, mechanical equations – Identities assumed fixed
5	Stationarity	Catastrophe theory, attractors, equilibrium

In reality, complex systems thinking offers us a new, integrative paradigm, in which we retain the fact of multiple subjectivities, and of differing perceptions and views, and indeed see this as part of the complexity, and a source of creative interaction and of innovation and change. The underlying paradox is that particular identities will each have their own “interpretive frameworks”, generated by their

own experiences and cultural identities, and will therefore not be able to understand others at all easily. But the behaviours of the differing individuals will interact through reality – and so actions based on any particular domain of knowledge, although seemingly rational and consistent, will necessarily be inadequate.

The reality of differing identities and different interpretive frameworks is one that we face in the real world. Managing organizations or making policies within social systems clearly presents real difficulties in dealing with these inherently incoherent views of what needs to be done, what is important and what should be aimed for.

We see a key framework that exists at the heart of complex systems thinking. The framework groups factors into three categories (Gillies 2001). These are:

- The values of *external* factors, which are not modelled as variables in the system. These reflect the environment of the system, and of course may be dependent on spatial conditions. Temperature, climate, soils, world prices, interest rates are possible examples of such factors.
- The effects of spatial arrangement, of juxtaposition and configuration, of the entities underlying the system, affecting self-organizing and autocatalytic effects.
- The values corresponding to the “performance” of the [underlying] entities, due to their *internal* characteristics like technology, level of knowledge or strategies.

These three levels are all coupled by interaction, and so changes that occur in any one will affect the other two. This in turn will affect the environment of the environment, the underlying entities of the underlying entities, and so on in an irreversible cascade outwards and inwards that makes everything essentially irreversible.

This new understanding of complex systems demonstrate the underlying difference between academic activities such as analysis and description and the domain of design, action or intervention that concerns real life, and practitioners.

Micro-Diversity-Evolving Identities

The dialogue between population dynamics – the simple reduced model of an ecosystem – and mutations or innovations, is particularly interesting in that it gives rise to what is usually referred to as evolutionary ecology. This has been presented in a recent article (Allen et al. 2006) and so we shall not go into too much detail here.

Evolution of Populations

The simplest possible equation for an ecosystem corresponds to a single species growing according to the logistic equation,

$$\frac{dx}{dt} = bx \left(1 - \frac{x}{N}\right) - mx \quad (3.1)$$

This equation, describing the growth of a species x in a system with limited resources has a stable, stationary state, $x^0 = N(1 - m/b)$. The average “identity” of the different individuals is such as to produce parameters that are, on average, b , m and N .

But what new population type could invade the stationary state of Eq. (3.1)? This focuses on the stability of the “identity” of x , as some deviant types may try to invade. Let us consider the arrival in the system of a “mutant”, x' , that is different from x . For example, x' competes with x to an extent β for the limiting resource N ($0 < \beta < 1$). If β equals 1, then we have the same essential identity as x , but if it is less than 1, then it must have features that distinguish it from x , and therefore constitute a different identity. The mutant is characterized by some other birth rate b' and death rate m' . We shall suppose that after being subjected to some initially stochastic events, it has managed to survive and to become sufficiently numerous to be able to speak of a “density” (albeit very low) of mutants. The system equations become:

$$\begin{aligned}\frac{dx}{dt} &= bx \left(1 - \frac{(x + \beta x')}{N}\right) - mx \\ \frac{dx'}{dt} &= b'x' \left(1 - \frac{(x' + \beta x)}{N}\right) - m'x'\end{aligned}\quad (3.2)$$

What are the values of b^* , m^* and β such that x' can invade the system. This question is decided by testing the stability of the pre-existing state, $x = N(1 - m/b)$; $x' = 0$. If it is stable, then x' cannot invade the system. If it is unstable, invasion can proceed.

A simple stability analysis shows that the condition for x' to invade is,

$$N'(1 - m'/b') > \beta(N(1 - m/b)) \quad (3.3)$$

When this condition is fulfilled, x' will grow.

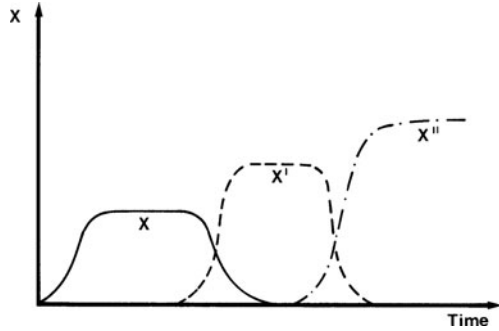
Two cases arise. If the mutation x' were in total competition with x , then $\beta = 1$, x^* has essentially the same identity as x , and the condition becomes:

$$N'(1 - m'/b') > N(1 - m/b) \quad (3.4)$$

Hence, as a result of random mutations, evolution within a given “niche” (identity) can only lead to increased “exploitation”, or increasingly efficient use of the resources. The important point in this case is that, the condition that allows x' to grow also ensures that x must decrease and disappear, as portrayed in Fig. 3.3.

When overlap is not total, $\beta < 1$, invasion is easier, since the value of $N'(1 - m'/b')$ need not be as high. What we shall observe, therefore, in a system with limited resources is that over a long period of time an initially empty resource spectrum will gradually be *filled* by different populations, each adapted to a certain range of resources. Also, within any particular range or type of resource the efficiency

Fig. 3.3 Within the same “niche”, we find successive replacement by individuals with more “effective” identities



of exploitation will increase irreversibly. This result can be extended to situations where genetics are explicitly considered, but these slightly more complicated equations do not lead to a different qualitative result.

This approach can be generalized and applied to many different kinds of ecological system, Allen (1976) and Allen et al. (2006). It captures the condition that limits which new identities and behaviours can actually invade a system successfully. One particularly interesting application is to consider what total population diversity and range of different identities can occupy a given resource spectrum. We first calculate what degree of specialisation will evolve in a particular environment, and then how much separation there will be between the niches of different populations. We will then be able to predict how many species will occupy a mature evolved ecosystem with a particular spectrum of resources. We suppose a resource base of length L and density c . May already showed (1973) that the separation between two species should be proportional to the amount of environmental fluctuation. However, we have shown (Allen 1985) how evolution would lead to the “width” occupied by a species, so it is possible to combine our results with those of May (1973) to obtain an expression for the expected morphological diversity (in a single level, simple, highly artificial example, of course). If the number of species is n , and their “niche” separation d , then we should find that, $d/w = \varepsilon |\sigma|^2$, where σ reflects environmental variability, since $n = L/d$ then

$$n = \frac{L}{\varepsilon \sigma^2 w_s} \quad \text{That is } n w_s = \frac{L}{\varepsilon \sigma^2} \tag{3.5}$$

Some partial confirmation of this relationship has been obtained. It concerns “Darwin’s Finches” which inhabit the Galapagos Islands. As is well known, the Islands are home to some 14 species of finch, which are generally not found elsewhere (Fig. 3.5).

Large islands carry greater numbers of species types, and total characteristic diversity than small islands. Although the exact make-up of the finch community cannot be predicted, the total diversity supported by a given resource base can be.

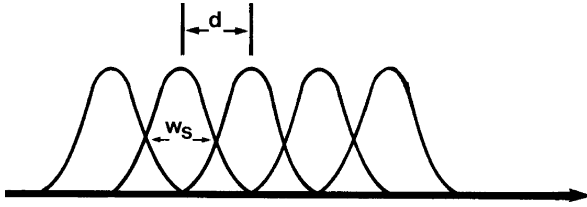


Fig. 3.4 A resource spectrum is supposed occupied by different populations, each of width, w , and separated by distance, d

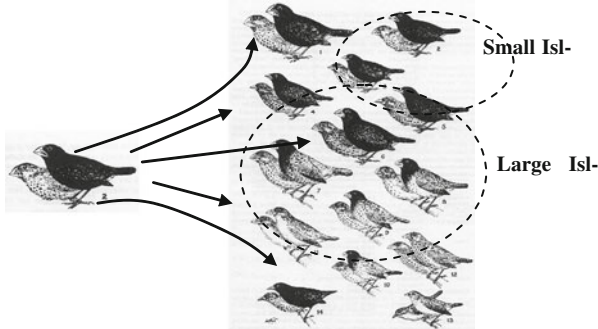


Fig. 3.5 The finches of the Galapagos. Male and female of each species. The 3-D visualizations were made by Jack Corliss, Mike Lesser and John Dorban at the Goddard Flight center, NASA

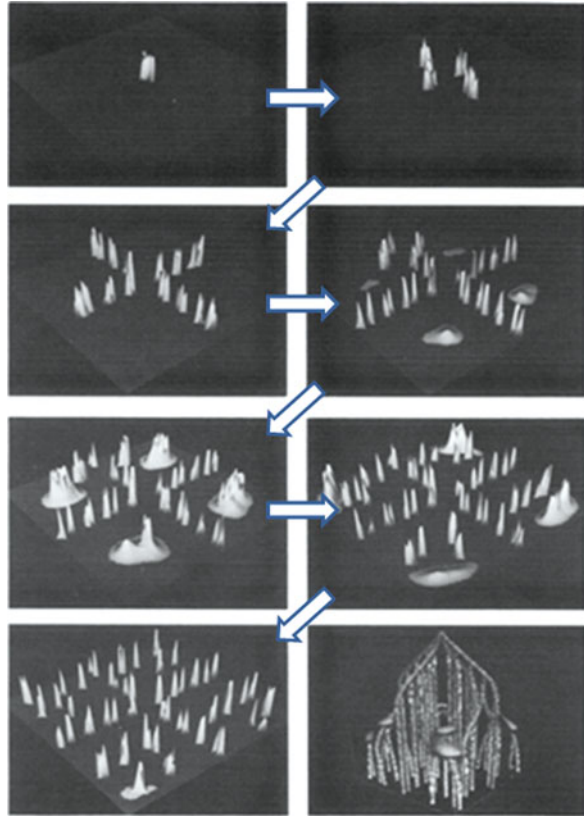
We can link resource volume, environmental fluctuation, and morphological diversity and “predict” the volume of identities/niches available to different populations, assuming the structural stability of the overall ecology. In other words, evolution leads to a given amount of “coherent” diversity of the identities of the constituent populations. But, the motor that drives this evolution of identities is actually that of micro-diversity generation – diversity produced at the level below that of the ecosystem. This tells us something quite fundamental:

- Identities evolve over time as part of the system and therefore are mutually interdependent.
- The heterogeneity or homogeneity of different identities play a role in the resilience, creativity and survival of the populations present.

We can run a simulation in an imaginary two-dimensional character space in which the exploratory behaviour of new identities “diffuses” outwards from any existing population. When populations are close, then they are “competing” with the original types, but as they move further away the differences mean that they no longer compete. We have made simulations with these simple rules in the behaviour, and found that such a system generates an evolutionary tree entirely spontaneously.

In some ways a supply chain is an example where the different nodes of expertise and knowledge work together to create a complex product that commands resources

Fig. 3.6 In “possibility space”, an initially pure identity will diffuse outwards and differential success will provide “selection”



from the environment. The division of labour in societies is clearly an example of interlocking, synergetic work identities that can be spectacularly successful. Of course, other factors are also required for sustainability. For example the different players must feel some justice in the partition of rewards, considering the effort and skills required. In the longer term, also, the effects of any of the specialized activities on the social or physical environment must be considered to be reasonable by the collectivity.

This work shows us how we can understand how identities and systems of interacting identities evolve and change over time, and how complexity shows us a generic mechanism that underlies all such phenomena.

Complexity of Individual and Collective Identity

Some time ago some studies and models of fishing behaviour in the Canadian Atlantic fisheries showed that sustainable behaviour did not result from the most efficient exploitation of current knowledge. Fishing fleets that were given

behaviours based on strong economic rationality did not do well over time, even though at each and every moment, this is the most successful short term strategy. The point is that this strong economic rationality applies to the moment, whereas sustainability is about the longer term. Exploiting currently known knowledge does not consider the question of how one can generate new knowledge. Over the longer term, the exploitation of the initial knowledge is very minor compared to the need to be able to discover, assess and then exploit new knowledge. Exploiting knowledge of existing fish stocks decimates them and so this is why it is absolutely vital to have behaviour that can discover new stocks.

This idea is completely fundamental. All evolved systems need to accomplish two almost opposite tasks if they are to persist over a long time. First they must develop an internal structure of interacting identities that can together do something currently that allows them to pump resources in to maintain and grow their structure. Secondly, however, they must be capable of creating and transforming these identities, and what they do, in order to deal with a changing world. As we saw above in much of biological evolution ecological communities achieve this normally as a result of the occurrence of mutation and natural variation through which individuals can explore the pay-offs for new identities. Because of the differential selection of these behaviours, fitness within a given niche improves, and new niches are opened up and explored.

In human systems however, our reason can suppress these natural explorations in order to focus and amplify the currently most successful behaviours. In other words, we can “lock-in” to a particular circumstance and through the creation of an extremely efficient system of exploitation of current resources can suppress the natural adaptive capacity of the system that would be more pluralistic and heterogeneous. In some recent work by McGlade et al. (2005), a study has been made of the decline of coal mining and the associated communities in South Yorkshire. It demonstrated essentially how the geography of coal deposits, and the social evolution of the mining communities, mining towns evolved to become essentially “mining machines” where people’s identities and roles were all aimed at this single overall activity. This operated and evolved successfully for at least four generations, but when the demand for coal from South Yorkshire inevitably fell, the communities that were affected had no response other than to fight for the continuation of its coal mining. The study documents the numerous ways in which the social, educational, family and institutional structures were all based on continuing coal mining and had no alternatives available. The result was a social disaster that is taking decades to resolve itself. Since economic transformation was accomplished with far greater success by longer term policies and carefully planned actions in both Germany and the Netherlands, it is clear that it is important to recognize these issues and to develop policies that are appropriate to the task.

The development of the multiple and diverse skills, social relationships and ethical values that characterized mining communities was a remarkable story of growing efficiency and technological advance, with team working and interdependence that gave rise to a social experience much more intense than that experienced by suburban dwellers. However, the fixity of the identities and roles, and the unity in

defence of the way of life is what led to the lack of adaptability and failure to “move on” to new things. In comparison, someone from suburban London, for example, never knew a community, and never had to conform to any particular career or role paths laid down by others. All was possible, all was open and nothing was really forbidden. Obviously, there was a general feeling on the part of parents that they hoped their children would “get on”, but this was a relatively vague concept and could be influenced by emerging opportunities and influences that were experienced at school.

This rather soulless society gave rise to a very adaptable, open post-war generation that could embrace whatever careers were on offer, and through this could build a complex and diverse economic system which it is difficult to characterize, other than by “post-industrial”. Clearly, there were also no real selection operating for ethical values providing some “community performance”, and so over time social solidarity, and shared values have slipped away. Definition by what something is NOT is an interesting idea, and shows that really we still do not really know what is driving our current economic capacities, and how they interlock and co-evolve. Our world is really like the Chesapeake Bay ecology of Fig. 3.1, where we can classify existing elements, collect all kinds of data concerning their connection, build “models” that are essentially accounting equations that track flows, but we cannot capture the essential creative forces that drive innovations and adaptation forward from within the different levels of the system. One may even surmise that the more clearly one can understand the functioning of a system, the more that system is fossilized and non-adaptive, since the adaptive capacity springs from what is not clear.

Clearly the ethical values of bankers and traders was such that their own short term profit drove their decision-making and eventually crashed the whole international financial system of which they were a part! As we said above, community fitness and resilience is a function of the collective effects of individual characteristics – such as ethical values. In fact regulation and anti-monopoly laws have to try to provide the restraints that internal ethical values clearly do not.

Economic and Organizational Identities

The above is also true for the companies and firms that make up an economy. They too must both create an identity, an identifiable product and brand that some customers want, but they must also be capable of evolving and co-evolving it with their competitors and their customers within a changing technological and social environment. It is the precise “recipe” for this double game that is difficult to specify. If it were easy, then the recipe would be a mechanical set of rules and adaptation and learning would just be part of the standard game. But in reality organizational change is driven more real than the structures that appear to be present at any particular moment (Murray et al. 2002).

So an economic market is not a set of interacting firms and their products, and a set of customers who all make decisions that rapidly clear the market. The whole

point is that neither suppliers nor customers know what price is reasonable for which product, and they use the economic market to learn about pricing strategies and products that lead sufficient customers to buy the goods, so that the production can grow and then be maintained. But this takes some time, and during that time innovations will occur, and the use of the product by customers will produce new potential demands for further innovations, so producing a market evolution. These evolutionary market models have been described elsewhere (Allen et al. 2007). Each model run, having a different sequence of events leads to different market structure, since there are path dependent learning processes involved. The non-linearities produced by fixed and variable costs are quite enough to make decisions concerning profit margin and quality made in the early stages to mark irreversibly the outcome. Each model run is like a particular run of history, and what matters is the ability of participating agents to learn sufficiently from whatever situation they are faced with. Just as Darwin's finches co-evolved to a stable pattern on different Galapagos Islands, so firms must adapt their profit margin and quality so that a stable co-existence can emerge in the market place.

By continuously adding the profits of all the firms, and the costs of bankruptcy, we can get a continuous trajectory for the total profitability of the market place as a whole. These market simulations show that depending on unpredictable events, market evolution can be quite different, with the spread in the trajectories demonstrating the importance of luck. The model shows that if firms adopt different learning rules (random, imitation of winner, hill-climbing, diverse) the average gain and spread of the trajectories can be affected. Darwinian, random learning is least effective, and learning from marginal changes in profit margin and quality is the most effective.

Similarly, based on the transfer of ideas from biology to industrial evolution.⁴³ We have considered the evolution of the internal, organizational form of firms and shown how the different possible bundles of working practice can form particular clusters of synergetic behaviour, with characteristics of performance that can co-exist with other organizational forms. This work was described in several recent papers (Allen et al. 2005). Fifty three different working practices were defined as the underlying possible components of different organizational forms in the history of the automobile sector.

In Fig. 3.7a, the model allows us to define a definitive branching point where the structures on either side of the divide differ by 17 conflicting practices. Once a firm has engaged down one path it will not be able to change its mind and take the other. This shows the importance of these ideas for strategy. It also shows us the complex interplay of diversity, identity and inter-connectedness, whereby an industry evolves different organizational forms (identities) as a result of internal micro-diversity as new practices and traits are launched and tested, and either accepted or rejected by the organization in which they are tried out. If they are rejected then they do not

⁴³McCarthy (1995), McCarthy et al. (1997), and McKelvey (1982, 1994).

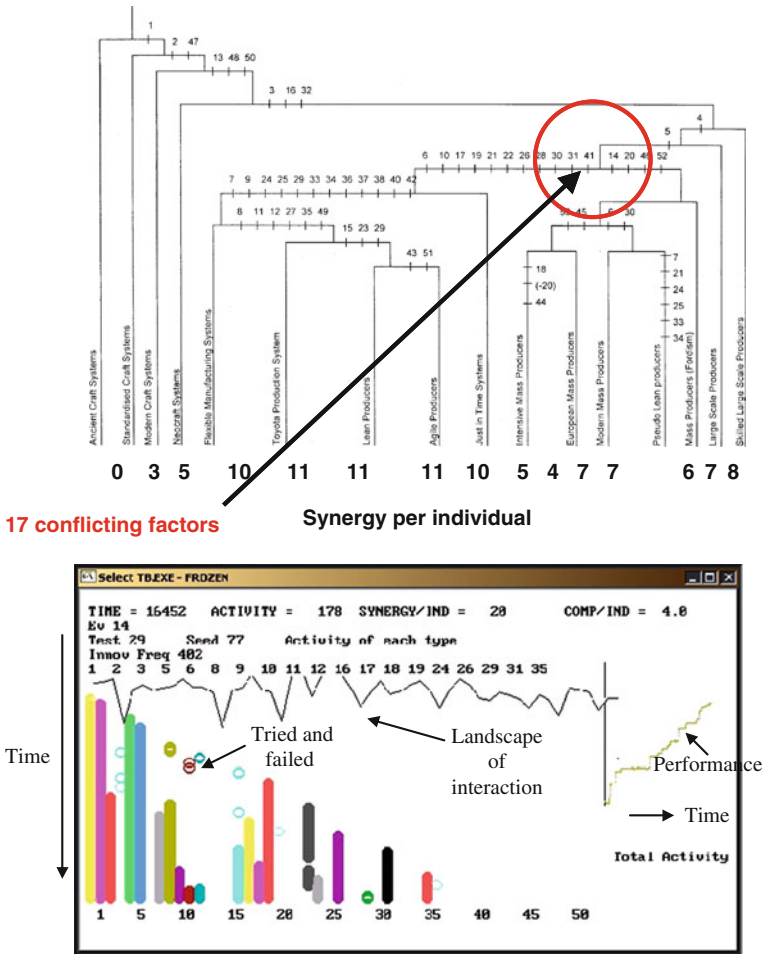


Fig. 3.7 (a) The Industry: 16 organizational identities emerge as different histories create a branching evolutionary tree of different bundles of practice. (b) The firm: An individual firm traces its own path through the tree

affect greatly what can currently invade the structure. If they are accepted however, then the new “composite” structure will have different susceptibilities to invasion than before. This means that different organizations trace out different pathways through an expanding tree of possible structures that collectively make up the industry. Once again, the micro-diversity of working practices leads to the emergence of co-evolving organizational forms and identities again reminiscent of Darwin’s finches. In different markets, different combinations of organizational forms may be appropriate, just as on different Galapagos Islands different combinations of finches can co-exist.

Conclusions

Our reflections concerning how complex systems of co-evolving agents with underlying micro-diversity and idiosyncrasy, then we *automatically* obtain the emergence of successive non-linear, dynamical systems. These “structural attractors” are temporary, emergent dynamical systems of limited dimensions, which approximately possess the property of “self-organized” criticality from among the much larger space of possibilities. These are complex systems of interdependent behaviours whose attributes are on the whole synergetic. They correspond to the emergence of hypercycles in the work of Eigen and Schuster (1979), but whereas the hypercycle is thought of only as a functional entity, in reality structural attractors have emergent collective attributes and dimensions. This is its identity. The structural attractor (or complex system) that emerges, results from the particular history of search and accident that has occurred and is characteristic of the particular patterns of positive and negative interactions of the components that comprise it. In other words, a structural attractor is the emergence of a set of interacting factors that have mutually supportive, complementary attributes.

The identity of an individual is related to the interpretative framework that they have developed with which to view and respond to events and experiences in the world. This very simple idea is shown in Fig. 3.8, where actions are guided by the interpretive framework that includes both beliefs about how the system works and what it is composed of, and of the values or goals that are to be respected or aimed for. Both of these are therefore the fruit of the family and cultural experiences of the individual concerned as well as of any fundamental genetic identity as well.

When events appear to support the current “understanding” and values of the individual then there is no need to change anything. But when events do not unfold as expected, or consequences appear to clash with values and goals, the individual

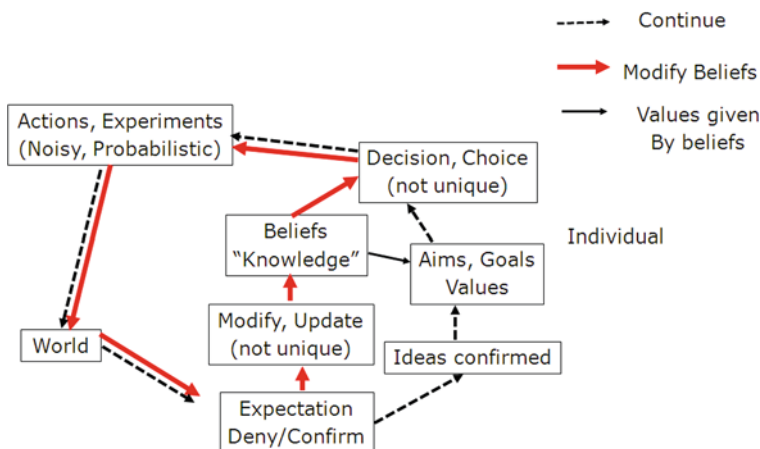


Fig. 3.8 Identity is really about the internal interpretive frameworks developed by individuals. Diversity arises because there is no unique, scientific or correct way to modify a framework in the light of events

will attempt to “up-date” and modify the interpretive framework – their model of the world.

The key point here is that there is no unique way of interpreting the “meaning” of new events or experiences into the existing view, and so individuals will tend to do it in different ways. There may be approximate cultural commonalities, but nevertheless there is no scientifically “correct” way to do this and so inevitably individuals will inherently diverge in their interpretations. This does not mean that any interpretation (or model) of the world is as good as any other, because experience will demonstrate that some views are clearly at variance with what happens. However, this still leaves a wide range of interpretations that are possible and still no unique way of up-dating them in the light of some new confounding experience. It also points to the idea that we should really be looking at our own actions as “experiments” that everyday test our understanding of the way things work – and what things “really” are. Clearly, given this lack of authority, and the difficulty of choosing one’s own new beliefs, many may simply adopt similar views to a preferred group, and simply mimic their responses without in reality understanding the basis of these. Figure 3.8 shows us that complexity is about how there is a co-evolution between ontology, epistemology and axiology – the breadth of the reality we perceive, the experiments we perform that test its coherence, and the values and goals that underpin our existence.

We see that the evolution of complex systems leads naturally to:

- Diffusion in character space leading to the emergence of co-evolved identities that are either synergetic or at worst can co-exist together. Instead of a homogeneous system, characterised by intense internal competition and low synergy, evolution driven by the generation of micro-diversity of identities leads to the emergence of heterogeneous structures with much higher performance, and reduced internal competition.
- Overall it leads to the evolution of a complex, a “community” of agents whose activities, whatever they are, have effects that feed back positively on themselves and the others present. It is an emergent “team” or “community” in which positive interactions are greater than the negative ones.
- Such systems represent the assemblage of a reduced set of activities from all those possible in principle. These will be the particular ones that history and its accompanying accidents. Happen to have led to, but will correspond to some degree of synergy and reduced conflicts. If all possible components were put together then the result would be a confusion and conflict of competing structures, whereas complex systems are really particular bundles of not mutually incompatible components. In classical dynamics an attractor refers to the long-term trajectory traced by the given set of variables. Here, we call a complex system that has some temporary persistence a structural attractor, characterized by the *emergence* of variables, dimensions and attribute sets that not only coexist but actually are synergetic.
- Sustainability results from the ability of systems to move from one structural attractor to another. It will be system that exhibits temporary stability for a time

and then is able to move on to a new form as the environment changes again. This discovery of different and multiple forms of co-operative and synergetic identities with complementary capacities, reduces internal competition. In other words, the free evolution of the different identities, each seeking their own way forward, leads to a system that is more co-operative than competitive.

The most important point really is the generic nature of the model presented above. The same ideas explain the evolution and co-evolution of Darwin's Finches, of economic markets, of organizational forms and of social entities such as our South Yorkshire miners.

A successful organism, product, organisation or social group is one which can discover successful "bundles" of component identities. These must possess emergent attributes and capabilities that assure the resources for its production and maintenance in the present. However, they must be capable of continuing their messy exploration of possible identities that allows them to find new, more adapted structures to the changing environment in which they live. The structural evolution of complex systems is driven by explorations and perturbations that test the stability of the existing attractor, either leaving it intact or evolving towards a new structural attractor involving some new "concepts" and emergent properties.

We can also draw some conclusions about the level of "cognition" required by organisms, individuals, firms/agents to survive in evolving structures. Broadly speaking we see that almost no knowledge is required for "agents" to generate successful heterogeneous complexes. Providing that there is micro-diversity among the agents, even with an entirely "random" basis, eventually the evolutionary system will discover a structure that is stable. In the economic market example, we know that purely random explorations, with no consideration of what seems to work, and what the successful directions seem to be can lead to a very slow rate of improvement of performance. In the further simulations, slightly more sophisticated learning methods are supposed in which either successful competitors are imitated, or trials are conducted to allow "hill-climbing" behaviour of the profit slope, but all of these require only very limited cognitive power. The "intelligence" that apparently underlies a coherent market structure lies not within the agents/firms that participate within it, but in the non-linearities inherent in the economic interactions that are present – the economies of scale, the fixed and variable costs, the degree of discrimination of potential customers. In reality collective intelligence is what emerges through evolution and this really requires very little cognitive power on the part of the participating individuals.

In the second example of structural evolution at the level of the internal structure of competing agents/firms, we see that it is the very ignorance of actual consequences of adding one practice rather than another that generates diversity of the different agents/firms, and allows a successful evolution of the industry. The evolutionary models described above show us the importance of the multi-level nature of socio-economic systems. Individuals with characteristic and developing skills and particularities form groups within companies, generating specific capabilities and

also particular receptivities for possible future changes. The products and services that emerge from this are perceived by a segmented and heterogeneous population of potential consumers, who are attracted by the qualities of a particular product or service and the low price at which it is offered. This results in a market share and in changing volumes of activity for different firms. When volume increases, economies of scale occur and allow further price decreases and greater attractiveness for potential customers. However, debts can be cleared quicker if higher prices are practiced, and since there is an interest rate in the model, paying off debt is also a way of reducing costs.

The important result from these multi-agent, complex systems simulations discussed above is that instead of showing us *the* optimal strategy for an individual, agent or firm, they tell us that there is no such thing. What will work for one person or company depends on the strategies being played by the others. The overall lesson is that it is better to be playing within a diverse ecology than in a limited, potentially vulnerable one. So, having a unique identity may seem “risky”, but it is better than simply packing into the same strategy as others. Coupled with having a clear individual identity, it is an advantage to “learn”. So, exploring the landscape sufficiently by doing experiments and interacting with it may enable faster “learning” than otherwise, but this will only be true if the “feedback” of the environment can be interpreted. In many situations involving highly connected individuals within organizations the feedback of experimental behaviour simply cannot be read and so learning is in reality impossible. In these cases, it may be necessary to develop an operational model in order to be able to calculate the collective outcome of particular combinations of behaviour of the multiple agents (Datta et al. 2007).

The new theoretical framework of evolutionary complex systems is about the emergent and creative co-evolution of identity and diversity at different levels of the system. We have a dialogue between explorations of possible futures at one level, and the unpredictable effects of this both at the level below and the level above. There is a dialogue between the “trade-offs” or “non-linearities” affected inside and outside the particular level of exploration. But it is also true that all levels are exploring. Unless there is an imposition of rigid homogeneity up and down the levels of the system, there will necessarily be behavioural explorations due to internal diversity. In this way, multi-level systems are precisely the structures that can “shield” the lower levels from instantaneous selection, and allow an exploratory drift to occur, that can generate enough diversity to eventually DISCOVER a new behaviour that will grow. Without the multiple levels, selection would act instantly, and there would be no chance to build up significant deviations from the previous behaviour.

It supports the view of evolutionary economics driven by “restless capitalism” (Metcalf 1998). Of course, many decisions will tend to reflect the short-term positive performance of something with respect to the dimensions of which we are aware, but obviously, in a complex system, there will be all kinds of less obvious factors that are perhaps adversely affected. In other words, what we choose to do

is dependent on “what we are measuring”, and so the system changes reflect our limited understanding of what will actually affect us. This is because our actions are based on our limited understanding and knowledge of the complex systems we inhabit. And their evolution therefore bears the imprints of our particular patterns of ignorance. So, we may grab economic gain, by pushing “costs” into the “externalities”, or we may seek rapid satisfaction from consuming some product that actually harms us, or our community, or our region, or the ozone etc. over the longer term.

This chapter shows us how identities, including ethical values, are created and co-evolve in an on-going evolutionary process, where it is the selection operated by the collective interactions that feeds back on individual experiments. Because of this, we cannot really ever fully understand why things got to be as they are, and in what precise way they may evolve. We cannot understand what exactly created the micro-diversity underlying Chesapeake Bay, an evolving economic market, an evolving organizational form or industry, or a social group such as a mining town. But can see that all these phenomena obey the same kind of behaviour – that of evolving complex systems. We need to allow ourselves to be “evolvers” – to both encourage and allow exploration both of behaviour and of values - and to pick up on what works and what doesn't. Instead of fossilizing our identity, skills, role or knowledge, we need to keep pushing back its limits, trying new things and learning things even though we cannot say ahead of time what the exact purpose will be. Of course, we may need to be particularly prudent about experimenting with ethical values but in fact the experiments are occurring in any case. Perhaps an open recognition and discussion of such matters is important and ultimately we may need to decide whether survival is the ultimate measure of such things or whether there should be “absolute values” that must never be questioned, even though survival may be jeopardized. The future problems of populations not being aligned to the food production and water consumption potential of the planet will probably test out these issues fairly soon.

Fortune favours the brave – those that are prepared to move on, to change and to adapt, and since the future is not known then we cannot prescribe the “best” things to learn. However, by exploring our own diversity, and building upon it we create a richer set of possibilities on which the collective system can thrive, and providing that multiple connections are tried out, then there are multiple possible new synergetic bundles that can emerge. So, the fact of uncertainty about the future, and the impossibility of knowing exactly how our current interpretive framework should be up-dated, leads naturally to a divergent, branching evolution of possible identities and diversities, which then compete and co-operate leading to the selection of compatible sub-sets, creating multiple possible futures, some of which at least will survive. The question is whether ethical values are what evolution creates in surviving structures or whether we can consider some ethical values as absolute, and hope that evolution will still allow us to survive. Complexity poses this question but does not answer it.

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Chapter 4

Comparison, Diversity and Complexity

David Byrne

Introduction

One of the most difficult problems in understanding complex systems is the question of how causality works in maintaining or transforming the trajectory of such systems. This chapter will outline some approaches in dealing with the problem of causality. It will recognize the enormous difficulty of developing causal methods for prediction in relation to complex systems; problems confounded, or perhaps even to some degree resolved, when human agency plays a role in determining the future of such systems. However, it will argue that we can achieve a satisfactory degree of *retrodictive* understanding of how causality has worked – can in other words understand what has happened to complex systems in the past. The set of approaches which work for this are essentially those of the comparative method as it has been developed in the social sciences but as it can readily be transferred into the domains of the biological sciences and in particular into the intersection of human and natural systems in ecology.

Of course any intervention in any social system has ethical implications. There is inevitably a normative element in relation to intervention because intervention is about changing things and if we set about changing things then we are in the business of making them into something else. We must regard their new state as better than their old state – a normative judgement. However, the ethical issues do not stop there. There is the vital question of who “we” are? All too often “we”, the actors and particularly powerful actors, assume that “we” represent some sort of universal interest, the proper enactment in the world of a Rousseauian General Will. Of course in reality there are often conflicting interests in play. If the question we bring to causal analysis is “what works?” then we have to also be asking “what works for whom?” and recognize the multiplicity of possible answers to that question. What is being proposed here is an approach which at least allows a delineation of multiple cause paths and multiple outcomes. Clarity in relation to multiplicity matters.

D. Byrne (✉)
School of Applied Social Sciences, Durham University, Durham, England
e-mail: dave.byrne@durham.ac.uk

Conflicts then become open and only when they are open can there be any possibility of resolution and even possibly reconciliation. So how can we work appropriately in that framework of understanding?

The central theme will be the need to pay attention to ensembles of systems rather than single systems and to take the idea of “near neighbours” which exists in the mathematical treatment of complex systems as a metaphor which can inform a whole range of quantitative and qualitative approaches to retrodiction. Drawing on the ontological program of critical realism, the chapter will outline how approaches including Qualitative Comparative Analysis and systematic narrative might enable us to explore differences among similar systems as a way of understanding complex causal sets and their outcomes in interesting social and socio-ecological systems.

The implications of this method for action-research, which here can be understood as all systematic social actions which are informed by scientific understanding in dialogue with social actors in real social systems, will be explored.

Complexity and Qualitative Comparative Analysis

... a practice of social and historical explanation, sensitive to structure but aware of contingency, is not yet at hand. We must build it as we go along, by reconstructing the available tools of social science and social theory. Its absence denies us a credible account of how transformation happens. (Unger 1998: 24)

What then is described by our models? I would argue that models attempt to grasp the *structure* of complex systems. Complex systems are neither homogeneous nor chaotic. They have structure, embodied in the patterns of interactions between components (Cilliers 2005: 139–140).

Case oriented researchers see cases as meaningful but complex configurations of events and structures. They treat cases as singular, whole entities purposefully selected, not as homogeneous observations drawn at random from a pool of equally plausible selections. Most case-oriented studies start with the seemingly simple idea that social phenomena in such settings ... may parallel each other sufficiently to permit comparing and contrasting them (Ragin 2004: 125).

This sense of order-in-complexity is very strong in comparative social science because it is not difficult to make sense of an individual case ... or to draw a few rough parallels across a range of cases ... The challenge comes in trying to make sense of the diversity across cases in a way that unites similarities and differences in a single, coherent framework (Ragin 1987: 19).

The point to be emphasized is that an abundance of difference is not a convenience, it is a necessity. Complex systems cannot be what they are without it, and we cannot understand them without the making of profuse distinctions. Since the interactions in such systems are non-linear their complexity cannot be reduced. The removal of relationships, i.e. the reduction of difference in the system will distort our understanding of such systems. A failure to acknowledge this leads to error, an error which is not only technical, but also ethical. When we pretend that we can understand or model a complex system in its complexity, such pretence is not only hubristic, it is also a violation of that which is being modelled, especially when we are dealing with human or social systems. Trying to understand complex systems involves a certain modesty (See Cilliers in Chapter 1 in this volume).

In order to recognize a *difference* between A and B, they must in the first place be identifiable as A and B (in their singularity), and secondly, they must, even if only slightly, share something that makes a comparison possible (there must be some element of identity) (Cilliers: Chapter 1).

This chapter is an attempt at a synthesis. It is intended to meld the conceptual understanding of complexity theory – “general complexity” as Morin (2007) and Cilliers (Chapter 1) describe it (which is a better term than my synonymous “complex complexity”- Byrne 2005), with contemporary approaches to the comparative method in the social sciences, and in particular with Qualitative Comparative Analysis (QCA) as proposed by Ragin (1987). In doing so it starts from Mills’ systematization of methods of difference, which was of course part of a nomothetic project of finding ways of elaborating causal accounts when experimental methods could not practically be employed. It is important to say that since QCA recognizes that causation may be complex – that is to say multiple and contingent – it represents a radical departure from Mills and, to extend the synthetic range, corresponds very closely to the understanding of causality which characterizes the critical realist project. However, all these are projects which deal seriously with causality. That is not to say that they reject meaning. In fact all take it very seriously and in an important sense all stand beyond the division of the human sciences from science as a whole which has been implicitly or explicitly asserted since the seventeenth century. Nonetheless, with meaning itself understood as having causal powers, we are dealing with attempts by human beings to understand why things have happened as they have in order to have some; however tentative and indeed always indeterminate, way of saying what will happen if we do something now in terms of how things will turn out in the future.

Two big issues are embedded in the last sentence of the preceding paragraph. First, it emphasizes change and necessarily change through time. We are dealing with dynamics here. Second, it asserts the creative capacity of human agency in playing a part in determining the future. Let us emphasize the significance of trajectories – the plural is absolutely deliberate – as descriptions of change through time for complex systems. Let us go further and understand effects, not in the traditional form of variable centred science as changes in the values of discrete parameters in the form of “variables” which are understood as having a reality without complex systems, but rather as systems staying much the same or changing radically. That is to say, those effects have to be understood as either the maintenance of broad stability in which, whilst the system may change through time, it does not undergo a transformation of basic character, or as “phase shifts” in which such a transformation does occur. If that is given, then trajectories of systems in “state space” (however, we frame our notion of state space), describe effects. Note this emphasis on effects before causes. We need to grasp that effects are the set of descriptions of trajectories of systems in which each system either stays much the same or changes, with the possibility for complex systems that there are multiple but not infinite future states which can be generated from the present state.

Dilthey’s (1996: 2) distinction between ideographic and nomothetic science (both are science since the German expression *Wissenschaft* has a far wider referent than

the conventional English meaning of “science” and corresponds to the Gulbenkian Commission’s very useful definition of science as “. . . systematic secular knowledge about reality that is somehow validated empirically” was a distinction founded on objectives – on the difference between the project of discovering universal laws which had predictive force and the project of describing the unique developments of particular aspects of reality. Implicit in this distinction was an understanding that the ideographic dealt with the complex and hence with the emergent in relation to the specific case. That is to say the ideographic method, best illustrated by the processes of historical account, generally took the form of a narrative describing the particular *and* the processes of the formation of that particular because this was the only way of dealing with what we now call emergence, and in particular with emergence which was the product of human actions.

Classification, Cases and Causes

Whilst Mills had understood the comparative method as a technique for the establishment of single causes when experimental procedures could not be employed, Weber influenced by Dilthey developed approaches which were intended to deal with multiple causation and, again implicitly, emergence. However, his formulation of the “ideal type” was a move beyond the merely ideographic towards a synthesis of common and essential elements and hence towards a specification of causality in multiple cases. Ideal types are abstractions from real cases but they draw on the properties of real cases. That word case cannot of course be simply taken as given. Indeed an important background referent for the whole discussion in this chapter is provided by Becker and Ragin (1992) whose edited books addresses precisely the issue of *What is a Case?* Here I am asserting that the cases which are significant for complexity science, are complex systems of whatever kind, whilst recognizing that it is wholly legitimate to think about cases in quite different ways. And the crucial thing about complex systems is that they have trajectories, or to put it another way, histories which extend forward from now as well as backwards from now.

One important procedure which we can apply to cases considered in the sense I have specified is classification – sorting things out into kinds. We must not forget that whilst the Newtonian model of mechanical causality described in terms of mathematical formalisms, is one of the key elements of science as it has developed since the seventeenth century, the other is classification – stamp collecting as Rutherford is supposed to have dismissed it when dividing, in a thoroughly reductionist fashion, science into physics (causal description) and stamp collecting. Now classification is about differences as much as it is about similarities. The most commonly employed set of techniques in computer based numerical taxonomy, cluster analyses; usually work by constructing matrices of *dis*-similarity coefficients across a range of variables describing a set of cases and then joining together in a set those cases for which a distance calculation derived from these dis-similarities is minimized. So sorting things into kinds is to derive difference from aspects of the set

of things being sorted. Now an important term in complexity theory is “near neighbour” which describes cases – i.e. systems – which at a point in time are located in the same “cloud” or discrete volume within a multi-dimensional state space. In cluster analysis terms these cases will be in the same cluster.

Classifications are usually made at a single time point. However, we can extend the idea of classification in a dynamic sense. We can explore how complex systems move through time in terms of whether or not they remain members of the same set at different time points. This provides us with an operationalized model for “phase shift” in that we can consider a change over time in cluster membership as demonstrating a phase shift. We should also recognize that the whole structure of classification may also change over time (see Byrne and Uprichard 2007).

Classification examines the macro characteristics of systems. However, comparative methods which go beyond the macro-characteristics can explore complex causation in relation to internal micro-characteristics of systems in some detail. They provide a potential route to defining: “. . . the nitty-gritty micro-diversities which enables a system to be what it is.” (Richardson and Cilliers 2007: 2). The best way to demonstrate this is by working through an example. Table 4.1. shows a “truth table” for state secondary schools in the North East of England which “patterns” the configurations relating to success levels for pupils in the public examinations taken at age 16.

Table 4.1 Truth table for secondary schools North East of England

High special needs	Mixed	Sixth form	Religious	Comprehensive intake	High deprivation	Number	% With a high score on GCSE binarized
0	0	1	1	1	0	2	100
1	1	1	1	1	0	1	100
0	1	1	0	0	0	3	100
0	0	1	1	1	1	1	100
0	0	1	0	1	0	1	100
0	1	1	1	1	0	9	89
0	1	0	0	1	0	11	82
0	1	1	0	1	0	26	69
0	1	0	1	1	0	2	50
0	1	1	0	1	1	17	47
1	1	0	0	1	0	8	38
0	1	1	1	1	1	3	33
1	1	1	0	1	0	7	29
0	1	0	0	1	1	18	28
1	1	0	0	1	1	14	7
1	1	1	0	1	1	3	0

This “crisp set” method of QCA requires that input descriptors be binarized i.e. have a value of either 0 or 1. In the above table some descriptors are truly binary. A school either has a mixed sex intake or doesn’t, either has a sixth form or doesn’t, either recruits on a comprehensive (non-selective) basis or doesn’t. However, other

variables involve the binarizing of continuous measures. This is true for special needs, deprivation and the attainment variable where a line is drawn to cut a continuous distribution.⁴⁴ If we look at the rows in the above table each represents a configuration or combination of binary/binarized characteristics. So the first line is that where special needs are not high, the school is not mixed, it has a sixth form, it is religious, it has a comprehensive intake, and it is not high on the deprivation measure. The two schools in this category (number in the table shows number in the category) both do well. In contrast of the 14 schools which have high special needs are mixed, do not have a sixth form, are not religious, and are high on the deprivation measure, only one does well. Now of course we go to look at that school to find what makes it different from the other 13 with the same configuration which is another way of saying they are in the same category.

It is worthwhile picking over the table in somewhat more detail. We can see that all single sex schools do well but that does not mean that it is enough to be single sex to do well because no single sex school is high on either special needs or deprivation. We can therefore say only that single sex schools which are not high on special needs or deprivation do well in this particular region and for the particular year for which the data was collected. The causal account is complex and contingent and local in both time and space. It is the combination of characteristics which matters rather than any single characteristic.

A great many issues emerge in this kind of exercise. The first is what precisely we are identifying when we make a measurement. There are three takes on this. The first is to assert that in general, subject to issues of validity, our measurements are of real variables which exist without the system which is being measured. The second is to see the actual measurements as traces of underlying unmeasured factors – the approach of factor analysis and its derivatives such as structural equation modelling. The third approach (see Byrne 2002) informs this chapter. Measurements are not understood as representing anything which has real existence without the system being described by them. Variables as such do not exist. Rather we are dealing with variate traces of the systems to which the measurements are attached.

A second issue relates to the thorny question of structure. Just what are we dealing with when we talk about structure in a complex system? Here a lead in is provided by the term “interaction”. In the language of statistics, this term is the tribute paid to non-linearity and emergence. It is the common term used to distinguish the complex from the simple. In his seminal paper of 1948 Weaver described problems of complexity thus:

The really important characteristic of the problems of this middle region, which science has as yet little explored or conquered, lies in the fact that these problems, as contrasted with the disorganized situations with which statistics can cope, show the essential feature of organization. In fact, one can refer to this group of problems as those of organized complexity. . . . A very substantial number of relevant variables is involved here, and they are all interrelated in a complicated, but nevertheless not in helter-skelter, fashion. (Weaver 1948: 536)

⁴⁴Clearly where the line is drawn has considerable implications for the data pattern generated.

Cilliers writes of “interaction between [we might say *among* since multiple interactions are possible] components”. So we do think of complex systems as having components and the structure of the system as dependent not on the simple summation of these components and their effects but as essentially including interactions and their effects, with emergence being precisely the product of such interaction.

I have to say that I have some reservations about this approach. It seems to me to continue to be analytical albeit that it abandons reductionism. We should not be simply holistic in thinking about complexity. Eve et al. (1997) reminds us that we can have a holistic fallacy of attempting to explain everything without any sense of internal differentiation or structure. However, we also have to recognize that:

Causal theories of emergence suggest that emergent properties are properties of structured wholes which have causal influence over the constituents of the whole . . . suggesting that one of the emergent properties that a system can have is the power to exert causal influence on the components of a system in a way that is consistent with, but different from, the causal influences that these components exert upon each other’ (Newman 1996: 248).

It is not that I disagree with the notion of complex systems as structured from sub-systems with the trajectory of the system being determined by interactions among those sub-systems, interactions of the sub-systems with the system as a whole, *and* interactions of both system as a whole and sub-systems with the external environment of the system. That is the essence of both the idea of emergence and of understanding meaningful change in complex systems as taking the form of phase shifts. Rather my proposal is that we should be very careful in equating sub-systems with “variables” in the tradition of multi-variate modeling in statistics. Even QCA tends towards a variate language in discussion and the use of Boolean methods based on De Morgan’s law as a way of developing a more parsimonious set of configurations is certainly reductionist. Rather I am proposing that we should see the interactions as what matters rather than the components of the interactions. This corresponds with Emirbayer’s proposal for a relational sociology:

Sociologists today are faced with a fundamental dilemma: whether to conceive of the social world as consisting primarily in substances or in processes, in static ‘things’ or in dynamic, unfolding relations. Large segments of the sociological community continue implicitly or explicitly to prefer the former point of view. But increasingly, researchers are searching for viable analytic alternatives, approaches that reverse these basis assumptions and depict social reality instead in dynamic, continuous and processual terms (Emirbayer 1997: 281).

Even Emirbayer talks of “analytic alternatives” and of course we must employ analysis in any investigation of complex systems, but we must do so in a way which corresponds to Goethe’s assertion that analysis and synthesis are as linked as breathing in and breathing out. The present implications of this are for what we understand by our measurements, and the elements in the configurations specified in Table 4.1 are measurements. For me these elements are not entities but traces of the systems – here secondary schools in the North East of England – as they move through time. The measures are either classifications of those systems in terms of the individual system’s own attributes, or dichotomised values of aggregate measures of the attributes of individual pupils (e.g. has or has not got a special need) within the

schools.⁴⁵ Measures like these are useful but the real “entity” is the combination of elements with elements being understood as interactions. This corresponds rather closely with the general critical realist understanding of complex and contingent causation (see Sayer 2000). We have generative mechanisms which are themselves complex which operate contingently in context. Heuristically it is perhaps appropriate to think of the generative mechanism as representing the “system” understood as all the elements within the system, their interactions, the whole system, and the interactions of whole system with the elements of the system *plus* the effect of generative mechanisms of systems at a more general level. Context is time-place contingent.⁴⁶

The term “control parameter” has considerable salience in complexity theory. In what Morin (2007) has called “restricted complexity” (again a synonymous and better term than my “simple complexity”) the search for control parameters can become very nomothetic – “the rule” of the game, the simple drivers of emergence and so on. Skepticism about the “scientism” of restricted complexity should not, however, stop us from thinking that what matters in complex systems might not be everything *and* that what matters might differ among different systems. Here we might see the identification of configurations as a move, always tentative, incomplete, provisional, towards the specification of *different* internal control parameters (although configurations can mix internal aspects of the system and external elements in their constitution) which can generate *difference*. This kind of approach resonates exactly with contemporary recognition of the significance of specific histories in social systems as expressed in the idea of “path dependency”.

Critical realism’s mode of explanation is primarily that of retrodiction with retrodiction being a subset of retrodiction. Retrodiction is a strategy which seeks to establish the nature of causality in terms of generative mechanisms responsible for the empirical effects we observe in the world. It is based on a deep ontology in which the real is the level of the generative mechanisms - a realm in essence of possibilities, the actual is what actually happens in the phenomenal world, and the empirical is what science observes of the actual. The retroductive approach does not seek for universal or constant conjunctions but rather understands causes as tendencies. In this way of thinking retrodiction is the specification of causal patterning understood, at least by me, as incomplete and tentative specifications of multiple, complex and contingent causal complexes. In other words the configurations in Table 4.1 are descriptions – incomplete and tentative – of such multiple, complex and contingent complexes in specific temporal and spatial context.

⁴⁵We certainly have a notion that the attributes of the individuals affect the system within which they are situated although probably this operates in a non-linear fashion through a threshold effect. A few pupils with special needs normally (there are exceptions particularly at the level of the class) makes no difference but a lot of such pupils does. Thresholds are not sharp but they are nonetheless real.

⁴⁶Actually we have to ask if the distinction between generative mechanism and context holds up. It can be convenient to think in that term when we have a useful notion of boundary but that is not always the case.

Near Neighbours and Systematic Comparison

What this means is that systematic comparison, precisely by focusing on macro differences in outcomes – with outcome here equivalent to the state of the system – provides a viable method of retrodiction. Let me develop this with regard to another example – that of city regions.

Cities happen to be problems in organized complexity, like the life sciences. They present “situations in which half a dozen quantities are all varying simultaneously *and in subtly interconnected ways*. [original emphasis] Cities, again like the life sciences, do not exhibit *one*[original emphasis] problem in organized complexity, which if understood explains all. They can be analysed into many such problems or segments, which, as in the case of the life sciences are also related with one another. The variables are many, but they are not helter-skelter; they are “interrelated into an organic whole” (Jacobs 1961: 433).⁴⁷

In Table 4.1 the outcome was specified in relation to a single categorical attribute based on one criterion – whether or not schools were above a cut off point on a single variable measuring the attainment of the relevant cohort of pupils taking public examinations. However, if we are talking about the “state space” location of a complex system then we are far more likely to want to describe that location not in terms of a single indicator but rather in terms of a much more general account which in quantitative mode means that we have multiple measurements. In conventional approaches to state space we would say that the location of an entity in the multi-dimensional state space is represented by the co-ordinates on all the discrete dimensions of the state space, which would be the different variables (properly variate traces) which we have measured to describe that system.

This is exactly what cluster analysis techniques do. In the visualization modes (which can at most be projected in three dimensions) members of a cluster are represented by a cloud of points in a graph and one useful measure is distance from the centre of the cluster for a case.⁴⁸ To use the language of complexity science, members of the same cluster are near neighbours of each other. So we can consider a set of industrial cities in what some 40 years ago we used to refer to as “advanced industrial societies” i.e. basically nation states in the global North which were of the “West” in political terms.⁴⁹ Thirty years ago a number of city regions in the Soviet block, particularly regions in *Mittel Europa* which had been industrial prior to Communist takeover, would also be at least partial members of this set. Such places had much in common. For example, Cleveland Ohio and the Tees Valley region of North East England (for a time the administrative Cleveland County⁵⁰) are both city regions characterized by heavy industry in the form of steel and chemicals and both

⁴⁷The reference to Weaver is obvious and explicit in the original text.

⁴⁸This would be more useful if it had some direction attached which here would mean that we would want to know not only the distance of the case from the centre of its own cluster but also its distance from the centres of all other clusters.

⁴⁹This set would include Australasia, Japan and South Korea.

⁵⁰The congruence of name is a coincidence but the places are very alike in most respects with one great difference relating to ethnicity.

the products of nineteenth and twentieth century industrial development. They differ in terms of “socio-political context” and ethnicity, in that Cleveland Ohio has a large Afro-American population and whilst Teesside is the product of massive immigration, the largest component of that was Irish and English/Irish divisions no longer have any real social significance. Both city regions are embedded in a global capitalist system which has changed dramatically over the past 30 years. Other cities which belong to the same set and have been exposed to the same pressures – in the case of *Mittel Europa* since the fall of Soviet Communism – would include the US Rustbelt as a whole, all city regions of the North of England and Wales, Glasgow, (but not Edinburgh), Lille, Liege and the cities of the Ruhr, Milan, Turin, Genoa, Barcelona, Bilbao, Rotterdam, Katowice, Brno, Ostrava, Lodz etc.

Over the past thirty (or in the cases of former Soviet *Mittel Europa* 20 years) these city regions have been exposed to global pressures and all have lost very large numbers of industrial jobs. All have changed but they have not all changed in the same way. We can examine the trajectories of these cities over this period, by which is meant not the calendar time but the period of de-industrialization, and construct a comparison to explore what differences have led to their present diverse character. This is not just a matter of quantitative coding for QCA but also includes the development of narratives (see Uprichard and Byrne 2006) both as a precursor to quantitative systemic comparison through QCA and following that systematic comparison in order to explore the basis of differences in contradictory configurations. That there is a difference we can agree. Seattle has had a different post-industrial trajectory from Detroit, Chicago from Cleveland Ohio, Leeds from Bradford, Malmo from Tyneside, Katowice from Chemnitz. This is by no means simply a matter of national location but rather reflects differences which are partly a function of spatial location – Seattle and Rotterdam remain great ports because of where they are, partly a matter of contingent developments – Seattle has Microsoft because Bill Gates grew up there, partly a matter of history in interaction with national location – Katowice is a good location for German and Belgian capital because it was such a location before communism and is in Poland where relative costs of technical and skilled labour are low whereas Chemnitz is embedded in the new Germany and development there incurs high social and wage costs, Leeds was both at the T junction of the M1 and M62 and had a history of small capitals which meant that it had a large producer services sector whereas neighbouring Bradford was not so located, had a history of large capital which had not relied on external producer services and has a problem of contested ethnicity as Leeds does not because Bradford drew in labour from Islamic zones in the 1950s to service that large capital in the woolen mills. The Leeds/Bradford comparison as with a Leicester/Bradford comparison (see Byrne 1998) generates precisely accounts of complex causation. Indeed policy makers constantly make comparisons of this kind seeking a similar place to imitate and looking for “differences” which they can address to make them “better”. This is absolutely dependent on the explicit recognition of the significance of path dependency – on the need to get there from here and not attempt to start in abstraction – a central historical principle in social science which resonates exactly with

complexity's frame of reference in general and with the significance of difference in particular.

Complex Causality and Difference

So far difference has been discussed here as a condition of systems understood if not in a mechanical sense, at least in a rather “asocial” sense as existing as they are now. The final part of this chapter will address the implications of an understanding of the complex causality of difference in complex systems for social agency – for the actions of human beings in their world(s) as constructors of particular futures from the range of futures which exist in potential. If there are different futures possible, then the engagement of social science with those futures will necessarily take the form of action-research. The online journal *Action Research International* defines this term thus:

Action research consists of a family of methodologies which pursue outcomes of both action (change) and research (understanding). It uses a process which alternates between action and systematic reflection, or achieves theory-practice integration by some other means. It is usually, though not universally, collaborative and qualitative. Its many forms include such varieties as participative action research, emancipatory action research, action science, and soft systems methodology, among others.

Journal guidelines: <http://www.scu.edu.au/schools/gcm/ar/ari/ari-auth.html>

In other words the philosophic contemplation of the world is abandoned in favour of an active engagement, informed by research processes, in the reconstruction of the social world anew (see Karl Marx – Thesis XI on Feuerbach, as inscribed on Marx's tomb). Research in a complex human social system is inevitably action research because it always contributes to the shaping of the trajectory of that system towards a particular future for the system. It is part of the process of the constitution of what is to be.

This predicates a very different conception of the relationship among researchers, researched subjects and social systems and institutions. This moves us inevitably in the direction of participatory social research:

Originally designed to resist the intellectual colonialism of western social research into the third world development process, participatory research developed a methodology for involving disenfranchised people as researchers in pursuit of answers to the questions of their daily struggle and survival. . . . It is not new for people to raise questions about their conditions or to actively search for better ways of doing things for their own well-being and that of their community. But what participatory research is proposing is to look at these actions as research that can be carried out as organized cognitive and transformative activity . . . This vision implies a new framework of political will to promote research as collective action in the struggle over power and resources, and as the generation of change-oriented social theory in the post-industrial, information-based society. Knowledge becomes a crucial element in enabling people to have a say in how they would like to see their world put together and run . . . Participatory research is a means of putting research capabilities in the hands of deprived and disenfranchised people so that they can identify themselves as knowing actors; defining their reality, shaping their new identity, naming their history, and transforming their lives for themselves It is a means of preventing an elite group

from exclusively determining the interests of others, in effect of transferring power to those groups engaged in the production of popular knowledge. . . (Sohng 1995).

Actually the term is due to Freire (1996) quite explicitly, and that attribution matters because Freire was engaged in a struggle not with external elites or experts, but with the possessors of power in his own society, Brazil. This is really quite important because so much of the literature about participatory research as part of the process of empowerment is written in a liberal elite hand wringing mode for “the poor poor people”. One of the key attributes of post-industrial society is that everybody other than a very restricted group drawn from intersecting economic and political elites is now disenfranchised. We are post-democracy as well as post-industry (see Crouch 2000, Nelson 1995). Freire (1996) had been poor himself and knew perfectly well that poverty, powerlessness and dispossession was the normal condition of people in his society. The majority in post-industrial post-democracies are not poor, although their lives are much more contingent than during industrial democracy, but they are powerless. Of course it would be perfectly possible to engage in complexity informed action research on behalf of the powerful and possessing. Indeed urban studies work using a complexity frame of reference which pretended to be purely “scientific/technocratic” would serve exactly that purpose.⁵¹ Here the “science” would serve the purpose of being an ideological smoke screen.

There are examples of engaged complexity informed research in areas which are relevant for us, but so far almost all of them come from work on the interface of bio-physical and social systems, particular in relation to water resource management. Here Lemon et al.’s interesting collection of essays (1999) is particularly valuable because they propose a style of iterative engagement between scientists – in their case physical and biological as well as social – and the people and communities who are the social component of their field of study. The term sustainable has only entered this essay so far in relation to the dependency of urban systems on their ecological footprints elsewhere. We can consider the principle of sustainability to extend beyond the ecological, or perhaps we should say that in a complex world sustainability of complex urban socio-economic-politico-ecological systems is a matter exactly of the interaction among all parts of those systems, as well as of those systems with their external environment of other nested and inter-penetrating systems. Blowers (1993) and Ravetz (2000) have begun this sort of debate, although both books in typical liberal fashion do not confront the reality of irreconcilable interests in relation to urban futures.

If we think of urban systems rather than particular administratively defined cities, then all the above are true except that in some old post-industrial city regions, population is momentarily declining.⁵² The first thing to focus on in this useful list is the notion of transition. City regions are generally not in a settled condition. They

⁵¹Interestingly I can’t identify any examples of this style. There is something about complexity which forces its practitioners towards genuine participation.

⁵²However, even in those places – for example Tyneside – there is global immigration in the form of asylum seekers.

are in the period of change, which means that there is a real possibility of shaping the direction of that change. The “renegotiation” – for which read massive privatization – of public/private sector relations is an important aspect of this process of change. It is the method through which private capital in the abstract and capitalist actors in reality are seeking to shape the trajectory of cities in a direction which enables surplus value to be extracted from the labour of workers in the formerly public sphere and rents to be extracted from previously public land and land derivatives. This process is the origin of much of “increasing inequality”. The old institutional forms of organized labour and representative democracy find themselves relatively powerless against this process, although they do retain more scope for action than ideologists of globalization will allow. It is the “disengagement” of public from politics which is most important in enabling change to be shaped by capital and capitalists’ agenda.

Conclusion

The need for participatory politics and a participatory politics which is informed by and shapes a coherent social scientific engagement with urban life and urban futures, is apparent. Globalization as ideology asserts that the control parameter for all of social life is systemic capitalist requirements as expressed through financial markets. The argument advanced here is that although that is an important part of the current configuration of “determining” elements, the effect of “market forces” will depend on the response of social action to the implications of market forces. This will necessarily be an active assertion of difference in places and by people. Outside Brazil, this has taken the form of policy planner led efforts to situate particular cities in the best niches available in post-industrial capitalism. The argument of this paper is that we can do more than that – literally can – we have the capacity to do more than that. And we have that capacity because urban systems and other social systems are complex systems and complexity theory informed participatory research gives us a basis for engaging with those systems in ways which will have profound implications for the future of the global system within which they are nested and with which they intersect. If we have that capacity, perhaps we might use it? Indeed, any ethical system would assert that we should use it and that it would be profoundly unethical to engage in social transformation without the combination of clarity of difference provided by the complexity modality applied to comparative study *and* the social engagement which allows for conflict and its resolution (hopefully) which is integral to the participatory process.

Hence, in this account difference becomes a tool for understanding processes of complex causation when difference is deployed as the basis of careful multi-case comparison. It is a way of establishing best practice, although that term has always to be understood in relation to the question “best practice for whom?” We can employ it in a relatively straightforward and usually non-contentious technical fashion as in the example of seeking to discover what path dependent best practice might generate good outcomes in relation to the achievement of children in

secondary schools. However, more often we will have to engage with contested futures as in the case of establishing tools for social intervention in order to transform post-industrial cities in particular directions. What is particularly interesting and this statement can serve as a conclusion to this chapter as a whole, is that the language of complexity gels so well with critical realism's ontological specification of the nature of complex causation *and* with tools developed in order to understand complex causation using comparative methods. What I tell you three times, is true.

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Part III
Identity

Chapter 5

A Dynamical Approach to Identity and Diversity in Complex Systems

John Collier

Traditional Approaches to Identity

Aristotle regarded every thing to be a member of a species falling under a genus, with higher genera less specific until we get to basic metaphysical categories. Although he was concerned with kinds of entities, Aristotle had less concern with the identity of particular things. He thought that there are substances (Greek *ousia*) that form the substratum for attributes, or properties. The essential properties of a substance are those without which the substance would not exist, with other, changeable, properties being accidents. The being or essence of a substance is what determines its identity, and is the basis of its distinctness from other substances.

Interest in this problem developed in the Middle Ages, with Duns Scotus, who believed that all substances must have an essence that makes them what they are. Since two things can have the same qualities he thought that there must be a non-qualitative property, *haecceity*, which makes things the things they are. Scotus needed such a property since he believed that qualities were universals, and their instantiation could not individuate things alone. Whether or not we accept the ideal of universals, the approach brings up the idea that there must be something about an individual substantial being that makes it the thing that it is. Any satisfactory account of identity must account for the essence, or being, of particular things. The haecceity account is not very helpful, though, since haecceity is not in any sense observable, and thus has no role in scientific accounts of identity.

Historically, the next problem of identity was diachronic identity, especially personal identity, taken up by John Locke (1690: II. Xxvii). While Locke generally was happy to identify things and properties by nominal properties (he thought that words typically follow the nominal essence rather than the real essence, 1690 III, iii), in the case of personal identity he took the opposite view, aiming to give an account of the real essence of personal identity. Locke thought that unchanging things like atoms, for example, were individuated by their persistence over time, and that groups of

J. Collier (✉)
School of Philosophy and Ethics, University of KwaZulu-Natal, Durban, KwaZulu-Natal,
South Africa
e-mail: collierj@ukzn.ac.za

atoms (bodies) were individuated by their component atoms. Living things like animals, though, are individuated by their specific organization, especially as it pertains to the maintenance of life. However he did not identify people with their bodies. He regarded personal identity as a forensic concept, and it mattered morally whether the person we blame at a later time really is the same person who committed an act at an earlier time. He identified being the same person with having the same consciousness. His theory was basically dynamical, depending on the closure of the memory relation, which he regarded to be causal, and for empirical investigation to discover. The details are not important here. What is important is that the problem raises the question of what it is that makes temporal parts (stages, slices) of some thing parts of the same thing. He did not seem to think the same problem arose for atoms, bodies or animals, taking it for granted that same individual essence persists.

There is an analogous question for spatial parts, which is more usually studied as the problem of what makes components of some thing components of the same thing. In this case Locke seemed happy to identify a thing with the sum of its parts (perhaps with organization preserved, as in animals), but apparently saw no problem with consciousness, regarding it as unitary. All of his moves on these issues have been questioned in depth. The basic problem, though, is the relation of a thing or property to its components; is it identity, or something else? If the essence of a thing or property is not just to have certain components, what gives it its being? If it is not just having certain parts, is the part-whole relation compatible with the answer to the first question? These are all problems in contemporary analytic philosophy, but its methods of analysis seem to lead to no common conclusions.

A third problem is sometimes called identity across possible worlds, or modal identity. Again, there are various questions and approaches to their answers, but no general agreement. The issue, basically, is how identity might apply under counterfactual conditions. A simple but unhelpful answer is that if the individual essence remains the same, then the entity is the same, but if it is disrupted or changes, then we have a new entity. The same sort of answer applies to questions of trans-temporal and compositional identity, so the issue is central to any satisfactory account of identity and individuation.

In a dynamical account of identity and individuation, some answer must be given to these questions for the account to be satisfactory. The central question is what dynamically characterized trait makes a thing or property what it is; that is, what is its dynamical essence? This will help to solve the issue of counterfactual identity, as required for fitting individuals into scientific laws, which support (and demand) counterfactuals. We need to know how and when, if we make dynamical changes in an individual, it is going to remain the same individual under scientific laws. Also, we would like to know how an individual changes with time and with composition. This is partly an empirical question, but without a dynamical account of individuality too much is left open. Some examples are the identity of biological functions, the identity of species under evolutionary theory, and of course the identity of minds, beliefs and other states of conscious. Most of these cases involve complexly organized systems, and thus complexity theory.

The dynamical account I give of identity, I believe, can address the conceptual side of these questions, but the exact answers depend on empirical facts, including scientific theory. In my account of dynamical identity I will indicate where the empirical part comes in. The fact that a dynamical approach cannot give a complete account of identity, but has an empirical component, unlike most attempts at analytical accounts, is a strength of the account rather than a weakness. In the final sections I will give a brief account of how two major forces driven by non-equilibrium thermodynamics (or more precisely, statistical mechanics) produce both unity and diversity. The exact balance of these forces differs in particular situations, but the balance accounts for both unifying (simplifying) and diversifying (complicating) processes. There is also a balancing between individuation of entities at different levels, especially between individual and society. This last has moral implications.

The Basic Idea of Dynamical Identity

I start with the logical notion of identity,⁵³ since the logical form is required of all satisfactory accounts of identity. It is straightforward, though there is some debate about condition (c), which I will address shortly.

Identity, $A = B$

- a. Is a logical condition, same for everything
- b. Identity is an equivalence relation: symmetric, transitive, reflexive
- c. $A = B$ implies that B has every property that A has, and vice versa

This tells us little about the identity of individual things and their properties, since it is a purely logical relation, but it does place these logical constraints on any concept of dynamical identity. Condition (a) rules out so-called relative identity, according to which things can be identical (or not) in different ways, so identity is relative to the condition under consideration. Relative identity is awkward, and doesn't either simplify things or add any clarity. Condition (b) just says that identity is an equivalence relation. Equivalence relations divide classes of entities into disjoint classes that all share the equivalence relation to each other. Identity is the strongest equivalence relation; its classes all have one member, and every member holds that relation to itself, so $(x) (x = x)$.⁵⁴ Condition (c) is the one that ensures this distinction between identity and all other equivalence relations. It says that $(x) (y) (P) (x = y$ if and only if $(Px$ if and only if $Py))$. Sufficiency, $(x) (y) (P) (x = y$

⁵³ Collier (2002, 2004a, b, 2006, 2008a).

⁵⁴ It is an interesting question as to whether any singular equivalence relation A such that A is an equivalence relation, and $(a)(b)(aAb \supset a=b)$ must be the identity relation. In general this is not so, since there may be other relations under which a and b are not equivalent. However, if $(a)(b)(aAb \supset a=b)$ is necessary, then aAb entails the identity relation $a=b$. Still, A need not be the identity relation; being the same size as itself is an example.

only if (Px if and only if Py)) is uncontroversial, and is often called Leibniz' Law. Leibniz in fact preferred the stronger version, since he thought there must be some sufficient reason for two objects to differ, and that this could only be in their properties. However his reasoning is controversial. But for dynamical identity if two objects do not differ in their dynamical properties there is no dynamical difference, so they cannot be distinguished dynamically. Barring non-dynamical properties like *haecceity*, there cannot be two particular distinct dynamical entities that do not differ dynamically. So even if the converse of Leibniz' Law is not true for everything that can be imagined (whatever the limits of that process are), that is irrelevant for dynamical purposes.

It might seem that a universe that contains two objects might have dynamics that requires that there be two objects, but all of the properties of the objects are symmetrical. I believe in this case that the dynamics can always be re-described so that there is one self-interacting object, which is a more parsimonious description. For example two identical iron balls might rotate around a common centre of gravity. But this assumes that there is a way to make dynamical sense of rotation in this universe, independently of the balls. It is more parsimonious to assume one ball, and perhaps a curved space-time, but even the latter is troublesome. One cannot merely project from the dynamics of our world to other worlds; each world has its own, depending on what it holds. I cannot generalize this argument to all possible cases at this time, but I hope this example indicates that describing dynamically possible worlds is not as easy as it might seem.

For trans-temporal identity, a dynamical system must map states of itself onto later states of itself, such that the above conditions are preserved by whatever it is that makes the system identical with itself. As I indicated in "Traditional Approaches to Identity", this is its individual essence, whether real or nominal. Similarly, for modal identity there must be a map of the dynamical properties of the system in actual conditions to dynamical properties in possible conditions that preserves the individual essence. However, unlike for trans-temporal identity, in which the map is an actual dynamical process, modal identity is more tenuous. The simplest way to approach modal identity is to use the real world cases to identify the individual essences of things, and require that this be preserved across counterfactual conditions. However, as the previous paragraph indicates, this is not reliable. Recall that the reason why a solution to the problem of modal identity is important is that we need some way to project how some particular object would act if its dynamical conditions were different, say, how my computer would behave on Venus. Without identity, such questions are not well-formed.

The final issue, the part-whole relationship, and the question of whether some object or property is just the sum of its parts, also depends on identification of the individual essence. This problem is just that of what makes dynamical parts of something parts of the same thing. It is the same as the trans-temporal problem, except that the parts are not temporal slices or stages of something, but parts of its composition.

So the next move is to look at what makes parts of something parts of that thing. This is provided by the unity relation (Perry 2002):

Unity, $U(A)$

Unity is the relation among the parts of a thing A such that:

- a. If a and b are parts of A , then aUb , and bUa (symmetric)
- b. If a and b are parts of A , then aUb and bUc implies aUc (transitive)
- c. If a is a part of A , then aUa (reflexive)
- d. By a , b , and c , U is an equivalence relation.
- e. $U(A)$ is the closure of U , given any initial part.
- f. By a . to $d.$, $U(A)$ contains all and only the parts of A .

It is an empirical question what satisfies $U(A)$ for a given A . Typically the type of unity relation will depend on the kind of thing A is. Dynamical entities need a dynamical form of unity. In previous writing, I have called dynamical unity cohesion (Collier 1986, 1988, 2003, 2004a, 2008a):

Cohesion, $C(A)$, dynamical unity

Cohesion is the unity relation for dynamical objects, such that:

- a. All parts aCb are dynamical
- b. C is dynamical

Cohesion both holds dynamical things together, and also individuates them from other dynamical things. For this reason I have called it *the dividing glue* (Collier 2004a). Any dynamical account of individuation and diversity will be grounded in the formation and disruption of cohesion.

So far I have just given the logical (formal) conditions for cohesion, without much indication of what it is like in its material realization. Recall that the unity relation has an empirical component that is not and can not be given in the formal account. A characterization of the empirical part is necessary. Details are spelled out at some length in Collier (2003), much of which derives from as yet unpublished work with C.A. Hooker. I will summarize the main points.⁵⁵

First of all, a *dynamical system* is a set of interacting components that is characterized and individuated from other systems by its cohesion. It is therefore a natural object. Its properties must be discovered, and its models must be tested.

Cohesion refers to the cause of the dynamical stabilities that are necessary for the continued existence of a system or system component as a distinct entity. The basic form of cohesion is a dynamical property of a system that is insensitive to local variations in the system components (e.g. thermal fluctuations, vibrations or collisions), including those (non-linear) interactions that formed it, and to external influences (Collier 1988). For example, a framed cloth kite has noticeable lift in a wind because the cohesion of its cloth molecules integrates the impulses produced by collisions with individual air molecules and transfers the result to the frame, and

⁵⁵These points are applied to identity and diversity of ecosystems in (Collier and Cumming forthcoming), and to levels in hierarchies in (Collier 2003).

then to the kite's cord, where the kite flyer experiences the lifting force as a tug. By contrast, an uncontained gas has no cohesiveness because it has no characteristic properties which interactions among its component molecules stabilize.

Several aspects of cohesion are worth explicit notice. These divide into basic properties of cohesion, which derive from its basic nature, and derived aspects of special interest, which are consequences of the manifestation of the basic properties in specific kinds of systems. B1: *The first basic property of cohesion is that it comes in degrees.* This is a direct consequence of its being grounded in forces and flows, which come in varying kinds, dimensions and strengths. Secondly, and following on from the first property together with the individuating role of cohesion, B2: *cohesion must involve a balance of the intensities of centrifugal and centripetal forces and flows that favors the inward, or centripetal.* Last, this balance is not absolute, but is probabilistic over the dimensions and boundaries of the cohesive entity. Just as there are intensities of forces and flows that must be balanced, there are, due to fluctuations, propensities of forces and flows that show some statistical distribution in space and time (or other relevant dynamical dimensions). B3: *Cohesion must involve a balance of propensities of centrifugal and centripetal forces and flows that favors the inward, or centripetal.* The asymmetry of this balance implies a distinction between inner and outer, consistent with the role of cohesion in individuating something from its surroundings.⁵⁶

The derived aspects of cohesion now follow from the basic properties as they apply to specific systems with many properties. From B1, only some properties are relevant to cohesion. Thus, A1: *In general, a dynamical system will display a mix of cohesive and non-cohesive properties.* For example, the particular molecules making up an organism don't matter much, if at all, to its cohesion. Next, from B2 and B3, A2 *Cohesion is not just the presence of interaction.* Whence, A3 *a property is cohesive only where there is appropriate and sufficient restorative interaction to stabilize it.* From A1, A4: *cohesiveness is perturbation-context dependent with system properties varying in their cohesiveness as perturbation kinds and strengths are varied.*

Furthermore, A5: *The cohesive support of nominally system properties may extend across within-system, system-environment and within-environment interactions.* There is no reason to think that a cohesive system must be closed. Following from this, cohesion is not to be confined to stability of first order properties like rock shape, kite; rather, A6: *cohesion characterizes all properties, including higher order process properties that are dynamically stabilized against relevant perturbations.* While the kite's cohesion is primarily expressed as a structural stability of a first order property, that of a bird flock is expressed primarily as process

⁵⁶A student of mine, Tony Horn, has argued that B3 is implied by B2, combining propensity with intensity. In any case, the average is over both, with low intensity but common insults undermining system integrity, along with high intensity but low propensity insults. The propensities typically change with time (age) of the system, as can intensities. Older organisms and ecosystems tend to be more fragile.

stability: flocking through flight path changes. Living systems are primarily characterized in terms of their process organization. Their structures may change, and must change somewhat whenever their adaptability is manifested; the more organized their adaptability, the higher order the cohesive processes that characterize them.⁵⁷

Interactive closure between the system and environment, together with an organizational imbalance between system and environment that favors the system, allows the definition of system cohesion in terms of the organization of forces and flows, rather than simply in terms of their intensities and propensities. This gives rise to a new sort of system that can exist only if both organized and complex. Organizational stability is grounded in forces and flows, but resides in what we might naturally call the control of those forces and flows. This control is itself grounded in and realized through forces and flows, and is thus based in dynamical processes. Organization is a higher order dynamical property in that it concerns not just the forces and flows, but the way in which they are inter-related. Organization does not exhaust the possibilities of new forms of cohesion, which include higher order organizations of various sorts, the sort depending on the organized substrate. For example, the flocking of birds mentioned in the last paragraph is in fact grounded in sensorimotor organization of the autonomous birds.

A cohesive system level, or dynamical level, is a dynamically grounded constraint (structural or process) in a system that occurs when (and only when) cohesion exists that acts as a macro filter, screening off most of the effects of sub-level perturbations (e.g. thermal agitation) from affecting the dynamic processes at and above that level. This definition is impredicative, and cannot be replaced with an explicit definition *except in cases in which the level itself is subject to explicit reduction*. Any attempt at a fully explicit definition of level would beg the question concerning the reducibility of levels. An example of multiple levels is found in the kite: the assembled kite represents a cohesive supra-component level, and its component cloth covering, framing rods and twine are each themselves cohesive supra-molecular levels. Levels are typically nested, forming a partial ordering. This sort of structure is easily confused with a classification. A typical example of such confusion that many biology texts warn of is that between classifications in biological systematics and phylogenetic trees. The former are classifications, while the latter represent historical processes. The latter can be used as a basis for the former, but the two are distinct. While all phylogenetic distinctions are particulars (at least ideally), biological classes above the species level are abstractions. Levels, unlike classes, must be cohesive.

Since levels are forms of cohesion, they have the same three basic properties B1–B3 and obey the same six principles A1–A6 set out above. In particular, structural and process levels may co-exist, interact, and conflict with each other. Likewise, levels may have properties or tendencies that conflict with each other. For

⁵⁷See Collier (1986, 1988, 1999a, 2000b, 2001, 2002, 2006, 2008a) for more applications of the cohesion concept that involve interactive closure.

example, cells may be cancerous, though they are included in an otherwise healthy body. This sort of inter-level conflict is fairly common.

Intuitively, an *organized* system is one exhibiting many distinctive but inter-related and coordinated component behaviors. An army is considered organized because all the layers of command perform their distinctive functions because of distinct, defined authority relations to one another. By contrast, gases (at equilibrium) are disordered and hence unorganized, their molecular behaviors distinctive but not systematically interrelated to one another in any manner essential for being a gas, and regular crystals, though highly ordered, are for this very reason only very simply organized because their global ordering is so uniform (of so low order) that all distinctive interrelations are suppressed. By contrast, machines and living things are organized because their parts are relatively unique and each plays distinctive, systematic and essential roles in the whole. A special class of organized things is those that are complexly organized (Collier and Hooker 1999). These are irreducible, and show emergent properties (Collier 2008a). Complexly organized things will occupy most of the rest of this chapter, since they are uniquely capable of individuation and diversification through action on themselves (see “The Role of Complexity in Individuation and Diversity”).

Issues of decomposability and localizability inevitably concern the nature of the local units into which a system might be decomposed. The dynamical elements of some systems will be *components*, that is, dynamically stable, separately identifiable sub-systems. The largest components of a car are its body, drive system (including engine), regulatory system (steering, electrical etc. subsystems) and features (radio, heater etc.). Components may inter-penetrate, as do the car body and features systems, or the cardio-vascular and hormonal subsystems of the human body as long as they remain dynamically stable and identifiable. A common form for components is *parts*, that is, spatially bounded and distinct dynamically stable sub-systems. Thus, most machines (as we currently construct them) have parts as their component elements at some appropriately grained spatial scale. In addition, we are inclined to think of these parts as having molecular parts in turn, but because they can be constructed using principles that assume molecular parts. However, some aspects of systems are best specified in terms of processes rather than components. This raises two issues: First, processes need not have a clear bottom, or atomic level, from which molecules are composed. The combination of processes can lead to a net product that is not decomposable into a sum of the effects of the two processes (see Rosen 1991: Chapter 6, Rosen 2000). Thus if all parts are processes, there need be no fundamental components. Second and more generally, the closure of processes need not match the boundaries of parts, and an analysis into constituent processes need not match a decomposition into parts. The simplest example Rosen gives is the case of two mechanical systems that, when combined, produce a non-mechanical system. The processes of this system are not decomposable into processes of their components.

Rosen (1991) uses a somewhat special notion of mechanical that corresponds to the properties of a Hamiltonian system (*sensu* Collier 2008b), but also to the properties of a terminating algorithm (Knuth algorithm). Complex systems (or, as I prefer, complexly organized systems) are exactly the sort of systems that violate

these conditions. I will not go into great detail about how these systems behave, since that has been dealt with adequately in a number of places.⁵⁸ Instead I will look at the dynamics of complex systems with respect to their formation, further individuation, and the production of diversity.

The Role of Complexity in Individuation and Diversity

The connection between individuation, diversification and entropy production has been known for some time. D.R. Brooks and E.O. Wiley (1988), for example, conjectured that the principles can be applied to the information flow in living systems to give an inclusive unifying theory for wide areas of biology from development to speciation. David Layzer (1990) argued in *Cosmognesis* that the principles explained the diversification and individuation processes in the whole cosmos. Anything on a smaller scale seems almost mundane.

Purely mechanical systems (which are conservative, and satisfy a Hamiltonian equation such that $H = T + V = E$, where the energy E is constant), cannot create any new information or real novelty (Collier 2008). At best they can rearrange pre-existing conformations into new ones. This is also true of systems that reorganize purely by dissipating energy, like the formation of fat globules in water. In such cases information is lost, and the new conformation is actually contained within the dynamics of the original one. New information requires symmetry breaking (Collier 1996, Muller 2007). This must be a dissipative process (Collier 2008b). Non-dissipative (conservative) processes can disrupt the cohesion of objects and their properties, but only through external action or the relaxing of internal organizational constraints (as in a stroke due to an aneurism). Clumping may occur during conservative processes, but these clumps will inevitably diverge again, in order to conserve energy, such as when two particles collide, and then diverge in different directions. Strangely enough, however, dissipation in far from equilibrium systems can produce both individuation and diversity through self-organizing processes. This is perhaps not surprising, given that cohesion both unifies and divides entities. The production or increase of cohesion will both increase individuality as well as divisions. It goes a bit further than that, though: symmetry breaking, in producing novel diversity, also increases numerical diversity. Dissipation alone, however, is not enough to produce symmetry breaking. In fact a dissipative system under no constraints (such as a gas) will increase its entropy until it is statistically uniform, and thus fully symmetrical. Obviously, further conditions are required.

There are several ways to state and argue for these conditions, which I have done in some detail elsewhere (Collier 2008b). Basically, the system must have non-holonomic constraints and be radically non-Hamiltonian. These conditions ensure that the boundary conditions and dynamics of the system cannot be separated, as is

⁵⁸See for instance, Collier (2004c), Collier (2008a), Hooker (2004), Rosen (1991, 2000), von Foerster (1960).

typical in mechanical systems. They also have some other implications that, taken together, imply the emergence of novelty, or new information:

1. The system must be non-holonomic, implying the system is non-integrable (this ensures non-reducibility)
2. The system is energetically (and/or informationally) open (boundary conditions are dynamic)
3. The system has multiple attractors (see below)
4. The characteristic rate of at least one property of the system is of the same order as the rate of the non-holonomic constraint (radically non-Hamiltonian)
5. If at least one of the properties is an essential property of the system, the system is essentially non-reducible; it is thus an emergent system.

Condition 3 is required for emergence only if emergence must be safe from predictability on general considerations of the type of system involved. For example, Bénard cells are controlled in such a way that only one form of convection is possible, and this can be predicted on consideration of the general properties of fluids. Nonetheless, the formation of the cells is an increase in diversity, and the identity of the cells follows from the dynamical cohesion produced by the convection as well as the stability of the cells (if driven by a stronger temperature difference across the fluid, fluctuations occur, and the cells eventually break up, producing more diversity, but losing integrity and stability).

Condition 5 is of most interest here, since if the emergent property is the cohesion of the system (as above, we could take the convection cells as systems) then the very identity of the system itself is emergent. What happens is that the dynamics of the proto-system, or substrate, of the to be emergent system drive the formation of new boundaries that are dynamically maintained, thus both dividing the substrate and forming new stable wholes. Thus the processes of individuation and diversification are really one and the same, though with a very strong energy gradient fluctuations will be large, and the stability required for individuation will be minimal. In this sort of case diversification will dominate. Alternatively, if conditions are relatively gentle and/or cohesive forces are strong, individuation and stabilization will dominate.

It might seem strange that the same sort of forces are active in both individuation and diversification, and that the dominance of one over the other depends on the variance of energy gradients and strength of cohesion, but we can go further and relate the differences to one factor, entropy production (assuming the other five non-independent criteria above are satisfied). However this is beginning to be recognized across a wide range of fields. Nicolis et al. (1981) were some of the first to fully appreciate the importance of fluctuation size as a result of entropy production, but they dealt with fluids, which have little or no structure to provide internal cohesion. More recently Adrian Hill (1990) has shown that differences in entropy production can result in systematic differences in morphologies in a variety of materials, though his experiments focused on NaCl solutions. In general, greater entropy production per unit area increases the complexity of the resulting structure. Andresen et al. (2002), taking the general result from physical systems that maximal

efficiency of a non-equilibrium process is achieved when entropy production is minimized (this by definition) through entropy production becoming constant (this by dynamics). This implies that a steady state (or stability) requires entropy production minimization, requiring further that entropy production is constant. However they found that this is not quite true for the metabolism of biological systems in general. What they did find is that the entropy production must be constant over the *eigen* time of the system, which scales according to the $1/4$ power of the body mass over a wide range of species. Their operational measure of the *eigen* time of organisms is the lifespan and time between heartbeats. Since metabolism scales as the $3/4$ power of body mass, they determined that entropy production per unit *eigen* time is the same for almost all species, and approaches maximal efficiency. Although they do not mention it, arguing only that this is a good design principle; it is also a condition of maximal stability which thereby enhances stability and individuation. These are just a few of the studies connecting entropy production to issues of individuation and diversification. Are there any general principles?

One general principle comes from the school of Julian Jaynes, called the maximal entropy principle (MaxEnt) school. A good representative is Roderick Dewar (2003); another is Ralph Lorenz (2002), who both argue for a tendency to maximal entropy production in dynamical systems. This principle leads to maximal system diversity. Critics have noted that although there are conditions in which maximum entropy are approached (for example in fluid systems, strongly driven), in other cases production of dynamic system order, or negentropy, is maximized. These two principles are in tension with each other, and systems can pass from one phase to the other during their development. The mathematics of the opposing principles have been recently analyzed mathematically (Mahulikar and Herwig 2008).

Mahulikar and Herwig give equations for the creation and destruction of order based on two principles, the entropy principle and the negentropy principle, which lead respectively to the law of maximal entropy production and the principle of maximum negentropy production. Strangely, both principles derive from the same source equations, and are not actually in contradiction to each other, but are complementary within dynamical regimes. In isolated systems, the evolution is from the dominance of negentropy production to entropy production (at the macro-level, or the level of cohesive organization). In line with Brooks and Wiley (1988),⁵⁹ Collier (1986) and Layzer (1990), (see also Frautschi 1982, Landsberg 1984), in an expanding system both entropy and order can increase together, and the two principles can be active together not just within an open system, but within an isolated system.

Mahulikar and Herwig give some interesting applications to biological evolution to expand the scope of selection theory. Though they cite Salthe (1993), they appear to have missed Salthe's rejection of selection as the only force in evolution and his insistence on self-organization. Possibly this is due to their restriction to evolutionary models based on models of isolated systems, which fit selection theory (and neo-classical economics, for that matter) fairly well, and perhaps Kauffman's (1981,

⁵⁹See also Frautschi (1982), Landsberg (1984).

1991, 1993) self-organization at the edge of chaos models of evolution, but neither to Salthe's own or that of Brooks and Wiley (1988). So the Mahulikar and Herwig analysis needs to be supplemented. Be that as it may, their work is an important advance in precision of previously more intuitive ideas of the evolution of order and disorder in complexly organized systems. The open and expanding (growing) models that I find more interesting from a complexity point of view (Collier 1986, 2003, 2006, 2008a) require the explicit introduction of cohesion as an additional element in the brew. As noted above, the formation of cohesion explicitly implies the simultaneous formation of individuation and diversification. However the amount and significance of one or the other formed can then depend on the dominance of either entropy production or negentropy production. Typical autonomous growing systems will pass through phases of one followed by the other, the first expanding and the second consolidating (I owe my own consolidation of my understanding of this idea to a talk by Ken Baskin in Havana in January 2006). The exact basis of this alternation needs more analytical study, but it seems to be found in physiological development, aspects of mental development, social evolution and economic evolution. Perhaps it is also present in biological evolution and even cosmological evolution.

Level Formation and Interlevel Moral Conflict

The possibility that levels can interact with each other in ways that may conflict was mentioned above. Recall that levels in a dynamical hierarchy are not kinds, but are individuals, and hence act according to their individual dynamics. In many cases of moral interest (where moral values are involved) higher levels emerge from more fundamental levels, permitting conflicts between moral principles that might apply to each level individually, if it were not interacting with other levels. Fuchs and Collier (2007), for example, propose that in societies viewed as dynamical systems the political emerges out of the more fundamental economic level, but that the political level is not reducible to the economic. Individuals in society play both political and economic roles, and may feel divided between economic and political mores. In this paper we suggested how this tension might be resolved. We also suggested that there is a higher cultural level that emerges from the political level, with corresponding tensions for individuals as political and cultural agents. Overall, the higher levels exert a moderating effect on the lower levels, though this role is not necessarily always beneficial. Correlating the levels requires a way to achieve cultural goals while not undermining the political system, and political goals while not undermining the economic system, and by extension how to achieve cultural goals while leaving the economic system intact. This requires a sort of mutualism between levels in which neither achieves complete domination, though this is not in itself sufficient. We argue that different perspectives, from different levels, have different advantages, and a pluralism of views is required, with some openness at each level to influences for the other levels.

The principles that apply to social systems in general, as dynamical systems, apply more specifically to multilevel subsystems of various kinds. For example,

the economics of a specific industry or even a specific business needs to be moderated by the political interests within the industry or business, and vice versa. A specific industrial or business culture must not be allowed to completely dominate political and economic interests within the industry or business. If that occurs, it is possible to get gross distortions of the internal politics and/or economics that can lead to catastrophic (or even slow) system failure. On the other hand, unrestrained attention to economic (or political) interests can lead to the undermining of cultural interests proper to the industry or business, again leading to failure. In common reductionist models either everything is reduced to bottom up determination by economic interests, or alternatively by top-down domination by the industry or business culture. Either of these models is a recipe for disaster. They both lead to an identification of economic and culture interests, and obscure the mutual relation between the two that can lead to a healthy system in any complexly organized dynamical system.

Another application of these ideas is to health care, whether at for health care systems (as in national systems) or in individual health care. National health care systems fit the economic-political-cultural model described by Fuchs and Collier. Individual health care raises some different issues, however. Here we have a potential conflict between individual and social interests (the latter including economic, political and cultural issues), in which individual rights and/or needs can conflict with social rights and/or needs. Instead of trying to reduce everything to the individual level, or to allow the social level to dominate, as in complexly organized systems in general, the best approach requires a degree of mutualism when interests conflict. In particular this requires understanding individual interests in the context of social interests, and vice versa. For example, we generally accept that the individual's right to self-determination is restricted for children, and for their parents, in exchange for our social interest in the welfare of children. Specifically, local cultural interests, such as a rejection of blood transfusions are typically seen as subservient to the broader cultural interest of the welfare of children. Bringing the individual (and more local) in line with larger cultural values is nontrivial, but understanding the relevant subsystems as levels in a larger complexly organized system helps to mitigate the tendency to look at things from one perspective alone.

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Chapter 6

Negativity, Difference and Critique: The Ethical Moment in Complexity

Eduard Grebe

Difference is the negativity which reflection has within it.
–Hegel, Science of Logic

Introduction

The language of “complexity” allows us not only to construct theory that can cope with the contingency and dynamism of many of the phenomena we wish to study (notably humans and social systems),⁶⁰ but also to adopt a more ethically and politically justifiable stance. This chapter is an attempt to show how the recognition of complexity can inform a critical philosophy (as any philosophy must be if it is to be ethical, in the sense of taking seriously the suffering of the other). Critique in turn requires a certain negativity, by which is meant simply operations of negation and the recognition of irreducible difference.

The ethico-political import of complexity can be brought into relief by tracing the tradition of philosophical critique which starts with Hegel’s dialectics and was developed, each time in a slightly different direction, by Marx, by the thinkers of the Frankfurt School (principally Horkheimer and Adorno) and reaches its most compelling contemporary articulation in the post-structuralism of Jacques Derrida. As Cilliers (1998) has convincingly shown, systems of meaning as conceived in

E. Grebe (✉)

Centre for Social Science Research, University of Cape Town, Cape Town, South Africa
e-mail: eduard.grebe@uct.ac.za

⁶⁰The relevance of “complexity science” for the social sciences and humanities has been convincingly demonstrated (see, e.g. Byrne 1998, Luhmann 1995), as has an affinity with the philosophical approaches collectively known as “post-structuralism” (Cilliers 1998). This relevance derives not only from the fact that social systems exhibit the characteristics of complex systems, but also from its ability to inform a sophisticated account of systemic change. The theoretical advantage of coping with contingency is perhaps best formulated by Unger (1998: 24): “[the absence of] a practice of social and historical explanation, sensitive to structure but aware of contingency . . . denies us a credible account of how transformation happens” (my emphasis).

poststructuralist philosophy share important characteristics with complex systems. For this reason, tracing the philosophical lineage of critique can help us render complexity theory in terms that make its ethical and political implications clear.

The focus here is on Adorno and Derrida, two thinkers who perhaps exemplify the reputation of German and French philosophers for obscurity, but who also represent two of the most sophisticated expressions of the Continental tradition of philosophical critique. This tradition turns on a certain negativity, and implies an awareness of the limits of knowledge, but not a nihilistic rejection of its very possibility. It also represents an attempt at coming to terms with contingency – a challenge to any thinking that aims at being scientific, and an impossibility for positivist thought.

Philosophical Negativity

Adorno's significance lies in developing Hegel's dialectics as a profound critique of positivism and the reductive impulse in Enlightenment thought. While it is true that negativity and negation provide the driving force of the Hegelian dialectic, difference is in Hegel's system ultimately reduced to a mere internal moment of a greater and more original unity, and is thereby robbed of its originary significance. In Adorno's philosophy, however, negativity is maintained unflinchingly. The dialectical process is developed away from the totalising re-appropriation of non-identity; Adorno places an ever greater emphasis on difference: rather than subsuming it under a "synthesis", distinctions are continually made and a more and more detailed view of the system results. The dialectical movement amplifies the dimension of negativity in a "negative dialectics" rather than arresting it in reconciliation; the complexity of the system is recognised with all its differences and unresolved tensions. By relentlessly focusing on the dimension of non-identity, and on its continuous movement, Adorno teases from Hegel's speculative system its most negative and critical impulse.

In this sense, Derrida's work can be read as a continuation and radicalisation of Adorno's project, with *différance* as the central notion that embodies his negativity.⁶¹ Derrida's engagement with the problem of difference and identity starts with his deconstruction of Saussure's description of language as a system of differences. In Saussure's view meaning is not something intrinsic to the linguistic sign, but rather results from the relationships of non-identity between signs (see Cilliers 1998, Saussure 1974). Derrida's deconstructive intervention radicalises and generalises this argument by showing that in any system of meaning, the differences are never-ending – no sign (or element of the system) can have a meaning that is fully "present" to it, at most it contains *traces* of other elements, which in turn consist of nothing more than traces, and so forth (Derrida 2004). In this way, meaning is

⁶¹ The neologism *différance* is derived from the French words for "difference" and for "deferral" and is intended to reflect Derrida's theoretical innovation over Ferdinand de Saussure's linguistics (cf. Cilliers Chapter 1 in this volume). This should become clearer in a moment.

continually “deferred” – in both the spacial and the temporal sense—it can never be fully *present*. Difference therefore occupies an ambiguous position at the heart of the system: it is both a prerequisite for the system to have meaning in the first place and that which ensures that this meaning can never be exhaustively specified.

In the sense that it is used here, negativity is not a nihilism. As will be shown in what follows, it can be understood in an “affirmative” sense, as an “active differencing that opens up the possibility of experience, language, decision and judgement” (Belmonte 2002: 19), and therefore also as a central moment in the founding of the system (social or otherwise). But on the other hand, it recognises contingency at the heart of this very founding; because the relevant differences can never be fully specified, meaning is continually deferred, and any meaning attached to the system is therefore always contingent and provisional (though not arbitrary). Negativity as “active differencing” is both a prerequisite for the system to emerge and what dislocates the founding and renders impossible any completion or exhaustion thereof. Conceived as simultaneously the condition of possibility and the condition of impossibility of the founding of the system, coming to terms with negativity becomes indispensable to any sophisticated understanding of systemic stability and change. Similarly, complexity science allows us to understand how a system is (relationally) constituted and at the same time compels us to recognise the contingency inherent in that constitution. Difference and diversity, which is logically dependent upon it, are essential resources in complex systems and in fact become the very condition of possibility of the constitution of the system as a system.⁶² By making difference central, complexity introduces philosophical negativity into the language of the sciences.

The affinity between critical philosophy and complexity science is illustrated by the fact that a number of concepts are shared between them: “identity”, “difference”, “non-identity”, “system”. In many cases the problems they call to mind are common to both traditions, and most often this is related to the epistemological difficulties associated with any attempt to escape the reductions of Enlightenment thinking; of accommodating contingency within a rigorous approach that does not degenerate into self-defeating relativism. Science generally shies away from these epistemological difficulties, and the promise of complexity is precisely that it helps us face up to them in a way that avoids crude “postmodernist” relativism (cf. Cilliers 2005). It is hoped that tracing a tradition of negativity in philosophy will help us navigate these treacherous theoretical waters.

Negativity is both theoretically valuable and of profound ethical relevance. At the level of epistemology it helps us to recognise the contingent moment in any determination of meaning and therefore the limitations of our knowledge claims. And as that which makes a sophisticated account of systemic change possible, it even has a utopian or redemptive aspect. Without the negative there can be no hope of a

⁶² As Cilliers (Chapter 1 in this book) puts it, “The point to be emphasised is that an abundance of difference is not a convenience, it is a necessity. Complex systems cannot be what they are without it, and we cannot understand them without the making of profuse distinctions.”

different future, of Derrida's *l'avenir* (i.e. a future beyond what is merely implied in the present). This chapter attempts to show that complexity can be understood as negativity in the theorisation of "systems" and that this points to the critical moment in an approach that is too often associated with subtle forms of determinism and even conservatism. At the same time, the study of complexity – properly conceived – is potentially a rich resource for critical and progressive thinking in the humanities.

Relational Models and Negativity: Difference at the Heart of the System

In the second half of the twentieth century, the limitations of traditional structural analyses of society became increasingly clear, and many scholars turned to approaches and techniques that had their origin in the physical and biological sciences. The most prominent example of this is the use of evolutionary ideas in the behavioural sciences (primarily in evolutionary psychology⁶³); but the appropriation of "systems thinking" (and particularly the notions of "emergence" and "complexity") that had been on the ascendancy in biology, climate science, computer science and engineering, is at least equally significant.⁶⁴

Increasingly, network perspectives on society are adopted that focus not on the inherent characteristics of people ("nodes") but on the relations between people ("edges").⁶⁵ Approaches like "social network analysis" focus on the webs of inter-relationships between individuals. Individuals ("actors") are considered primarily as nodes in the network, rather than as the repository of individual agency. A basic premise of network thinking is that outcomes are shaped more by the "network effects" that result cumulatively from the relationships between nodes than by the characteristics of the nodes themselves. Applied to social networks, this view holds that an individual's significance in a social configuration results from the ties (strong or weak, many or few, etc.) between that individual and others in the network.⁶⁶

⁶³ Evolutionary psychology is an approach to psychology in which the "knowledge and principles" of evolutionary biology are applied to the human mind, which is viewed as a set of "information-processing machines" produced by natural selection to solve adaptive problems (Cosmides and Tooby 1997). Also see Tooby and Cosmides (2005). Other prominent proponents include David Buss (1995, 2004) and Steven Pinker (1997, 2002).

⁶⁴ See Sawyer (2005: 10–26) for a good overview of the rise of systems thinking in social reflection.

⁶⁵ Network approaches are in fact being adopted in widely divergent fields: "We are witnessing a revolution in the making as scientists from all different disciplines discover that complexity has a strict architecture. We have come to grasp the importance of networks." (Barabási 2002: 7).

⁶⁶ A classic example is Granovetter's analysis of "the strength of weak ties" (see Granovetter 1973, 1983). In Granovetter's view, having a large number of "weak" connections to other individuals, i.e. to a generally more diverse set of acquaintances, is more important in social mobilisation than the strength of those connections. While "strong" ties – such as close friendship and kinship – may be highly effective in mobilising those individuals to whom one is so tied, these have two disadvantages: (1) one is likely to have fewer such ties and (2) they are less likely to enable mobilisation

When social structure is understood as that which emerges from the relational constitution of the social system, we must turn to relational models if we are to understand even the macro-level structure of society. Cilliers (1998: 12–13) distinguishes between two approaches to modelling complex systems: the traditional analytical approach (“rule-based” models) and connectionist models (e.g. neural networks). The former assumes that a system can be adequately described by specifying rules analytically, whereas the latter acknowledges that a system may be too complex to describe in such a fashion and can be approached better through models that replicate some of the features of complex systems (e.g. self-organisation). In this way connectionist models may be able to account for certain “emergent properties” of complex systems that analytical models can not.

However, the more radical implications of a relational approach to human society have in the main not been recognised. Often the study of networks still reveals reductionist principles. For example, formal social network analysis makes use of statistical and mathematical techniques to describe the relational structure of networks and emphasises “explicit, mathematical statements of structural properties, with agreed upon formal definitions” (Wasserman and Faust 1994: 17) in order to develop “formal and testable models.” Attempts at the rigorous study of complex systems should be encouraged, and the value of mathematical and statistical techniques for doing so may be great, but these kinds of formulations nevertheless reveal a lingering positivistic desire to formally and exhaustively describe the constituent elements of the object of one’s reflection.

Such attempts are ultimately doomed, for a relational approach is necessarily negative in the philosophical sense. “Relations” are not positive entities (i.e. entities with a substantive existence), but rather have a “negative existence” (if one can say that), so that in a network model the most fundamental unit of analysis – the edges, not the nodes – are in a sense not even there. This is perhaps best illustrated by Saussure’s classical description of language as a “system of differences” – i.e. meaning comes about through the relationships of non-identity between signs (see Cilliers 1998). Derrida’s notion of *différance* (described in greater detail later in this chapter) provides a more sophisticated interpretation of meaning as a system of

beyond a certain social grouping (such as a neighbourhood or ethnic community). The counterintuitive conclusion is that the weak ties between individuals in different groups (“bridging ties”) are more important than the strong ties within groups (“bonding ties”). There is strong empirical evidence supporting this analysis. Despite the tension between network theory and individual agency, the former nevertheless suggests the possibility of an understanding of the role of individuals that derives from their “position in the network.” For example, certain individuals – owing to their particular sets of relationships with others – are uniquely able to bring together diverse groupings and to mobilise strategic individuals and groups. While this analysis is usually applied at the group level to explain why certain issues gain wider traction than others, it is applicable also at the level of key individuals. Empirical studies of Aids activism, for example, seem to confirm that a relatively small number of individuals can bring to bear the inter-group linkages that are key to wide mobilisation, even if most movement participants rely on strong ties to mobilise friends and family (see Grebe 2008a, b).

difference and deferral, in both spacial and temporal senses. For now it is sufficient to see that any relationally constituted system is necessarily a system of differences, since even identical nodes in a network would differ at least in their position.⁶⁷

The true power of a relational approach lies not in the descriptive or explanatory power of network models (and in the scientific rigour with which they can be specified), but rather in the critical power of this approach. Its critical power derives from the negativity at its core and creates a new opportunity (or rather, responsibility) for the social sciences and humanities to engage ethically and politically with its object. In order to understand how the notion of negativity can help us to discover the critical moment in complexity, the next section traces the philosophical lineage of negativity and its importance for critical philosophy since Hegel.

The Hegelian Roots of Critique: From Determinate Negation to *Différance*

While the debt to Hegel of critical thinking in general, and that of the Marxist variety in particular, is clear to most observers, it is less common to consider Derrida's "deconstructive" practice from a Hegelian perspective. Even more unusual would be an attempt to rehabilitate Hegel as a thinker of difference – after all, is Hegel not the ultimate unifier in Spirit [*Geist*]?

The thinkers of the Frankfurt School (and particularly Adorno) found in their (re)turn to Hegel the inspiration for a new and arguably more radical negativity that allowed them to escape the essentialist claims of orthodox Marxism and that became the engine of their entire critical project. Adorno believed – and on this point Derrida would surely have agreed – that if Hegel is "taken seriously" or "taken at his word", despite his ultimate betrayal of negativity, he remains the most revolutionary of thinkers.

A reading of Hegel that emphasises the negative moment can result in a Hegel that is most fundamentally a thinker of difference rather than of identity. Belmonte (2002: 25) approvingly cites Jean Hyppolite's (1997) characterisation of Hegel's philosophy as one of negation and negativity: "Indeed, Hegel's very notion of identity . . . and the dialectical movement it engenders all depend on an original and productive differencing-from." This is the Hegel in which Adorno is interested. Says Adorno (1993: 30): "Hegel's philosophy is indeed essentially negative: critique."

In *Dialektik der Aufklärung* – a seminal text not only for the Frankfurt School, but arguably spawning the broad theoretical movement of which Derrida's post-structuralism forms part – Horkheimer and Adorno provide a dialectical interpretation of Enlightenment. The emancipatory power of enlightened thought is acknowledged, but they nevertheless see in Enlightenment itself a regressive or recidivistic (*rückläufige*) moment, in which Enlightenment turns against itself and

⁶⁷ Note that the term "position" is used here in the topological sense, i.e. to refer to the node's "position in the network" rather than in the ordinary spacial sense.

threatens to introduce a new age of enslavement and barbarism. It is an attempt to explain how the rational process of enlightenment could turn into “forms of political, social and cultural domination in which humans are deprived of their individuality and society is generally emptied of human meaning” (Bernstein 2004: 21). In their view advanced industrial capitalism represented a reified, dehumanised existence. (Incidentally, it is to this regression that they attributed the rise of fascism in Europe, the spectre of which must at the time still have seemed to loom large over the Western world.)

Horkheimer and Adorno appropriate Hegel’s concept of “determinate negation”:

... [it] discloses each image as script. It teaches us to read from its features the admission of falseness which cancels its power and hands it over to truth. . . (Horkheimer and Adorno 2002: 18).

Yet, they show that while negativity and negation provide the force and drive of Hegel’s dialectic, final reconciliation ultimately robs it of its originary significance and critical power. Reconciliation in one final, totalising moment is a betrayal of Hegel’s own most radical insight:

With the concept of determinate negation, Hegel gave prominence to an element which distinguishes enlightenment from the positivist decay to which he consigned it. However, by finally postulating the known result of the whole process of negation, totality in the system and in history, as the absolute, he violated the prohibition⁶⁸ and himself succumbed to mythology (Horkheimer and Adorno 2002: 18).

“Determinate negation” is described as the “faithful observance of [the image’s] prohibition” – i.e. the refusal to equate the image with the thing, the concept with its object (Horkheimer and Adorno 2002: 18). However, “negation . . . is not abstract”; it does not simply negate from a detached position, from some sort of Archimedean point, but rather “emerges out of and is specific to what it negates” (Nicholsen and Shapiro 1993: xiii). One could say that determinate negation is respectful of what is negated, in a certain sense even affirmative of it, at the same time that it negates. In this way determinate negation, as Horkheimer and Adorno conceive of it, exhibits the same “double gesture” as deconstruction – which deconstructs a “text” or tradition in terms of its own resources, and is in that sense affirmative of it at the same time as negating it – handing it over to truth, as Adorno might have said.

Nor does determinate negation reveal the “whole truth” obscured by the actual, contingent reality. Instead, it is itself a local and contingent negation which reveals the untruth of the “image” and thereby allows – in a piecemeal, always incomplete fashion – a closer approximation of a truth that is never arrived at, but that, through the dialectic, is nevertheless unfolding. Hegel’s mistake and betrayal of his own insight lies precisely in arresting the dialectic and interrupting the process of

⁶⁸ In *Dialectic of Enlightenment*, determinate negation is equated analogically with the Jewish religion’s prohibition on uttering the name of God: “It places all hope in the prohibition on invoking falsity as God, the finite as the infinite, the lie as truth. The pledge of . . . knowledge in the denunciation of illusion” (Horkheimer and Adorno 2002: 17).

determinate negation which is its motor by “postulating the known result” of the process: the absolute.⁶⁹

Against positivism and instrumental reason that they identify with Enlightenment, Horkheimer and Adorno (2002: 20) maintain a model of thought in which the “determining negation of whatever is directly at hand” allows a penetration by thought which sees things in their historicity and their social context, allowing thought to grasp their meaning (see Horkheimer and Adorno 2002: 20). This kind of thought avoids the trap of positivist reflection which “arrests thought at mere immediacy” and, according to Horkheimer and Adorno, renders things meaningless except as objects for manipulation. Rather, it allows the possibility of a critique that escapes the perpetual repetition of the same.⁷⁰ The central difference between positivist and critical thought is therefore the evacuation of the negative from the former.

The moment of reflection in thought, which is also the moment of negation, is more than an epistemological operation to ensure greater “truth” or validity; it is the central task of philosophy, if philosophy is to prevent the reversion of Enlightenment to barbarism, of thought to violence.⁷¹

⁶⁹ “Arresting the dialectic” is not simply a theoretical error that occurs in philosophy – it can be a profound historical tragedy. According to Bernstein (2004: 30–31), Horkheimer and Adorno diagnose the dialectic of Enlightenment as a dialectic which has come to a standstill. Marx’s expectation that the dialectic of class would inexorably lead to revolution (and therefore delivery from the nightmare of class society) is thus invalidated and society arrives at the impasse that is the cause of Adorno’s pervading pessimism. A key question for Adorno, and for the Frankfurt School generally, is why the dialectic of class had come to a standstill; this, in turn, calls up the normative question: how can the immobile present be set in motion? Adorno’s entire oeuvre can be read as, if not an answer, at least a serious engagement with this question.

⁷⁰ Cf. Horkheimer and Adorno (2002: 20):

Knowledge does not consist in mere perception, classification, and calculation but precisely in the determining negation of whatever is directly at hand. Instead of such negation, mathematical formalism, whose medium, number, is the most abstract form of the immediate, arrests thought at mere immediacy. The actual is validated, knowledge confines itself to repeating it, thought makes itself mere tautology. The more completely the machinery of thought subjugates existence, the more blindly it is satisfied with reproducing it. Enlightenment thereby regresses to the mythology it has never been able to escape. For mythology had reflected in its forms the essence of the existing order – cyclical motion, fate, domination of the world as truth – and had renounced hope.

⁷¹ Horkheimer and Adorno link Enlightenment’s rejection of all thought that is not abstract, formal, “scientific” in the positivist sense – i.e. modelled on formal logic and mathematics – to the capitalist mode of production (cf. Horkheimer and Adorno 2002: 16): “Even the deductive form of science mirrors hierarchy and compulsion. . . . the entire logical order, with its claims of inference and dependence, the superordination and coordination of concepts, is founded on the corresponding conditions in social reality, that is, on the division of labour.”). In striving for objectivity and impartiality, “scientific” thought dispensed with “ideas” – i.e. deprived thought of its critical and substantive character, reduced it to a concern merely for means and became thereby an alibi, if you like, for the existing order. The very term “positivism” indicates that they consider the central feature of this type of thinking to be the absence of negation.

Horkheimer and Adorno's rejection of the totalising moment in Hegel's thought prefigures Adorno's even more radical reformulation of the dialectic in *Negative Dialectics*, in which Hegel's negativity is developed away from the totalising re-appropriation of non-identity. One could consider this a rehabilitation of Hegel's more originary "pure negativity" or *Negativität* in contradistinction to "determinate negation."⁷²

Adorno's reading of Hegel is at once respectful and transformative. Bernstein (2004: 20) calls Adorno's philosophy the articulation of what it is to be Hegelian after Hegel, Marx, and Nietzsche. Adorno (1993: 83) himself says:

... rescuing Hegel – and only rescue, not revival, is appropriate for him – means facing up to his philosophy where it is most painful and wresting truth from it where its untruth is obvious.

This "wresting of truth" from Hegel is accomplished by focusing on the negative moment – on negation, the non-identical, unreconciled contradiction – in Hegel and resisting the temptation to reduce the non-identical to a mere internal moment of a reconciled totality. A transformative reading which rescues "the negative and dialectical core" of Hegel's thought from "its embeddedness in a doctrine of undialectical affirmation, reconciliation and unification", (Nicholsen and Shapiro 1993: xi) that reads Hegel *against himself*, as it were, is nevertheless one that reads him carefully, systematically and even respectfully.

Belmonte (2002: 24) argues that for Hegel, the possibility of experience lies not in an ultimate unity, but in a differencing more fundamental than that of the dialectic, a differencing of consciousness with itself, what she describes as "a movement-away-from that is not yet opposition, contradiction or negation."⁷³ She goes on to cite Hegel, who says:

Difference is the negativity which reflection has within it, the nothing which is said in enunciating identity, the essential moment of identity itself which, as negativity of itself, determines itself and is distinguished from difference (Hegel 1976: 417).

⁷² The "pure negativity" that Adorno and Derrida arguably attempt to revive lies for Hegel, as Belmonte (2002: 47) points out, at the very heart of reflection as "self-related difference." But difference itself is for Hegel subject to this paradoxical logic, resulting in a negativity that turns the negative of a negative into a positive, in the identity of non-identity and identity:

Difference in itself is self-related difference; as such, it is the negativity of itself, the difference not of an other, but of itself from itself; it is not itself but its other. But that which is different from difference is identity. Difference is therefore itself and identity. ... This is to be considered as the essential nature of reflection and as the specific, original ground of all activity and self-movement. Difference and also identity, make themselves into a moment or a positedness because, as reflection, they are negative relation-to-self. (Logic, in Hegel 1998: 228)

⁷³ Cf. Belmonte (2002: 24):

... for Hegel, the possibility of experience lies not in an ultimate unity, but in a differencing more fundamental than that articulated in and by the dialectic. It is the differencing of consciousness with itself, that interval of being/time that is the negativity of the self-same, a movement-away-from that is not yet opposition, contradiction or negation.

It is in this sense that Hegel places difference “at the source”, before its activation in the dialectic and (eventual) demobilisation in reconciliation. It is this negative core of his thought that is retained in negative dialectics and in *différance*.

In *Negative Dialectics*, Adorno (1973: xix) himself says that he seeks to “free dialectics from [its] affirmative traits . . . without reducing its determinacy.” He steadfastly insists upon the irreducibility of difference: “To equate the negation of negation with positivity is the quintessence of identification; it is the formal principle in its purest form” (Adorno 1973: 158). Thinking must not shy away from the negative. “If negative dialectics calls for the self-reflection of thinking, the tangible implication is that if thinking is to be true – if it is to be true today, in any case – it must also be a thinking against itself” (Adorno 1973: 365).

Positivity that masters the object of reflection mirrors the domination of industrial society. So, resistance against instrumental reason is real resistance. His unrelenting negativity is precisely what gives his thought its critical power, and that, in the end, points to a redemptive moment and forms the core of what could be called the utopian impulse in his thought.

Derrida’s deconstructive practice, like Adorno’s negative dialectics, implies a negativity that can also be traced to Hegelian roots and that shares important characteristics with that of Adorno. In fact, Adorno’s negativity led him to exhibit what could even be termed proto-deconstructionist impulses. The dialectic of Enlightenment can be seen as a deconstruction of the Enlightenment tradition – showing how the intellectual strategies associated with the tradition, if followed through on, ultimately undermine that very tradition. Like Adorno, Derrida reads Hegel transformatively but respectfully, though he does seem more irreverent than Adorno in his dealings with Hegel. Adorno remains largely in an expository framework, while Derrida adopts a freer approach, what he describes in *Glas* as a “bastard course”⁷⁴ – i.e. reading Hegel’s discourse in terms of “that which exceeds and resists it” (Critchley 1999: 4). Elsewhere Derrida (2001: 319) describes his approach as “a complicity without reserve” and as one that “‘takes [Hegelian discourse] seriously’ up to the end, without an objection in philosophical form, while, however, a certain burst of laughter exceeds it and destroys its sense . . . and this can be done only through close scrutiny and full knowledge of what one is laughing at.”

The similarity extends to their respective philosophical methods. Derrida’s deconstruction, like determinate negation, implies an engagement with its object that is at once respectful and transformative. In order to see the negativity inherent in the deconstructive practice (and therefore its Hegelian roots), it is necessary to see how Derrida’s description of the system, and of the process by which meaning is generated within a system, implies both an inherent instability of meaning, and a

⁷⁴ This is a reference to Jean Genet’s calling himself a “bastard” – the second column in *Glas*, perhaps Derrida’s most sustained engagement with Hegel, is also an extended meditation on Genet (see Derrida 1990). The reference to “bastard” is especially suggestive, given that Derrida’s primary device in deconstructing Hegel’s dialectic is a critical focus on the notion of the (monogamous, heterosexual) family, which for Hegel is a node in the triad Family – Civil Society – State.

“beyond” (“outside” or “remainder”) to this system. This transcendental moment in his thought is the source of its critical power, since a trace of the outside and therefore the radically other or new (something which is not implied by the system itself) always enters into the system and disrupts the determination that occurs within. This has important ethical consequences, as will be argued in the next section.

As noted earlier, the logic of *différance* implies that every element within a system (signs in the case of a linguistic system) consist of nothing more than traces of other elements, through its differences with them, and the meaning of each element is continually deferred as each trace is followed in an endless “play of differences”. This implies not only that, like with determinate negation, difference is at the very heart of meaning, but also that meaning is never stable. As Cilliers (1998: 45) points out: “As soon as a certain meaning is generated for a sign, it reverberates through the system. Through the various loops and pathways, this disturbance of the traces is reflected back on the sign in question, shifting its ‘original’ meaning, even if only imperceptibly.”

This is also how the logic of *différance* leads to Derrida’s deconstruction of the “metaphysics of full presence”, Derrida’s name for the idea (central to the Enlightenment tradition) that meaning can be fully present to the sign and therefore the concept can be fully adequate to its object. This presence is necessarily disrupted by the movement of play which is both infinite and continuous: “The presence of an element is always a signifying and substitutive reference inscribed in a system of differences and the movement of a chain” (Derrida 2001: 292). Though it is not addressed here in any detail, Derrida’s deconstruction of the metaphysics of presence is as relevant in the temporal sense of “presence” as it is in the spacial, in what Cornell (1992: 117) calls his deconstruction of the “traditional conception of time which privileges the present”. It is striking how directly Adorno seems to anticipate Derrida on presence. In this, too, he takes his inspiration from Hegel:

Hegel does not credit the concept of being, as a primordial value, with immediacy, the illusion that being is logically and genetically prior to any reflection, any division between subject and object; instead, he eradicates immediacy. (Adorno 1993: 33)

His denunciation of the “false immediacy” of positivist thought anticipates Derrida’s critique of the metaphysics of presence.

A second important dimension implied by the logic of *différance* is the paradoxical relationship between the system and its environment, between the inside and the outside. Derrida says, in the context of a discussion of his notion of the trace (although, as is typical with Derrida, other aspects feature just as prominently: temporality, presence, death),

. . . [T]his trace is the opening of the first exteriority in general, the enigmatic relationship of the living to its other and of an inside to an outside: spacing. The outside, “spatial” and “objective” exteriority which we believe we know as the most familiar thing in the world, as familiarity itself, would not appear without the *grammè*, without *différance* as temporalization, without the non-presence of the other inscribed within the meaning of the present. . . The presence-absence of the trace, which one should not even call its ambiguity, but rather its play. . . (Derrida 1998: 70–71)

Just as a complex system can never be hermetically sealed, but is always “open” to its environment, even though it can only “see” and process information from this environment by means of its internal resources (see Cilliers 1998, Luhmann 1995), deconstruction shows us how a trace of the outside has always already (re)entered the system. Neither absolute immanence nor absolute transcendence is possible: only a “presence-absence”. The traditional categories of the Enlightenment, however, cannot accommodate an outside, except as absolute transcendence such as in Kantian ethics. Derrida’s deconstruction of the inside/outside divide – his project has been described as an attempt to think the possibility of a “constitutive outside” to the system (Belmonte 2002) – is analogous to Horkheimer and Adorno’s critique of the “pure immanence” of positivism that tolerates no outside (Horkheimer and Adorno 2002: 11). Allowing for an outside that is entirely beyond the system (and is therefore negative since in a sense it negates the immanent) “but a trace of which can nevertheless enter” is theoretically indispensable. Without it there is no possibility of “the new”, which must necessarily enter the system from the outside, and therefore also not of critique. Perhaps Derrida’s most important contribution is the thinking of the inside/outside dichotomy as an aporetic relation. The language of the aporia also brings to light its profound ethical implications.

Critique As an Ethics of Responsibility

The paradox of the immanent and the transcendent manifests in a multitude of ways in the deconstructive tradition, including in any attempt to think the social or the political. Beardsworth (1996: xiii) points to a distinction evident in most contemporary continental philosophy: that between political organisation on the one hand and the “remainder” of any attempt to organise politically, on the other. This distinction is analogous to the distinctions between “the law” and “justice”, “the deconstructable” and “the undeconstructable”, “the system” and “the outside,” and between “the immanent” and “the transcendent” that pervade the work of Derrida, Critchley, Cornell and others who write in the deconstructive tradition (see Grebe 2009). The political and ethical power of Derrida’s thought flows precisely from his thinking of this distinction as an aporetic relation. Beardsworth (1996: xiii) argues that all political organisation depends upon a stability of conceptual determination and that this stabilisation implies a certain violence. Derrida’s deconstruction of metaphysics disrupts this conceptual stability and thereby undermines any totalitarian politics.

What in theoretical reflection is represented by the trace of the outside, becomes in Derrida’s political reflection the ethical injunction represented by that which transcends the actual, but which must nevertheless “break into it” through the deconstructive critique of the system: *justice*. As Caputo (1997: 128) says, “[E]very deconstructive analysis is undertaken *in the name of something*, something affirmatively undeconstructable.” Caputo is concerned with the distinction between *the law* and *justice* – a manifestation of the broader distinction described earlier:

“Deconstruction situates itself in the structural, necessary space between the law and justice, watching for the flowers of justice that grow up in the cracks of the law.” This “structural” dislocation or spacing is necessary on the one hand if law is to be deconstructable and therefore capable of improvement (otherwise justice would always already be instantiated in the law and no improvement would be possible or necessary); but it is also necessary to traverse that space – i.e. for deconstruction to not merely watch and wait for the flowers of justice, but to cultivate them by actively transforming the law in the name of justice. Derrida makes sense of this limit as *aporia*: justice is only encountered by running up against the limits of the law.

Derrida says of the notion of *aporia*:

I believe we would misunderstand [the word ‘*aporia*’] if we tried to hold it to its most literal meaning: an absence of path, a paralysis before roadblocks, the immobilization of thinking, the impossibility of advancing, a barrier blocking the future. On the contrary, it seems to me that the experience of the *aporia* . . . gives or promises the thinking of the path, provokes the thinking of the very possibility of what still remains unthinkable or unthought, indeed, impossible. (Derrida 1986:132)

In other words, it is precisely the *aporia* which opens up the possibility of the *impossible*,⁷⁵ that is: it is only in the *aporia* that there is any chance for “the beyond” to re-enter the system, for “the remainder” to influence political organisation. This logic of the *aporia* can be somewhat elucidated by looking at the related notion of undecidability. Says Derrida, in response to a question relating to Searle’s accusation that he “[sets] up a kind of ‘all or nothing’ choice between pure realization or self-presence and complete free play or undecidability”:

[Undecidability] calls for decision in the order of ethical-political responsibility. It is even its necessary condition. A decision can only come into being in a space that exceeds the calculable program that would destroy all responsibility by transforming it into a programmable effect of determinate causes. There can be no moral or political responsibility without this trial and this passage by way of the undecidable. Even if a decision seems to take only a second and not to be preceded by any deliberation, it is structured by this experience and experiment of the undecidable. If I insist on this point from now on, it is, I repeat, because the discussion is, will be, and ought to be at bottom an ethical-political one. (Derrida 1988:116)

The “experience of the undecidable” is therefore a structural condition of possibility of decision *qua* judgement. Undecidability means that calculation is insufficient – if it were, no judgement would be necessary and the correct decision would be self-evident. However, it does not mean complete paralysis either: a decision has to be taken: “justice does not wait” (Caputo 1997: 138). Undecidability in this sense is what opens up the impossible as that which is beyond the merely

⁷⁵ This notion of the “impossible” is not used by Derrida to refer to that which cannot be done, but rather that which is beyond the possible. This is discussed later in this chapter.

possible.⁷⁶ Only by reaching beyond the limit of the actual (the law, political organisation, the system) can a *trace of the other* (the beyond, the remainder, justice) re-enter the system and a “fresh judgement” be made.

The aporetic, then, is what, on the one hand (through undecidability) opens up the possibility of the new and therefore of the just, and on the other (through responsibility) requires it, compels us to push against the limit. The “promise of the future” emerges as a direct result of the paradoxical logic by which undecidability becomes the condition of possibility of judgement.

This is the essence of critique: reaching beyond the immanent, negating it. But in deconstruction, like in negative dialectics, there is no access to a positive alternative. Justice does not have determinable content; there is no ready alternative to inform critique. Determinate negation is all we have—we are called to judgement.

Complexity and Critique

The negative impulse informing Adorno’s and Derrida’s philosophy is the source of its critical power. While complexity science emerged from an entirely separate intellectual lineage, it can nevertheless be seen as embodying a similar negative impulse, and consequently can be read as a critical philosophy. In this way its ethical and political significance becomes clearer. Cilliers (1998) shows convincingly that the characteristics of complex systems accords with Derrida’s description of linguistic systems and the logic of *différance* more generally. This chapter has argued that Derrida’s deconstruction is animated by a negativity that derives from the tradition of philosophical critique that the Frankfurt School and Adorno in particular, developed from Hegelian dialectics.

Complexity implies negativity because of the centrality of difference. No element in a complex system has a positive identity; each element is relationally constituted through its relationships with other elements. Similarly, the “identity” of the system as a whole is an emergent property: it is constituted through the differential relationships of its elements and neither the elements nor the system has a positive or final identity. This negativity at the heart of complexity has important critical consequences in at least two ways: (1) a temporal dimension is introduced that allows us to conceive of systemic change in a sophisticated way; and (2) the system (or at least its closure) is “negated” by the recognition of an “outside” that is more than a mere environment, but is what holds the potential for the radically new.

By articulating the notion and logic of *différance*, Derrida deconstructed the “metaphysics of presence”, not only in the sense of Enlightenment’s assumption that meaning can be fully present in the sign (and therefore that knowledge can be fully

⁷⁶ “The possible” here refers to that which is in any event given or implied in the immanent situation.

adequate to its object), but also in its privileging of the present in perhaps its most reductive impulse. By making both difference and deferral central to the founding of the system, a synchronic (“snapshot”) view of the world is rendered meaningless. Complexity (properly articulated) likewise introduces a temporal dimension to our view of the system, making change not only possible but unavoidable. A critical view of the world depends on the possibility of change, and in this sense the temporal moment in complexity is also its critical moment.

The question of the boundary in complex systems is a source of considerable difficulty. While Cilliers (1998) considers openness to its environment an essential characteristic of complex systems, there is a certain tension between this notion of openness and another indispensable characteristic, that of *self-organisation*. Other theorists emphasise the relative closure of complex systems, for example in the notion of “autopoiesis”, according to which the system, in (re)producing and maintaining itself, in a certain sense also “produces” its environment (Luhmann 1995, Maturana and Varela 1992). This difficulty is closely mirrored in the philosophical problem of the limit and of the “outside” sketched earlier. Derrida’s attempt to think the “constitutive outside” may be our best model for thinking about the boundaries of complex systems. The paradoxical notion of a boundary that is folded in on itself, of “invagination” (see Culler 1983, 1998, Wicomb 2008), or of a “quasi-transcendental” analysis, in which the system is deconstructed “in the name of” something that transcends it (see Cornell 1992), in fact closely resembles the notion of a complex system that processes information from its environment by means of its internal resources, but which is nevertheless open to new information entering it from outside.

Keeping alive in this way the possibility of radical transformation and non-evolutionary change (i.e. change that is more than an expression of internal dynamics) is indeed to keep alive the notion of critique. This is where the ethical consequences of complexity’s negativity are most important.

To philosophers like Adorno, the horrors of the twentieth century’s great political experiments demonstrated the devastating consequences of thought without the negative – i.e. without a critical moment that relentlessly resists the totalitarian impulse of modernism. Critique, for both Adorno and Derrida, drives a certain redemptive (even utopian) moment – the promise of a different and better future (while at the same time rendering fruitless any attempt to positively specify an order that is to come).

Deconstruction, as we have said, is affirmative of “the undeconstructable” – justice – while denying the possibility of giving content to the notion of justice. It is only by virtue of negativity that something new can come about, that *l’avenir* (the “to come”) can arrive. Far from leading to fatalism and paralysis, this negative and anti-totalising thrust is essential to this redemptive moment without which all hope is lost. If complexity allows us to rearticulate a critical and negative philosophy, while also allowing us to speak concretely about society and the world, it is nothing less than the rebirth of a hopeful science.

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Part IV
Complexity and Ethics

Chapter 7

The Complexity of Difference, Ethics and the Law

Wilmien Wicomb

Introduction

It is not difficult to find support for an argument in favour of diversity in contemporary social discourse. Tolerance for difference and for the rights of minorities has become an accepted notion amongst many contemporary scholars.⁷⁷ Even though international law instruments generally still cling on to a universal conception of humankind, minority rights have cautiously come to be acknowledged by international and domestic law with little contradiction.⁷⁸ This is reflected significantly in the inclusion of the protection of culture and language as fundamental rights in more recent national constitutions⁷⁹ as well as the protection of peoples' rights as formulated in the African Charter on Human and Peoples' Rights.⁸⁰ As a result, we have become accustomed to metaphors reflecting on the ways in which people differ from each other, whether it be as different "civilisations" (as Huntington famously formulated it), different ethnic and cultural groups (in Archbishop Desmond Tutu's

W. Wicomb (✉)
Legal Resources Centre, Cape Town, South Africa
e-mail: wilmien.wicomb@gmail.com

⁷⁷ See for example De Sousa Santos (2006), Harris-Short (2003) and Douzinas (2007). Kofi Annan concluded that "Tolerance and mercy have always and in all cultures been ideals of government rule and human behaviour. Today, we call these values human rights" (Statement on the fiftieth anniversary of the Universal Declaration on Human Rights (UDHR), 10 December 1997).

⁷⁸ While minority rights were already protected in theory in article 27 of the International Covenant on Civil and Political Rights (ICCPR) approved in 1966 and entering into force in 1976, this right has only recently entered the "mainstream". See for example the UN Declaration on the Rights of Persons Belonging to National or Ethnic, Religious and Linguistic Minorities GA Resolution 47/135, 18 December 1992; United Nations Human Rights Fact Sheet no. 18 (Rev. 1) *Minority Rights* (1998).

⁷⁹ South African Constitution (Act 106 of 1996) and the 1995 Federal Democratic Republic of Ethiopia Constitution.

⁸⁰ Adopted by the Organisation for African Unity on 27 June 1981 and entered into force on 21 October 1986. It has been ratified by all 53 member states to the African Union.

metaphor of the multicultural South African society as the “rainbow nation”⁸¹) or as different religions. More than mere tolerance for diversity, the notion is also celebrated as something *productive*.⁸² This argument suggests that a diverse number of viewpoints, for one, provide us with an ever richer pool from which to source solutions to the increasingly complex problems of the world (Cilliers 2005: 3).

This recent emphasis on difference and diversity has an interesting history. The celebration of difference is to a large extent a reaction to the “philosophy of the same” that attempts to formulate a universal definition of humanity so as to argue that, on the basis of such shared humanity, all people are entitled to some basic rights.⁸³ This attempt at reducing differences between humans to a universal identity was in turn not only a reaction to the horrors of the world wars and the counter-human rights arguments of cultural relativism, but also to earlier theories of law that indeed defined people in terms of their differences and as a result marginalised some groups on the basis of their difference from the privileged group, i.e. Western males (Minow 1990). If diversity is understood as a result of the many ways in which humans differ from each other, then these radical shifts in difference thinking over the last century may indicate at least how difficult it is not only to understand human diversity, but to find a way to speak meaningfully about it without resorting to absolute difference or sameness.

The significance of articulating human diversity recently again became a matter of particular importance in the legal context where the difference between formal and substantive equality is increasingly acknowledged.

In this chapter it will be argued that the recent attempts at re-establishing the significance of difference, disregard the *complexity* of diversity. This all-important oversight is paradoxically the result of an effort to promote diversity by defining identity and difference in reduced terms, thereby attempting to allow for greater inclusion. The more universal a definition, the less it excludes. At the same time, however, diversity is precisely that which cannot be reduced unless one is willing to give up the meaning and productivity of the diversity. The problem is that, in order to speak about diversity, one must give meaning to a notion that, in a sense, defies meaning by being always too complex to be reduced to a single and universal definition.

⁸¹ See Distiller and Steyn (2004).

⁸² See Douzinas (2007) and Cilliers (1998).

⁸³ This approach is said to have underscored the formulation of the UDHR. Kofi Annan, for example, in a statement on the fiftieth anniversary of the UDHR, said “Human rights, properly understood and justly interpreted, are foreign to no culture and native to all nations[. . .]The principles enshrined in the Universal Declaration of Human Rights are deeply rooted in the history of humankind. They can be found in the teachings of all the world’s great cultural and religious traditions.” In the same vein, Mary Robinson, UN High Commissioner for Human Rights at the time, has said that “the *travaux préparatoires* [of the UDHR] are there to remind us that the authors sought to reflect in their work the differing cultural traditions in the world. The result is a distillation of many values inherent in the world’s major legal systems and religious beliefs[. . .].”

Articulated in this way, the problem becomes an overtly ethical one: the ethical relation, defined in post-structural terms,⁸⁴ is one that attempts to regard the difference of the other completely and equally.⁸⁵ The other is not reduced to a mere object; rather there is regard for her subjectivity and otherness. This is the basis of a non-violent relationship as violence is understood as any action that attempts to reduce the other and her identity, thereby asserting a description of the other upon her. At the same time, one can also not say nothing, as that would simply deny us the productivity of diversity in dealing with the complexities of humanity.

The question remains therefore whether we can retain a notion of diversity which includes a meaningful engagement with both identity and difference, without reducing one to the other. In this regard, it will be argued, the theory of complexity provides some of the tools needed to develop a complex notion of diversity. To understand how complexity theory differs from the traditional approaches, it is useful to understand their approach to difference and sameness within systems of meaning as criticised by Jacques Derrida.

Derrida's Criticism of the Structurality of Structure

In *Writing and Difference*, Derrida (1978) takes structuralism's understanding of systems of difference as the structures responsible for the creation of meaning, to task. Structuralism based its assumptions largely on the theory of language as developed by Ferdinand de Saussure (1960). Whereas earlier models of language regarded linguistic signs as necessary representations of something external to it, Saussure argued that the elements of a language cannot be identified in terms of their intrinsic value, but in terms of the relationship they have with every other element in the system (Attridge et al. 1987). These relationships are characterised by difference: the more an element can be differentiated from other elements, the more meaning it gains. Outside this system, a sign is meaningless. This notion of meaning as a system of difference became the basis of subsequent structuralist analyses of cultural and social systems (Lechte 1994).

Derrida (1978) is not so much critical of the structuralist approach to meaning which posits meaning as a function of structure, but rather of the fact that this structure is understood to have a centre (or a point of origin) which organises the structure

⁸⁴See for example Cornell (1992).

⁸⁵The Other as a philosophical term is often associated with the work of Emmanuel Levinas. Once the subject lost its central position, the subject-object relation became problematic. The object could no longer be understood in terms of the subject. This led Levinas to call the object the "Other", to articulate his understanding of this object as being completely other and therefore outside the system. As Gibson explains, "...the other whom I encounter is always radically in excess of what my ego, cognitive powers, consciousness or intuitions would make of her or him. The other always and definitively overflows the frame in which I would seek to enclose the other" (Gibson 1999: 25). Seeking to enclose the other in such a frame is committing violence and thus being unethical.

and as a result dictates the meaning generated by the structure. As he points out, this system of difference as a totality and therefore a closed system of meaning is dependent on a centre which dictates what is allowed inside the system, and what must necessarily remain outside (1978: 352).

The function of this centre was not only to orient, balance, and organise the structure – one cannot in fact conceive of an unorganised structure – but above all to make sure that the organising principle of the structure would limit what we might call the *play* of the structure. By orienting and organising the coherence of the system, the centre of a structure permits the play of its elements inside the total form. And even today the notion of a structure lacking any centre represents the unthinkable itself. Nevertheless, the centre also closes off the play which it opens up and makes possible.

The significance of this centre is the fact that, while it allows for meaning (as the play of elements) to be free within the structure, the structure itself remains closed and static, because nothing that does not correlate with the organising principle (centre) is allowed in the system. This structurality of the structure is hidden by the play that is allowed within its boundaries. Because the meaning within this system is dynamic, and the meanings attached to signifiers therefore able to change, the absolute limits that the centre places on this change, becomes invisible. The centre does make play within the structure possible by providing a principle of organisation, but it also “closes off the play” by fixing the boundaries of the system and as a result the structure, by this very principle of organisation (Derrida 1978: 278). This latter characteristic, Derrida describes as the structurality of structure.

What the centralised system implies for a theory of meaning is that, while meaning is free within the system, this meaning is always reduced to the centre as organising principle and can therefore never influence, defy or alter this centre and as a result the structure of the system. The meaning that is generated by the play of differences within the system always necessarily remains within the structure without influencing the structure. While the meaning (play) generated in the system seems free, it is in fact bounded by the totalising structure. Moreover, the meaning created by difference in the system remains irrelevant as to the system’s representation of itself as the meaning of the system is always reduced to its centre and the resulting structurality.

It could be argued that theorists approaching the problem of human diversity have attempted to solve the problem of inclusion by positing either a universal definition of sameness or of difference. From a rereading of these theories in terms of the theory of centralised systems, it becomes evident that they attempt to define a centre principle of diversity in order to allow for the play of elements which constitute diversity, without acknowledging that that very same principle also closes off the play and reduces diversity to the meaning of the centre.

In turn, reducing diversity and restricting the play of difference denies us the possibility of the ethical as the latter is embodied by the constitutive play of difference. As was argued above, ethics has seized to be a restricted, rule-based discipline within the post-structuralist tradition, but is indeed something dynamic and particular. Every interaction presents its own unique challenges to the possibility of the ethical, non-violent relation and therefore the ethical itself must be dynamic in order

to remain relevant. This is only possible if the differences between the interacting elements are allowed to engage in a productive play, thereby constituting the ethical for their particular engagement.

The implication of this theoretical point is usefully illustrated in the development of difference and identity in the context of the rights discourse.

Liberal Rights Analysis: Affording Rights on the Basis of Sameness

An early attempt to accommodate the tension between diversity and the problem of exclusion can be found in the discourse of rights analysis as developed in mid-twentieth century American jurisprudence (Minow 1990). This discourse chose to emphasize the “sameness” between people, thereby attempting to find a basis for absolute inclusion which accommodates difference by *allowing* it, without *engaging* with it.⁸⁶ The apprehension of including differences meaningfully within rights analysis stemmed from the disillusionment with the American law tradition that explicitly marginalised groups such as women and African-Americans in, for one, the writing of the American Constitution (Minow 1990). The result of the eradication of difference from the law was that the basic rights of participation, self-determination and equality before the law were afforded to “all” based on the principle that all human beings are rational and autonomous. This approach allowed for the notion of fundamental rights inherent to all humans to be given content and as a result, these rights have become a subject of global concern.

Martha Minow’s (1990) critique of traditional rights analysis is twofold. She emphasises the reliance of rights theory on a description of humans as “autonomous, rational beings” upon which the principle of “sameness” is based that allows for all “humans” to claim the rights of self-determination, participation and equality before the law. On the one hand, Minow (1990: 171) argues, this “sameness” necessarily excludes those who do not fall within the ambit of the rational and autonomous being, and therefore does not honour the tension between diversity and inclusion. Paradoxically, the emphasis on sameness is precisely an effort to promote inclusion by eradicating the hierarchical differences that was believed to be the cause of law’s exclusion – of women, the disabled and others historically treated as “different”. But while these formerly marginalised groups may be included (and therefore protected) in as far as they represent rational, autonomous beings, they lose the advantage of special arrangements made for them in a law system that is based on absolute equal treatment and sameness. As an example Minow (1990: 168) cites American divorce law, and shows how the emphasis on equal treatment has weakened the bargaining power and protection of women – a group often in a more vulnerable position in divorce procedures. The point is that, if the system of law wants to protect its citizens

⁸⁶This approach is still prevalent in the debate about the justification for human rights and their enforceability in international law.

and as a result achieve equality, special arrangements that rely on the differences between people are imperative, as some people do need more protection than others. Formal equality often does not translate directly into substantive equality.⁸⁷ While sameness can provide protection of vulnerable and excluded groups up to a point, the fact that it ignores the difference between people, makes the theory inadequate to deal with the diversity of a society's needs.

Understood as a system of meaning in terms of the Derridean critique of closed systems, one could argue that the organising principle that ensures the totality of this system of "sameness" is the definition of human beings as rational and autonomous. This system based on sameness ensures that that which does not correlate with this centre – for example, humans deemed as being irrational – will remain absolutely outside. The problem of relying on this system of meaning is not necessarily that it attempts to give content to the principle of sameness, but rather that it makes the principle the organising centre of the system. Once the centre is allowed to dictate what the system includes, a negotiation of the limits of the system becomes impossible. In terms of the rights of participation and self-determination, it means that negotiating the possibility of the rights of those not regarded as rational, autonomous human beings, becomes impossible. For Minow, this represents a miscarriage of justice.

As for Minow's second point of criticism, Derrida (1978: 278) argues that the centre simultaneously decides the limits of the system and allows for "play" within this system. The argument is that, because the centre dictates the meaning of the system, the play of meaning and difference is allowed complete freedom within the system, as they could never alter the meaning and structure of the system. This is what makes a centralised system attractive to those attempting to formulate definitions upon which principles of law may be based: even though one is dealing with a definition that implies a great deal of diversity, the singular instances of difference included in the definition, could never "contradict" or alter the system's meaning. In terms of rights theory, once rationality is fixed as the central organising principle of the system of meaning that is called "sameness", a vast diversity of humans – across gender, race or ability – can be included in the system, without the danger of the "irrational" ever entering this system of sameness and destabilising it.

The organising centre of rationality further ensures that the differences within the system can never undermine the identity of this principle. This system does not deny the existence of difference, but believes that difference can and must be reduced to an identity (sameness) in order for a system to be inclusive of difference while remaining a stable and meaningful unit. In terms of rights theory, for instance, it will be argued that we cannot get caught up in the differences between humans when formulating a right such as equality before the law,⁸⁸ as this is precisely the traditional

⁸⁷This difference has been discussed in some depth by the South African Constitutional Court and is an insight that underlies their equality jurisprudence. See for example, *National Coalition for Gay and Lesbian Equality v Minister of Justice* 1999 (1) SA 6 (CC); *Minister of Finance v Van Heerden* 2004 (6) SA 121 (CC); *President of the Republic of South Africa v Hugo* 1997 (4) SA 1 (CC).

⁸⁸See also Article 1 of the UDHR

approach which led to the exclusion of certain groups. We should rather attempt to formulate principles and create structures of law which could transgress these differences; principles and structures, therefore, which can accommodate diversity without being dictated by it. This, they will argue, is the only way to retain difference and inclusion simultaneously.

As Minow (1990: 168) points out, however, ignoring the differences that exist between those included in the system undermines that which the system was designed to promote, namely substantive equality. We might all share sameness as humans that allow us to *claim* equal rights before the law, but it does not follow that equality is achieved when we are all treated the same. Substantive equality must be sensitive to the differences that exist between us. These differences must be allowed to influence and change the structure of the system, for example by making special provisions for certain vulnerable groups to ensure their empirical equality before the law, rather than merely acknowledging equality as an ontological “truth”.

This “detached” approach to human diversity was also found wanting when attempting to understand conflict between different groups of people in different contexts around the globe. Merely emphasizing our sameness without engaging with our differences was no way to explain why people thought and acted in fundamentally different ways. The reality of multiculturalism further indicated that a mere emphasis on sameness was an oversimplification of a far more complex problem, and as a “solution” to diversity thus seemed rather naïve. As a result, more emphasis came to be placed on the ways in which people are different, rather than the same.

Acknowledging Difference

Similar to Minow’s argument, these recent discourses of difference reflect the insight that the attempt at promoting diversity by reducing differences within a system to the sameness of an organising centre, denies the significance of these differences. In other words, defining a system (of human beings, for instance) in ever broader terms in order to allow for greater inclusion, necessarily reduces ever more differences between the elements in order to formulate an inclusive definition. As a result, an emphasis on difference has become an important motivation of more recent descriptions of human organisation.

The problem of difference is often felt even more acutely in a multi-cultural society. The example of South Africa is quite striking in this regard, as the former policies of apartheid not only served to turn differences into absolutes, but further claimed to honour the important tension between difference and sameness in a policy that purported to treat people as separate, but equal. The reality of these policies was, or course, quite the opposite. The new approach to difference encountered in post-apartheid rhetoric wants to encourage tolerance for that which is other by also naming differences explicitly, but without the hierarchical implications. This is meant to reflect the positive nature of diversity so as to show that the fact that post-apartheid South Africa could never be a nation united in sameness is not a case of

irreconcilable differences, but rather of productive differences, and as such should be welcomed. The metaphor of the “rainbow nation” attempts to retain both difference and sameness, as diversity is not encouraged as an antidote to unity – thus the significant retention of the notion of a “nation”. The argument seems to be, then, that sameness is not a precondition for unity, but that we can remain a unit *despite* our diversity.

Huntington’s (1997) notion of the “clash of civilisations” does not carry the same idealistic motivation, but it does attempt to explain modern day global conflict by describing people as different along identifiable lines of separation. In a descriptive argument, Huntington names and defines the fundamental differences that, according to him, will make a difference on a global scale in modern politics. It should therefore be possible to explain most instances of political conflict in terms of these very fundamental differences between “civilisations”. Huntington’s argument rests on the notion that every singular instance of conflict is merely symptomatic of far more fundamental conflict. One should therefore be careful not to get caught up in the details of everyday conflict, but should rather understand these as a function of the broader categories of difference that he suggests.

Criticism of these discourses of difference works at two levels. On the one hand, it is argued that absolutising the difference between people and groups without at the same time acknowledging the sameness or identity between people would imply that communication between different groups becomes impossible (Cilliers 2005: 2–3). This criticism may be levelled against an extreme reading of Huntington’s theory of civilisations: if we say that we need to understand the differences between people in order to understand conflict, this understanding becomes futile if the differences are such that they make any basis for communication, and therefore for the peaceful resolution of conflict, impossible. The same can be said of the rhetoric of “us” against “them” that was often used by Western leaders in the discourse surrounding the so-called war on terror. In the aftermath of the terrorist attack on London in July 2005, the leaders attending the G8 conference that was taking place in Scotland at the time, issued a statement saying that the contrast between “them” and the terrorists couldn’t be more stark: here “we” (the West) are attempting to solve the problems of poverty on a global level out of respect for life and dignity as universal human rights, and there “they” (the terrorists) are attacking these very principles by disregarding life and dignity in the most careless and cruel of manners.⁸⁹ This kind of argument disregards the fact that, while our goals may be fundamentally different, there remains sameness in the human desire for freedom and self-determination. And this sameness cannot be underestimated, as it will only perpetuate the lack of understanding between peoples that may be said to have led to the conflict in the first place.⁹⁰ Moreover, denying the play of difference between the two groups to

⁸⁹“Terrorist Attacks on London fail to stop G8 climate talks” <http://www.ens-newswire.com/ens/jul2005> [accessed 20 January 2008].

⁹⁰See also Sen (2006).

this extent, completely eliminates the possibility of the constitution of an ethical, non-violent relationship and thus simply reinforces the cycle of violence.

But there is another problem inherent in the absolutising of difference, a problem rarely avoided by these discourses of difference. While the emphasis on difference is often motivated by a celebration of diversity, rather than a criticism of it, the tendency to celebrate difference by giving content to it again reduces difference to sameness. This is reflected in the arguments from some commentators who point out that these metaphors of difference tend to absolutise the notions of diversity and difference. Sen (2006: xii), for example, argues that understanding the disharmony in the contemporary world as a result of the difference between “civilisations” defined along single lines of impenetrable division, disregards the “human pluralities” which “cut across each other and work against [this sharp separation]”.

The new emphasis on difference is not an unsophisticated position and one should be careful to dismiss it out of hand. The discourse of sameness that characterised rights analysis of the twentieth century, we saw, developed in reaction to an acknowledgment of difference which led to the exclusion of many groups from equality before the law. This emphasis on sameness, however, suffered from a lack of sensitivity for difference which denied it the ability to treat people and groups with the necessary regard for how they differ. The new discourses on difference want to address both the problems of inclusion and difference by acknowledging difference explicitly, without allowing for exclusion on the basis of such difference. It is an engagement with difference with the important acknowledgment that traditional discourses – both of difference and sameness – have been known to devalue or disregard that which is different.

The example of the rainbow nation is to an extent an expression of this attempt to overcome the shortcomings of previous discourses by giving difference positive content. The metaphor, it was argued, attempts to overcome the legacy of apartheid, a legacy molded in the earlier theories of difference which expressly acknowledged the differences between people and excluded many on the basis thereof. The new South African society was left with all the differences (racial, linguistic, cultural), without the institutionalised separation. There were some who believed that the new South Africa could produce a people united in its sameness on the basis of shared (and created) nationality. A far more realistic approach suggested that the South African society should accept that it is made up of many fundamentally different groups that have very little in common and should rather celebrate the productivity of this diversity, without attempting to create a contrived “South Africanism”. As a counter-metaphor for the American “melting pot”, where the vast array of differences amongst migrants who became American citizens were supposed to disappear in the creation of an American nation sharing an “American dream”, the rainbow as metaphor suggested that South Africans retain their differences, and unify despite them. This notion was consistent with the post-apartheid emphasis on the right to self-determination of every group reflected in the new South African Constitution, and as such it seemed to be a useful metaphor.

In a country where race is as pertinent an issue as in post-apartheid South Africa, it was inevitable that the rainbow’s allusion to colour was associated with racial

difference. Some critics felt that the metaphor thus foregrounded racial difference without engaging with the meanings of the different groups (Gqola 2004: 146). Diversity was reduced to the distinctions made between the different identity groups. As a result, all differences within groups were reduced to single identities. The meaning of the identity of a member of such a group then amounts to little more than what distinguish his group from other groups. The metaphor is further unable to include categories of difference other than that of race, such as gender, which results in the metaphor containing identities. Ironically, the effort to transgress the containment of identities associated with an apartheid regime that classified people according to race and marginalised them accordingly, only goes half way. People are still contained within single identities separated along racial lines, even though they may not be marginalised on the basis thereof.

Even though the rainbow metaphor thus celebrates diversity, while Huntington's clash of civilisations points to the inevitability and danger of diversity, their approaches amount to the same problematic: it rests on the presumption that humans can be categorised according to some singular and overarching system of partitioning. Amartya Sen's (2006: xv) argument against such an approach is not that people should not be understood as belonging to groups, but rather that they cannot be defined in terms of their membership to a single group. It could be argued that the problem with these descriptions of difference is that, even though it attempts to engage with difference in a way that an emphasis on sameness was unable to do, its approach to difference is caught in the same centralised system of meaning and therefore does not move beyond the absolutising of the notion of difference. In other words, in order to speak of difference, an organising centre is defined upon which the meaning of the system is based: in Huntington's description, it is "civilisation", for the rainbow metaphor, it is "colour" or "race". As was the case with an attempt to ground a system in sameness, the existence of differences within the system is not denied, but it is suppressed in the *representation* of the system. In order for the meaning of the system to be universal, the diversity of differences within the system is reduced to the meaning of the organising centre. In the same way, the rainbow metaphor is not an attempt at denying that we are different in more ways than merely our race, or that diversity can indeed be separated along single lines, but it does reduce this diversity to a "singular system of partitioning" (Sen 2006: xii) in its *representation* of the system.

When both the theories of sameness and difference are accused of disregarding the diversity and singularity of difference it is because they both choose to operate within a centralised system of meaning where a universal principle (of sameness or of difference) is used to ground the meaning of the system. The effect in both cases is that the diversity of difference within the system is disregarded when describing the system. In the case of a system of sameness, the motivation is precisely that of the inclusion of diversity – on the grounds of a universal humaneness. But the diversity is given no content, as the system remains to be represented in terms of its common denominator. In a system of difference, the attempt is to give content to diversity, but again in terms of a fixed principle. The result is that this diversity along singular lines contains identities to an even greater degree than the system of sameness.

Complexity and Diversity

It is important to find a way to speak meaningfully about diversity, as it is at once an indispensable resource of a complex society rich in meaning, but also an increasing empirical reality in a globalised world. But to speak meaningfully about diversity, we will have to approach the notion in its complexity. In other words, reducing diversity to a manageable notion that can be defined in terms of a single line of separation, for example, destroys the very notion of diversity. It can equally not be allowed to exist entirely free from the constraints of a system of meaning, as such freedom would make it impossible to say anything about the phenomenon. Moreover, if diversity is to be the productive notion able to stimulate meaning and complexity in society, it cannot be bound to a centralised system where the play of diversity is contained within the totality of the system. For diversity to be productive, for it to be able to play a role in developing complex societies, it must be allowed to influence the structure of meaning within which it [is] constituted – the play of diversity cannot be closed off. Only if we can speak about diversity without having to fix the discussion in an organising centre, will we be able to engage with diversity as a complex notion. As the citation from Derrida above suggests, however, the possibility of such a decentralised system is often regarded as the unthinkable itself. This is where the theory of complexity provides an important alternative.

Complex systems consist of a large number of elements. The meaning of the system is constituted, however, by sets of non-linear interaction and feedback loops rather than by the elements themselves (Cilliers 1998: 54). Complexity theorists argue therefore, that complex systems cannot be understood by reducing the system to its elements, because the characteristics of a complex system are generated by the interaction between different elements, rather than by the identities of elements themselves (Midgley 2003). This is a function of the organisational component of complex systems: properties emerge from the organisation of the elements of the system that would not emerge from a disorganised bunch of elements. Thus, a description of the system can never exclude the interactions between elements.

This organisational component of complex systems often translate into the ability of the system to self-organise, “a property of complex systems which enables them to develop or change structure spontaneously and adaptively in order to cope with, or manipulate, their environment” (Cilliers 1998: 90). Important implications of self-organisation are that it allows for structure – and as a result, meaning – without the necessary intervention of either an external designer of the system, or a point of origin (centre) *able to dictate the meaning of the system* (Cilliers 1998: 91). The first implication is a result of the fact that organisation and structure emerges spontaneously from the interaction of the elements in the system, while the second is implied by the fact that the structure of the complex system is always changing in response to the changes in its environment. For the discussion at hand, it is this second characteristic of complex systems that they have no dictating centre, which is of particular importance.

A significant implication of a complex understanding that follows is the importance that the interactions between elements have for the system’s meaning. We saw that in a centralised system, difference and interaction occurs, but it is disregarded

in the system's representation of itself. Diversity – like the play of meaning in the system – is allowed within the system, but has no bearing on the meaning of the system, as all meaning is reduced to that of the centre. But when diversity is celebrated as “productive”, it was argued, it must be constitutive of the meaning of the system, rather than its meaning being reduced to the system's centralised description. If not, it is hard to understand in what way diversity can be said to indeed be productive.

A complexity approach is often “feared” precisely because, while it allows for the inclusion of diversity, it does not allow for final and universal descriptions of the system. As was shown, however, when dealing with diversity, postulating “sameness” as a universal description of the system destroys diversity as a meaningful concept. It thus becomes impossible to engage with diversity when its meaning is reduced to the structurality of the system. Because the discourses of sameness and difference implicitly support the notion that the description of a system must necessarily be “universal” so as to be able to *include* a diversity of elements, they will argue that they *cannot* get caught up in an engagement with diversity which is singular and contingent. This is accurate: if diversity were to be included in the representation of the system, it would have serious implications for the system and the possibility of a universal description. Diversity is dynamic, and therefore the meaning and structure of the system will be dynamic, and any attempts at describing it exhaustively, futile. But this is precisely what it means to approach diversity *in its complexity* (Cilliers 2005: 3).

If a diverse society is understood as a complex system, it is an understanding that is not bound by an organising principle. A description of the society will emerge from the interaction of all the members with each other and their environment. Meaning will reside in the diversity of the system, therefore. For rights theory, this would mean that a description of the system of law subjects merely in terms of that which is common to all the elements (and therefore allows for their inclusion), is a description that distorts the meaning of the system entirely. It either assumes that the relations and interaction between elements are linear and therefore may be disregarded in a universal description of the system, or decides that, even though the interactions between elements are non-linear, and that these differences will make a difference to the system's description if they were included, they must be disregarded if we are to have any hope of formulating universal principles upon which fundamental rights can be based. Either way, this reduction of the system's meaning may be useful in formulating rights, but is proved futile in engaging with the empirical realities of differences before the law, as Minow's (1990) criticism points out.

Understanding the system of law subjects as a complex system will further make a final and universal description of this system impossible. This is not arguing that we should abandon all principles of law as they necessarily reduce the empirical diversity of law subjects to their sameness. It is rather an argument for accepting the fact that, however useful these principles may be, they are based upon a description of human society that is a distortion and therefore their implementation should aim at reflecting the diversity that is disregarded in the formulation of these principles. Yes, we share sameness in being human – which is why we are able to communicate and

interact in ways that result in self-organising systems – but we are also always different in a countless number of ways. It is this tension between diversity and inclusion that these discourses discussed above attempted to solve, but failed, either because they absolutised sameness or difference. A complex understanding of the system allows us to speak of identity, of sameness in describing the system, but without allowing a disregard for the differences between elements. A complex understanding accepts that the tension between diversity and inclusion is indeed not a problem to be solved. Approaching diversity as a complex system is thus an acknowledgment that we could never have the last word and therefore even our understanding of humans as law subjects should be open to the dynamics of human diversity.

In addition, a systems understanding devoid of an organising centre necessarily provides for less certainty as to what is included in the system and excluded from it. Boundaries around a complex system do emerge as a result of self-organisation, but the system is dynamic and therefore these boundaries are never fixed. This gives critics such as Minow the opportunity to negotiate the rights of those not defined as “rational, autonomous human beings”.

Whereas the lack of an organising centre forces philosophies of the same to engage with the differences in the system rather than ignoring them, this very same lack forces philosophies of difference to refrain from absolutising difference. When a complex system is described as dynamic and the interactions as non-linear; when it is argued that a complex system changes its structure and meaning through self-organisation in response to its environment, it means that the differences between elements will never be static. Moreover, elements in a complex system do not have fixed identities, but are constituted relationally⁹¹ (and never finally) through their various interactions with other elements. The identities themselves are complex and changing.

In order to understand difference as something absolute, one must understand both the elements of the system as well as the structure as static. A multi-cultural society is not such a static structure; neither are those members to it. Describing the society in terms of absolute difference is therefore an unnecessary and unproductive reduction of the diversity of the society. As with the philosophy of the same, one would have to accept once more that the description of the system and its diversity can only be provisional. But that does not mean that we cannot say meaningful things about the system and especially about the interactions between elements. Meaning is indeed a product of the self-organisation of the system, even if this meaning remains dynamic.

The fact that diversity can simultaneously be celebrated as productive and bemoaned as the cause of global conflict is perhaps symptomatic of the fact that we have indeed not been able to formulate ways to deal with diversity in its productive complexity. If we continue to reduce the notion, it will indeed remain the absolutist expression of difference that Huntington, for one, believes it to be. Celebrating diversity, it could be argued, means at least accepting that it is a notion too complex

⁹¹Minow (1990) also argues for understanding law subjects as relational identities.

to be contained in our metaphors of difference. This is the good news, for if diversity can indeed be described as something dynamic, then the fatalistic descriptions of difference as something that will always make meaningful dialogue between different civilisations impossible and conflict inevitable, can be countered on the grounds that it can at best be a temporary description of difference. Diversity will, thankfully, always exceed our attempts at defining it.

Legal Instruments

- African Charter on Human and Peoples' Rights.
- International Covenant on Civil and Political Rights.
- The 1995 Federal Democratic Republic of Ethiopia Constitution.
- The Constitution of the Republic of South Africa Act 108 of 1996.
- UN Declaration on the Rights of Persons Belonging to National or Ethnic, Religious and Linguistic Minorities GA Resolution 47/135.
- United Nations Human Rights Fact Sheet no. 18 (Rev. 1) *Minority Rights*.
- Universal Declaration of Human Rights.

Cases

- National Coalition for Gay and Lesbian Equality v Minister of Justice 1999 (1) SA 6 (CC).
- Minister of Finance v Van Heerden 2004 (6) SA 121 (CC).
- President of the Republic of South Africa v Hugo 1997 (4) SA 1 (CC).

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Chapter 8

Ethical Complexity

Harry Kunneman

Introduction

During the last decades, a far-reaching change has occurred in the conceptualization of identities and differences. The general direction of this change can be characterized as a movement away from conceptualizations of identities in terms of pre-given essences or in terms of elementary characteristics towards conceptualizations of identities in terms of the play of differences. This movement is not confined to the ontological and epistemological plane, but also has important ethical implications. In his groundbreaking book *Complexity and Postmodernism*, Paul Cilliers tries to shed light on these implications by analyzing the nature and modelling of complex systems. His central insight concerns the structural similarities between on one hand neural networks and on the other hand the analysis of language, meaning and society within postmodern and poststructuralist philosophy, especially Jacques Derrida and Jean-Francois Lyotard. Their work not only contains a radical critique of all metaphysical efforts to determine identities in terms of “naturally given” essences or by reference to a transcendent origin, but also has far reaching implications for dominant views on the foundations of scientific knowledge. As Cilliers says: “One of the most important scientific tools has always been the analytical method. If something is too complex to be grasped as a whole, it is divided into manageable units, which can be analyzed separately and be put together again. However, the study of complex dynamic systems has uncovered a fundamental flaw in the analytical method. A complex system is not constituted merely by the sum of its components, but also by the intricate relationships between these components. In ‘cutting up’ a system, the analytical method destroys what it seeks to understand.” (Cilliers 1998: 1–2)

This insight has important ethical and even political implications. Edgar Morin (together with Henri Atlan and Michael Serres one of the “grand old men” of complexity thinking in France) underlines these implications in the following way:

H. Kunneman (✉)
University for Humanistics, Utrecht, Netherlands
e-mail: h.kunneman@planet.nl

All knowledge operates through the selection of meaningful data and the rejection of data that are not meaningful. It does so by separating (distinguishing or disjointing) and unifying (associating, identifying), and by organizing into hierarchies (the primary, the secondary) and centralizing (around a core of master notions). These operations, which use logic, are in reality driven by “supra-logical” principles of organization of thought, or paradigms: the hidden principles that govern our perception of things and of the world, without our being conscious of them. . . Let us now take an example that is at the heart of the anthropo-social problems of our century: the concentration camp system (the Gulag) in the former Soviet Union. Even when acknowledged, de facto, it was possible to cast the Gulag out to the periphery of Soviet socialism, as a negative but secondary and temporary phenomenon, provoked primarily by an encroaching capitalism and the initial difficulties in the construction of socialism. But the Gulag could also be considered as the central core of the system, revealing its totalitarian essence. We see then how, depending on a logical operation—centration, organization into a hierarchy, disjunction or identification—our view of the USSR changes completely. (Morin 2008: 10)

The example provided by Morin offers a first illustration of the ethical implications flowing from a complexity oriented ontological and epistemological perspective. Together with Morin - and, from a different angle, together with feminist theorists such as Donna Haraway – Paul Cilliers is one the few complexity theorists explicitly acknowledging the central importance of normative and ethical issues for complexity thinking and trying to do philosophical justice to them. During the last decades he has not only developed a general, “lean” theory of complex systems, but has also sketched the outlines of an “ethics of complexity”, focusing on questions of ethical responsibility in the face of complexity and on the central importance of differences and of the respect for differences for such an ethics of complexity. In their anthology *Biology under the Influence*, Richard Lewontin and Richard Levins state that “complexity is the central scientific problem of our time” (Lewontin and Levins 2007: 65) In my opinion complexity is not only the central scientific, but also the central *ethical* problem of our time. Hence the importance of Cilliers’ efforts to develop an ethics of complexity against the background of a general theory of complex systems.

However, in my eyes the project he has embarked upon might be more complex than he has acknowledged up until now. His point of departure is supplied by a combination of intertwined ontological and epistemological arguments. On the ontological plane (with some proviso’s, to be discussed below), he ascribes specific characteristics to complex systems, especially the non-linear character of the relations between their components and the concomitant emergent properties of complex systems. These specific ontological characteristics have far-reaching epistemological consequences, because they imply that all epistemological strategies based on the reduction of the properties of complex systems to the properties of their components necessarily distort or even block from view the emergent properties of the systems involved. Thus the epistemological difficulties necessitating the use of non-reductionist conceptual strategies when trying to understand complex systems, are rooted in the ontological characteristics of complex systems. However, Cilliers does not want to rule out the possibility that all complexity is merely epistemological, there is a possibility that:

all complex systems are actually just complicated and that we will eventually be able to understand them perfectly. Nevertheless, until such time as the emergent properties of a system are fully understood, it is foolish to treat them as if we understand them already. Given the finitude of human understanding, some aspects of a complex system may always be beyond our grasp. This is no reason to give up on our efforts to understand things clearly. However, there are good reasons why we have to be extremely careful about the reach of the scientific claims we make. (Cilliers 2008: 4–5)

These good reasons are thus primarily epistemological. According to Cilliers the only adequate model of a complex system would be the system itself:

The knowledge we have of complex systems is based on the models we make of these systems, but in order to function as models – and not merely as a repetition of the system – they have to *reduce* the complexity of the system. This means that some aspects of the system are always left out of consideration. The problem is compounded by the fact that that which is left out, interacts with the rest of the system in a non-linear way and we can therefore not predict what the effects of our reduction of the complexity will be, especially not as the system and its environment develops and transforms in time. (Cilliers 2005: 256)

At this point the ethical implications of complexity thinking come into view:

The failure to acknowledge the complexity of a certain situation is not merely a technical error, it is also an ethical one. We cannot make purely objective and final claims about our complex world. We have to make choices and thus we cannot escape the normative or ethical domain. . . Normative issues are intertwined with our very understanding of complexity. (Cilliers 2005: 259–264)

However, in a complex world normative issues cannot be decided upon on the basis of universal ethical rules which could free us from the necessity to make ethical choices. We can draw up such rules and act as if they were universally valid,

but only with the proviso that they have to be re-evaluated *each time they are applied*. . . We cannot avoid making a decision, and we can also not escape accepting responsibility for its outcome, even if the outcome was something that could not be foreseen. (Cilliers 2004: 25–26)

Against this background Cilliers advocates some provisional ethical rules, in which respect for differences takes central stage:

to make a responsible judgment – whether it be in law, science or art – would involve at least. . . respecting otherness and difference as values in themselves. (Cilliers 1998: 139)

Moreover, in a paper on “Complexity, Ethics and Justice” he explicitly connects lack of respect for otherness and difference with power and oppression: “The argument from complexity claims that a single story, or in the words of Lyotard, a ‘coherent meta-narrative’ cannot describe any social system fully. . . The reason why a certain description is acceptable has to do less with rationality and more with *power*. We do not have to look hard to find examples of master-narratives which oppressed the ‘other’ in the system, whether they are of a different race, religion, gender or sexual orientation.”(Cilliers 2004: 24). Thus the provisional ethical rule to “respect otherness and difference as values in themselves” also has political implications: it implies a critique of and resistance against all master-narratives presenting a unified view of all social relations, in which crucial

differences are blocked from view or presented as irrelevant in view of a supposed “general interest”.

The Gap Between “Is” and “Ought”

Against the background of his general theory of complex systems, Cilliers has thus developed the outlines of an “ethics of complexity”, centering on respect for otherness and for differences and oriented by values such as diversity and the development of “rich identities”. In the light of the persistent tendency of most renowned complexity theorists either to avoid normative and ethical questions (Holland 1995, 1998, Kauffmann 1995), or to suggest simplistic solutions for them (Maturana and Varela 1992), these efforts are in my opinion highly important. However the preliminary steps he has made on the road towards an ethics of complexity leave important questions unanswered. The most pressing question in my eyes concerns the foundations of his ethics of difference, especially its roots in his general theory of complex systems.

By aligning himself with the ethics of differences proposed by Jacques Derrida and Drucilla Cornell, Cilliers has taken sides in a debate which has vexed philosophers and theologians for the past two millennia. Within twentieth century philosophy, all efforts to provide a rational foundation for ethical and moral principles and to establish their universal validity have been subjected to devastating critique. On the one hand, based on arguments reaching from Hume, Kant and Weber to Moore and Ayer, it has become clear that it is impossible to prove the validity of normative judgments with the help of empirical arguments. In twentieth century philosophy an unbridgeable gap between “is” and “ought” has opened up. On the other hand postmodern philosophy has more or less demolished all efforts to ground ethical principles on a metaphysical or transcendent base, whether this transcendence is articulated in religious language or in the form of a transcendent historical truth, as envisioned for instance by historical materialism. Moreover, postmodern and feminist thinkers have argued that scientific knowledge itself is deeply imbued with values and interests. (Foucault 1982, Braidotti 1992, 2005) Instead of bridging the gap between “is” and “ought” however, this line of critique has strengthened the idea that ethical perspectives cannot be justified on rational grounds.

As Jean-Francois Lyotard has it in *The Differend*: “We do want justice”. But at the same time he is at pains to show that neither this desire nor the value of justice can or should be justified with rational means. (Lyotard 1986)

Seen against this background, it seems that Cilliers underestimates the conceptual (and practical!) difficulties connected with the gap between “is” and “ought”. These difficulties become visible when we pose the question why we should prefer his ethics of differences above – for example – an ethics of care, or the discourse ethics propagated by Jürgen Habermas (1984) and Sheila Benhabib (1992), or the feminist inspired “nomadic ethics” advocated by Rosi Braidotti (2006), or for that matter, the aggressively “masculine” ethics connected with the Hip-Hop scene, or

the “tribal” ethics practiced with great brutality and with great economic success by Italian Mafia-families? In my opinion, the conceptual strategy developed up till now by Cilliers makes it difficult to offer a satisfying answer to these questions. In my eyes the central difficulty is his allegiance to a general *theory* of complex systems as the basis for his ethical enquiries. At crucial places in his work, Cilliers implicitly suggests that his ethics of differences is supported somehow by his general theory of complex systems. More specifically he suggest a conceptual continuity between on the one hand the notion of differences as articulated with the help of neural network theory and of the Sausurian/Derridean analysis of meaning and difference and on the other hand the notion of difference in the context of relations of power, oppression and respect for “otherness”. Upon closer inspection a big conceptual gap becomes visible between these two notions of difference. The conceptual distance between them transpires from Cilliers own analysis of the “logic” and “economy” of differences in the introduction to this book.

There he provides a lucid analysis both of difference as a necessary condition of meaning and of the constraints involved in the generation of meaning: “Meaning, in real time and space, is only possible when there are many differences interacting by constraining each other.” (Cilliers in Chapter 1) This analysis also makes clear that for meaning to become possible “some form of similarity must already be there. . .without constrained difference and repeatable identity, there can be no meaning.” Against this background Cilliers then tries to translate these insights to the macro level of persons and groups of persons. He concludes that the identity of persons and groups of persons is an emergent property resulting from the *diversity* in the system: “Identity is the result of diversity, not the other way around.” This argument is then extended toward the “shallowness” and “richness” of social identities. According to Cilliers, the more diversity there is involved in the construction of identities, the richer they will be. A “self-reliant minority” for instance may tend to derive its identity

by recycling internal well-established differences, and by excluding outside influence. This may easily result in a ‘lean’ identity. If however a minority finds its identity in a rich interaction with other groupings, such an identity will not only be richer and more specific, but it will also be more resilient. The closing down of the borders of a system leads to pathology. (Cilliers in Chapter 1)

This passage clearly resonates with the “respect for difference and otherness as values in themselves” advocated in *Complexity and Postmodernism*. In both cases a conceptual continuity is suggested between insights stemming from complexity theory and specific, value laden concepts, such as respecting differences or the shallowness or richness of social identities. However, when delving deeper into his argumentation a big gap between these notions of difference shows itself. In my opinion this gap will continue to exist as long as Cilliers (together with the majority of complexity theorists) sticks to the idea of a *general theory* explicating characteristics shared by *all* complex systems and then tries to develop an ethics of complexity on the basis of this general theory. As Cilliers indicates in all clarity, such a general theory starts at a comparatively low level and then “works its

way up”, by extending general characteristic found at lower levels to higher levels. “This means that the higher-level or emergent properties play no role as such in the theory itself. They have no ‘higher’ importance”. (Cilliers 1998: 142) As a consequence of this conceptual strategy however, a big gap opens up between on the one hand the general characteristics of complex systems and on the other hand the very specific characteristics attributed by Cilliers to human actors faced with normative issues. These abilities, such as the ability to reflect, to take ethical responsibility for one’s actions and to practice values such as respect for difference and otherness, imply forms of organization and capabilities that differ sharply from the general characteristics shared by all complex systems. But human actors and the social systems and cultural frameworks they partake in, no doubt belong to the category of complex systems. Thus in his *ethics* of complexity Cilliers presupposes the existence of a very special kind of complex systems, exhibiting characteristics which cannot be understood in terms of his general *theory* of complex systems. This suggests that the conceptual building he has erected misses a “mediating level” so to speak, which could connect the general theory of complex systems with his ethics of complexity.

In the remainder of this chapter I will sketch the outlines of such a mediating, “in-between level”. Two hypotheses will underlie and orient this sketch. In the first place the idea that ethical complexity embodies an emergent quality of relations between “selves” and “others” which I propose to designate as “diapoiesis”, in critical reference to the notion of autopoiesis as introduced by Humberto Maturana and Francisco Varela and to the notion of dialogue. As a relational quality diapoiesis presupposes the dynamic relations between living entities and their surroundings, as explicated among others in the general theory of complex systems, but enriches the autopoietic dynamic of living systems with another dynamic involving re-entrant ethical and moral relations between selves. The second hypothesis orienting my argument concerns the distinction between ontological and epistemological complexity on the one hand and ethical complexity on the other hand. I will argue that this distinction cannot be fully clarified with theoretical means: ethical complexity and the dia-poiètic relations connected with ethical complexity also require *narrative* forms of modelling, both on the level of personal identities and on the level of narrative traditions and cultural frameworks.

In the remainder of my argument, I will elucidate and concretize these abstract formulations in two steps. In the next paragraph, I will give a preliminary sketch of the nature of ethical complexity and the necessity of narrative forms of modelling ethical complexity, building upon the work of the French philosopher and ethicist Paul Ricoeur. In the last paragraph I will show how the “in between” conceptual level I try to construct by weaving together core ideas from Paul Ricoeur with insights stemming from complexity thinking, can help to reformulate the gap between “is” and “ought” in another conceptual framework and this point a way out of the conceptual difficulties faced by Cilliers, and by other contemporary thinkers engaged with the same kind of important and even critical questions explored in his work.

The Narrative Ethics of Paul Ricoeur

On the Back of a Stamp

In his book *De ontmaskering* (1997) the Dutch psychiatrist Detlev Petry reflects on his experiences as a young practitioner in a traditional asylum for the mentally ill. During the first weeks of his stay, he was introduced to the patients in the section where he was going to work and to their histories. One of these patients was named Pieter. The psychiatric nurse who acted as his guide told him that Pieter was a schizophrenic, had been with them for a long time and suffered from religious delusions. In his eyes, there was not much more to tell about him. In fact, the nurse said, “what there is to tell about Pieter can be written on the back of a stamp.” For Petry, this was unacceptable. Influenced as he was by critical psychiatric thinkers such as Laing and Basaglia, and on the basis of his personal history and values, he refused to believe that this was all there was to say about the life and the person of Pieter. So he started a series of conversations with Pieter and tried to clarify his personal history. After half a year he proposed Pieter to visit his native village and have a talk with the vicar there, who appeared to have been an important figure in his life. This meeting helped to put Pieter’s “religious delusions” into a historical perspective and redefine it in more spiritual terms. After one and a half year, Pieter moved out of the asylum into a small apartment in the near vicinity of the local church, where he was regularly visited by his family and some old acquaintances and was able to lead a life of his own.

This little story offers a first, narrative evocation of the nature of ethical complexity, as an emergent, inherently instable quality of relations between “selves” and “others”. This first evocation and preliminary definition of ethical complexity points to two important differences between ontological and epistemological complexity on the one hand and ethical complexity on the other hand. Ontological complexity foregrounds questions concerning the nature or defining properties of entities, especially concerning their structure of organization and their relations with other entities, whereas epistemological complexity foregrounds the nature of the relation between knowing subjects and objects of knowledge. Ethical complexity is akin up to a point to epistemological complexity, in so far as ethical complexity also foregrounds activities and relations of actors. But it differs from epistemological complexity because it brings another type of relations and another type of modelling into play: on the one hand emergent, re-entrant, dia-poiètic relations between actors and on the other hand narrative forms of modelling both the selves involved and their relations with others.

In the remainder of this paragraph I will offer a more precise conceptual explication of this notion of ethical complexity and the conditions for its emergence, building upon on the work of Paul Ricoeur. Together with Hans-Georg Gadamer and Charles Taylor, Ricoeur is generally considered as one of the most important hermeneutic philosophers of the twentieth century. However, reducing his work to hermeneutics and to his specific, phenomenological inspired development of

hermeneutic thinking, would hardly do justice to the breadth and depth of his philosophical work. Ricoeur has not only developed an extensive discussion with and critique of analytic philosophy, but is also one of the driving forces behind the new wave of attention for the ethical importance of the work of Aristotle in the second half of the twentieth century, usually associated with the work of Alistair MacIntyre. Moreover, in one of his most important books, *Oneself as Another*, first published in French in 1990, he has forged a conceptual connection between Aristotle's practical ethics and the Kantian deontological tradition, especially critical innovations of this tradition in the work of Jürgen Habermas (1971, 1984) and Karl-Otto Apel (1984). The work of Ricoeur thus embodies a fruitful zone of interconnection between major philosophical traditions. Although he himself does not make any reference to complexity thinking, his analysis of ethics and morality lends itself very well for a precise conceptual explication of ethical complexity. To show this I will briefly sketch four central conceptual innovations introduced by Ricoeur, to be found in the first volume of his three volume study *Time and Narrative* (1984–1988) and in his book *Oneself as Another* (1992). These conceptual innovations concern the distinction between “Idem” and “Ipse”; the distinction between different forms of mimesis and the related notion of narrative identities; and last but not least the distinction between ethical and moral identities.

Idem and Ipse

With regard to the nodes of a neural network, or with regard to signs in a linguistic system, we can meaningfully ask what processes and relations are involved in the constitution of their identities. Moreover, with regard to living entities we can also meaningfully speak of actions undertaken by living beings. According to Humberto Maturana and Francisco Varela, we can – and should – even speak of “selves” with regard to living beings such as cells: “Living beings are characterized in that, literally, they are continually self-producing” (Maturana and Varela 1998: 12). This process of self-production, or “autopoiesis” as they famously say, has been made possible by the “infinite morphologic and chemical diversity of organic molecules” to be found at our planet. This “diversification and plasticity has made possible the formation of networks of molecular reactions that produce the same type of molecules that they embody, while at the same time they set the boundaries of the space in which they are formed. These molecular networks and interactions that produce themselves and specify their own limits, are living beings” (Maturana and Varela 1998: 40). This quotation refers to two basic characteristics of the notion of “self” and of “self-production” with regard to living beings, which according to them are exemplified already on the level of cells. In the first place a network of ongoing interactions connecting the molecular components of a “cellular autopoietic unity”, resulting in the production of “components which make up the network of transformations that produced them”, as Maturana and Varela have it in their sometimes laborious idiom.

In the second place the constant production and reproduction of a porous boundary, a *membrane*, which

not only limits the extension of the transformation network that produced its own components, but participates in this network. . . . on the one hand, we see a network of dynamic transformations that produces its own components and that is essential for a boundary; on the other hand, we see a boundary that is essential for the operation of the network of transformations which produced it as a unity. (Maturana and Varela 1998: 45–46)

Thus Maturana and Varela accord *autonomy* to living beings: “We use the word ‘autonomy’ in its current sense; that is, a system is autonomous if it can specify its own laws, what is proper to it.” This autonomy implies that the only product of autopoietic unities “is themselves, with no separation between product and producer.” According to Maturana and Varela:

the emergence of autopoietic unities on the face of the Earth is a landmark in the history of our solar system. . . .not because autopoietic unities go against any aspect of physical phenomenology – since their molecular components must fulfil all physical laws – but because the phenomena they generate in functioning as autopoietic unities depend on their organization and the way this organization comes about, and not on the physical nature of their components. . . .Thus if a cell interacts with molecule X and incorporates it in its processes, what takes place as a result of this interaction is determined not by the properties of molecule X but by the way in which that molecule is ‘seen’ or taken by the cell as it incorporates the molecule in its autopoietic dynamics. (Maturana and Varela 1998: 48–49, 51–52)

Important and illuminating as this analysis might be, the way in which Maturana and Varela use the notion of “self” in their explication of autopoiesis and autonomy of living beings, also obfuscates the crucial difference between cognitive and ethical relations, and thus also the difference between ontological and epistemological complexity on the one hand and ethical complexity on the other hand. Seen from a philosophical perspective, we could say that Maturana and Varela project the modern notion of the autonomous, knowing and acting subject onto cells and use it as a model for the understanding of their autopoiesis. Thus they have shed a new, complexity-informed light on the dynamics of life and its evolution. At the same time however, they have fortified the modern notion of subjectivity, especially the identification of being an autonomous subject with the ability to *know* the world autonomously and preserve oneself as an autonomous entity on the basis of this knowledge. As Maturana and Varela say:

. . .if a cell interacts with molecule X and incorporates it in its processes, what takes place as a result of this interaction is determined not by the properties of molecule X but by the way in which that molecule is ‘seen’ or taken by the cell. (Maturana and Varela 1998: 52)

What is obfuscated in this way can be clarified with the help of the distinction introduced by Ricoeur between two different modes of being of the self, designated by him as “Idem” and “Ipse”. A first step in the conceptual unfolding of this distinction is provided by the difference between two elementary questions, the difference between “what is this ”and “who are you?” (or “who am I?”) The difference between these two questions in a sense contains the whole problematic of ethical complexity. The general theory of complex systems as developed by Cilliers and others tries to provide an answer to questions such as “what are complex systems”, or “what are

the basic properties of all complex systems?” When we move from the ontological and epistemological to the ethical domain however, the question “what is this?” becomes supplemented by a different question: the questions “who are you?” and “who am I?”

To elucidate the difference between the two, Ricoeur offers a more detailed analysis of the meaning of the notion of identity. In a first step, he distinguishes three components. The first is *sameness* in the sense of numerical identity, for example two cells who are considered as identical, as one and the same thing; where identity represents oneness. The opposite is plurality (not one but two or numerous). This notion of numerical identity allows for the reidentification of the same. The second component of the idea of identity refers to *qualitative identity* or “extreme resemblance”. These two components are very close to one another, but there is an important difference, which hinges on the role of time: “it is precisely to the extent that time is implied in the series of occurrences of the same thing that the reidentification of the same can provoke hesitation, doubt or contestation” (Ricoeur 1984: 116). Ricoeur gives the example of the problems confronted by judges when they have to decide whether witnesses have reliably re-identified a supposed perpetrator of a crime committed 10 years before. The problems connected with such a re-identification “suggest that we appeal to another criterion, one which belongs to the third component of the notion of identity, namely the *uninterrupted continuity* between the first and the last stage in the development of what we consider to be the same individual. This criterion is predominant whenever growth or aging operate as factors of dissemblance and, by implication, of numerical diversity” (Ricoeur 1984: 117). In a formulation reminiscent of Derrida, Ricoeur speaks here about time as a factor of dissemblance, of divergence, of difference. According to Ricoeur this dis-sembling dynamic is intrinsically connected with the passage of time. It asks for

a counterbalancing principle of *permanence in time*. This will be, for example, the invariable structure of a tool, all of whose parts will have been replaced. This is also the case... of the permanence of the genetic code of a biologic individual; what remains here is the organization of a combinatory system. The idea of structure, opposed to that of event, replies to this criterion of identity, the strongest one that can be applied. It confirms the relational character of identity. (Ricoeur 1984: 117)

At this point Ricoeur’s analysis could be strengthened with the help of Maturana’s and Varela’s notion of autopoiesis. In their vocabulary, it is not the structure of living beings which assures them a certain permanence in time, but the autopoietic character of their organization, which is maintained by ongoing changes in their structure. A clear example is provided by so called myxomycetes, a group of single-cell organisms that under specific circumstances are capable to aggregate into a meta-cellular unit, in the form of a fructiferous body. In that case the cells differentiate into different types. In the case of *Dyctiostelium* for instance,

the cells at the upper end of the fructiferous body generate spores, whereas the cells at the base do not. These become full of vacuoles and walls, which gives a mechanical support to the entire meta-cellular system. Here we see that in the dynamism of this close cellular aggregation in a life cycle, the structural changes that each cell undergoes in its history of

interactions with other cells are complementary to each other, within the constraints of their participation in the meta-cellular unity they comprise. (Maturana and Varela 1998: 79–80)

Thus,

the life of a meta-cellular individual as a unity goes on through the operation of its components, but it is not determined by their properties. (Maturana and Varela 1998)

This relative independence of the identity of meta-cellular individuals from their components embodies a specific manifestation of general properties of autopoietic systems, namely “operational closure” and “structural coupling”. The notion of operational closure involves the idea that the environment of autopoietic systems does not causally determine their functioning or development, but has to be considered as a source of “perturbations”, which *trigger* specific changes within them, but do not determine the direction or content of those changes. Forms of structural coupling between autopoietic unities and their environment arise when *mutually congruent* structural changes result from recurrent reciprocal perturbations. “In these interactions, the structure of the environment only *triggers* structural changes in the autopoietic unities; it does not specify or direct them” (Maturana and Varela 1998: 75). Second-order autopoietic unities embody a specific form of such “recurrent reciprocal perturbations” triggering mutually congruent structural changes, assuring a certain permanence in time of the meta-cellulars involved.

Against this background the question arises whether personal identity can also be understood along these lines, that is to say along the lines of maintenance of structure, or, formulated with the help of Maturana and Varela, the maintenance of their autopoietic organization. Ricoeur does not directly address the biological structures supporting the identity of persons, nor the many autopoietic processes going on at the cellular level in their bodies. However, his analysis clearly presupposes this “biological” permanence in time, but focuses on personal identity as a different level of organization, distinct from the many distinct levels of biological organization on which the permanence of personal identities also depends. Thus, Ricoeur’s answer to the question whether personal identity can be understood along the lines of maintenance of structure (or of autopoietic reproduction) would be both yes and no. “Yes”, insofar as the permanence of personal identities in time depends on a form of structural organization which is akin to the biological forms of organisation on which it depends. With regard to the structural organisation of persons, Ricoeur uses the notion of *character* to designate this form of permanence in time. But his answer to this question would also be “no”, because in his eyes personal identities also involve another form of permanence in time, another form of emergent organization, which differs markedly from structural and from autopoietic permanence in time.

Here at last the difference between the questions “what is this?” and “who are you?”, or “who am I?” comes into view. Structures or autopoietic forms of organization can be considered as *properties* of living beings or of complex systems. In the same way a character literally embodies the characteristic traits of a person, to be enumerated when somebody asks what characterizes a specific person most clearly. Apart from this structural form of permanence in time personal identities also exhibit another form of permanence in time, which Ricoeur illustrates with the

examples of “keeping a promise” and of “attestation”, in the sense of testifying of and keeping true to one’s deepest moral convictions. This last form of permanence in time can no longer be designated as “staying the same” that is to say as “Idem”, but involves an answer to the question “who are you?” This question can only be answered by a self or “Ipse” as Ricoeur says, and always involves a dynamic and often tense relation between *two* poles of the self, corresponding with two different forms of permanence in time. The difference between the two is often hidden from view; because the Ipe pole of identity is “covered up” so to speak by the Idem pole:

My hypothesis is that the polarity of these two models of permanence with respect to persons results from the fact that the permanence of character expresses the almost complete overlapping of the problematic of *Idem* and *Ipse*, while faithfulness to oneself in keeping one’s word marks the extreme gap between the permanence of the self and that of the same and so attests fully to the irreducibility of the two problematics one to the other. (Ricoeur 1992: 118)

This polarity between Idem and Ipe is of great help in clarifying the nature of ethical complexity, as will become clearer below. But the spatial metaphors (overlap and gap) Ricoeur uses to articulate this polarity are too static in my eyes. What he is trying to say can better be formulated with the help of the notions of emergence (and its complement “demergence”). We could then say that the Ipe-pole of personal identity can emerge out of the Idem-pole, as a specific form of organisation of the self, but can also “demerge” so to speak and no longer be manifest, either for a short time or more permanently.

The plausibility of such a temporal instead of spatial interpretation of the polarity between Idem and Ipe is confirmed by Ricoeur’s own exposition of the notion of character.

By character I understand the set of distinctive marks which permit the reidentification of a human individual as being the same. By the descriptive features that will be given, the individual compounds numerical identity and qualitative identity, uninterrupted continuity and permanence in time. . . .Character. . . designates the set of lasting dispositions by which a person is recognized. (Ricoeur 1992: 119–121)

According to Ricoeur, this notion of disposition points to the temporal dimension of characters. It manifests itself in two central components of the acquisition and stabilization of characteristic dispositions: habit and identification:

Habit gives a history to character, but this is a history in which sedimentation tends to cover the innovation which preceded it. . . . It is this sedimentation which confers to character the sort of permanence in time that I am interpreting here as the overlapping of *Ipse* by *Idem*. . . .Second we may relate to the notion of disposition the set of *acquired identifications* by which the other enters into the composition of the same. To a large extent..the identity of a person or of a community is made up of identifications with values, norms, ideals models and heroes *in* which the person or the community recognizes itself. . . .The identification with heroic figures clearly displays this otherness assumed as one’s own, but this is already latent in the identification with values which make us place a ‘cause’ above our own survival. An element of loyalty is thus incorporated into character and makes it turn toward fidelity, hence toward maintaining the self. Here the two poles of identity accord

with one another. This proves that one cannot think the *Idem* of the person through without considering the *Ipse*, even when one entirely covers the other. (Ricoeur 1992: 121)

To elucidate the specific nature of Ipse-identity in comparison with Idem-identity, especially the specific form of permanence in time involved in Ipse-identity, Ricoeur gives the example of giving and keeping a promise, or “keeping one’s word in faithfulness to the word that has been given.” Such a form of self constancy, as exhibited for instance in the constancy of friendship or the constancy of other intimate relations, do indeed embody a different form of permanence in time, because a promise to be faithful can lead to great *tensions* and even conflicts with specific dispositions embodied in Idem-identity, for example a disposition to be thrilled by new erotic experiences and the concomitant tensions with a promise to be faithful to a partner. Thus “keeping one’s word in faithfulness to the word that has been given,” is not just “staying the same”, but can involve a lot of “identity-work” so to speak in reaction to changes in one’s environment or in reaction to the surfacing of marginalized needs or desires: “In this respect, keeping one’s promise does indeed appear to stand as a challenge to time, a denial of change: even if my desire were to change, even if I were to change my opinion or my inclination, ‘I will hold firm’.” Ipse-identity thus has an *inherent* ethical importance. This importance “can be derived from the obligation to respond to the trust that the other places in my faithfulness” (Ricoeur 1992: 124). This ethical significance of Ipse-identity transpires also from the other example Ricoeur gives, besides giving a promise, for the specific form of permanence in time involved in Ipse-identity, namely taking a stand on moral issues, as Martin Luther did for example by nailing his 95 theses to the door of the Castle Church in Wittenberg, or as Nelson Mandela did in his unwavering resistance against the Apartheid-regime: “Here I stand, this is my conviction”. In both cases the question “who am I?” is answered by a firm “here I am”. Thus, whereas Idem-identity concerns so to speak the “what-ness” of identities, an answer to the question “what am I?” Ipse-identity answers the question “who am I?” (or to the question: “Who are you?”), in the form of the ethical and moral commitments a person takes upon him-/herself and tries to be faithful to.

Autopoiesis and Diapoiesis

I have suggested that the nature and importance of Ricoeur’s distinctions between Idem- and Ipse-identity can be further clarified by reformulating Ricoeur’s analysis of the permanence in time exhibited by characters with the help of Maturana’s and Varela’s notion of autopoiesis. Against the background of the preliminary clarification of the distinction between Idem and Ipse, the further clarification points into two different directions. In the first place the notion of autopoiesis helps to clarify the maintenance of character as a dynamic process of ongoing structural changes supporting and maintaining characters as higher-level organizational forms. Thus the notion of autopoiesis helps to clarify the idea of Idem-identity. However, the clarification also points into a completely different direction. It also points the other way around so to speak, because Ricoeur’s distinction sheds light on the

inherent *limitations* of the notion of autopoiesis for a deeper understanding of ethical questions, especially a deeper understanding of the nature of ethical complexity as distinct from ontological and epistemological complexity.

Maturana and Varela clearly recognize both ontological and epistemological complexity. In their eyes the emergence of autopoietic unities can be considered as a

landmark in the history of our solar system. . . not because autopoietic unities go against any aspect of physical phenomenology. . . but because the phenomena they generate in functioning as autopoietic unities depend on their organization and the way this organization comes about, and not on the physical nature of their components. (Maturana and Varela, 1998: 125–126)

A crucial component of the organization of autopoietic unities is their ability to *observe* their surroundings, that is to say their ability to develop an epistemological relation with their environment, based on a succession of models of increasing complexity. Thus, Maturana and Varela clearly reckon with epistemological complexity. For Maturana and Varela, this is even necessarily the case: autopoiesis unavoidably involves a selective construction of a reality which only makes sense in relation to the autopoiesis of specific living entities.

They illustrate this crucial point by referring to the famous experiments with frogs, undertaken by Maturana and other researchers in the fifties. To undermine the notion that brains in some way represent an objectively existing “outside” reality that is to say to undermine the idea of epistemological simplicity, the experimenters operated one of the eyes of frogs larvae by cutting the edge of the eye, leaving the optic nerve intact and rotating it 180°. When these operated frogs had reached maturity, they covered the operated eye and presented a worm to the frog:

The tongue goes out and we see that it makes a perfect hit. We repeat the experiment, but this time cover the normal eye. In this case we see that the frog shoots out its tongue with a deviation of exactly 180 degrees. Each time we repeat the experiment it makes the same mistake. . . the frog shoots out its tongue as if the retinal zone where the image of the prey is formed were in its normal position. (Maturana and Varela)

This ingenious experiment demonstrates in their eyes that there is no such thing as an independent objective outside world for the frogs involved:

There is only an *internal* correlation between the place where the retina receives a given perturbation and the muscular contractions that move the tongue, the neck, in fact the frog’s entire body. (Maturana and Varela, 1998: 125–126)

On the basis of this experiment they reach a similar conclusion as Paul Cilliers with regard to meaning as an emergent internal property of language:

This experiment can be direct evidence that the operation of the nervous system is an expression of its connectivity or structure of connections and that behaviour arises because of the nervous system’s internal relations of activity. (Maturana and Varela)

This basic epistemological structure pertains in their eyes to all living beings, whether availing of a nervous systems and brains or not. In their eyes knowing and living are directly connected:

the fact of living – of conserving structural coupling uninterruptedly as a living being – is to *know* in the realm of existence. In a nutshell: to live is to know (living is effective action in existence as a living being). (Maturana and Varela: 174)

Thus they not only presuppose an ontologically complex world but also recognize epistemological complexity. Moreover they draw radical implications from it:

In this book we have harked back to the ‘tree of knowledge’. We have invited the reader to eat the fruit of that tree by offering a scientific study of cognition as a biological phenomenon..{This} knowledge of knowledge *compels*. It compels us to adopt an attitude of permanent vigilance against the temptation of certainty. It compels us to recognize that certainty is not a proof of truth. It compels us to realize that the world everyone sees is not *the* world but *a* world which we bring forth with others. It compels us to see that the world will be different only if we live differently. (Maturana and Varela 245)

At this point they make a conceptual move which resembles up to a point Cilliers turn to ethical questions on the basis of his general theory of complex systems. According to Maturana and Varela their biologically based analysis of epistemological complexity also have ethical implications. The knowledge that “our world is necessarily the world we bring forth with others” (Maturana and Varela: 246) implies in their eyes that we should acknowledge the restrictions of our own viewpoint and respect that of others:

If we want to coexist with the other person, we must see that his certainty – however undesirable it may seem to us- is as legitimate and valid as our own, because, like our own, that certainty expresses his conservation of structural coupling in a domain of existence. (Maturana and Varela)

On this basis they advocate a biologically founded ethics:

Biology shows us that we can expand our cognitive domain through the encounter with a stranger, or, more directly, through the expression of a biological interpersonal congruence that lets us *see* the other person and open up for him room for existence beside us. . .Anything that undermines the acceptance of others, from competency to the possession of truth and on to ideological certainty, undermines the social process, because it undermines the biologic process that generates it. (Maturana and Varela 1998: 246–247)

Although at first sight this ethical perspective may seem quite plausible and sympathetic, upon closer inspection it involves a drastic reduction of ethical complexity. In fact it firmly sticks to ethical simplicity, implying as it does that a biological structure and the autopoietic insight into the implications of this structure, could somehow *guarantee* the ethical quality of relations between humans. Expressed in terms of Ricoeur, they try to ground ethical behaviour in the Idem-identity of humans beings, in their “what-ness” as Ricoeur says, and thus completely forego the *tensions* between Idem and Ipse as a constitutive feature of ethical complexity. These tensions point beyond the autopoietic maintenance of identities, beyond the maintenance and stability of “character” and bring another form of relation into play between systems and their environment, which I designate as *diapoiesis*. This concept combines the concept of “poiesis” with the notion of *dialogue*, as analyzed in different ways in the work of authors such as Michael Bakhtin (1930/1981), Martin Buber(1947/2002) Jürgen Habermas (1984) and Hubert Hermans (1989). Whereas

the analyses of these thinkers focus primarily on linguistically mediated forms of dialogical communication, the notion of diapoiesis designates a much wider form of co-creative interaction and includes such linguistically mediated forms of dialogical communication as a special case. In a first approximation I define diapoiesis as all emergent forms of interaction between autopoietic beings which mutually enhance their wellbeing on the basis of co-creation but cannot be autopoietically brought about or controlled by one of them. Thus diapoiesis both presupposes and transcends autopoiesis.

The distinction between these two forms of “production of selves” and the concomitant distinction between ethically simple and ethically complex relations, can be further elucidated with the help of the notion of re-entry, as introduced by Gerald M. Edelman and Giulio Tononi in the context of their analysis of consciousness and the brain (Edelman and Tononi, 2000). On the one hand their analysis sheds light on the nature and importance of consciousness for the autopoiesis of complex living beings equipped with brains; but on the other hand the notion of re-entry which takes central stage in their analysis also can be used to clarify the distinction between autopoiesis and diapoiesis.

Re-Entry

In their book *A universe of consciousness. How Matter becomes Imagination* (2000), Gerald M. Edelman and Giulio Tononi use the notion of reentry to characterize a peculiar characteristic of higher vertebrates: the fact that their brains allow them to be conscious. They view consciousness to be a very special and puzzling brain process because it is at the same time highly unified and highly differentiated. A given conscious state is the result of a selection process involving billions of other possible states. Edelman and Tononi elucidate the complexity of this selection process with the help of the notion of re-entry:

Re-entry is the ongoing recursive interchange of parallel signals between reciprocally connected areas of the brain, an interchange that continually coordinates the activities of these areas' maps to each other in space and time. . . This interchange involves many parallel paths. . . [it] alters selective events and correlations of signals among areas and is essential for the synchronization and coordination of the areas' mutual functions. (Edelman and Tononi 2000: 48)

According to Edelman and Tononi, a striking consequence of re-entry is

the widespread synchronization of the activity of different groups of active neurons distributed across many different functionally specialized areas of the brain. This synchronous firing of widely dispersed neurons that are connected by re-entry is the basis for the integration of perceptual and motor processes. (Edelman and Tononi 2000)

They illustrate this general definition of re-entry and its importance for the understanding of higher brains by way of the metaphor of a string quartet, be it a very peculiar string quartet. Its first main characteristic is the fact that the players – metaphorically representing different functionalized parts of the brain – do not play from a pre-given score. Instead each player “responds by improvisation to ideas and

cues of his or her own, as well to all kinds of sensory cues in the environment” (Edelman and Tononi: 2000). The second characteristic of this string quartet is even more peculiar:

the bodies of the players become densely interconnected by myriad fine threads so that their actions and movements are rapidly conveyed back and forth through signals of changing thread tensions that act simultaneously to time each player’s actions. Signals that instantaneously connect the four players would lead to a correlation of their sounds; thus, new, more cohesive, and more integrated sounds would emerge out of the otherwise independent efforts of each player. This correlative process would also alter the next action of each player, and by these means the process would be repeated but with new emergent tunes that were even more correlated. . .such integration would lead to a kind of mutually coherent music that each one acting alone could not produce. (Edelman and Tononi 2000: 49)

Along these lines Edelman and Tononi shed light on the concurrence of differentiation and unification (that is to say: integration) characteristics for conscious states of higher vertebrates. They also use the metaphor of a group of experts completely immersed in a discussion, in which each expert both talks with his immediate neighbours and some of them occasionally speak to the whole group. All conversations go on at the same time and influence each other on a permanent basis, changing the content of the local conversations. Then at a certain moment a collective conclusion is reached and a specific conscious state emerges.

This analysis implies that re-entrant processes in the brain not only involve individual neurons, but *groups* of specialized neurons, connected with different functions and capabilities. According to Edelman and Tononi, these different functions are connected “with three major topological arrangements in the brain that appear to be essential to understanding the brain’s global functioning.” (Edelman and Tononi 2000: 42) The first is described by them as a large, three-dimensional meshwork, comprised of the thalamus and the six layers of the cerebral cortex, to which the thalamus is reciprocally connected. The cortex and the thalamus are themselves subdivided into interconnected areas with different functions, for instance dealing with visual stimuli, with acoustic stimuli or with tactile stimuli. In the same vein “the back of the thalamo-cortical system is roughly devoted to perception, while the front is devoted to action and planning” (Edelman and Tononi 2000). This anatomical segregation is only one half of the story: The other half is anatomical integration. Different groups of neurons dealing preferentially with specific aspects of a stimulus are at the same time “reciprocally interconnected in certain patterns” (Edelman and Tononi 2000). The same goes for the different functionally segregated areas:

These reciprocal pathways are among the main means that allow for the integration of distributed brain functions. . . . Altogether, the organization of the thalamo-cortical meshwork seems remarkably suited to integrating a large numbers of specialists into a unified response. (Edelman and Tononi: 2000 44–45)

In this respect this topological arrangement differs sharply from a second arrangement which is not organized like a meshwork

but rather, like a set of parallel, unidirectional chains that link the cortex to a set of its appendages, each with a special structure, the cerebellum, the basal ganglia, and the hippocampus. (Edelman and Tononi 2000: 45–46)

These appendages are responsible for the coordination and synchrony of motion and for the planning and execution of complex motor and cognitive acts. They are characterized by a mode of organization differing markedly from the highly integrated meshwork embodied by the cortex and the thalamus:

The connections are generally unidirectional rather than reciprocal, and form long loops, and there are relatively few horizontal interactions among different circuits..In short these system seem admirably suited to the execution of a variety of complicated motor and cognitive routines, most of which are as functionally insulated as possible from each other, a feature that guarantees speed and precision in their execution. (Edelman and Tononi: 2000)

These two different brain systems are complemented by a third kind of topological arrangement, resembling

neither a meshwork nor a set of parallel chains, but, rather, a diffuse set of connections resembling a large fan. The origin of the fan is in a relatively small number of neurons that are concentrated in specific nuclei in the brain stem and hypothalamus. . . All these nuclei project diffusely to huge portions of the brain, if not to all of it. (Edelman and Tononi 2000)

These “value-systems”, as Edelman and Tononi say, influence “not only neural activity but neural plasticity – a change in the strength of synapses in neural circuits yielding adaptive responses” (ibid.). These value systems broadly correspond with the emotions as analyzed in a number of influential books by Antonio Damasio (1994, 1999, 2004). They project to almost the whole brain by way of different neurotransmitters such as serotonin and dopamine and “appear perfectly suited to signalling the occurrence of salient events to the entire brain, leading to changes in the strength of billions of synapses” (Edelman and Tononi 2000: 47).

This analysis of re-entrant processes and their importance for the understanding of the brain and of consciousness is perfectly compatible with the analysis of autopoiesis by Maturana and Varela. It provides a deeper insight into the inner complexity of the autopoiesis of conscious living beings, understood as the conservation of “structural coupling uninterruptedly as a living being” by way of an inner organization “whose only product is itself, with no separation between producer and product,” as Maturana and Varela say (1992: 246, 249). Apart from elucidating the inner complexity of the autopoiesis of living beings equipped with brains and consciousness, the notion of re-entry can also be used to illustrate the difference between the Idem-pole and the Ipse-pole of identities and the concomitant difference between autopoiesis and diapoiesis.

As analyzed already above, the emergence of Ipse-identity cannot be understood as a result of an autonomous individual decision or an outcome of individual preferences. Instead it is crucially dependent upon continuing re-entrant processes *between* individuals combining “segregation and integration” and leading to the emergence of a new form of organization, namely an ethically complex relation between two or more individuals. Although Ricoeur does not extensively analyze this re-entrant, “distributed” character of the Ipse pole of identity, it is clearly

implied by his formulations, for instance where he refers to the “ethical justification of the promise. . .which can be derived from the obligation to respond to the trust that the other places in my faithfulness” (Ricoeur 1992: 124). The re-entrant character of the relation involved here shows itself clearly in the case of broken promises and of trust jeopardized. The regaining of trust after a promise was broken is not a project which can be autopoietically undertaken or autonomously achieved. Instead it is dia-poiètic through and through. It depends upon a re-entrant, co-creative dynamic between the two persons involved, which cannot be autopoietically brought about let alone controlled by either of them. It could lead to the re-emergence of trust, by way of a fragile series of interactions which could start with remorse over a broken promise perceived as sincere, followed by trust provisionally awarded and helping to keep renewed promises for the time being, trust slowly growing further, self respect coming back and strengthening the Ipse pole, and so on. Thus this re-entrant process shares essential characteristics with re-entrant processes which take place within the brain and result in conscious states of individuals. But they also differ sharply from the emergence of individual consciousness, because they result in the emergence of an ethical relation between two or more individuals. In both cases the re-entrant dynamic shows the same structure, elucidated by Edelman and Tononi with the metaphor of the string quartet:

Signals that instantaneously connect the players would lead to a correlation of their sounds; thus, more cohesive, and more integrated sounds would emerge out of the otherwise independent efforts of each player. This correlative process would also alter the next action of each player, and by these means the process would be repeated but with new emergent tunes that were even more correlated. . . .such integration would lead to a kind of mutually coherent music that each one acting alone could not produce. (Edelman and Tononi, 2000: 49)

As this metaphor illustrates, Edelman and Tononi in fact use the example of a dia-poiètic process of co-creation to illustrate re-entrant dynamics in the brains of individuals and analyze the simultaneous processes of specialization and integration resulting in individual forms of consciousness.

Against this background I can now distinguish between two groups of interrelated concepts:

Autopoiesis	Diapoiesis
Idem	Iipse
Individual consciousness	Co-created realities
Ethical simplicity	Ethical complexity

These distinctions lead to a question that will take central stage in the next paragraph, namely their *interconnection*. It is here that a second conceptual innovation introduced by Paul Ricoeur can be of great help, to wit his analysis of *narrative* identities. This analysis sheds more light on the *mediation* between Idem and Ipse by way of the narrative configuration and refiguration of identities. Along this

line, the difference between epistemological and ethical complexity can be clarified further: whereas the confrontation with epistemological complexity asks for complexity-sensitive *theories*, the confrontation with ethical complexity asks for *narrative* forms of modelling, both on the level of individual identities and on the level of institutions.

The Narrative Configuration of Identities

On the basis of this first elucidation of the difference between the Idem and the Ipse pole of personal identities, and the related distinction between autopoiesis and diapoiesis, I can now introduce a second, highly important element of Ricoeur's analysis, namely the notion of narrative identities and the concomitant idea of narrative forms of modelling or "configuring" personal identities. With the help of these notions I hope to further clarify my thesis that in the last resort ethical complexity cannot be understood on the basis of (more or less general) *theories*, but requires narrative forms of modelling, both in the form of the narrative figuration and refiguration of personal identities and in the form of culturally shared and transmitted narrative traditions. These narrative forms of modelling provide the "mediating level" which could connect the general theory of complex systems with the ethics of complexity.

The narrative configuration of identities plays a crucial role according to Ricoeur in the mediation of the tension between the two modalities of selfhood: Idem and Ipse, "what?" and "who?" Narratives come in many forms, but their general characteristics are exhibited most clearly by stories.

Referring to Walter Benjamin's analysis of storytelling, Ricoeur states:

... in its most primitive form, still discernible in the epic and already in the process of extinction in the novel, the art of storytelling is the art of exchanging *experiences*. By experiences [Benjamin] means not scientific observations but the popular exercise of practical wisdom. This wisdom never fails to include estimations, evaluations. (Ricoeur 1992: 164)

In his three volume study on *Time and Narrative* (1984, 1985, 1988), Ricoeur elucidates this experiential and evaluative character of narratives with the help of the notion of *mimesis*, as introduced into philosophy by Aristotle. This notion, as analyzed by Ricoeur, is of special importance for my argument, because it points both to parallels and to important differences between on the one hand the cognitive models taking central stage in complexity thinking and on the other hand narratives, understood as models "mapping" the existential and moral complexity of human lives. The development of moral identities can then be pictured as dependent upon the narrative configuration of the unity of one's life, the life in which one's own "character" and its possible development takes central stage, thus mediating with the help of narrative means the tension between Idem and Ipse.

The notion of *mimesis* sheds more light on this process of narrative configuration and re-configuration of identities. In ancient Greek, "mimesis" has two basic meanings. On one hand this notion refers to imitation or reproduction, on the other hand

to modelling or picturing. Borrowing a concept from the great humanistic scholar Erich Auerbach (1953), I translate Aristotle's and Ricoeur's notion of mimesis as "figuration". This concept refers to notions such as form, outline and figure and is related to the notion of mapping. Just as the idea of mapping allows for the possibility of different maps of the same reality, offering different possibilities for orientation, so the notion of figuration allows for different outlines or sketches of the same object or event. To the idea of *descriptive* adequacy (and of descriptive distortion) associated with maps the mimetic figuration brought about by narratives adds two crucial elements.

In the first place an element of *aesthetic* adequacy, in the original Greek sense of *aesthesis*, refers to sensory perception, to feeling and to taste. Building upon the analysis of mimesis as developed in Aristotle's *Poetics*, Ricoeur elucidates the specific character of narratives as a combination of *three* different forms of mimesis. The first form – "mimesis 1" – designates the experiential and existential frame of reference presupposed and refigured by all narratives. Ricoeur refers here both to already existing networks of narratives and to the experiential reality of speakers and listeners resonating in these narrative traditions. Thus we can say that narratives refigure a reality which is already *prefigured* by this shared experiential and existential horizon and their figuration in shared narrative traditions. Ricoeur's notion of mimesis 1 refers to this "existential pre-figuration" constitutive of all narratives. Mimesis 2 adds a new element to this figurative dynamic, in the form of the *plot* of narratives, that is to say a specific figuration of "projects" undertaken by protagonists and the fate that befalls them, as told, written or pictured by a narrator. This figuration combines selection and omission with embellishment and enhancement. The "sketch" omits details which are deemed insignificant and enlarges and embellishes elements deemed essential. Thus mimesis 2 results in a plot, a "figura" (or a *Bild* as Gadamer says) which is not only meant to *move* the listener(s), but also provides *insights* into the complex realities of human lives. The emotions and feelings involved in this inner movement of listeners – for instance the fear and compassion elicited by tragedies – pertain not only to the existential significance of the plot, but also to the ethical and moral insights it contains.

Here we touch upon a second decisive characteristic of the mimetic figuration brought about by narratives. Their ability and intent to move listeners, to elicit emotions and feelings rests also on the *ethical* and *moral* import of the experiences, actions and events affecting the well-being of the protagonists. Their actions are always sketched against a horizon of good and bad. Commenting upon Aristotle's *Poetics* and the contrast Aristotle makes between tragedies and comedies, Ricoeur elucidates this ethical and moral import as follows:

The *Poetics* presupposes not just 'doers' but characters endowed with ethical qualities that make them noble or vice. If tragedy can represent them as 'better' and comedy as 'worse' than actual human beings, it is because the practical understanding authors share with their audiences necessarily involves an evaluation of the characters and their actions in terms of good and bad. There is no action that does not give rise to approbation or reprobation, to however small a degree, as a function of a hierarchy of values for which goodness and wickedness are the poles. (Ricoeur 1984: 59)

To further elucidate the specific character and the complexity of narrative forms of modelling, it is necessary to take a third form of mimesis or figuration into account, which is decisive importance for the re-entrant dynamic characteristic of narrative forms of modelling. The configuration of ethically and morally significant experiences by mimesis 2 in the form of a plot against the background of the pre-figuration of these experiences by mimesis 1, is supplemented by mimesis 3, in the form of a *re-figuration* of the plot and its ethical and moral import by listeners against the background of their own experiences and emotions. The re-figuration brought about by mimesis 3 feeds back into the pre-figuration of possible plots of narratives by mimesis one, changing this pre-figuration in a re-entrant dynamic, which in its turn possibly influences and changes future figurations of the plot involved.

With the help of this analysis of the different forms of mimesis coming together in the telling of and listening to narratives, the development of personal identities can now be elucidated as a complex process of narrative figuration and re-figuration of identities, as a dynamic, ongoing answer to the interconnected questions “What am I?” and “Who am I?”, both in the eyes of the self and in the eyes of others. It is crucially important for my analysis of ethical complexity that these “others” not only comprise actual others, but also the many “eyes” and “voices” resonating in the culturally transmitted narrative traditions which provide the background and the reservoir for mimesis 2. These narrative traditions are in a permanent flux as a result of the feedback loops instigated by “mimesis 3”. This process is clarified by Hans Georg Gadamer with the help of the notion of “applicatio”, that is to say the ongoing application of the ethical and moral insights contained in narrative traditions to new practical questions and challenges confronted by ever new generations. (Gadamer 1989, Kunneman 1992, 2005). This complexity of personal identities and all the differences and feedback loops involved in their development, is further compounded by the fact that they not only involve one’s own wellbeing and the well-being of beloved others, but also considerations of *justice*. At this point a third conceptual distinction introduced by Ricoeur can be of help.

Ethics and Morality

Most philosophical traditions do not distinguish clearly between “ethics” and “morality”. In twentieth century philosophy, especially within analytic philosophy, ethics increasingly takes the form of an academic discipline which no longer provides substantive answers to moral questions, but instead devotes itself to the intellectual analysis of different moral perspectives and their main characteristics. C.D. Broad for example introduced in the thirties the influential distinction between “teleological” ethical theories focusing upon the ethical import of the goals aimed at by actors; “consequentialist” theories, focusing upon the factual consequences flowing from ethical actions, and “deontological” theories focusing upon the ethical obligations supposed to underlie specific actions (Broad 1930). By concentrating upon the different cognitive foundations and conceptual strategies involved in the

different types of ethical perspectives, main stream analytic philosophy thus takes its distance from all ethical traditions involving *concrete* ethical commitments, as articulated for instance in religious and spiritual traditions but also in the classical tradition of “virtue ethics”, associated with the work of Aristotle. In such a perspective, “morals” and “morality” come to designate substantive moral views, whereas ethics is confined to their intellectual analysis and classification from a meta-level. This move away from substantive forms of ethics towards ethics as an intellectual and analytical endeavour, is closely connected with the growing dominance within twentieth century philosophy of positions stressing the gap between “is” and “ought”. As transpires from the above, Ricoeur firmly opposes this move away from a substantive ethics. Instead he sides with Aristotle and with his focus upon “the good life” and upon “wellbeing” (or *eudaimonia*) as the concrete *aim* of ethics. Thus ethics is not only reconnected to the figuration of identities, but this figuration is seen as a process essentially involving other persons and their identities. This intersubjective dimension of the figuration of identities takes two different but related forms: an ethical form and a moral form.

According to Ricoeur Aristotle’s analysis of the good life clarifies the internal relation between one’s own wellbeing and that of others. This relation shows itself most clearly in the importance of *friendship* for a good life. Friends are concerned both with their own and with each other’s wellbeing. They not only want good things to happen to themselves and bad things averted, but they also want that their own actions contribute to a good life for their friend(s). Mutual *solicitude*, that is to say compassionate care for the wellbeing of another, is at the heart of friendships that contribute to the flourishing of both persons involved. Thus according to Ricoeur, the analysis of friendship as a central component of a good life, already reveals the interconnections between one’s own wellbeing and that of others, the emergence of a dia-poietic relation both based on and transcending the autopoiesis of the persons involved.

However, ethics understood in this way remains restricted to questions of the good life for oneself and for beloved others and does not directly address moral questions, pointing to general considerations of *justice*. According to Ricoeur specifically moral questions come into play when people succeed (more or less) in realizing a good life for themselves and their beloved, but then realize that others, nearby or farther away, are *suffering*, either from misfortune or from evil done to them by others. Here the notion of justice comes into play. According to Ricoeur this notion points beyond solicitude at the level of face to face relations between people, towards the distribution of the burdens and benefits of the *institutions* in which they participate, and thus to the critique of relations of “domination and violence” which result in *unequal*, unjust forms of distribution of the burdens and benefits flowing from forms of institutionalized cooperation between actors. At this point Ricoeur clearly takes his leave from conservative forms of hermeneutic philosophy and forges a connection with the tradition of critical theory, especially its focus on social justice and on institutionally anchored relations of power and domination. Above and beyond the ideas of friendship and solicitude, this critical notion of justice brings a new criterion into play, *equality*, and opens up a new *universal*

horizon, because the notion of “justice as equality” in the last resort involves *all* human beings.

Along these lines Ricoeur both distinguishes ethical and moral judgments and forges a very important connection between them. Moral judgments and moral actions *build upon* the experience of a more or less good (or bad) life for oneself and for beloved others, and upon the central role of solicitude in striving for a good life, but *extend* this concern for the quality of one’s own life and that of beloved others to all human beings:

Equality, however it is modulated, is to life in institutions what solicitude is to interpersonal relations. Solicitude provides to the self another who is a face, in the strong sense that Emanuel Levinas has taught us to recognize. Equality provides to the self another who is an *each*. (Ricoeur 1992: 202)

Thus Ricoeur succeeds in connecting two very important philosophical traditions: on the one hand the Aristotelian tradition, which concentrates on ethics and the good life and on the other hand, the Kantian tradition in which moral duties and the universal scope of moral judgments take central stage. Paraphrasing Kant’s famous Categorical Imperative, Ricoeur formulates the moral law regulating moral actions as follows:

Act solely in accordance with the maxim by which you can wish at the same time that what *ought not to be*, namely evil, will indeed *not exist*. (Ricoeur 1992: 218)

For Ricoeur the notion of evil refers both to all forms of misfortune which can befall upon us and to the evil done to us by others, or to others by ourselves (Ricoeur 2007). In his re-interpretation of Kant’s maxim in both these senses evil *ought not to be*. This universalizing moral perspective acts as a “sieve” for the critical examination of our ethical aims and the maxims connected with them: do they contribute only to a good life for us and our beloved, or do they contribute to the diminishment of evil in the world at large?

However, precisely because of its universal character, this revised categorical imperative (and its extension and reformulation by contemporary Kantians such as Karl Otto Apel and Jürgen Habermas) does not provide enough support when moral actors are confronted with complex practical situations. According to Ricoeur in such situations they have to recur again to the notion of the good life and the *practical wisdom* exhibited in moral judgments allowing adequate action in specific, *unique* situations, but now a practical wisdom “purified” so to speak by the universalizing perspective of “justice for all”. At this point not only the way in which the narrative figuration of identities mediates between Idem and Ipse becomes clear, but also the full complexity of ethically complex relations. The practical wisdom required for morally responsible judgments and concomitant actions in concrete situations, is contingent on the outcome of the tensed interaction between two elements: on the one hand the “habitual weight” and the identifications embodied in the Idem-identities of the persons involved; on the other hand the ethical and moral appeal connected with their Ipse-identities. Practical wisdom, justice and Ipse-identities reveal themselves to be internally connected, as *emergent* qualities contingent both on the narrative mediation of Idem and Ipse on the personal level

and on the ethical and moral richness (or poverty) of the narrative traditions and cultural frameworks available to the persons involved. The Idem pole of identities is formed in great part by identifications with the narrative traditions transmitted in different forms of socialization, ranging from the lullaby's sung at ones cradle and the tales told before falling into sleep to the statues of heroic kings on the marketplace and soaps on TV. The richer these tales are in a moral sense, the more fertile so the speak the narrative soil providing individual persons with metaphors, images and perspectives for their own ongoing mediation between Idem and Ipse, between autoipoiesis and diapoiesis, and thus between ethically simple and ethically complex relations with others, possibly extending to the wellbeing of all human beings. Thus ethical complexity involves a form of modelling both oneself and the world one lives in oriented by the perspective of "a good life, with and for others in just institutions" as Ricoeur has it (1992: 171). In our times this ethical complexity has increased even further, because the problem of evil has become entwined with the problem of sustainability and with the diminishing chances for a good life of other species. Thus, paraphrasing Ricoeur we could say that for a growing number of people on our planet, facing the ethical complexity of our world involves an orientation towards "a good life, with and for others in just institutions and a sustainable world society".

The Narrative Figuration of Possible Worlds

This brings me to a last element of Ricoeur's narrative ethics which is of great importance for the further elucidation of the nature of ethical complexity. It concerns the specific potential of narratives not only to picture possible worlds, but also to *inspire* us to act in such a way that such worlds could emerge.

According to Paul Ricoeur the narrative unity of a life

must be seen as an unstable mixture of fabulation and actual experience. It is precisely because of the elusive character of real life that we need the help of fiction to organize retrospectively, after the fact, prepared to take as provisional and open to revision, any figure of emplotment borrowed from fiction or from history. (Ricoeur 1992: 162)

Hence, there is no sharp distinction between on the one hand "factual" or "historical" and on the other hand "fictional" or "literary" narratives. In his eyes both first and foremost have an ethical and moral significance, which is "carried along" so to speak by the aesthetic qualities of narratives:

Might it be said that the literary narrative, on the level of narrative configuration properly speaking, loses its ethical determinations in exchange for purely aesthetic determinations? This would be to misunderstand aesthetics itself. The pleasure we take in following the fate of the characters implies, to be sure, that we suspend all real moral judgment at the same time that we suspend action itself. But in the unreal sphere of fiction we never tire of exploring new ways of evaluating actions and characters. The thought experiments we conduct in the great laboratory of the imaginary are also explorations in the realm of good and evil. (Ricoeur 1992: 164)

Seen in this light, narratives allow for “thought experiments” enabling us to explore “the realm of good and evil.” Upon closer analysis, the perspective developed by Ricoeur also points to another reason for the importance of narrative, fictional and figurative forms of modelling the complexity of human relations. This reason is connected with the differences between the action repertory connected with cognitive and narrative forms of modelling reality. Speaking very broadly, cognitive forms of modelling allow for the identification and manipulation of causal connections. Thus they are internally connected with instrumental action and with technical forms of bringing about desirable states in the world, as underlined from completely different angles for instance by Carl Hempel, Jürgen Habermas and Henri Atlan (Hempel 1965, Habermas 1968, Atlan 1996). Such causally effective influences and forms of manipulation are also of decisive importance for moral actions, as transpires from Ricoeur’s reformulation of Kant’s categorical imperative, cited above: “Act solely in accordance with the maxim by which you can wish at the same time that what *ought not to be*, namely evil, will indeed *not exist*.” Seen in this light, moral actions necessarily involve causally effective forms of influencing existing realities: evil should not exist. However, as the maxim clearly states: in order to diminish the existence of evil in our world we do not only need causally effective forms of action, but also emergent “Ipse-identities” and concomitant forms of diapoiesis. At this point the fictional and figurative character of narratives and (to a certain extent) also of narrative identities, no longer appears as a deficient form of cognitive modelling of existing realities, but on the contrary as a resource for the imaginative projection of a *possible* reality, a reality in which that what ought not to be, indeed would not exist. This imaginative projection involves both the future identity of moral actors, the continued emergence of their identity as “Ipse-identity” and the moral quality of the institutions in which they partake.

At this point the limitations flowing from the conceptual strategy followed by Cilliers and other complexity theorists become clearer. They flow not only from the focus on general characteristics shared by all complex systems, but also from the concomitant, implicit commitment to an epistemology privileging cognitive forms of modelling and obfuscating the specific form of insight into the complex reality of human relations provided by narrative forms of modelling, especially the ethical and moral insights which can emerge from narrative “thought experiments and explorations in the realm of good and evil”. To adequately understand the nature of ethical complexity, such ethical and moral insights should not be constructed as some kind of deficient “theories” about the world. In terms of the vocabulary developed by Maturana and Varela, we could say that theories and the instrumental actions based upon them implicitly or explicitly refer to the autopoiesis of living beings, interacting with “their” surroundings in ways which secure their structural coupling to a dynamic world, which is co-constructed by their own autopoietic interventions.

On the basis of my complexity informed interpretation of Ricoeur’s views we can say that such an autopoietic form of “cognitive” reality construction belongs to the “basic repertory” of living beings, but does not embody the only nor the necessary way of relating to “their” environment. Just as physical and chemical processes keep going on within their bodies and between their bodies and other entities

after the death of living beings, so autopoietic processes go on after the breakdown of dia-poiètic forms of relating to others. In the same way as life embodies another, emergent form of organization *vis-à-vis* physical and chemical processes, so dia-poiètic relations embody an emergent form of organization with regard to the autopoietic processes out of which they emerge. Thus, there exists indeed a break or a gap between these two forms of organization, these two forms of “poiesis” of living beings, as the proponents of the gap between “is” and “ought” do not tire to point out. However: these two forms of organisation are not only separated by a gap, this gap also gives rise to new forms of mediation. It is here that Ricoeur’s analysis of the narrative mediation between the Idem and the Ipse pole of personal identities offers a conceptual renewal with far reaching consequences. Based on this distinction we can now say that it is indeed always *possible* to reduce the question “Who are you?”, or “Who am I?” to the question “What are you?” or “What am I?” These questions can then be answered with the help of cognitive models of ourselves, describing our character and its determinants and thus clarifying *up to a point* our identity. When such descriptions provide the principal framework for our relations with ourselves and with others, we do indeed find ourselves in a reality dominated by autopoiesis.

A simple example is provided by an acquaintance explaining and justifying his own shortcomings with regard to his partner and children by referring to the severe negligence he suffered from the side of his parents in his own youth. The question “Who are you?” is then answered by reference to the Idem pole of his identity. In this way, the Ipse is almost completely “covered” by the Idem, as Ricoeur says. The narrative he tells to himself and to others about his identity and actions becomes almost completely descriptive, and assumes the characteristics of a theory, of an autopoietic model of the relations between himself and his surroundings. But the narrative mediation between Idem and Ipse could also take on a different form, a form in which the figurative and aesthetic potential of narratives are not used to fortify a “true” description of his identity, but are used to evoke a *possible* world, a world in which he does keep his explicit and implicit promises to his wife and children. In so far as such a world indeed emerges, he no longer lives in a world dominated by autopoiesis, but in a world in which also “pockets” of diapoiesis exist. Such a world arises out of co-creation. It is not enough that his narrative regarding his relations with others describes these as, for instance, caring. His narrative has to interlock with the narratives of those whom he tries to care for: do they indeed experience his actions as caring? And does he allow them the emotional and relational space to amend or criticize his narrative, and vice versa? Seen this way the difference between autopoietic and dia-poiètic relations indeed hinges on the emergence of a re-entrant dynamic which cannot be autopoietically controlled by the individuals involved: they do no longer autonomously define the border between themselves and their surroundings, but become part of an emergent, re-entrant “moral network” which they can damage or even destruct autonomously, but cannot autonomously create or renew.

The relation just indicated between ethical complexity, the narrative figuration of identities and the emergence of dia-poiètic relations, does not only hold at the level of face to face relations, but also has a very important corollary on the institutional

level. As Ricoeur argues, the solicitude underlying the ethical quality of relations between friends, or between partners or between parents and children, forms the basis of the moral quality of institutions: the idea of an equal distribution of benefits and burdens of institutional forms of cooperation can be considered as an extension of the idea and practice of solicitude at the level of intimate relations. Here the co-creative character of the diapoiesis involved is even clearer than at the level of personal relations. Institutions such as states, firms and educational organizations have a history which far extends beyond individual life spans. Although Ricoeur does not explicitly address this problematic, his distinction between *Idem* and *Ipse* can and should be extended in my eyes to the level of institutions. Here also processes of sedimentation are going on, crystallizing into structures and characteristics bringing about a permanence in time which can extend over long centuries. Processes of narrative mediation at the level of institutions can also lead however to new articulations of possible “inner” developments of the institutions involved, to new articulations of their “institutional *Ipse*”, pointing to new, more just forms of cooperation and distribution. Along these lines an important re-entrant dynamic comes into view between on the one hand the personal narratives of the individuals involved and the mediation between *Idem* and *Ipse* furthered by these narratives, and on the other hand the collective narratives in which the identity of the institutions shaping their cooperative efforts is articulated.

Organizational Ethics

The importance of this re-entrant dynamic transpired from present-day discussions with regard to “organization ethics”. These discussions range from the field of business-ethics and new forms of corporate social and environmental responsibility, towards the integrity of government agencies and government officials and the safeguarding of human rights. Seen from the perspective of leading sociological theorists such as Jürgen Habermas and Niklas Luhmann, the organizations involved differ in important respects from the institutions taking central stage in Ricoeur’s analysis of the relation between ethics and morality. According to Ricoeur, all institutions face the question of a just distribution of the burdens and benefits of the common activities of the participants. Families and national states provide clear examples of the complexity of this challenge. However, modern organizations cannot be equated with institutions because they are able to *externalize* up to a point this moral problematic. In Habermas’ work for example, this externalization is conceptualized in terms of the split between “system” and “life-world” (Habermas 1984, Kunneman 1992). The ethical and moral values and challenges which are constitutive of personal identities and of institutions on the level of the life-world, are neutralized up to a point in the context of market-oriented and bureaucratic organizations. These organizations answer to another, “systemic” logic, characterized by instrumental and strategic forms of rationality. According to Habermas this systemic logic is *anchored* in the life-world, but on the level of their day-to-day functioning modern organizations are relieved of the burden to contribute to the maintenance

and renewal of the ethical and moral values constitutive of identities, cultural frameworks and institutions such as families. They do not have to be “just”, but can permit themselves to concentrate almost completely on being *successful* as long as they remain within the confines of the law.

This far reaching difference between institutions and organizations is reflected in the dominant position occupied by objectifying forms of theory and analysis within modern organization theory and within the vast networks of business schools and other educational organizations providing higher education and training for managers and government officials. Although the scientific status of organization theory and organization research, and their many practically oriented branches, most certainly are not undisputed (Foucault 1977, Morgan 1986, Boje et al. 1996), the field as a whole has been dominated for a very long time by a strong preference for “hard” forms of scientific research and all the concomitant ideas of objective, empirically verified, “value-free” knowledge. During the last decades however, the importance of ethical and moral values and of “meaning in organisations” is gradually receiving more attention. This attention not only concerns the importance of motivation, vision and sense-making for ongoing innovation and survival (Weick 1995), but increasingly also the social responsibility of commercial and governmental organization. Business ethics and corporate social and environmental responsibility have developed into a booming field, further prompted by heated present day debates sparked by the financial crisis of 2008 and by increasing public worries concerning environmental issues. Organizations can no longer simply focus exclusively on their own success and survival and on more efficient forms of production, but are increasingly confronted with ethical and moral challenges which they can no longer externalize.

In the light of the argument, one of the most interesting developments which have taken place in the context of this shift within organizational theory is the rise of narrative frameworks and approaches. (Czarniawska 1997, Gabriel, 2000, 2004). Building upon Barthes’ analysis of the ubiquity of narratives in social life and on MacIntyre’s analysis of narrative practices, Barbara Czarniawska argues that organizations can be seen as involved in a “narrative quest”:

According to MacIntyre, a virtuous life is a life dedicated to a quest for the good human life, where the construction of a definition of a ‘good life’ is a process that ends only when a life comes to an end. Rather than being defined at the outset, a ‘good life’ acquires a performative definition through the living of it. A search looks for something that already exists (as in a search for excellence); a quest creates its goal, rather than discovering it. This reasoning has an obvious relevance in the context of organization theory, when so much attention has been devoted to ‘organizational goals’. Rationalists defend the notion, pragmatists declare it to be impractical. A narrative view gets rid of the problem by reinstating the role of goals as both the results and the antecedents of organizational action. Organizations. . . can also be regarded as engaged in a quest for meaning in ‘their life’, which will bestow meaning on particular actions taken. (Czarniawska 1997: 16)

On first sight this “narrative view” comes very close to Ricoeur’s narrative analysis. It sheds an illuminating light on the complexities of “organizational story telling” and on the importance of ongoing processes of localized, narrative forms

of meaning construction within and around organizations. However, narrative views within organization theory show a remarkable reluctance or even inability to take up the pressing ethical and moral questions facing present day organizations. Although they draw heavily from literary theory and from philosophical analyses, they remain committed by and large to a *cognitive* perspective on organizations and refrain from connecting their analyses with the many pressing questions of *practical* ethics and morality within and around organizations. Thus, on the very last pages of his influential study *Storytelling in Organizations*, Yannis Gabriel underlines the “danger of allowing our current fascination with text and narrative to occlude deeper issues of justice, politics and human suffering” (Gabriel 2000: 240). This warning could also be turned into a pertinent question: why not *use* the sophisticated analyses of “text and narrative” in the context of organizations to *illuminate* “deeper issues of justice, politics and human suffering” and *help* present day organizations to confront these issues more adequately?

At this point Ricoeur’s analysis of the narrative mediation between Idem and Ipse and my elaboration of this difference with the help of the distinction between autopoiesis and diapoiesis, could provide a fruitful connection between the conceptual sophistication of the narrative approach within organization theory on one hand and the practical ethical and moral challenges confronting present day organizations on the other hand. The decisive step involves the recognition that the tension between Idem and Ipse and between autopoietic and dia-poiètic forms of relating to others manifests itself at different, interlocking and interfering levels within present day organizations:

- on the level of the life stories of individual members, ranging from temporary “hired hands”, to middle and higher management;
- on the level of the “corporate identity” of the organisation involved; and
- on the level of economic and political systems and the concomitant relations of cooperation and competition between organizations.

At each of these levels specific process of narrative mediation are taking place between the Idem and the Ipse potential of the individuals, the organizations and the economic and political systems involved. Moreover, these processes of mediation are mutually interlocking and interfering and this interference *itself* exhibits a more or less autopoietic or dia-poiètic dynamic. Along these lines the narrative creation of meaning within and around organizations cannot only be described and analyzed from a cognitive perspective, trying to do justice to the ontological and epistemological complexity of these processes; moreover it becomes possible to actively engage with the *ethical* complexity of the narrative creation of meaning within organizations, by taking upon oneself the practical, day to day responsibility to enhance the ethical and moral quality of the narrative mediation between Idem and Ipse on these three levels at the same time: as an individual involved in personal relations with nearby others; as an active member of different organisations; and as a consumer and citizen, taking part in the narratives co-constituting the dynamics of present day markets and political systems.

Conclusion

Against this background, I can now return to the differences between ontological, epistemological and ethical complexity and to the implications of my argument for the further development of complexity thinking. I have argued in the introduction that the importance of the contemporary movement away from conceptualizations of identities in terms of elementary characteristics towards conceptualizations in terms of the play of differences hinges primarily on the ethical implications of this conceptual shift. Paul Cilliers has pointed out in all clarity that ethical choices unavoidably come into play when modelling complex systems. However, upon closer analysis the conceptual continuity suggested by Cilliers between insights stemming from complexity theory and specific, value laden concepts such as “respecting differences as a value in itself” appeared not to hold. I have suggested that this difficulty is internally connected with a conceptual strategy centred on the development of a general *theory* of complex systems and focusing on “low-level characteristics” shared by all complex systems. Against the background of the argument, I can now conclude that the incorporation of ethical complexity into the conceptual universe of complexity thinking has even more radical implications than Cilliers has made visible already: they suggest a *reversal* of the dominant relations between ontology, epistemology and ethics. Within modern philosophy in general and within modern philosophy of science in particular, ontology has precedence over epistemology and epistemology has precedence over ethics. Science has to uncover reality “as it really is”, independent of human fancies and desires.

Epistemology and methodology clarify the general conditions under which such objective knowledge can be acquired and the methods by which rivaling claims to knowledge can be decided upon. One of the central insights of modern epistemology concerns the *impossibility* of settling ethical disputes involving differing values with the methods of science. Thus epistemology takes precedence over ethics. In the nineteenth century, this framework has first been attacked by the three “masters of suspicion”, Marx, Nietzsche and Freud and has then been undermined further by the “linguistic turn”, by postmodern philosophy and by social constructivism. In the process, “nature” as an objectively existing independent reality has almost vanished. The great importance of complexity thinking hinges in my eyes on two points. In the first place, it allows for the reintroduction of nature into these debates. No longer in the form of a simple, fundamentally transparent and well-ordered nature, but as a nature, that exhibits both order and complexity “in and of itself”. This shift implies that the precedence of ontology over epistemology no longer holds: the modelling of complex systems from a cognitive perspective necessarily involves simplifying assumptions. In the second place, the precedence of epistemology over ethics also is undermined, as Cilliers (2004: 20) rightly argues: “We cannot make purely objective and final claims about our complex world. We have to make choices and thus we cannot escape the normative or ethical domain.” Thus, in the work of Cilliers a new, more “horizontal” relation emerges between ontology, epistemology and ethics. However, Cilliers still seems to hold fast to a certain precedence of *theory* over ethical norms and values: he tries to articulate an “ethics of difference” on the

basis of complexity theory, reinforced with insights from postmodern philosophers. Along these lines the nature of ethical complexity cannot be clarified satisfactorily, as I have argued on the basis of a complexity informed interpretation of Paul Ricoeur's narrative ethics.

A horizontal, dialogical relation between ontology, epistemology and ethics, in which none of these perspectives can claim permanent precedence over one or more of the others, thus asks for a horizontal and dialogical relation between cognitive and narrative forms of modelling of our world. As I have argued, ethical complexity can only emerge on the basis of narrative figurations of possible worlds: personal, institutional and organizational worlds, in which the reign of evil is diminished and in which people can live a good, meaningful life, with and for others in just institutions and responsible organizations. By incorporating such a narrative ethics into the conceptual universe of complexity thinking, the gap between "nature" and "culture" and the related gap between "is" and "ought" lose their pertinence. On the one hand we can now say that Ipse-identities and ethically complex relations never leave the network of physical, chemical and biological relations out of which they emerge: the ethical co-construction of realities experienced as good and more just not only takes place *within* nature, but it is also a completely natural process, be it a highly complex process. On the other hand, the narrative figuration of possible worlds and of better realities can now be seen as a process which not only encounters causally effective constraints, but can also have causal effects *changing* these constraints, without however putting them out of action. Just as the invention of flight by the first birds changed the constraints which gravity up till then exerted upon possible movements of living entities, so the emergence of ever more radical moral perspectives in the cultural and social evolution of mankind, changes up to a point the constraints of autopoietic forms of reproduction without putting them out of order.

This brings me to a final characteristic of ethical complexity and to the possible consequences of my argument for the further development of complexity thinking. The complexity inspired shift from a "vertical" to a more horizontal and dialogical relation between ontological, epistemological and ethical considerations, leads to a double focus for complexity thinking, involving two different forms of tension. On the one hand the interplay and the tensions between order and emergence, between repetition of the same organizational patterns and the evolution of new forms of organization; on the other hand the interplay and the tensions between "Idem" and "Ipsé", between Autopoiesis and diapoiesis on the level of individual life stories and on the level of institutions and organizations. According to Paul Ricoeur, the mediation between Idem and Ipsé can only be brought about with narrative means. Seen from the perspective developed above however, this mediation also requires more adequate, complexity sensitive *theories* about the dynamic interplay of autopoiesis and diapoiesis, as exemplified for instance in the work of Frans de Waal and Sarah Blaffer Hrdy on the biological roots of solicitude and on moral behaviour among primates. (de Waal 2000, 2005, Blaffer Hrdy 1999, 2009) It is thus my hope that complexity theorists can *broaden* the ideal of an encompassing theory explicating general characteristics of all complex systems, and embrace a more horizontal ideal, a multiple perspective oriented to a dynamic interplay between on the one hand

theories explicating our worlds “as it is” and as it develops, and on the other hand morally inspiring narratives articulating possible, more meaningful lives and more just institutions and organizations. I hope and expect that the identity of complexity thinking itself can be further developed, by welcoming a play of differences *within* itself, as a creative tension between theories and narratives, between cognitively complex and ethically complex forms of modelling our world, in view of “a good life, with and for others in just institutions, responsible organizations and a sustainable world society”.

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Part V
Ethical Consequences

Chapter 9

Corporate Identity, Responsibility and the Ethics of Complexity

Minka Woermann

Introduction

The death of the transcendental subject paved the way for a more complex understanding of identity. Today it is quite common to refer to identity formation as an emergent process. This means that we are not born with an inherent idea of what it means to be human, how we should relate with the world or even what the world is (cf. Cilliers and de Villiers, Chapter 2), but rather, that our responses to such questions are in themselves part of identity formation. In other words, we are constituted through practice and through engagement with the world. Nietzsche placed a high premium on this complex process of becoming, describing the “highest values” as appeals for the preservation of a certain life form – one that demands the active cultivation of behaviours, in order to nurture a particular authentic experience of life and perspective on the world (May 1999). In order to better understand the value – indeed the ethics – associated with this process of becoming we need to understand what identity formation implies within a complex world.

To say that identities emerge in and through practice, implies that identity questions not only bear upon our own identities, but also upon the identities of our practices and our systems (indeed, the world at large). In other words, identity is a relational construct, which means that the self is always located at the nexus of many relationships (Painter-Morland 2008). This relational understanding of the self adds a further layer of complexity to identity formation, and limits the Nietzschean ideal of the *Übermensch* or sovereign individual as someone “who has achieved perfect self-mastery and genuine freedom” (Painter-Morland 2008 155). In addressing the question of identity formation, it is, therefore, critical to contextualise identity not only in terms of time (the temporal process of becoming), but also in terms of space (the nexus of relationships in which identities are co-constituted).

M. Woermann (✉)
Department of Philosophy, University of Stellenbosch, Stellenbosch, South Africa
e-mail: minka@sun.ac.za

In this chapter, the question of identity formation within the corporate context⁹² will be explored. The identity formation of corporate members, work practices and corporations will form the specific focus of this investigation. However, precisely because our identities are interdependent and co-constitutive, identity formation is a process with normative implications. These normative implications have a direct impact on how we view ourselves, others and our responsibilities towards ourselves and others. Within the corporate context, these normative implications have a bearing on our understanding of business ethics, both in terms of our responsibilities as corporate members, and the corporation's responsibilities within the wider internal and external environment.

In particular, this analysis seeks to undermine the conceptual fissure that exists between individual responsibilities and the responsibilities of the corporation as a whole. This fissure is upheld by the traditional association of moral responsibility with the notions of individual agency and intentionality, and is most commonly expressed in the business ethics debate on whether the concept of moral responsibility can or should be extended to corporations and corporate actions. One insight that emerges from a complexity analysis of corporate identity is that the identity of corporate members and corporations are coterminous (i.e. the identities arise and die together). The identities of corporate members are, therefore, not ontologically prior to the identity of the corporation as a whole. Furthermore, the way in which we frame our corporate identities impacts upon the manner in which we view our responsibilities. In other words, our corporate responsibilities are not linked with some a priori ethical scheme, but are, first and foremost, determined by our corporate practices, and, therefore, linked with our corporate identities. What is of ethical importance in this analysis, is to investigate the impact that our understanding of our own corporate identities has on our view of business ethics in general, and on our view of our moral responsibilities in the workplace in particular.

The chapter will proceed as follows: In the first section, a complex understanding of identity formation will be investigated. The second section presents a translation of these complexity insights into the language of social systems. This move allows us to gain a better understanding of how corporate identity emerges in and through work practices. In the third section, the normative insights of corporate identity formation are explored, and the implications of these insights for our understanding of business ethics are elucidated.

⁹²In the context of this paper, the terms "corporation" and "organisation" will be used interchangeably. The term "organisation" is broader than that of "corporation", and includes for-profit and not-for-profit, as well as private and state entities. The broader understanding of organisation is what is implied under the term "corporation". The reason for using the terms "corporation" and "corporate" is to avoid confusion, as the concept of "organisation" is part of complexity terminology, and is commonly used to refer to self-organising systems (social or otherwise). As such, the term "corporation" is useful in distinguishing organisations from self-organising systems in general.

Identity Formation in Complex Systems

In the introduction it is stated that identity is both an emergent property and a relational construct, meaning that identities develop over time within a network of relationships with other identities (Cilliers, Chapter 1). In this section, these two characteristics of identity formation will be unpacked in greater detail at the hand of complexity theory.

In chapter one, Cilliers makes the point that “the identity (or identities) of the system is a *result* of. . .differences and interconnectivities, not something which precedes them” (my italics added). The idea that differences are necessary for the creation of identity forms the basis of structuralist and poststructuralist philosophical thinking. However, despite not being a new insight, it is nevertheless an important insight, since it problematises our traditional understanding of ontology, which, as Seabright and Kurke (1997: 92) remind us, is “a question of identity”.

That identity and difference are necessarily bound together is also reinforced in Quine’s work on ontological relativity: Quine argues that framing ontological questions in absolute terms is meaningless. We can only address the ontology of something, if we view it as *relative* (or in relation) to something else. In other words, “[w]e cannot know what something is without knowing how it is marked off from other things” (Quine 1969: 55). Apart from stressing the importance of difference, Quine’s citation introduces another important aspect of identity, namely boundaries: boundaries (i.e. the marking off of things) *enable* us to ask ontological (and epistemological) questions by framing differences as distinctions. In other words, though boundaries are a function of the activity of the system itself, they are also a product of the description that we give to the system (Cilliers 2001). As such, boundaries must be thought of “as something that *constitutes* that which is bounded” (Cilliers 2001: 141). We can, therefore, conclude that constrained or bounded difference is a necessary condition for identity and meaning (cf. Cilliers, Chapter 1). However, bounded difference (or distinction) is not enough for understanding identity.

Elaborating on the notions of difference and identity, Cilliers (Cilliers 2001) suggests that an element of sameness is needed in order to make comparisons or distinctions. From such an understanding of identity, it follows that we cannot relate in any meaningful sense to the radically other.⁹³ This implies both that components must have an addressable identity, and that components must be interconnected in a meaningful way. Though these implications are mutually reinforcing they are not exactly the same: to say that components must have an addressable identity means that identity must be iterable (i.e. have the capacity to be repeatable in different contexts), whereas interconnectivity refers to “the capacity to connect components or

⁹³The fact that components, sub-systems, and systems interact with each other in a manner that allows us to make comparisons also implies that the boundary that demarcates a given identity cannot completely close in upon itself.

systems”.⁹⁴ The connections or interactions between components can be physical or informational, they are non-linear,⁹⁵ they are asymmetrical (the relative strength between components vary), they are localised (i.e. interactions take place at the level of the components, not of the system), and they create feedback loops in the system (Cilliers 1998). The system’s capacity to create connections between components, therefore, allows us to *recognise* not only differences between components, but also the iterable and (hence, addressable) identity of components and sub-systems. Simultaneously, interconnectivities contribute to the creation of the identity of components and the system as a whole through [facilitating] a process of emergence.

When the components of the system interact, they allow for continuity and transformation. Transformation is often the result of non-linearity, since non-linear interactions can amplify small differences (Cilliers 1998, Stacey 2003). Dynamic structures are the product of patterns of continuity, but also [of] transformation [,] and emerge over time due to self-organisation. Self-organisation can be defined as “a process whereby a system can develop a complex structure from fairly unstructured beginnings” (Cilliers 1998: 12). System-level order emerges because of interactions amongst components at lower levels of the system (Andersen 1999). These interactions also produce nested systems within the larger system (Ashmos and Huber 1987). However, it would be incorrect to view emergence as the passive product of local interactions. The system as an organised and organising whole feeds back to produce the components. The complexity theorist, Edgar Morin (2008) describes this temporal and structural process of identity emergence as follows: the components, in their interactions, produce the system, which produces the components that produce it. This implies that identity formation is a recursive process “where the products and the effects are at the same time causes and producers of what produces them” (Morin 2008: 49). Just as the interconnectivities between components create systemic structures and constraints, so too feedback loops allow for the system itself to constrain the behaviour of the parts by means of framing identity within a larger context.

To summarise the argument thus far: identity is the result of bounded differences (i.e. distinctions) that exist between the components of a system. The fact that we are able to recognise distinctions as distinctions implies that some element of sameness must be present in the system itself. This sameness (i.e. discernable identity over time) manifests as a result of the iterative nature of identity, which we are able to recognise (along with distinctions between components) due to the

⁹⁴www.tki.org.nz/r/technology/curriculum/p85_86_e.php. If the components of a system are richly interconnected, the idea of the “centre” and “periphery” is also problematised, along with the notions of “inside” and “outside”. This is because there will always be a “short route from any component to the “outside” of the system.” Boundaries in a complex system are folded in and impossible to pinpoint (Cilliers 2001:142).

⁹⁵Unlike linear phenomena where the system is the additive result of its components, nonlinear phenomena occur due to novel and often surprising configurations of the system’s components (Dyke and Dyke 2002). In practice, non-linearity means that systems cannot be compressed without discounting some of the complexity.

interconnectivities between the components of a system. These interconnectivities are dynamic in nature, and allow for systems to emerge through the process of self-organisation. The concept of emergence further contributes to the identity of both components and systems. This is because of feedback loops that exist between the system and the components (or between the whole and the parts). As a result of these feedback loops, the system acts as a further constraint upon the components of the system. Emergence, thus, implies that the identity of systems and components are coterminous.

Corporate Identity

Complexity theory provides us with important insights regarding the nature of identity, but if we wish to say anything useful about corporate identity, these insights (namely, bounded difference, iterability, interconnectivity and emergence as conditions for identity) must first be translated into the language of *social* systems, specifically corporations. In this section, the implications of the above complexity insights will be spelt out in terms of the process of identity formation of corporate members, corporate practices and corporations at large.⁹⁶

The analysis undertaken in the first section yielded the insight that within a system, constrained or bounded difference (i.e. distinctions) between components is a necessary condition for identity. Individuals within a social system such as a corporation are constrained in terms of their formal and informal roles, functions, and relationships. To try and unpack the nature of these constraints in any specific terms would be impossible, given the uniqueness of these constraints within a given context. However, one can make a couple of general points regarding these constraints.

Since identities are constituted in a process of interaction, it follows that corporate identities are delineated within a given work practice (Westenholz 2004). However, these corporate identities are not equivalent to our individual identities “as such”. This is because when we shift amongst interactions and contexts, we also shift amongst definitions of self (Weick 1995). For example, the fact that I may be an excellent cook does not affect my corporate identity as a line manager. Therefore, when one speaks of corporate identities, one is referring to role identities,

⁹⁶Throughout this analysis it is important to bear in mind that the components of one system, are simultaneously systems in themselves. So too, any given system functions as a component in other systems. Therefore, how we view a system is a function of our descriptions. This means that the insights provided in this analysis are also applicable to other demarcations of systems. In other words, logically speaking, there is nothing inherent in the relationship between corporate members and corporations. We can just as well speak of corporate departments or task teams (components) in relation to the corporation (system); or of corporations (components) in larger societal systems (such as the economy or the socio-political environment). In a nutshell, systems are constituted by many sub-systems, which are, in turn, constituted by many complex components (which are systems in themselves).

constituted by acts and events (Seabright and Kurke 1997). This point also follows from the complexity insight that individuals are dynamic, differentiated selves, and not stable, monolithic entities (Seabright and Kurke 1997). In the corporate context, individuals are differentiated from one another on the basis of their membership “to social categories that define departments, work units, levels of hierarchy, and/or specialized roles” (Paulsen 2003: 16). Individuals, therefore, have multiple group identities within a given corporation (Paulsen 2003), and – in this context – organisational diversity refers to the identity distinctions that create the necessary requisite variety needed for a system to cope with its environment (cf. Dyke and Dyke 2002). Just as individuals have multiple corporate identities, corporations in themselves also mean various different things to different stakeholders and groups, and the idea that corporations are differentiated across contexts, represents a quite common understanding of the nature of corporations, as “complex, variable and loosely coupled” social collectivities (Seabright and Kurke 1997: 99).

To say that identities are delineated “in practice” not only implies something about the constraints that a given practice or process of interaction imposes on identity, but also about the nature of the interactions that constitute [a given] practice. When we speak of social systems, we can refer to these interactions (interconnectivities) as social cooperation and competition, which is mediated through language (Stacey et al. 2000). As will be demonstrated in the following argument, language is the medium through which we can form some stable idea of our own identities, as well as gauge the necessary identity distinctions for a given practice.

Morin (2008) points to the interesting biological fact that the greater parts of the cells that make up our bodies disappear and are replaced by other cells. Biologically-speaking we are, therefore, no longer the same beings as we previously were, but despite these changes, we can still look at old photos and say “that’s me!” This strange ontological phenomenon also led Nozick (1981: 29) to ask: “How, given changes, *can* there be identity of something from one time to another, and in what does this identity consist?” Returning to the analysis of identity, we can say that the answer to this question has something to do with both the emergent and the iterative nature of identity. It is specifically the iterative quality of identity that is expressed through language, since we become conscious of ourselves and our practices through language.

Morin (2008) argues that our ability to become self-conscious through language hinges on the ability of language to act as an instrument of objectification. This function is expressed in the distinction between the concepts of the “I” and the “me”. Whereas the “I” occupies an “egocentric site” – “the pure uprising of the subject” in the “I speak” (Morin 2008: 73) – the “me” expresses the objectification of the “I” by allowing us to refer to ourselves indirectly. Stacey et al.’s (2000) interpretation of Mead’s (1934) analysis gives rise to the same insight (“I am me” is the self-conscious declaration of a subject that becomes an object to itself). Therefore, in addition to experiencing the phenomenological quality of the “I”, it is this ability to view ourselves across contexts as a “me” that gives identity an iterative quality.

Mead (1934) makes the further point that this objectification of the “I” as a “me” is only possible when an individual experiences him/herself from the standpoint of

others. The subjective uprising of the “I” is then also partly constrained by a community, as it involves a response to the perceived community’s view of the self. The subjective response to the community’s view of the self is characterised both by identity (“the warm collectivity” of the “we”) and difference (“the more cold and anonymous collectivity” of the “they”) (Morin 2008: 80). This means that “[i]n every human ‘I’ there is a ‘we’ and a ‘they’” (Morin 2008: 80) or, expressed differently, “[w]henever I define self, I define ‘it’, but to define it is also to define self” (Weick 1995: 20).

Language is the means through which an iterative, albeit impure and relational, sense of self emerges, but – since identity formation is always socially-situated – language is also the means through which identity distinctions (needed for the self-organisation or the emergence of a system) comes into being within localised contexts. The narrative that we construct of any given practice, allows us to distinguish between the “me” and the “you”. In cooperative activities the “me” and “you” give rise to a “we” or “us” – a common subject, acting jointly. In corporate terminology, cooperative activities refer to the emergence of collegial relationships (both formal and informal), task teams, departments, sections, and corporations in themselves. Research indicates that when corporations are loosely coupled, the importance of group and inter-group relations become more pronounced (Paulsen 2003). In competitive activities the “me”/“we” gives rise to an “it”/“they” – which, in corporate terminology, refers to both internal and external environments. Research further indicates that group identity also becomes more pronounced when a group is required to represent itself to other groups or the environment (Hartley 1996). In other words, social boundaries enable groups to form a sense of identity, which in turn enables the creation of “otherness” that is needed to distinguish groups from one another (Hernes 2003). Therefore, it is through social interaction (facilitated by language) that individual corporate members come to form groups with which they identify. This reinforces the point that when individuals act, they do so not only as individual persons but “also as members of the salient organizational groups to which they belong” (Paulsen 2003: 16). Albert et al. (2000) further argue that these group identities are partially self-defining for the individual corporate members, and may support attempts towards defining human agency within the corporate context.⁹⁷

The interplay of cooperative-we-orientated activities and competitive-they-orientated activities is critical to identity formation and is helpful in showing us how a corporation can develop purpose and a sense of shared identity amongst its members. The importance of social boundaries for identity formation is underscored in an empirical analysis conducted by Westenholz (2004), which shows that individuals who work in temporary and scattered work practices are in contexts in which their

⁹⁷Social Identity Theory or SIT (Abrams and Hogg 1990, Hogg and Abrams 1988, Tajfel and Turner 1986) is a theoretical framework in which the group (as opposed to the individual) is used as the fundamental unit of analysis to explain social behaviour. According to SIT, social identity can become more salient than personal identity under certain conditions. This leads to behaviour that is based on group membership rather than individual characteristics (cf. Paulsen 2003).

well-known identities are subject to pressure. This research illustrates that social boundaries serve to “protect groups when members perceive that their identity is threatened” (Hernes 2003: 39). Other research also indicates that effective groups have a strong sense of social boundaries, whereas ineffective groups tend to have a blurred sense of social boundaries (Bion 1961). Social boundaries enable groups to operate effectively as they provide the stability needed for groups and corporations “to act intentionally as they deepen their sense of trust and identity” and also provide the space within which resource can be mobilised and energy released (Hernes 2003: 42).

This having been said, there are a few caveats to bear in mind when referring to identity formation in groups. Firstly, since we are dynamically differentiated across contexts, individuals have several (inter-related) identities. This implies both that a given identity can never close in upon itself and that identities within a system cannot be oppositionally defined,⁹⁸ but should rather be understood in terms of a network of relations. This means that, instead of employing a binary logic, it is more accurate to employ a “both/and” logic when thinking about identity formation (Stacey 2003). Secondly, the fact that the “I” is typified by a “we” and a “they”, ensures that some difference in a “we” identity cannot be assimilated. Nor can a “they” represent the completely other, but represents a strategy of framing (i.e. where and how we draw the boundaries between a system and its outside). Putting the above two points together, we can say that: “I am *both* a ‘we’ *and* a ‘they’; an ‘inside’ *and* an ‘outside’”. Thirdly, this formal conceptualisation of identity formation also frames identity only in terms of abstract-systemic frameworks, thereby negating the role of communicative acts relayed via bodies (and conducted in the medium of proto-symbols). Identity formation via communicative interaction is both a formal and informal process, which further problematises the idea of clear boundaries that neatly demarcate inside from outside (Stacey 2001). Lastly, the interactions between corporate members are characterised by power relations, which means that the “we” is never free of conflict. Similarly, a “they” identity necessitates an acknowledgement of patterns of inclusion and exclusion (which are an irremovable part of power relating) (Stacey 2003). Therefore, though the above analysis is helpful in understanding how group identities emerge, one must bear in mind that within any type of relationship, individuals are simultaneously enabling and constraining each other (Stacey 2003) through formal and informal cooperative and competitive activities.

In explaining an organisation’s sense of purpose, we must also consider the issue of emergence. It has already been shown how a “we” emerges from communities of differentiated individuals who cooperate (through language) to achieve certain shared goals. Stacey (2003) describes social cooperation as a complex responsive process of relating from which coherent patterns of being-together emerge. These coherent patterns remind corporate members of their collective identity, and are the reason for why storytelling, myths and narratives are an important means of identity

⁹⁸See Cilliers’ (Chapter 1) argument on “The economy of difference”.

formation and maintenance (Hernes 2003). These coherent patterns can also be described as iterated themes, which perpetually reconstruct the past whilst creating the future. In other words, “yesterday’s action activates a reaction today which may lead to a new action tomorrow” (Thietart and Forgues 1995: 21–22). As corporate structures, defined as an organised and organising wholes emerge, the corporation feeds back these iterative themes, in order to produce corporate members through policy, culture and purpose (cf. Morin 2008). Another way of stating this is to say that normative congruence, defined as the system’s “ability to accommodate difference and disensus, without losing its functional unity of purpose or sense of identity” (Painter-Morland 2008: 224), is facilitated by downward causation (i.e. the system’s ability to constrain individual components through feedback loops). Congruence also facilitates “alignment with respect to goals and priorities that move and motivate an organisational system”. As such, congruence contributes to the sense of purpose and cause among corporate members and systems (Painter-Morland 2008: 224).

The previous discussion illustrates how corporate members simultaneously create and embody a sense of corporate identity.⁹⁹ This process is facilitated by the dynamic interactions between corporate members and subsystems, and by the iterative themes and feedback loops which create a sense of normative congruence amongst corporate members and subsystems. When multiple internal and external stakeholders (with diverse agendas) try to coordinate their actions and share information (Thietart and Forgues 1995), the future emerges as simultaneous continuity and transformation. Transformation is the result of the nonlinear interactions, which occur when stakeholder cooperate and compete through a web of feedback loops (Andersen 1999, Stacey 1995). These dynamic, non-linear interactions allow for surprising and novel configurations of the organisation’s system (Stacey 2003), and further imply that emergent identity does not constitute some harmonious whole, but is necessarily defined by conflict (Stacey 2001) and uncertainty.

In translating the complexity insights regarding identity into the language of social systems (specifically corporations), we were able to glean the following insights: Firstly, our corporate identities are not equivalent to our “individual” identities. Rather, corporate members assume identities that contribute to the diversity needed for the survival of the corporation (where diversity is defined as distinctions that matter within a given context). Individuals, like social collectivities, are not “whole beings”, but are rather dynamically differentiated across contexts. Secondly, the medium through which our identities emerge is language. Language allows us to

⁹⁹Research indicates that, within large complex corporations, corporate members are more likely to identify with salient groups within the corporation (organisational “subcultures”), rather than with the corporation itself (Paulsen 2003). This does not imply that corporate members do not share a sense of corporate identity or purpose, but rather that corporate members’ understanding of the corporate identity emerges in communicative interaction with external stakeholders, or when members are asked to reflect on the nature of the corporation (Paulsen 2003). Feedback loops *between* corporations and the environment are, therefore, just as important for forming a sense of corporate identity as are feedback loops *within* corporations.

gain a sense of our own boundedness within a community of practice, but also allows communities of practice to develop by allowing us to express the distinctions in and between practices. In corporate terms, our dynamic interactions with one another, which are expressed in language, allow us to differentiate in order to form social boundaries, which distinguish task-teams, collegial relationships, departments etc. Boundaries, therefore, make it possible for corporate groups “to take actions and at the same time limit those actions by what the boundaries define” (Berg and Smith 1990: 116). Thirdly, the relationships constituted through language are not neutral. Interactions between components in a complex system are asymmetrical, and in the language of systems this means that power relations are continuously at play, both in communities of practice and between communities of practice. Fourthly, over time, our practices form iterative themes or patterns of coherence (which often take the form of narratives). Iterative themes aid in fostering a sense of corporate identity and purpose in self-organising systems. These iterative themes are also fed back to corporate members through a process of downward causation. In this sense, feedback loops also help to foster a sense of normative congruence within corporations, and contribute to the “staying power” of corporate identity. Lastly, the identities of corporate members, work practices and corporations are subject to change due to the complex and temporal interactions between stakeholders and structures. This non-linearity leads to transformations that cannot be predicted in advance, and that make it impossible to fully know where the identity constraints of the corporate members and the corporation lie.

Implications for Business Ethics

Complexity theory provides us with a description of how identity emerges in complex systems. When we translate these insights into the language of social systems, our descriptions have certain normative implications. For example, the characteristic of asymmetry, which describes the type of interconnections that exist between components in a complex system, takes the form of power when we speak of social systems. In a social system, the issue of power is not just a descriptive characteristic of the system, but a characteristic with decisive normative implications (power can be good or bad) that demand ethical reflection (when is power good or bad?/what type of power is good or bad?). Another example that illustrates the normativity of our descriptions is that of boundaries and constraints: as stated earlier, boundaries are a function of the activity of the system itself, but they are also a product of the description that we give to the system (Cilliers 2001). Our description of a given system reduces the complexity of the system itself, and in so doing, makes the system more manageable to understand. But, in reducing the complexity, important elements of the system may not feature in our description (and we cannot know what these elements are in advance due to the non-linear nature of complex systems). In terms of social systems, this means that our description of a given system cannot account for the interests of all those who affect or are affected by the

system. Therefore, the descriptions that we attribute to certain systems (i.e. where we draw the boundaries) could end up harming a stakeholder group that did not factor into the particular strategy that we employed when demarcating the system. Though complexity theory cannot provide us with any a priori normative principles, the above examples nevertheless illustrate that complexity theory presents a case for the inevitability of normativity from a position which focuses on boundaries, constraints, emergence, non-linearity, asymmetry etc. Therefore, whenever we wish to say something useful about the world from a complexity perspective, we must bear in mind (indeed, never forget) that our descriptions have certain normative implications.

In this section, the ethical implications of a complex understanding of corporate identity are addressed. The first part of this section provides an overview of how moral responsibilities are traditionally understood within a business ethics perspective. An alternative approach, which focuses on the process of identity formation, is also suggested as a means for considering the problem of moral responsibility within the corporate context. In the second and third parts of this section, this alternative approach is further explored and concrete suggestions are made as to how one is to overcome the problems associated with corporate identities, as well as how one is to think about the moral responsibilities of both corporate members and corporations.

Challenging Traditional Notions of Corporate Responsibility

When we speak of the normative implications of our decisions and actions, the concept of responsibility (defined as the ability to respond to ethical questions) is also invoked. In much of the business ethics literature, moral responsibility is ascribed to rational and autonomous individual agents, who make decisions according to reasonable principles and calculations. One of the central issues in business ethics that arises from this view of moral responsibility is whether the concept of moral responsibility can be extended to corporations and their actions. In other words, the question is: can corporations be morally responsible for their actions in the same way that individuals are? Strong positions have developed on both sides of the debate (cf. Seabright and Kurke 1997). On the one hand, it is argued that the organisational systems and processes make it possible for corporations to undertake intentional actions that surpass the actions of individual corporate agents.¹⁰⁰ On the other hand, it is argued that corporations are incapable of undertaking moral obligations because they function like machines, and are, therefore, only capable of pursuing empirical objectives (Ladd 1970, Werhane 1980); or, in a related argument, that corporations are incapable of moral motives and actions, as only biological agents can be defined as intentional agents (Keeley 1981, 1988, Velasquez 1983). Though the concept of “intentionality” varies in meaning, one can nevertheless conclude that (within this debate) moral agency is conceptualised “as a direct cause and

¹⁰⁰See French (1979, 1984), French et al. (1992); Erskine (2003) and Petit (2007).

effect relationship between the willing and acting agent and the consequences of his or her decisions and behavior” (Painter-Morland 2006: 90). This view of moral agency, therefore, provides the dominant paradigm for thinking about concepts such as accountability, corporate social responsibility, good governance, leadership and a number of other business ethics themes.

However, as mentioned in the introduction, this traditional view of moral responsibility has been both challenged and discredited within the field of continental philosophy. Post-Enlightenment critique typified by the work of, amongst others Nietzsche, Heidegger, Marcuse, Adorno and Horkheimer, “call into question the [very] idea that a moral agent can make sense of things objectively, through an act of rational detachment” (Painter-Morland 2008: 101). Post-structuralists have further built upon the views of the post-Enlightenment critics (Sim 2004): Derrida’s emphasis on the indeterminacy of meaning; Foucault’s interest in marginalised groups whose differences exclude them from attaining political power; Deleuze and Guattari’s description of individuals as “desiring machines”, “who lack the sense of unity we generally associate with individual identity” (Sim 2004: 7); and, Levinas’ concern for the inassimilable Other, present us with positions that call for a radical reinterpretation of how we are to understand the questions related to agency, responsibility and ethics.

New perspectives regarding agency, responsibility and ethics have also emerged in the field of business ethics over the last decades. Authors such as Parker (1998), Collier and Esteban (1999), Verstraeten (2000), Freeman (2001), Jones et al. (2005), and Painter-Morland (2006, 2008) have tried to open business ethics to perspectives that are more sensitive to a relational, historical and contextual understanding of business practices. Some of these theorists have also explicitly adopted the critical theory or post-structural insights (briefly mentioned above) in their own work. Most of these authors have begun their exploration of alternative understandings of concepts and themes relevant to business ethic from within the field itself. In other words, rather than dismissing current perspectives in business ethics outright, these authors have sought to critically engage with the field, and transform it, whilst drawing on other perspectives of thinking about ethics. It is with this aim in mind that we now return to the question as to whether corporations are morally responsible for their actions in the same way that individuals are, in order to uncover one further premise upon which such a question is based, as well as to try and identify a way of moving beyond this question.

When we reflect on the above-mentioned question regarding individual and corporate responsibilities, we identify individuals as ontologically prior to corporations. This is because the identity conditions for individuals (namely, intentionality, autonomy and rationality) are assumed as a priori givens. In fact, some ethicists who support a radically, relational understanding of the self, often still work with the assumption that a kernel of individual freedom and intentionality can be retained,¹⁰¹

¹⁰¹This assumption is seen as necessary for warding off the sceptre of relativism or subjectivism. Whilst these fears are understandable, Painter-Morland (2006) reminds us that the normative

even though intentionality is severely constrained by context and history. Seabright and Kurke (1997), on the other hand, question the validity of these identity conditions, and, consequently, argue for the counter-intuitive point that individuals and social systems are ontologically indistinguishable. Their argument is based on the premises that (1) both individuals and organisations are dynamic systems, which involve differentiation and organisation, and (2) both are defined by the concept of partial inclusion; in other words, the “basic units composing social systems are the same as the basic units in self systems, namely, sub-selves or working selves” (Seabright and Kurke 1997: 102). Though they concede to the possibility that their conclusion may rest on our current inability to make the finely-grained distinctions necessary to distinguish between individuals and social systems (an inability which rests on our lack of knowledge), they also entertain the idea that – in reality – there may be no distinction. This is perhaps a too radical conclusion: identity, after all, has to do with iterability (which in turn gives the concept of identity a certain robustness), and without iterability no distinctions would, in principle, be possible.

However, their conclusion does beg the question as to whether *comparing* corporate identity with individual identity is the right way of approaching the normative implications of corporate decisions and actions. In the previous section, it was shown that the individual in corporations should not be conceptualised “as an independent or socially isolated decision-maker, but rather as a *social* actor embedded in a complex network of intra- and inter-group relationships” (Kramer 1991: 195). Thus, in keeping with the preceding analysis, one can reframe the traditional question pertaining to the nature of corporate responsibilities by asking what the emergence of a corporate identity can tell us about the nature of responsibilities within the workplace. If identity is formed in practice, then such an analysis must centre on the coterminous identity formation of corporate members, work practices, and corporations.

A Complexity Perspective on Corporate Responsibility: The Role of Moral Imagination and Critical Thought

An important implication of the analysis thus far is that, since we are dynamically differentiated across contexts, our individual responsibilities within a corporation cannot be equivalent to our responsibilities as people. This is because our corporate responsibilities are determined by our roles and identities within corporations, and are, therefore, framed within practice. This does not mean that aspects of our larger identity are not factored into work practices (if this were not possible, we would be nothing more than our role-identities). However, what it does imply is

content of our responsibilities are not only shaped, but also *limited* by context and history, and by the conditions that are necessary to sustain relationships of trust between various relational stakeholders. In other words, the boundaries that emerge in and through practice constrain our actions.

that our corporate responsibilities are first-and-foremost linked with our corporate identities, and not with some a priori ethical scheme. Thus, to summarise: within a corporate context, the behaviour and responsibilities of corporate members “can only be understood in the context of relevant group memberships, the systems within which groups are embedded, the power relations that exist between groups and the permeability of boundaries that define group membership [or identity]” (Paulsen 2003: 17).

The particular focus of this analysis will particularly be on this last point (namely, the permeability of boundaries), as social boundaries not only create and maintain certain behavioural norms, but also uphold patterns of social power (Elias 1994). As mentioned earlier, boundaries or constraints are inevitable: they are needed for identity to emerge, and in this sense, are enabling. When we speak of boundaries, we are, thus, also inevitably saying something about the identity of a given system. However, boundaries can also be used to maintain a given status quo, and can often be stifling. An important set of questions upon which we must, therefore, reflect when considering issues that are important to the business ethics field pertains to boundaries. Specifically, we should reflect on the type of boundary questions that we ask (or don't ask) of ourselves as corporate members and corporations.

This analysis addresses three types of boundary questions that have a direct impact on how we view issues related to corporate identities and business ethics, namely: (1) Are corporate boundaries too closed off from internal and external operating environments and stakeholders? (2) Are corporate boundaries too narrowly construed? (3) Are corporate boundaries flexible enough to cope with novel problems and environmental complexities? The analysis further suggests that when corporate boundaries prove to be problematic, critical and imaginative activities can help to address these problems. Before turning to these three specific questions, it is, therefore, necessary to say something about the nature of moral imagination and critical thought.

In a recent article, Hargrave (2009) argues that moral imagination does not only involve considerations of social processes, but is in itself a social process. More specifically, “[m]orally imaginative arrangements emerge through dialectical processes that are influenced by actors' relative power and political skill” (Hargrave 2009: 87). Therefore, contrary to the suggestions made in much of the extant literature, imaginative solutions to ethical dilemmas do not constitute a passive process, taking place within the minds of individual actors. Rather, imaginative solutions “emerge from pluralistic processes in which multiple actors with opposing moral viewpoints interact, and no single actor is in control” (Hargrave 2009: 90). Furthermore, because of the “lived tensions between contradictory perspectives” (Hargrave 2009: 91), as well as the relative power and political skill that characterises moral imagination, imagination necessarily contains an element of conflict. This conflict gives rise to non-linear interactions and unpredictable transformations of social identity. Though conflict is an inevitable part of this process, the degree of openness that characterises the political opportunity structures (cf. Campbell 2005) also impacts on the scope of critical and imaginative engagement, including the ability to successfully contest frames of meaning for the issues at hand, and “mobilise

the resources needed to achieve objectives” (both of which are characteristic of imaginative arrangements) (Hargrave 2009: 87).

This conceptualisation of moral imagination, which Hargrave (2009: 91) terms the “collective action model”, also has implications for our understanding of individual moral imagination. Hargrave argues that “morally imaginative actors recognize and integrate contradictory moral viewpoints, and also integrate moral sensitivity. . . [of] contextual considerations” (Hargrave 2009: 91). From this description one can deduce that a critical disposition is a necessary condition for moral imagination. This is because the skills needed for moral imagination, namely the ability to recognise and integrate opposing moral and contextual factors and perspectives, are also the hallmark of critical thought.

Using this general description of moral imagination, it is suggested that the three boundary questions mentioned above, can each be addressed by focusing on a specific function of imagination and critical thought. The typology suggested below construes the ethical task as follows: when boundaries are too closed, corporate members should engage in activities designed to stimulate retroactive moral imagination and critical engagement. When corporate boundaries are too narrowly construed, reflective moral imagination and critical reflexivity is needed to address the problem. When the boundaries that define corporate identities are too inflexible to deal with the environmental complexities, corporate members should attempt to engage in a process of proactive moral imagination and critical projection. Each of these critical and imaginative tasks can be stimulated by engaging in certain types of activities both on an individual level, and an organisational level.

Closed Corporate Boundaries: Normative Implications

The first boundary question pertains to how, and where, we draw the distinctions between me-you, us-them, or inside-outside. These distinctions (as has been shown) are essential for identity formation, but can have destructive effects when they are viewed in terms of an “either/or”, rather than a “both/and” logic. The main contention is that, when viewed in binary terms, identities tend to close in on themselves, and in the process, often end-up framing the outside as a hostile environment. Paulsen (2003: 19) attributes this phenomenon to self-categorization processes:

Self-categorisation processes reflect the fact that when people define themselves as a member of some self-inclusive social category or group (e.g. gender, class, ethnic group, team or organization), differences among individual group members are minimized. At the same time, differences between in-group and out-group members are accentuated.

Often we think of difference as a good thing, but what the above quotation demonstrates is that there is nothing within a system of distinctions, which implies empowerment or democracy (Stacey et al. 2000). In fact, when identity distinctions between groups are over accentuated (or, otherwise stated, when the boundaries of the system are framed as essentially closed) the effects on a corporation can be

devastating. Hoarding information within departments (the “silo-effect”), or maintaining mental boundaries which are embedded as collectively tacit assumptions (Hernes 2003) designed to promote cohesion and consensus (groupthink), are illustrative of situations in which the boundaries that demarcate work practices are framed as too closed. In such situations, corporate members have a duty to try to prevent their practices from having adverse effects on others and society.

Similar to work practices, corporations are also regularly portrayed as closed systems. Such a view creates the impression that organisations occupy the central position on stakeholder maps. This implies both that the organisation interacts freely with stakeholders on its own terms, and operates as a self-contained entity (Painter-Morland 2006). Such a view blatantly ignores the insights gleaned from systems theory and complexity theory. Of particular concern is the disregard for the complex, non-linear, asymmetrical interactions and interdependencies that exist between corporations and stakeholders. Stakeholders affect and are affected by corporations in many different ways. Though it is impossible to determine all these effects in advance, corporations nevertheless have a duty to try and remain open and responsive to stakeholder concerns and environmental demands.

From the above, we can deduce that it is imperative for corporate members and ethics officers to ensure that corporate boundaries and identities do not close in upon themselves. There is, of course, no external vantage point from which to determine whether this is happening or not. However, one can use the resources of the system itself in order to formulate a response. Cilliers (cf. Chapter 1) argues that within a fully-constrained system, there exists no capacity for complex behaviour. Therefore, when a certain work practice is no longer robust enough to cope with the complexities of its operating environment, or when it causes destructive conflicts, it is, as Collier and Esteban (1999: 176) warn, a sure sign to start planning as “open systems” in order to survive. According to them, the act of “planning as an open system” does not resemble a once-off organisational intervention. Instead it is a process of continual re-organisation in an effort to create greater flexibility. Greater flexibility allows organisational structures to become more loosely coupled, in order to better deal with current concerns such as globalisation, increased communication possibilities, technological change, financial innovation, freer trade possibilities, and heightened competition for market share.

Opening up work practices and creating greater organisational flexibility demands both that work practices be aligned with organisational purpose and that corporations be more responsive to environmental complexities and contingencies. To facilitate this process, critical engagement in the corporation’s systems, culture and history is needed. Critical engagement can help transform the iterative themes that define workplace narratives, which, in turn, may help to re-establish a sense of normative congruence within the corporation, as well as between the corporation and the environment. Critically engaging in a corporation’s identity also implies stimulating retroactive moral imagination, in a bid to generate solution aimed at re-establishing moral congruence.

As mentioned earlier, one of the characteristics of moral imagination, is the fact that it contests the frames of moral meaning that we use to define and evaluate

the issues at hand (also termed “framing battles” (Hargrave 2009)). These framing battles seek in part, to challenge the boundaries that define our practices. Critical engagement and retroactive moral imagination are a means of trying to achieve this aim, by focusing specifically on the narratives and cultural symbols (the iterative themes) that have come to define work practices. In other words, critical engagement and retroactive moral imagination present an active attempt to reconstruct and understand the past, in order to transform the future (Stacey 2003).

Traditionally, business ethics management programmes, in part, rely on quantitative measures such as compliance checklists and organisational culture audits, which are used to identify ethical problems (Painter-Morland 2008). However, according to Painter-Morland (2008), such measures fail to tap into the complex network of tacit beliefs that inform corporate behaviour and identity. As such, Painter-Morland (2008: 241–242) suggests a different, indeed, more qualitative type of information gathering, in order to gain “a sense of the values that inform behaviour in an organization’s internal system of relations”. She proposes that, if ethics officers wish to tap into corporate values, they should undertake the following forms of information gathering: they should analyse the stories that define a certain practice; make observations that are indicative of a given practice’s “rules, heroes, history, value and communication style” (Painter-Morland 2008: 244); gather cultural information through means of analysing texts such as newsletters, memos and strategic documents; analyse budgets in order to gauge what money is being spent on; and, listen to the jokes and humour that is employed in the workplace. These strategies help us to gain a better understanding of the iterative themes that define a given identity, as well as why particular values are important within a given practice (Painter-Morland 2008).

Though ethics officers attempt to explicitly intervene in corporate cultures in order to promote transformation, corporate members themselves should remain morally aware and morally critical¹⁰² of the manner in which iterative themes emerge and develop within a particular practice. However, it is also important to bear in mind that critically engaging with a system’s history (either directly through explicit interventions, or indirectly through moral awareness and evaluation) does not involve the intentional actions of free agents upon a system, but rather denotes a communicative process between corporate members. The reasons for this are threefold (Painter-Morland 2006): Firstly, intentionality assumes that “a group of agents can be isolated and be identified as *the* single cause of an event” (Painter-Morland 2006: 90). The uniqueness and complexity of events, however, make it impossible to fully articulate in language the tacit understanding that corporate agents have of the way in which they function, or should function. Secondly, it is impossible for any single corporate actor “to ‘step out’ of the web of unarticulated expectations, obligations and pressures that make an organizational culture what is, in order to change or challenge it” (Painter-Morland 2006 92). And, thirdly, even if it were possible for

¹⁰²Both moral awareness and moral judgement are characteristics of moral imagination (Werhane 1999).

any single corporate actor to fully identify all the aspects that determine a given corporation's iterative themes, identity or culture, this information would immediately feedback into the system and produce a number of new and unpredictable effects on the behaviour of employees. Despite these warnings, communicative processes between corporate members, nevertheless, provide a potent forum for challenging corporate identity boundaries. Merely raising difficult questions within a given practice already invokes response and presents a challenge to the status quo. Though attempts to implement radical, overnight challenges are perhaps unrealistic, there is still much merit in "tinker[ing] often, and insistently" (Painter-Morland 2006: xi), since small causes may have large effects in complex systems, such as corporations.

Corporate members must not only take cognisance of a given practice's narrative themes and cultural symbols, but also view these in relation to a larger community. In other words, corporate members must recognise that "people are not merely 'part of' the organization, but actually 'take part' in every aspect of its existence" (Collier and Esteban 1999: 177). Partaking in work practices generate and facilitate relationships with internal and external stakeholders. This implies both that accountability and responsibility is shared by all, and that corporations must seek to redefine its relationship with the environment, as one of symbiosis and adaptation (Collier and Esteban 1999), rather than [one of] disjuncture and otherness. In terms of the first implication, accountability is more productively viewed as accountability towards someone, rather than accountability for the failure of an action (Painter-Morland 2008, 2006). A reason for this is that this latter formulation still conjures up notions of autonomous agents undertaking intentional actions. Furthermore, if accountability is redefined as accountability towards people (including accountability towards external stakeholders), then the environment is, by implication, also an integral part of corporate activities. The fact that the boundaries between the corporation and the environment act as an interface that participates in constituting both the corporation and its environment, also implies that the focus of ethical evaluation should shift from the perceived core of the corporation to the periphery (Cilliers 2001, Collier and Esteban 1999).

Framing Corporate Roles: Normative Implications

When identity-constraints are too closed, corporate members not only develop a morally problematic sense of self and group identity in relation to a given environment, but also tend to frame their roles too narrowly with respect to this environment. This means that corporate members may not recognise or accept accountability towards stakeholders who are affected by their actions. In other words, when boundaries are perceived too narrowly, we may end up underestimating the scope of our responsibilities. Consider the following example (Frew 1973). In 1973, a behavioural scientist undertook a study, which illustrated the "ecologically schizophrenic" behaviour of employees who worked for a corporation that was known as a substantial polluter. He found that although each of the corporate members recognised and deplored the corporation's polluting activities, they

nevertheless willingly contributed on a daily basis to the problem through their work practices. A possible reason for this could be the way in which work practices are delineated. In terms of this example, broadening the perceived scope of the workers' identities would imply a concession that they are both employees and community members, and that their work identities (which are formed through practice) cannot be incongruent with their community identities.

In order to prevent us from framing our identities and responsibilities too narrowly, an attitude of critical reflexivity is needed. Critical reflexivity demands a constant awareness of how our identities, decisions and actions affect others. If we are constituted in and through a network of relations, our decisions and actions have a necessary political and ethical dimension. This is because we act upon and are acted upon by each other, a process which, within any social system, has decisive normative implications (Cilliers et al. 2002). In a business context, this implies that we must respond to stakeholders' interests, expectations and perceptions "in terms of an evolving sense of moral appropriateness that has to be nurtured within everyday business practice" (Painter-Morland 2006: 94). Therefore, critical reflexivity is in itself also a reflective imaginative activity, as it necessitates that we reflect upon the nature of this complex network of relationships within which corporate members and corporations are embedded; and, which further constitutes the relational context within which moral responsibilities and duties develop. This type of reflective, imaginative activity can aid us in determining the various stakeholder positions, as well as inquire into which stakeholders have not been considered in the delineation of a given practice (and hence, do not form part of our moral deliberations). In other words, critical reflexivity and reflective moral imagination allow corporate members and corporations to consider how they are to frame relationships, how they are to sustain these relationships, and whether it is appropriate to sustain these relationships (Painter-Morland 2006).

Trangressing Corporate Boundaries: Planning for the Future

When we speak of boundaries, we must not only question how and to what extent these boundaries inhibit or limit our responsibilities, but also how our sense of identity (of boundedness) enables us to undertake novel activities. Boundaries, as Hernes (2003: 39) reminds us, "provide the basis for effective action and change, particularly when actions are directed beyond the borders of the group." Just as we are able to use a given system's history and resources to transgress existing boundaries, so too can we harness the diversity of a given work practice in order to start imagining a better future. In other words, we can engage in activities that stimulate proactive moral imagination, which, in turn, allows us to think in novel and creative ways about the future. This helps in transforming the frameworks that we apply when apprehending the world (Cilliers 2005). Proactive imaginative activity is neither typified by a creative chaos (an anything goes approach), nor a radical abandonment of everything that came before. Indeed, it is a well-known complexity

insight that when changes to a given identity occur too quickly, the system crumbles – a phenomenon which (when translated into the language of business) is aptly expressed in the following quotation: “You can always tell that an organization is on the skids when it changes its name, and pays a lot of money for consultants to invent some ghastly new corporate identity”.¹⁰³

As opposed to being viewed as a form of creative abandonment or chaos, proactive moral imagination should rather be conceptualised as an activity that involves critical projection into the future. It is a critical task, since imagining the future involves an element of uncertainty or risk. However, as Luntley (2003: 325) states, “uncertainty reflects a real property of the situations with which we have to deal and about which we have to make decisions. It is not something that can be removed.” Luntley (2003) continues by arguing that “[o]ur decision making, under this orientation, is not then guided by the application of rules that erase uncertainty; it must be guided by a non rule-governed response to the environment, the response of judgement.” Though Luntley spends some time unpacking what judgement might mean in this context, one could, in principle argue (as does Werhane 1999) that judgement is a characteristic of imagination. According to this interpretation, the way in which we engage with risk is, therefore, “a function of the quality of our imagination” (Cilliers 2005: 264).

Because of the risk involved in proactive imaginative activities, tolerance of failure must be exercised by members within communicative practices in order to reduce the anxiety associated with risk, and stimulate action (Stacey 1996). To encourage risk-taking a climate of autonomy, freedom from interference and trust is also needed (Collier and Esteban 1999). Within the framework of complexity, autonomy is related to the degree of openness within a work practice for asserting an “I” identity which cannot be assimilated in the “we” identity. This allows for difference or “otherness” to manifest in interesting ways within a practice, underscored by a collective purpose. Freedom from interference and the development of trusting relationships also ensure that the asymmetrical power relations that emerge within practices foster the development of an authentic identity, rather than subvert distinctions. These measures facilitate the development of corporate work practices that operate in conditions far-from-equilibrium. And, it is a common complexity insight that, only as corporations move into far-from-equilibrium states, do emergent ideas, which give rise to creativity and innovation, become possible (cf. Anderson 1999, Chiles et al. 2004, McKelvey 1999).

However, openness must not only define a given work practice, but also the work practice’s relation to its environment. Critical projection can, therefore, be further stimulated by harnessing diversity not only from within a practice, but also between practices. The development of cross-functional task teams and engagement with external stakeholders can facilitate proactive imaginative activities. Here again, the boundaries between different practices and stakeholders do not dissolve, but rather allow for (enable) the emergence of distinctions (the flourishing of a constructive

¹⁰³http://thinkexist.com/quotation/you_can_always_tell_that_an_organization_is_on/179511.html;

diversity) that can transform practices in novel ways. Once again, this reiterates the point that meaning is located at the periphery, rather than the core of a corporation, and that adaptiveness is an important characteristic needed to create and maintain a healthy corporate identity (Collier and Esteban 1999).

The preceding analysis illustrates how corporate identities can easily become too closed, too narrow, or too static to deal with internal and external stakeholders and environmental complexities and contingencies. This means that corporate identities can – through virtue of how they are framed or bounded – block alternative courses of action and more ethical ways of being. Therefore, it is the emergence of corporate practices and corporations as a whole that should become the proper focus of business ethics. One way in which to address the problems related with identity formation in practice is to critically and imaginatively harness the system's resources in order to promote identity transformation in and through a complex process of relating. The transformation of identity always takes place via communicative practices, which are complex and dynamic, and which are characterised by asymmetrical and non-linear interactions between corporate members and structures. Therefore, though the above analysis helps us to think through the dynamics of identity formation and transformation, one must bear in mind that our critical and imaginative activities may have effects that we cannot determine in advance, and, hence, they contain an element of unpredictability. Ethical decision-making is, non rule-based and guided by the response of judgement.

Conclusion

The three processes that are related to identity formation and transformation are interdependent. For example, the more enabling the identity of a given practice, the greater are the chances that diversity within practices will be harnessed. This in turn might lead to novel and creative ways of thinking about the future, which could enhance the possibilities for outside stakeholders to be acknowledged. However, in order to prevent identities from becoming too inclusive or unstructured, identity formation remains constrained by a sense of individual discretion and organisational purpose. This is not to say that the corporate identity itself cannot change (indeed, self-organising systems are always in flux), but only that some congruence is needed between the various sub-systems and components that define an organisation.

Moral congruence cannot be guided by hard and fast rules, but emerges as corporate members respond appropriately and sensitively to the contingencies and constraints of every new business relationship (Painter-Morland, 2006). In other words, ethical decision-making “flows from piecemeal detailed attention to the particularities of situations and the attempt to bring those situations into stability with respect to some general requirement” (Luntley 2003: 326). Taking account of contingencies and constraints implies that corporate members are collectively entrusted with what Collier and Esteban (1999: 178) term “the two complementary referential aspects of the organisation – the interaction with the environment

and the internal interactions.” It is through “responding” to environmental demands and “purposing” to reinforce normative congruence that members contribute their values, interactions and expectations to corporate goals and practices (Collier and Esteban 1999). This process allows for simultaneous transformation and continuity of corporate systems. Continuity is not only the result of individual interactions, but also the result of the constraints that the emergent corporate structures place on the behaviour of individual corporate members. The feedback loops created by corporate structures guide corporate members and allow them to continuously adapt their behaviours to facilitate corporate purpose and to conform to behavioural norms. Therefore, we again see how boundaries and constraints are necessary for corporations to function. Collier and Esteban (1999: 179) summarise this insight as follows: “The differentiating responsiveness to the environment is ‘bounded’ by organizational purpose; the integrative pull of organizational purpose is ‘bounded’ by the needs of the environment”. Identity formation and transformation can, therefore only take place within a system that is characterised by both structure and a degree of freedom; by both identity and difference; and, by both the past and the future.

Identity and responsibility must be continuously renegotiated within the complexity understanding of corporate emergence. Such an understanding also has implications for how we think about ethics. Ethics can no longer be viewed as the evaluation between right and wrong (on the grounds of a priori principles). Rather, the key to understanding ethical decision-making, informed by an orientation that acknowledges complexity, is wise judgement. Wise judgement is not constituted by a grasp of ethical rules and principles (Luntley 2003), but by the ability to partake in imaginative and critical activities aimed at “finding salience in the particularities of situations” (Luntley 2003: 326). Ethical competence rests upon a perceptual competence, and the skill to attend to things that a “novice fails to see” (Luntley 2003: 326). The ability to recognise and integrate opposing moral and contextual factors is also essential to this understanding of ethics, and in practice, translates into the continuous negotiation of differences and identities in corporate contexts. Such negotiations are aimed at promoting openness to difference and respect for difference. In line with this, Rorty (1999: 89) describes moral development as a matter of “re-making human selves to enlarge the variety of relationships which constitute those selves”. This, however, will only be successful if the history, culture and structures that define a given corporation, simultaneously contribute to the maintenance of its identity.

The preceding analysis poses several challenges to the normative basis of business ethics. According to this analysis, moral responsibility should no longer be understood in terms of the autonomous decisions and actions undertaken by rational, intentional agents; but rather in terms of the context, embedded systems, and boundaries that define corporate identity. Only one prominent question in the business ethics literature (namely: “Can the concept of moral responsibility be extended to corporations and their actions?”) is challenged and addressed in this analysis. However, this radically immanent complexity understanding of moral responsibility also holds challenges for many other topics in business ethics, including big topics

such as sustainability, governance, and the nature of capitalism. Perhaps a question which follows directly from the preceding analysis (and which is related to the traditional question concerning corporate responsibility), is how one is to think about accountability in the context of corporate wrongdoing. In a sense, the preceding analysis serves to exacerbate, rather than resolve, “the problem of many hands”. However, if we view the phenomenon of distributed agency as a consequence of complexity, rather than a problem to be solved, the only meaningful conclusion to draw is that we need to find new ways of dealing with corporate wrongdoing and other issues related to corporate accountability. The notion of responsibility developed in this paper should not serve as an excuse for corporate wrongdoing, but should rather strengthen our commitment to ethical behaviour. Indeed, on this count, responsibility is a verb demanding both the development of our critical and imaginative faculties, and constant vigilance over our perceptions, decisions and actions. Such a notion of responsibility, therefore, raises the bar for business ethics.

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Chapter 10

Business Ethics from Below: Rethinking Organisational Values, Strategy and Trust

Hans Müller

Introduction

Complexity is a common feature of the management of organisations in contemporary society. The complexity is both external and internal to the organisation. Complexity also features in the problem of determining what the boundaries of an organisation are. Understanding complexity in and around contemporary business organisations requires revisiting the notion of strategy and of organisational identity or culture and values. The requirement of thinking about complexity in organisations and specifically business organisations also opens up business ethics definitions and debates in a new way.

Operating in a competitive environment requires constant change from organisations. If the competitiveness is global, then change in markets, suppliers, products and multiple aspects of the organisational environment are endemic. Internally, large multinational organisations also tend to exhibit more and more variation and specialisation, with many different business plans being executed simultaneously in order to remain competitive in different geographical areas of the world and with different types of business competencies. Flexibility is a key requirement. Exposure to global competition means that change within organisations is rapid and unexpected, and this leads to even more internal difference. Mergers and acquisitions add to these effects. In fact, the boundaries of organisations are shifting all the time in that “chains, clusters, networks and strategic alliances” dilute the notion of organisational boundaries (Thompson and McHugh 2002: 150). Difference within is no longer necessarily to be smoothed out but sought and even enhanced.

Whether one agrees with Castells that these are the effects of “informationalism” (1996) or those arguing for the notion of a knowledge economy – Mokyr (2004) provides an excellent economic history of the notion – is beside the point. It is clear that internal flexibility and external volatility and turbulence create a

H. Müller (✉)

Centre for Knowledge Dynamics and Decision Making, Stellenbosch University,
Stellenbosch, South Africa
e-mail: hpm@sun.ac.za

significantly more complex challenge for the management of organisations. The many levels of internal and external diversity and difference within an organisation mean that retaining or establishing identity becomes a more significant challenge than ever. Castells (1996: 151) calls contemporary business organisations “network enterprises”. Network enterprises have to produce flexibly, deal with changing configurations of corporate size and interaction with smaller and medium firms, come to terms with new methods of management, and be able to get the best out of inter-firm networking and corporate strategic alliances (1996: 152–164). Basically the organisational model shifted “from vertical bureaucracies to the horizontal corporation” between, we might add, different, changing and assertive components of organisations (1996: 164). For the sake of sustaining identity within an organisation, decision-makers within the organisation have to focus on keeping a sense of direction (or strategy) and a sense of coherence (or culture) in a context of turbulence or increasing complexity.¹⁰⁴

Turbulence is often seen as a threat to strategy processes in organisations. Turbulence implies unpredictability and that means that meaningful strategy cannot be developed, as the assumptions on which any particular strategy is built cannot be held constant. Even if strategy is seen as an emergent process à la Mintzberg and others (Mintzberg 1994, Mintzberg and Waters 1985), turbulence brings with it uncertainty. Severe turbulence is often regarded as making strategic action impossible.

In this context, Boisot (2000, 2003) and others (Ashmos et al. 2000, Montuori 2000) argue that extreme turbulence can be dealt with, if the strategies designed and implemented are such that they can absorb complexity and if these strategies do not attempt to reduce complexity unduly. Strategy is often seen as the task of reducing complexity and creating a framework for simplified decision-making on an operational level. When this is not possible, the conclusion cannot be that it is simply useless to think about strategy. The notion of the absorption of complexity provides an avenue towards understanding that it is not necessary to give up on strategy in turbulent environments.

If it can be assumed that reducing complexity where possible – and absorbing it where not – is good practice, business organisations and business leaders need to adapt their understanding of actions aimed at shaping organisational and corporate values and business ethics. Corporate or organisational values need not be an explicit part of the management agenda to prevail as they are, of course, created and sustained in the everyday operations, patterns and decisions of the organisation. Organisational culture, and tacit values that prevail without explicit attention to them are often governed by aims that are equally dependent on the assumption of stability. In fact, especially where no explicit attention is given to organisational and corporate values, these values are by definition a latent expression of the dominant

¹⁰⁴Although the argument that follows also applies in many ways to organisations that are not business oriented, the emphasis here is on business organisations.

patterns of the organisation and, if the processes within the organisation are predicated on stability, the values will follow suit. Ethical decisions function in the same way. Strategies that attempt to deal with turbulence will be held up or undermined, if the values that underlie existing patterns are not reflected and acted on. However, if initiatives around values are set up well, they may create better conditions for strategies to succeed in extreme turbulence.

The types of values that will support strategies that are suitable for turbulent conditions will require acknowledgement, incorporation and commitment to the internal diversity of the organisation. Difference can actually be good and should not have to be kept quiet in a singular dominant culture. The types of strategies that are suitable for turbulent conditions will equally require strategic diversity. However, this is a threat to control systems, to codes of conduct and explicit business ethics, to organisational integrity as often understood by managers and too much of what is understood to be management itself. Therefore, a revision of the role of trust in organisations has to be undertaken as well. Most of the trust literature focuses on trust between individuals in teams, networks, projects, etc. and on the trust that employees or workers in organisations have in the organisation and in the institutions that surround the operations of the organisation. This is all very relevant to the challenge of diversity in organisational strategy. However, the trust, or often more pertinently, distrust, of the employees and workers are a relatively unexplored aspect of trust. We may call this organised distrust. This has to be considered in effecting the kind of organisational change that will support the absorption of complexity into strategy that is needed in conditions of extreme turbulence.

Obviously there is a difference between what managers and decision-makers say about the nature and history of their strategies and what actually happens, and there is an equally significant difference between how strategies are actually formulated and executed and how theorists and advisors think it should be done.¹⁰⁵ One has to distinguish between dominant post hoc description, dominant practice and dominant normative theory, with many variations around each of these three levels of differentiation. The dominant post hoc description still seems to emanate from a rationalist revamp of the mostly messy and emerging dominant practice. Normative theory seems to be catching up with dominant practice, but has something to offer in that it is more reflexive and may be able to provide models that give a better overview of the process and requirements that can be so confounding to practitioners.

¹⁰⁵The level at which the strategy process is formulated and what it is focused on comes into play here. It may seem obvious that lower-level strategies can anticipate higher levels of predictability than higher-level strategies. At a functional level, strategies seem simpler than at the business, corporate or network levels of strategy (to use De Wit & Meyer's distinction between levels of strategy, 1999: 9) as the number of possible factors influencing the strategy increases with every expansion of the reach of the strategy. Arguments that go exactly in the opposite direction may also be advanced. Even though it may seem that functional-level strategies deal with more predictable and defined contexts, it may well be that major shifts are taking place without warning exactly at the functional level relevant to, for example, retail marketing strategy to youth in a particular country. These changes could be evened out on the aggregate level at business or corporate level. Therefore the arguments advanced here are deemed to be relevant to any level of strategy formulation.

In what follows I will attempt to reflect on dominant practices from the perspective of the theoretical material on strategy that is available and eventually from the perspective of a particular social theoretical argument. There is a normative and practical conclusion to the discussion in that I argue for the alignment of organisational values with insights from strategy. The argument for a broader view of business ethics is part of this discussion. Behaviourist views of business ethics that define business ethics in terms of the dominant economic ideology of the time ignore the fundamentally holistic nature of any ethical discourse. This is not only hazardous but cannot be sustained – ethical claims either become meaningless as ethical claims or draw in wider issues of a holistic nature (wider than the specific priorities of any one business organisation).

I will not spend much time on discussing how managers and executives explain strategies that worked and those that did not work to boards and shareholders (and sometimes to themselves!). Recounting stories of how strategies worked out and explaining why they did not is an important process that includes more than corporate politics, stock-market spin and self-belief. It is also a process whereby beliefs about the nature of human control over events are entrenched. March puts it well: “In a society, based on reason, rationality, and a conception of intentional human control over destiny, decision making [and for that matter, strategy] is a sacred activity” (1994: 216). To unravel the post hoc recounting of the story of how rationality and intentional human control have delivered (or not delivered) the results that the strategies were meant to deliver is a different topic.

Strategy and Turbulence

In the past, the dominant normative theory used to describe strategy as the process of a comprehensive review of all the relevant facts and a particular business perspective taken on those facts that would be enable exploitation of opportunities that become evident in the analysis of the facts. The sequence of discrete actions was functionally defined and normally consisted of five steps, i.e. setting objectives; strategic programming; budgeting; monitoring, control and learning; and lastly incentives and staffing (Chakravarthy and Lorange 1999: 114–116). Implementation is planned and executed as a set of pre-defined tasks. Andrews puts this succinctly: “The implementation of a strategy comprises a series of sub-activities that are primarily administrative” (Andrews 1999: 77). It starts with gathering the facts that are deemed to be relevant to the issue. These facts are available and their relevance is clear.

There are very few strategy experts and practitioners in today’s globalised and changing business environment that would still make a general call for strategy formulation that assumes that one is able to plan and then execute the plan as if these are two distinct stages and as if one knows what to plan for and what the consequences of planning and implementation will be. De Wit and Meyer (1999: 16, 96–139) talk about 10 “strategy tensions”, of which one is the tension between “emergentness” and “deliberateness”. However, most managers and strategy experts

would use this kind of distinction only as a foil for making the point that, although all strategy formulation has to start with some assumptions, this is only a start. The intention in strategy formulation is no longer to come up with 5-year strategic plans that assume a direct relation between plan and effect. Complexity is part of life. Therefore, strategic planning as a subject or discipline has been replaced with concepts such as “strategic intent”, “emergent strategies” and “entrepreneurship” (Boisot 2003: 38). These notions come from a variety of sources (Hamel and Prahalad 1989, Mintzberg 1994, Mintzberg and Waters, 1985, Pinchot 1985), but are all an expression of the realisation that predictable change and predictable outcomes of strategic initiatives are mostly improbable or usually unlikely.

A broad theoretical consensus therefore exists that strategy formulation in most contexts has to accommodate and integrate emergence as part of the process in order to have any sense at all. De Wit and Meyer (1999: 98) further distinguish between the planning view of strategy (described above) and the incrementalism perspective. They point out that incrementalists believe the planning view puts too much faith in “deliberateness” and that this is “misplaced and counterproductive” (De Wit and Meyer 1999: 100). One might take the 1994 Special Issue on Strategy: Search for New Paradigms of the *Strategic Management Journal* as an indication of a watershed in normative theories of strategy.

There are many proponents of the incrementalist view, but two of the best known and influential have been James Quinn and Henry Mintzberg. Quinn is an explicit proponent of logical incrementalism and describes it thus:

... logic dictates that one proceeds flexibly and experimentally from broad concepts toward specific commitments, making the latter concrete as late as possible in order to narrow the bands of uncertainty and to benefit from the best available information. (1999: 133)

Mintzberg is severely critical of the planning perspective and argues for the “invention of new categories” and against strategic planning as this “has been and always will be dependent on the preservation and rearrangement of established categories ...” (Mintzberg 1994: 107). He also argues that planned strategies seldom work out as planned and that allowing for emergence in the process of strategy development may well be more useful than trying to stick to a planned strategy.

To be able to integrate emergence in strategy formulation, a second broad consensus seems to be developing around the absorption of uncertainty. Strategy formulation cannot and should not only focus on the reduction of uncertainty, but is understood to be taking place within a range between the reduction of uncertainty and the “absorption of uncertainty” (Boisot 2000, 2003). Absorption of uncertainty is deemed to be part of strategy formulation in conditions of uncertainty. Uncertainty is the product of turbulent conditions.

Strategy in Turbulent Conditions

Polley (1997) points out that the use of the notion of turbulence in business can only be a metaphor and as such, it has to be used appropriately to dispel undue illusions as to the type of science with which one is engaging. He also points out that the concept

of turbulence carries with it two aspects that we would do well to keep distinct in our attempts to analyse organisations, namely notions such as attractors (associated with chaos) and the notion of bifurcation (1997: 456). I will take turbulence as a general metaphor indicating a large or infinite number of sources of variation in the environment of the organisation (see Landau 1944, where the physics of the problem found its first attempts at solution) or as “dynamic heterogeneity”, that affects both supply and demand (SubbaNarasimha 2001: 215). The point is that turbulence makes it impossible to predict and plan on the basis of those predictions. The causes of events are latent in the system, but can only be known after the event. This creates obvious uncertainty and concomitant discomfort and conflict (Boisot 2003: 46).

Boisot (2003: 47) argues that the appropriate response to the discomfort and conflict emanating from uncertainty should not be to simplify and consolidate positions, but to absorb¹⁰⁶ the uncertainty by becoming a learning organisation. Of course, this means managing to operate much closer to the edge of chaos than is comfortable. Furthermore, he points out that managers are not trained to do so, as most management training is analytical (Boisot 2000: 131). Boisot’s conclusion is that popular business literature shows evidence of an awareness of the need to move closer to the edge of chaos in that it calls for internal competition, agility in large firms and interpersonal networking (Boisot 2000: 132). This awareness has to be integrated and developed.

That variety within the organisation is a requisite for organisational success in changing environments is a conclusion that Lawrence and Lorsch (1967) came to long ago. This is clearly consistent with the cybernetic law of requisite variety (Ashby 1956) and Weick’s (1995: 35) point about the workings of a contour gauge. If this awareness is couched in the language of evolutionary change (as is often the case in cybernetics, organic adaptation and contingency theory), one has to caution that there is also something like “organisational mortality” (Montuori 2000: 70) and that entropy in organisations is only turned around or stayed by deliberate action. Organisations are not natural structures (Drucker 1993: 48–67, Giddens 1986: 263–274, Morgan 1986: 74) and, although we recreate them all the time (Weick 1995: 32), we need to be aware of what we are doing and constantly manage these processes, if they are to develop in a particular direction (Weick 1995: 182).

Contingency theories of management (Burns and Stalker 1961) have, in principle, a ready answer to the problem of turbulence, as they propose adaptation to the turbulence in the environment by management becoming more complex and varied, and empirical analyses framed in these terms also find that adaptation is taking place in this pattern (Größler et al. 2006). However, agency (whichever way this

¹⁰⁶The notion of the ‘absorption of uncertainty’ in strategic thinking comes from Pascale (1990) as noted by Boisot (2003: 47). However, absorption of uncertainty has a wider reference than strategic thinking as it is also used in data analysis, computer science and the natural sciences in general. There it seems to refer to the problem of inaccurate, false or incomplete information and how this is dealt with in models and analyses.

may be conceptualised) is not reflected upon sufficiently in such evolutionist theories and therefore attempts at thinking about the choices made when managers and decision-makers realise that organisations are facing increased turbulence are of interest (Ashmos et al. 2000).

The goals of organisations that set themselves up to deal with increasing complexity are stated (in lieu of a summary of insights from organisational complexity writers) as follows: “with multiple and conflicting goals, a variety of strategic priorities, increased connectivity among people, as well as structural variety intended to maximize the flow of information and meaning in the organization” (Ashmos et al. 2000: 577). At the same time others emphasise that group psychology and leadership direction are also important, for when “. . . turbulence increases[,] leaders must increasingly emphasise that some level of control is possible” (Smith and Saint-Onge 1996: 13). Obviously some organisations come to the conclusion that simplification is the solution to turbulence, but these organisations “. . . defy the prescriptions of Ashby (1956) and Weick (1975)” (Ashmos et al. 2000: 280).

The success of organisations that aim to absorb complexity rather than reduce it is evident from the empirical material studied by Ashmos et al. (2000) and one could also take cognizance of the results of adaptation studies to support this point (Größler et al. 2006). This supports the Boisot argument that increased turbulence can be dealt with in strategy processes, if the strategies are set up to absorb complexity rather than reduce it. However, other than the general conclusion that “managers will have to rethink their organization’s very identity” (Ashmos et al. 2000: 292), what the values of such an organisations will have to be and how they are to be approached are not made clear.

Values and Organisation

Management has become more sensitive to the need for reflection on the values of the organisation since Schein (Francis and Woodcock 1990, Schein 1987, 1990) and since recipes for the “cultural redesign” of organisations in contexts of uncertainty have been made available (Dolan and Garcia 2002, Dolan and Richley 2006). These recipes are mostly oblivious of the complexity of values *as a discourse* that becomes meaningless if not tied to the lifeworld and the required communicative rationality of the lifeworld – nothing is such a giveaway on the instrumentalist logic than the notions of “redesign” and “implementation”. Furthermore, these recipes are often devoid of indications of what content these values would have to enable organisations to manage strategically in turbulent conditions.

Types of Value Discourses in Business Organisations

The value discourses in organisations can be categorised under four types. The *first* deals with business ethics. Business ethics is, of course, more than the discourse on behaviour within the workplace and includes what Frederick (1995: 210) calls

“philosophic ethics” and “responsibility ethics”. However, within business organisations and in the training of managers in business schools, behavioural ethics holds sway. The *second* value discourse deals with the values individuals bring to business organisations by virtue of having a cultural and social identity. This may range from being a young female engineer to being Nigerian and all possible cultural and social connections combined with individual and personal traits. Human resource management and cross-cultural management experts are mostly seen as having to deal with the issues arising explicitly from this discourse. The *third* discourse that is related to values deals directly with the culture and values of the organisation as a whole. It obviously relates both to business ethics and individual and social identity issues, but tries to align these to the mission and reason for the existence of the particular business organisation. It is often an instrumentalist type of discourse. This is the discourse that we are primarily interested in this article. The *fourth* discourse deals with the values found in business organisations as an embodiment of the system from which they emanate, i.e. the capitalist economy. This discourse has an impact on all three the other discourses in that it sets boundaries that are tested frequently.

The Relationship Between Organisational Values and Organisational Strategy

In this chapter I argue that business organisations and business leaders need to adapt their understanding of actions aimed at shaping organisational and corporate values. If initiatives around values are set up well, they create better conditions for strategies to succeed in extreme turbulence. However, the very notion of *common values* may be a mistake, if it is taken to imply that values are understood and driven as the basis of the reduction of complexity and uncertainty. Actions aimed at shaping organisational values should deliberately focus on values that enable organisations to absorb uncertainty and complexity. This argument is now developed further with reference to Jürgen Habermas’ (1981) distinction between system and lifeworld and his characterisation of the lifeworld as “stocks of knowledge” with a different logic of rationalisation than the logic of rationalisation appropriate in system integration.

Common Values in Business Organisations

Business organisations are part of, and more specifically a function of, the more general system of the capitalist economy. The differentiation between economy, politics and religion is probably the single most important process of institutional differentiation that led to the development of modern Western society. A social systems point of view insists that the economy has a particular binary code (Miller 1994: 106) and that this is not incidental. It is also not without consequence. When fully

developed, the binary codes function as constructions of the totality without boundaries. Such autopoietic social systems function in such a way that everything that becomes relevant to a particular system is interpreted in terms of the relevant binary code and therefore made contingent (Luhmann 1986: 78–80). The environmental stimuli are also instrumentalised and objectified within a system that is set up to differentiate, code and thus reduce the complexity that comes with social phenomena. The capitalist economy is efficient because it reduces social things to commodities with market values. Business organisations are effective enactments of that logic as they can reduce complexity by being business organisations and not families, welfare organisations, religious organisations or sporting institutions at the same time. That is why no one can ever argue that they did not know that the business that they work for has to make money (Luhmann 1982: 75). It is an institutionalised part of the reason for the existence of business organisations.

It is important to make this clear whenever organisational values are to be analysed, since the concept of values seems to carry a baggage that makes it sound either sentimental and irrelevant to hard-nosed managers, or mythical and profound to enthusiasts. It is clear that the consequence of the first perception is lack of commitment on the part of management. The enthusiasts, on the other hand, create the problem of unfulfilled expectations well described by Burdett:

... a values orientation, presented as a means to orchestrate a common mind set and where the *other critical elements of culture* are not taken into account, is unlikely to have lasting impact. Simplicity, without consideration as to the holistic nature of the challenge on hand, is inevitably a recipe for failure. And yet managers, in attempting to provide a behavioural platform congruent with the organization's strategic intent, focus on values with the clear expectation that somehow, magically, everything else will fall into line. The reality is somewhat different: a car may well have a good engine but if the transmission is damaged it still will not run. (1998: 36–37, my emphasis)

The issue is what the other elements of culture are that Burdett refers to. One such element is the disjunction perceived by many managers between the values discourse and business imperatives. A better understanding is needed of the interaction and dynamics of organisational values and the world outside the business system. This should enable both the hard-nosed and dewy-eyed to take a more appropriate stance in organisational values discourses.

There are two reasons for wanting to do this, which are relevant here. The one is that values discourses will be empty at least or alien at worst, if the connection between values and the wider world of the organisational culture is not taken into account. The second is that the specific requirement for strategy success in turbulent environments is that values that enable the absorption of uncertainty are more difficult to cultivate than values that enable the reduction of uncertainty. My view is that Habermas provides a good structure for insights that could deal with these problems.¹⁰⁷

¹⁰⁷The works of Giddens (1986, 1991) or Bourdieu (1977, 1990) are other possible options.

Habermas

The explicit values of business organisations are often a mix of the necessary values that these business organisations have to have by virtue of being businesses and the values that seem right in order to demonstrate the humanity of the organisation. This is not as ridiculous as it may seem. The problem is the fact that these elements are often a jumble. It is important to understand that the logic of instrumental reason is needed in business organisation. It is even more important to understand that logic has a history and that the values that emanate from it are connected to choices that accumulated over time. If the real and undiluted values of the capitalist business organisation seem to be a threat to the humanity of the society within which it is functioning, Frederick (1995) argues that such values were not original to business. Habermas argues that such threatening values are not irreversible if the connection between instrumental rationality and communicative rationality is not lost in a violent overthrow of the logic of communication that is aimed at understanding (Couture 2002). One form of such violence will be the *imposition* of organisational values.

Habermas' Conceptualisation of the "Lifeworld" as a Critique of Social Systems Theory

To understand this argument some attention must be focused on Habermas' distinction between system and lifeworld. This distinction enables an explanation of change in system dynamics and change on a fundamental societal level. Social complexity is constantly developing and one of the most important dynamics relates to the relationship between clearly demarcated and seemingly independent systems (or sub-systems depending on your terminology) and what may be called the "lifeworld" from where these systems come and on which systems depend for their creation, existence and change. Here it should be no surprise that reference is made to the debate about system and lifeworld that raged between Luhmann and Jürgen Habermas in the seventies (Habermas and Luhmann 1971).

Habermas develops the idea of communicative action and especially the notion of the lifeworld as another aspect of social interaction in modernity next to that of systems. Communication is not only determined by systems and the meanings created in systems. Eventually all meaning depends on the lifeworld. The relevant point around which Habermas' critique of Luhmann revolves is whether Luhmann can access the "communicative everyday practical knowledge" which individuals employ to make decisions if he does not incorporate a theory of action and thus change (Habermas 1988: 84). By distinguishing the lifeworld from the sub-systems making up the modern societal system as a whole, Habermas opens up the space for understanding the role and modern nature of practical knowledge. In his view the lifeworld has very much been part of the development of the functionally differentiated modern society. Habermas' distinction between lifeworld and system is meant as a critique of functionalist reason (which would include systems theory).

Habermas argues that one can only understand modern societies if one understands that social integration and system integration have been separated as social processes. Durkheim

directs our attention to empirical connections between stages of system differentiation and forms of social integration. It is only possible to analyse these connections by distinguishing mechanisms of coordinating action that harmonise the action orientations of participants from mechanisms that stabilise non-intended interconnections of actions by way of functionally intermeshing action consequences. . . This distinction between social integration of society, which takes effect in action orientations, and a systemic integration, which reaches through and beyond action orientations, calls for a corresponding differentiation in the concept of society itself. (Habermas 1987: 117)

“Action orientations” refer to the lifeworld, while “action consequences” refer to social structures and systems.

The lifeworld is understood to be the horizon within which all communication takes place and is possible. The process of coming to understanding takes place against this background. The lifeworld concept is defined as “background knowledge that must tacitly supplement our knowledge of the acceptability conditions of linguistically standardised expressions” which is “*implicit*”, “*holistically structured knowledge*”, which “*does not stand at our disposition*, inasmuch as we cannot make it conscious and place it in doubt as we please” (Habermas 1984: 336, his italics). These “stocks of knowledge” (Ingram 1987: 116) are handed down in culture and language. Changes which affect culture and language obviously affect the lifeworld as well.

Rationalisation and the Lifeworld

In general terms, in real life people cannot objectify the whole of the lifeworld within which communication takes place. The lifeworld is the horizon within which communication takes place. On the other hand, we use and review aspects of the lifeworld continually in our attempts to make sense of life.

Aspects of the lifeworld are reviewed primarily when a loss of meaning threatens “cultural knowledge”, when social conflict and anomie threaten social integration and when experiences of alienation and psycho-pathologies threaten socialisation and identity (Habermas 1987: 140–141). But our ability to reflect on problems of social integration becomes greater when society is in the process of differentiation and when prescriptions of an “opaque source of authority” (White 1988: 98) are no longer strong enough to control the process. This is the case only in “late modernity”.

Rationality is not only present in the instrumental rationality of the functional systems. Reason is also part of the way in which modern people solve problems, which go beyond the functioning of those systems. The differentiation of types of rationality in terms of their relation to communication and the lifeworld is crucial (Habermas 1984: 238). The rationality of functional systems is not the rationality at work in communicative action. Communicative rationality is orientated towards

understanding and this is the “preferred” mode of rationality in modern lifeworld contexts.

Society, individuals, and groups are continuously at work on formulating and reformulating common understandings, on coordinating action and social integration, and on formation and development of personal identity and socialisation (Habermas 1987: 135–140). But in non-modern societies the cultural knowledge, social norm formation and personal identity were integrated with each other and with system integration. Modernisation has brought about the uncoupling of social integration and system integration.

[T]he further the structural components of the lifeworld and the processes that contribute to maintaining them get differentiated, the more the interaction contexts come under conditions of rationally motivated mutual understanding, that is, of consensus formation that rests *in the end* upon the authority of the better argument. . . . (Habermas 1987: 145, his italics)

This process leads to the lifeworld being gradually rationalised and differentiated. Modernisation is therefore also a process of differentiation of the lifeworld and not only of functions and systems.

However, the uncoupling of systems from normative questions appears to destroy the all-encompassing lifeworld. “They congeal into the “second nature” of a norm-free sociality that can appear as something in the objective world, as an objectified context of life”. “[T]he social system definitively bursts out of the horizon of the lifeworld, escapes from the intuitive knowledge of everyday communicative practice, and is henceforth accessible only to the counterintuitive knowledge of the social sciences. . . .” (Habermas 1987: 173). However, on a theoretical level, this appearance can be unpacked with the help of a lifeworld perspective.

The second nature of a “norm-free sociality” leads to a situation where change in the lifeworld has often been seen as dependent on the change in the systems. Habermas claims that “the opposite is true; increases in complexity are dependent on the structural differentiation of the lifeworld. . . .” because every new “mechanism of system differentiation must, however, be anchored in the lifeworld; it must be institutionalised there” (Habermas 1987: 173). The process of institutionalisation of systems in the lifeworld can only come about if the lifeworld is sufficiently rationalised and differentiated itself to be able to accommodate the new level of system differentiation.

Communicative Action in Modern Society

Habermas holds that the progressive rationalisation of the lifeworld in modernity makes it possible for social actors to reflect on society and to reflect on some of the common understandings, the norms and integration and the processes of socialisation¹⁰⁸ that make up society.

¹⁰⁸The lifeworld and communicative action can be rendered incapable of providing answers to social problems. When the lifeworld is instrumentalised and seems to be just another sub-system

Functional systems are the easy solution to the problems of contingency created by modernity as they code and decide much of the meaning that we deal with. Most decisions made by modern actors are patterned and need to be routine. The complexity of modern society is such that it makes careful reflection of every aspect of life impossible. At the same time, the authority of tradition or an elite class can no longer take over the responsibility of actors in modern life. Therefore, when one takes the contingency of meaning in modern societies into account, a very necessary complement to the differentiation of systems is found in the differentiation of the lifeworld. This is the arena in which the functionally differentiated systems are anchored.

The notion of the uncoupling of systems from the lifeworld may seem to go against the above argument of the necessary anchoring of systems in the lifeworld (Baxter 1987: 69). But as Baxter points out, “[b]esides the inputs of labour-power, demand, taxes, and mass loyalty, Habermas acknowledges that the economic system depends on certain patterns of value and motivation that are required for successful action within economic organizations, and that the political system depends on legitimisation” (Baxter 1987: 72). These “patterns of value and motivation” are no longer necessarily prescribed by authority and tradition nor by the instrumental logic of the systems which depend on them. This opens up scope for consideration of value discourses not defined by the logic of functional differentiation.

Strategy and Types of Organisational Values

The ambivalences of the organisational values discourses in modern businesses can be illuminated to some extent by a discussion of Habermas’ ideas. As indicated earlier, there is a need for the alignment and reduction of values complexity in organisations. In business organisations this will be a business-oriented reduction. However, if the tie between the system values and their origin in the lifeworld is lost, it may be threatening or at least empty talk for managers to assume that the values of the organisation are to be accepted without qualm by all. There has to be a shared understanding that the values of business are acceptable to society and to individual human beings. That means that it must be possible to at least perceive a link between system rationality and social rationality.

Such a link has to be established and continually re-established when an uncoupled system begins to hive off from the rest of social life into something that is only instrumental. If such a link is no longer perceived, attempts at fostering coherence and direction on the basis of values will turn on themselves and become, at best,

of modern society, it is impossible to activate the communicative action necessary for reflection on cultural, social and identity matters. Two phrases dominate Habermas’ views on the subject. These are the ‘colonisation of the lifeworld’ and ‘cultural impoverishment’. We do not need to consider these issues here as the problem at hand is not a critique of the capitalist system but coming to an understanding of the dynamic between system and lifeworld values from an organisational point of view.

useless exercises. If the link is perceived to be lost, there is only one way forward and that is a general rethink of what the organisation stands for in society, not just in the business system.

Coming back to the more specific issue of strategy, one would probably have to anticipate the need for such a rethink anyway when turbulence threatens an organisation. Turbulence creates uncertainty and uncertainty creates conflict. The instrumental logic that seemed to have worked is no longer self-evident. At the same time, it is not possible to have such a rethink and in the meantime to cease being a business organisation. It is also not possible to objectify the entire world of social assumptions or stocks of knowledge that give rise to the business system or any organisation. But there can be no limit to the questions that may legitimately be asked.

Coming to the issue of values that are appropriate to strategy processes in turbulent conditions, the aim of common values has been problematised from the perspective of handling uncertainty and complexity. Habermas can help us see what procedures we need to institute and what limits are to be set to be able to develop values that will facilitate the accommodation of the requisite variety, difference and conflicting goals within the strategic process. The key is the logic of communicative rationality. Organisations need not only the instrumental logic of the system within which they are positioned; to be successful in turbulent environments, social integration has to take place in addition to, or as foundation of, system integration. That means that the notion of common values has to include values that are not only oriented to the establishment and continuation of the system, but also oriented to the rational and human establishment of society, community and individuals. It furthermore means that the “common” in “common values” cannot mean that these values function as reductionist rules, but rather as a moving frame with space for diversity and difference.

Sushil (2001) argues that flexibility seems to threaten values in general. However, he argues apodictically and in keeping with Indian-style philosophy that flexibility cannot be value neutral, but that a higher understanding of these values is developed that “understand[s] the logic of these values on a spiritual plane and [apply] them in an holistic manner” (Sushil 2001: 865). This sounds vague and indigestible to most managers trained in a Western frame of mind – even though there is a growing demand for spiritual perspectives on management. What one can learn from this is not too far removed from Habermas’ perspective on the lifeworld! Values are to be developed in a rational discussion that aims to understand connections and is holistic in procedure. Understanding values on a “spiritual level” means that values enable flexibility and reflection on the relationships between the organisation and society at large.

Many have argued for involvement and participation (Montuori 2000:71) as basic to successful organisational strategy supported by a culture that recognises difference. This is not simply a ruse, but enables the notion of “drawing on the full intelligence of the organisation” (Wheatley 1994) that will encourage proactive change. There is also some evidence (Miron et al. 2004) that an inclination to be innovative does mean opposition to values that promote quality of performance.

These values are procedural in that they refer to the nature of relationships between members of the organisation and to the structure of the discourse. Recognition of individuality, respect for diversity and difference, and the commitment to reaching inter-subjective understanding on a social and system level are needed. Habermas' ideal speech conditions form the basis for the exploration of this. However, one may also frame these values in more substantive terms. Trust is one of the substantive requirements that would enable an organisation to generate useful strategies in turbulent conditions.

Trust, Strategy and Complexity

Trust is needed on a very real level (Loren 2002). If this does not exist and is not developed, the procedural framework proposed above will not be instituted in either the system or in its wider social context. Managers have to trust themselves and the people of the organisation to be able to engage in the kind of discourse that is required in communicative rationality – that is rationality that is not instrumentalised but oriented towards understanding and human life. If this is not possible, it is unlikely that the real conflicts between people and between the system and human sociality can be discussed and that a resolution of that conflict can be found that will legitimise the system in the lifeworld. It is also unlikely that the kind of conversation will be possible that will make room for diversity and difference.

The literature on trust is extensive and definitions of the notion are varied.¹⁰⁹ In this context the distinction between different types of trust is of immediate relevance. Trust is not only interpersonal but, at least in organisations, also institutional and structural. It has to be understood in systemic terms. However, the literature on this aspect focuses attention on the trust that employees and workers have in the organisation and in the institutions. This ranges from detailed analyses of the trust of employees in the management mechanisms and controls within which they operate, to the general context of modern society and its institutions within which this takes place.¹¹⁰ The more detailed analyses show that management mechanisms and controls have to be viewed as substantively fair, enforced equally and transparent (Bachmann 2003: 65, “institutional trust” here); that strong controls limit interpersonal trust as cooperation is seen as compliance to rules (Mayer et al. 1995: 727); and that employees taking on roles and attempting to learn and do new things need to be supported by the organisation (Möllering et al. 2004: 559).

All of this is very important and the literature is very developed on a theoretical level, while the empirical research is becoming voluminous. However, it seems that there has not been direct consideration of the situation where the employee and the

¹⁰⁹See Arnott (2007), Fukuyama (1995), Gambetta (1988), Kramer and Tyler (1996), Luhmann (1979), Nooteboom (2002), Nooteboom and Six (2003).

¹¹⁰See Beck (2001), (1988), Giddens (1991)

decision-maker have to feel trusted to be able to make decisions and follow a general strategic intent without absolute clarity (even to the agent or team themselves) about the alignment between particular actions and the necessarily vague strategic intent. Equally pertinent is the experience of many employees and workers in large organisations that the system within which they are supposed to be making fairly independent decisions in order to be able to pursue divergent aspects of a general strategic intent does not trust them. One might talk of structural distrust, not in the usual sense of individuals not trusting the structures, but in the sense that individuals experience active distrust in them emanating from the control systems of the organisation in which they operate.

There are a number of interesting starting points for consideration of this issue. Most of them emanate from the management literature around control and risk management in organisations. The arguments for flat structures, cybernetic feed-back loops and learning, etc. (Morgan 1986, are as good a starting point for these arguments as any) are all concepts that can be considered with a view to developing perspective on how organisational controls can be adjusted to limit the level to which employees feel distrusted by the organisation and are able to make decisions that are not patterned in a pre-existing framework and therefore appropriate for the absorption of complexity into strategy processes. It is clear that experiences of distrust lead to more distrust (Zand 1972, and a slew of research publications after that) and this has to be countered on the structural level as well.

A different angle is visible in Sitkin and Roth (1993). They have shown that organisational or institutional trust or mistrust also has to be understood in terms of the level of value congruity or incongruity experienced by members of the organisation.

Distrust is engendered when an individual or group is perceived as not sharing key cultural values. When a person challenges an organization's fundamental assumptions and values, that person may be perceived as operating under values so different from the group's that the violator's underlying world view becomes suspect. (1993: 371)

The question is what happens when the system is set up in a way that indicates distrust of any individual. If the bureaucratic procedures of an organisation are very restrictive or elaborate, it does communicate distrust. Such organisational control mechanisms carry latent value connotations that may limit or denigrate diversity and difference in strategic operations.

When one reads the material on organisational trust (trust of individuals in organisations) with that of Sitkin et al., an important deduction can be made. The argument about value congruity has to be reciprocal. If the individual can only be trusted when there is congruity between the values of the organisation and the values of the employees, and the individual can only trust the organisation when there is congruity between the values of the individual and the organisation, a reciprocal relationship has been established.

The argument has to be developed in more detail as it makes a significant difference whether the values about which there are divergent views emanate from operational, organisational culture, management, strategy, or social interface levels.

Reciprocal value congruity may be more of an issue in terms of the organisation's ability to work with strategic processes in turbulent conditions and thereby deal with complexity if the values about which there is divergence are about something like following procedure directly rather than something like being the best.

Conclusion

For organisations to be able to devise and realise strategies in conditions of complexity generally and conditions of turbulence in the environment specifically, there needs to be sufficient difference and diversity internally. In some ways, this diversity will be thrust on them by the networked and interlinked nature of business in contemporary global competition. But there is significant resistance to this from management attempting to keep it simple and coherent in ways that make the organisation more manageable. A better approach could be that individuals and small collectives like teams are managed within a values framework that does not constrain diversity but supports it, while at the same time also being clear and honest about the economic and business parameters within which this happens.

Conceptualisations and operationalisations of business ethics that are limited to behaviourist prescriptions and/or by the dominant economic ideology of business organisations in general will, for the same reasons, fail as ethical precepts. Many initiatives and initiatives aimed at business ethics development are internal to business organisation as a class of organisations and are bound to the meanings that are self-evident in that context but not necessarily in a wider societal and human context.

The point of the excursion into Habermas' conceptualisation of communicative rationality and the lifeworld is that establishing and sustaining a set of values that supports diversity, while also creating the basis for dialogue on the economic and business parameters of the organisation, require a different type of values initiative and ethical approach than that found in most organisations. It requires a process that is oriented towards understanding and cannot be sustained if an instrumental logic drives the entire initiative. This does not mean that instrumental logic does not apply and should not be incorporated, but that it should be based on or framed within a broader understanding that is developed in social lifeworld terms and not just in system terms.¹¹¹ In a homogenous context this part of the process happens tacitly. In a heterogeneous context, such a process cannot be expected to work if it is not conceived and articulated more explicitly. This may sound esoteric, but if one considers what really happens in strategic planning sessions that actually have an impact and that work well, it is very often the case that the framework understandings about social lifeworld issues develop during such processes. Very often, executives and managers complain that they have not really achieved much in the

¹¹¹These ideas are echoed in management literature: Bürgi and Roos (2003), Shaw (2002), Von Krogh and Roos (1995).

strategic planning process, but actually, they have established certain agreements on social lifeworld matters that provide the basis for the strategic intent that flows from the planning sessions. This has not been established empirically, but is certainly worth considering if one tries to explain the time and money that is spent on these organisational processes.

The process of reaching understanding on a social lifeworld level is even more dependent on trust than the process of developing and realising strategies that are not very clear and very specific. Both these processes are dependent on trust between individuals and between individuals and the organisations. From Sitkin and Roth (1993) we can see that value congruity between organisations and individuals is really important in the development and sustaining of trust in organisations. From the literature on turbulence and complexity, we can see that the types of values that are needed in complex and turbulent conditions have to support diversity and difference. A behaviourist view of business ethics that focus on codes of conduct will have to be redrawn in the same fashion and require a wider frame of reference. From the lifeworld literature, we can see that these values can only be created and sustained if there are processes that make dialogue and understanding possible (Downs et al. 2003, Hammond and Sanders 2002). Not all of these processes have to be to be explicit and designed, and the flow of these processes cannot be determined by an instrumentalised approach either. However, this matter needs to be given attention, if these processes are not to occur only when there is a crisis (Richardson 1995). The logic of the system of which business organisations are a part is just too strong and too instrumentalised in their movement towards seemingly self-evident goals to allow for real dialogue on the social lifeworld level. The logic of management that wants to keep control and order is an equally strong and parallel force that constrains diversity and imposes an identity on organisations that cannot deal with turbulence.

The simple truth of Cilliers' (2000: 26) overview of management issues in the light of complexity is that "[c]omplex organizations cannot thrive when there is too much central control. This certainly does not imply that there should be no control, but rather that control should be distributed throughout the system". This applies also to strategy processes in organisations that are not only complex themselves, but face an environment that is turbulent and therefore complex in that sense as well. All of this depends on the inclusion of values that support diversity in the culture of the organisation and the existence of reciprocal trust in the organisation between individuals, individuals and the organisation, and in the organisational controls and the individuals and groups they control.

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Chapter 11

Agonistic Engagements: Difference, Meaning and Deliberation in South African Cities

Mark Swilling, Pierre Roux, and Amélie Guyot

Agonistic politics seeks to advance radical democracy by highlighting and challenging the limits of “the possible”.
Edgar Pieterse, 2006

Dissenting voices receive no special privilege; they have to enter into the ‘agonistics of the network’, where their relevance is dynamically determined through competition and co-operation in terms of the history as well as the changing needs and goals of the system.
Paul Cilliers, 1998

Introduction

The burgeoning literature on complexity and complexity theory has emerged primarily (but not exclusively) from North American and European contexts where modernity and the Enlightenment project profoundly transformed the economic, technological, socio-institutional and cultural dimensions of these societies. Various permutations of complexity theory have provided a set of epistemological and ontological critiques of modernity with respect, in particular, to the impact and future validity of the so-called “grand narratives”. These critiques have challenged Cartesian logic and the promise of rational planning as the best means to achieve progress towards what has become historically associated with a Eurocentric pre-conception of an ultimate historical end point, namely the seemingly obvious so-called “good society”. In particular, it provided the basis for a systematic critique of an ethics that associated ethical conduct with adherence to the rules of conduct as laid down in rational plans, constitutions, laws and norms. But what are the implications of complexity thinking for societies that have only been partially transformed by the modernist project?

M. Swilling (✉)
Sustainability Institute, Stellenbosch University, Stellenbosch, South Africa
e-mail: swilling@sun.ac.za

African societies were transformed by colonialism and by this means incorporated into a global economy dominated by the modern capitalist economies that emerged out of the industrial revolution. But this did not require the total decimation of pre-modern institutions and the creation of modernist institutions to prepare the way for the birth of a predominantly middle class society and its consumerist cultures as happened in the global north? Africa is not where the bulk of consumers of manufactured products lived, so there was no need for the cultural, educational and institutional arrangements to develop such a middle class. Instead, partial modernisation and therefore “partial modernity” gave rise to a condition that most African scholars like to refer to as “hybridity” – a condition fundamentally different to a pre-colonial past, but equally fundamentally different to the promise of a Eurocentrically defined consumerist lifestyle and social structure. But what are the implications of this kind of context for complexity thinking and the ethical foundations of development theory and practice?

Although the aspiration to “become modern” is an all-pervasive theme in the development policy frameworks of a large number of development agencies and developing country governments in Asia, Latin America and Africa, many African scholars have begun to question the validity and utility of this aspiration.¹¹² To question the assumptions of modernist logics in African development theory and practice, these writers have used a deconstructionist mode because this makes it possible to see and write about hybridity, diversity, difference, multiple identities, and the seeming “irrationality” of everyday life in African cities in ways that are not possible via the clinically delineated and profoundly normative categories of mainstream social science and development theory when applied in the African context. For many of these writers, normative claims about acting in the name of the general good have often been legitimating masks for oppressive regimes, no matter whether these are externally opposed by Western agencies or self-imposed by corrupt dictators. For them, deconstruction is about de-legitimising all claims about positive normative value. Because action itself is suspect, so too is any notion of an ethics to guide action.

But is an ethics of rational rule-based action or its opposite which is a non-ethics of deconstruction, the only alternatives? Our argument is that complexity provides a third option, one that recognises that it is context that matters most and the capacity for judgement that are appropriate to the context.

Interestingly, although these African writers are obsessed with complex realities, they have not turned to complexity theory to make sense of these realities and the post-deconstructed implications of their critiques. They are interested in many of the things that complexity theory is interested in (i.e. contextual specificity, relational dynamics, the relational self, incompressibility, unintended consequences, difference, diversity, multiplicity/multi-nodal, richness), but not emergence. Emergence is where (extreme) deconstructionism and complexity thinking part ways.

¹¹²See, for example, Bekker and Leilde 2006, Pieterse 2008, Mbembe 2002, Simone 2004a, Simone and Abouhani 2005, Swilling et al. 2003.

The concept of emergence as it has been used within complexity theory has major ethical implications for development practice. As will be discussed in this chapter using a series of stories derived from developmental experience in the City of Cape Town (CCT), specific actions are undertaken within particular local contexts that result in emergent outcomes that can rarely be predicted from the outset. This, however, does not disqualify the need for claims about the possible results of action, it merely means moderating these claims in ways that leave considerable space for a wide range of probable outcomes. These kinds of claims can be tricky in highly politicized environments where political leaders are under huge pressure to reassure agitated communities, provide certainty to investors and shore up increasingly fragile regimes of legitimation. Nevertheless, as the title of the book by the great revolutionary thinker from Guinea put it: “Tell no lies, claim no easy victories.”

Following Paul Cilliers (1998), emergence in a “connectionist model” presumes that “society forms a network” and that discourses are in fact “pattern[s] of activity” within this wider network. This suggests a pattern that may not be predictable, but this does not imply an understanding of diversity as isolated random and accidental interactions (Cilliers 1998: 119). Emergence implies patterns that can be anticipated and therefore promoted, modified, initiated or suppressed by whoever may have interests in particular outcomes depending on their location within particular nodes in the networks. This notion of emergent outcomes is difficult for intellectual cultures that are concerned primarily with critique and therefore healthy iconoclastic pessimism, and when – as is the case in African societies – pessimism is reinforced every day by what actually happens in the lives of the vast majority of African people. For those who insist on difference for its own sake, or randomness or the in-built tendency to subvert what is so common at the interface between institutions and citizens in African cities, emergence implies the presence of structure and this, in turn, potentially creates a discursive framework for yet another threatening act by those with power who claim to know and who search out and co-opt any suggestion of a normatively preferred future.

The problem, of course, is that deconstruction may appropriately disempower narratives that legitimise kleptomaniac elites and ethically problematic development aid practices, but it can also obliterate the normative space that is required for purposive and concerted action to change things for the better. We are, of course, most conscious of the ethical dangers here of implying the possibility of a better future – it means such a future has to be specified (and implies the pre-existence of the “specifier”) and this can be dangerous because once it has legitimacy it gets co-opted, emptied of meaning and used against society to retain the status quo in the interests of a few. Complexity thinking can help us to move beyond deconstruction to re-develop the notion of a preferred future in a way that mitigates the danger of elite co-option. In our view, post-modernist deconstructionism has aggressively shied away from this task, remaining largely satisfied with deconstruction and critique. The problem with this, however, is that it leaves uncontested the space for articulating an alternative, more just and sustainable future. To this extent, deconstruction as critique of action effectively obliterates the space for an alternative ethics of action.

Our argument that complexity provides a basis for an imaginary of the future can be envisioned in two respects. Firstly, emergence is itself disarming – it implies multiple causation and multiple effects that are ignored at some risk by the kinds of reductionist logics that legitimise domineering power-based interventions and actions. Emergence is no friend of certainty. Secondly, emergence implies what both Pieterse (2006: 288) and Cilliers (1998) have described as “agonistic” processes of engagement that generate the kind of meanings that are durable and enjoy a sense of validity and legitimacy, precisely because they are embedded within complex networks rather than captured by powerful elites.

The rest of this chapter will draw on the African experience of urban processes with special reference to cities in South Africa. It will be explored whether complexity thinking can help to go beyond simply an ethics of difference and hybridity, and the relatively weak notion of tolerance that this tends to underpin. Rather, an attempt will be made to analyse (largely unintended and unpredicted) emergent outcomes and their associated “agonistic engagements” in order to develop a body of concepts that may be a useful ethical basis for purposive and concerted action for change that is appropriate for the realities of everyday life in African cities.

Utopianism, Certainty and Contextuality

Since 1994 a vast array of South African social forces were mobilised in various and often contradictory ways, with the aim to realise the ideals and dreams that inspired the possibility of a more just post-apartheid South Africa (Lodge 2003). These ideals and dreams were codified in the Constitution, in grand development visions like the Reconstruction and Development Programme (RDP) (Wenzel 2007) and in moralistic narratives about the “rainbow nation” that permeated popular political and cultural discourses since 1994. It is arguable, however, that the most sophisticated attempts to codify these ideals and dreams were to be found in the elaborately detailed development plans that were compiled for our cities, in particular the major metropolitan centres.¹¹³ The purpose of these so-called Integrated Development Plans was to demarcate a decisive break from the past in order to imagine a perfectly plausible implementable future free from the separations, divisions, inequalities and injustices that defined the apartheid city. To this extent these city development plans were examples of modern utopian thinking. The South African story since 1994 has been the story of the “rainbow nation”, an image of “unity in diversity” – “A Home for All”¹¹⁴ – that inspired a generation of nation-builders and the massive social, economic and institutional restructuring that has characterised post-1994 South Africa.¹¹⁵ However, it is a story which many think has gradually

¹¹³ See Ambert and Feldman 2002, Berresford and Kohato 2008, Harrison 2008, Muller, 2006, Unpublished

¹¹⁴ This is the slogan of the Western Cape Provincial Government

¹¹⁵ For a review of the local government context see Van Donk et al. 2008.

transformed into a formalistic legitimating ideology that denies how little actually changed, in particular for those who still live in poverty. Friedman defines utopian thinking as

the capacity to imagine a future that departs significantly from what we know to be a general condition in the present. It is a way of breaking through barriers of convention in a sphere of the imagination where many things beyond our everyday experience become feasible. (Friedmann 2000: 462)

We are of the view that it is how we use utopian thinking rather than utopian thinking itself that is problematic. Utopian thinking can be the liberating dynamic that Friedman has in mind, but it can also be a deadly trap if it rests on the presumption that the future is just as knowable as the past and therefore the outcomes are predictable, controllable and therefore self-evidently attainable. For nearly all South Africans, the founding democratic election in 1994 marked a decisive turning point: the certainty that pervaded our knowledge of a rejected past was carried through into a projected, shared vision of a desired future. Nation-building entailed, almost by definition, an intense process of formalizing, codifying and institutionalising the utopian vision of a non-racial, democratic and more equitable future.¹¹⁶ This is, after all, how states work, or as J.C. Scott put it in his classic text, its' because this is all about "seeing like a state" (Scott 1999).

The problem was, however, that we tended to use reference points for the future that were rationally derived logical opposites of the past, rather than rooted in an understanding of what was contextually specific, uniquely configured in space and time and, therefore, profoundly contingent. With few – and maybe even no – historical or contemporary precedents to draw on, we drew down generalised (largely sanitized and idealised) prescriptions of urban modernity imported mainly from Western cities, replicated these principles in our city development plans, and then geared financial expenditures, regulatory regimes and implementation strategies accordingly. Unfortunately, these elaborate prescriptions for "rolling out"¹¹⁷ versions of urban modernity implied a simplistic linear conception of urban development that needed to suppress the tension between, on the one hand, the tendency to rationalise, codify, order, finance and make transparent the functions of clearly delineated institutions and governance processes and, on the other, the tendency to intensify highly idiosyncratic, often non-formalised, creolised, hodge-podged, hybridised and contested social orders and territories that ambiguated any clear reading of what was really going on.¹¹⁸ Instead of creating spaces to allow for the expression and legibility of contextual specificities and features, our imported prescriptions – mixed in with some inspired guesswork – buried these spaces below a cacophony of words and (often meaningless) concepts, often written in tedious

¹¹⁶ For overviews see Southall (2006, 2007)

¹¹⁷ "Roll out" being one of the most oft used and abused phrase amongst government officials since 1994.

¹¹⁸ See Simone (2001, 2004a), Simone and Abouhani (2005), Swilling et al. (2003)

impenetrable technocratic jargon replete with all the tables, graphs and figures that create the impression of objective quantitative knowledge.

As this bland planning language cemented together an alliance of city administrators, local politicians and local business elites, this alliance lost sight of the real forces shaping everyday life. Instead of empowering people to take responsibility for their own development, investments were made in majesty, importance, and efficacy, as manifested through spectacle, formality, bureaucracy, ceremony and the facades of urban modernity (malls, elite enclaves, big projects, applause for conspicuous luxury). Rooms full of empty hand-clapping, grandiose ceremonies, and excess consumption, are now the well known rituals of municipal governance; no matter how big or small the town. They are, however, well seen through by everyone, and are taken seriously simply because they are so empty – as governance becomes pure style and urban developments a fraud, no qualifications, no prerequisites are necessary. Politics as theatre obfuscates the need for serious intent. Combined with the arbitrary nature of violence in South African society, the surface compliance of the masses to the incontestability and majesty of elite behaviour (increasingly backed these days by threats of violence against non-compliers) acts as a way to defuse their power.¹¹⁹ In short, the spectacle is supported because in the absence of viable alternatives, the collective mockery of the caricature is an act of mesmerizing self-recognition.

In the language of this book, South African cities have become melting pots of complex identities that derive from both liberating and suppressive dynamics. Liberating because the formalities of apartheid have been replaced allowing all South Africans, but in particular the black majority, to move, express, live and play in ways that were previously prohibited. Suppressive because differences have been subordinated by the process of formalising an official ideology of urban development that aspired to unify through repetitive meaninglessness rather than allowing deliberative and open exploration of (often uncomfortable) substantive diversities of identity, vision, values and norms of everyday living. Outbreaks of NIMBYism,¹²⁰ xenophobia and mass personality politics may well be reminders of the consequences of restricting spaces for articulating the more inconvenient discourses that are an endemic part of the socio-ideological mix of the post-1994 era. The more the liberatory discourses were codified and imposed on society via the media, the political system, regulation and informal violence, the more vacuous and empty the ideas became. Ironically, this same process created spaces that fostered discourses that followed quite different logics, some in conscious defiance; others simply about survival instinctively articulated in whatever colloquial assemblages were available to make sense of what was required to make it through to the next day. In short, restrictive boundaries reduced meaning, but this does not mean the opposite is true, namely that meaning is derived from an endless multiplication of informal identities

¹¹⁹Mbembe (2002), Swilling et al. (2003).

¹²⁰NIMBY = “Not in my back yard”

as represented by a deconstructionist discourse – it’s the balance that this chapter explores.

There is a rapidly growing academic literature that is exploring these tensions between formal ideology and identities embedded in lived realities.¹²¹ Robins, for example, draws from a case study of the Marconi Beam informal settlement in Cape Town to argue that the modernist “bureaucratic dreamscape of properly planned and orderly suburbs” typically makes the mistake of assuming that very poor South Africans will “fit into this fantasy of suburban living” (Robins 2006:112). This author is deeply critical of the utopian thinking of planners and their technocratic plans and blueprints in the face of everyday struggles by poor urban communities. This line of argument suggests there is an intractable dualism between bureaucratic modernist logic and the “solutions from below” with their self-organising logics of informality (Robins 2006: 113).

The latest South African planning textbook also questions whether these “deep differences” and conflicting rationalities between official ideology and informality can be bridged through debate in a consensus-seeking process (Harrison et al. 2008: 219). For Harrison et. al. “the clash of realities or differences in meaning are so great that it is difficult to believe that consensus could be achieved through discussions or conflict-resolution to overcome this divide of differences that go far beyond speech-level misunderstandings or an unwillingness to see the other’s point of view” (2008: 222).

We explore two inter-linked processes: the formalisation of housing policies after 1994 that interpreted the RDP vision within the housing/urban sector and thus profoundly shaped the evolution of the post-apartheid city; and the responses of poor urban communities who both colluded, and also invented their own worlds as they struggled to survive and make sense of the post-1994 promises. But to avoid the tendency in the emerging literature to counter-pose bureaucratic rationality and community-level informalities, we use a case study from Cape Town to show how bureaucracies can discover the virtues of a relational mode of interacting, and we also try to introduce concepts into the discussion about informality that suggests the need for certain kinds of boundaries if we are going to make sense of what is going on.

To reach beyond codified institutionalised visions of the city, we draw lessons from three seemingly unrelated sources: the idea of “mediated modelling” as applied within the City of Cape Town, the Stalker movement in Rome, and a growing literature on the significance within cities of a range of “loose spaces” that have escaped the rigid rationalities of formalised planning and the commercial logics of privatised spaces. Our aim is to make a case for experiential approaches that open up more complex spaces for deliberative knowledge-building and imagining thus counteracting the impact of increasingly constricted modes of thought that deaden rather than energize public discourse. Re-enchanting public discourse via “agonistic

¹²¹Mbembe and Nuttall (2004), Robins (2006), Pieterse (2005), Simone (2004b, 2001, 2006), Swilling et al. (2003)

engagements” is a genuine means of interaction that is a pre-requisite for rebuilding utopian thinking as an authentic source of inspiration for active change. Ours is a search for processes and spaces that validate and support the transgressive dialogical engagements that allow authentic differences to emerge, flourish, clash and reshape in relation to each other. To this extent we want to discover “in the mess” some patterns that can be useful for dialogue about change, rather than simply celebrate an unbounded mess that can be as meaningless as the emptinesses of official ideologies and technocratic plans.

We concur with Pieterse who calls for a “transgressive politics” capable of “fostering a culture of agonistic engagement that is institutionally mobilised and embedded. . . . Agonistic politics seeks to advance radical democracy by highlighting and challenging the limits of ‘the possible’” (Pieterse 2006: 288). Similarly, Holston called for a type of planning “grounded in . . . antagonistic complements”. He suggests that we should “hunt for situations that engage, in practice, the problematic nature of belonging to society and that embody such problems as narratives about the city” (Holston 1998: 55).

To tell this story, we have selected a set of stories that help reveal the way these complex dynamics unfolded in time and space. They are not stories that aim to counter-pose utopian visions and the “real world”. Like Friedmann (2000), we feel it is important to set up an ideal of a much better future, which can mobilise collective action for change. Indeed, it is impossible to imagine substantive change without the emergence of shared utopian visions of the future that a given coalition of social forces aspires to achieve. But while simplification of these utopian visions may be necessary to mobilise the maximum number of people, they risk masking uncomfortable complexities that often defy articulation as simplified constructs for massive popular consumption. This is trouble enough. But when this discursive mode gets carried over into the formalisation of what constitutes knowledge and becomes “science”, that is when we get into really deep trouble. What we are interested in here is what John Law (2004) has called, quite simply, “mess”. “How might method deal with mess?”, he asks at the start of his book appropriately called *After Method*:

[W]hat happens when social science tries to describe things that are complex, diffuse and messy? The answer, I will argue, is that it tends to make a mess of it. This is because simple clear descriptions don’t work if what they are describing is not itself very coherent. This very attempt to be clear simply increases the mess. (Law 2004: 2)

We need, he proposes, to drastically widen our conception of research methods to include experiential approaches that can grasp the diversities and differences that enrich the real patterns of everyday city living.

We will tell some of the stories about these lesser known dynamics and trajectories that are assumed to be either irrelevant or non-existent because they don’t appear in the sanitized idealised pictures of how things should be. We use these stories to suggest that there are ways of thinking about contextually rooted change that is informed by a process of opening up deliberative spaces for dialogue so that

differences can be surfaced, acknowledged and then used to catalyse re-invigorated dialogue about potential realisable futures.

The Unintended Consequences of Joe Slovo's Housing Policy

Joe Slovo, the renowned South African Communist Party leader, was appointed by President Nelson Mandela as the first Minister of Housing in 1994. He, in turn, appointed Billy Cobbett as his first Director-General of the National Department of Housing – before this Cobbett was a leading figure in the so-called “urban sector network” which was a coalition of leftwing urban development NGOs (Swilling 1999). Cobbett led the ANC negotiating team that negotiated a deal with big business in the National Housing Forum during the transition years leading up to 1994. Ironically, it was Minister Slovo who became the political head of a negotiated policy that aimed to meet the needs of the homeless and strengthen the role of the construction and property development industry in the design and building of the post-apartheid city.

The post-1994 housing policy took as its point of departure the constitutional right to housing and the existence of a market economy regulated by a developmental state (Khan and Thring 2003). This was the essence of the message encapsulated in the Reconstruction and Development Programme (RDP) that was the cornerstone of Government policy for the period 1994–1996. At the core of the housing policy was the so-called “capital subsidy”. This was defined as a lump sum of money payable to any agent that delivered a predetermined housing asset to a South African citizen who earned below a certain amount of money. The capital subsidy was designed to cover the costs of land, service infrastructure and a small portion of the so-called “top structure”.

There is widespread consensus in the literature on housing that the post-1994 housing policy unintentionally replicated and expanded the “apartheid city”.¹²² The reason for this rather drastic statement is that post-1994 housing policy defined the problem it sought to address in purely quantitative terms as numbers of homeless (black) people who, in turn, needed access to land and services. The solution was equally quantitative: provide a capital subsidy to cover mainly the cost of land and services, and ensure access to affordable land in greenfields developments.¹²³ The focus of the post-1994 housing policy was “the poor” and in particular the “urban poor”, and the creation of a single homogenous product (the capital subsidy) to trigger housing developments “for the poor” using state-funded private sector delivery mechanisms. Significantly, no matter the context of a particular group of homeless (backyard shack dwellers, occupants of standalone shacks in distinct settlements, overcrowded homes, renters of housing and flats, citizens of large or small towns, etc), the solution was the same: capital subsidy for a private sector-delivered asset in greenfields developments. As the popular saying in the housing sector goes, “if the

¹²²Harrison et al. (2003, 2008), Khan and Thring (2003), Van Donk et al. (2008)

¹²³Greenfields means a development on land that had not been previously developed

solution is a hammer, then all the problems are nails". Dewar, a leading academic authority in the planning field, argues as follows:

A major problem of housing policy historically in South Africa is that it has always promoted overtly simplistic 'either-or' approaches to housing provision. ...The housing problem, however, is complex. The fact that the demographic and financial circumstances of homeless people vary significantly denies a single approach to housing delivery. Choice and diversity are the keys.(Dewar 1997: 26)

The focus of the post-1994 housing policy was not the overall housing system and its complex dimensions and modalities, and contextual specificities were largely ignored. This policy framework replicated the apartheid spatial pattern because the cost of land needed to be covered by the subsidy. This inevitably meant the poor would get housing opportunities where land is cheapest, i.e. on the urban periphery. The result, which was only predicted by a few, but ignored by the decision-makers, was unsurprising: the poor ended up far from centres of employment thus undermining employment-generating growth, racial apartheid spatial forms persisted, and environmentally unsustainable urban sprawl was encouraged. This was only made financially viable by massively escalating the transport subsidies required to transport poor people over long distances from their peripheralized formal housing settlements to the centres of employment. In other words, the Department of Transport helped the Department of Housing to make financially viable an extremely costly land and housing program that has, on the whole, made the poor poorer while costing the state more than more compact solutions would have cost. The only real beneficiaries were the construction and property development industry that made profits from the process and an increasingly multi-racial middle class united by the NIMBY syndrome.

The radical disjuncture between the intentions of post-1994 housing policy and actual outcomes raises fundamental questions about why Minister Slovo and the policy-makers around him did not anticipate these outcomes. The evidence points to the fact that despite the rhetoric of stakeholder involvement in policy-making at the time, the key players that influenced the final outcome were narrowed down to a few technocrats and influential representatives of business interests.¹²⁴ Interactions with communities were few and far between and where they did occur, communities were not empowered through systematic educational processes to fully understand the implications of seemingly attractive proposals like the capital subsidy for the poorest of the poor. Radical researchers employed by NGOs who worked closely at the time with organised politically conscious communities, were intentionally excluded from the National Housing Forum and the policy-making process leading up to the adopting of the post-1994 White Paper on Housing. In short, the exclusion of perspectives that differed from those that united the group that authored the White

¹²⁴There is no space to go into this vast and complicated story, but the deliberate restraint on public debate about housing policy during the years 1992–1996 are derived from two post-graduate theses supervised by Mark Swilling, namely: Rust, 1998, *Civil society participation in the housing process, 1991–1996. Masters in Management, Unpublished* Also: Khan (2008).

Paper resulted in a failure to anticipate system consequences that would undermine the intentions of the White Paper over the long run. Or, in short, politically-inspired attempts to suppress differences created an ideational deficit that ultimately drained policy intentions of any substantive meaning in practice. The end result was an ideological process that led to denials of the negative outcomes, followed eventually by admissions that the policy had failed.

Ten years later, the post-1994 housing policy began to be reviewed within a context of a national policy shift away from the neo-liberal notion of “state-as-facilitator” of development, to the notion of a “developmental state” approach. Protest actions against the consequences of the old policy, plus critical research and the opening up of the policy dialogue created space for this review. The result was a search for a mid-way between the old policy because of its failures and the more radical demands for pro-poor state-delivered mass housing schemes. The reason why the latter was seen as problematic is that it runs the risk of the same error as the old policy, i.e. a narrow focus on the needs of the poor, no restructuring of the economics of the housing delivery system as a whole, a tendency to ignore contextual specificity, and being state-centric it could reinforce household and community disempowerment (even if this was not intended, it is highly likely that this would have been the case when implemented by a bureaucracy that almost certainly would have been ignorant of the dynamics of developmental practice).

Since 2004, the National Department of Housing has been following a new policy approach known as Breaking New Ground (or BNG). Seeing BNG as a “mid-way” solution between Slovo’s policy and the statist leftwing alternative, however, does not imply that it is a compromise, or the “best of both worlds”. As it stands, it is a policy framework that is faithful to a “developmental state” approach in that it makes provision for state intervention across a wide range of fronts, in particular in land and property markets. At the same time, its so-called “demand-driven and supply negotiated approach” is simply another way of saying that contextual specificity is finally recognised. The most significant consequence of this is that the recognition of contextual specificity immediately opens up the space for empowerment. The reason for this is that if it is recognised that each context is different, then it follows that specific knowledge of that context is now needed as a basis for planning a particular project (e.g. Greenfields development) or systemic intervention (e.g. reinforcing backyard housing development via loans to landlords and regulations to protect tenants, etc). The need for contextually specific knowledge is what makes participation an authentic necessity, rather than the rhetorical ideologically determined formalistic and therefore legitimating ritual that it has become. For the first time, there is therefore a real potential role for CBOs and NGOs who know how to facilitate authentic participation of the poorest households. Finally, the BNG framework recognises the need to work with the private sector and the market while simultaneously transforming the ground rules.

The story of post-1994 housing policy is a story of unintended consequences that have had particularly negative implications for the urban poor. This was a policy that reflected the interests of the construction and property development industry and was codified by systematically restricting the inputs of diverse policy actors

at critical junctures in the policy formulation process. It was, nevertheless, propagated as a pro-poor policy via a forceful marketing campaign that depicted rows of new neatly stacked single family homes sprawled out across a single story physical monoculture that was extremely seductive for all those living in appalling conditions of poverty and homelessness. A remarkable coalition of government, business and community interests colluded in this utopian vision despite clear evidence that the spatial outcomes contradicted the policy intentions, and the resources, regulatory regimes and institutional capabilities available to the implementers of the policy were clearly inadequate given the magnitude and, more significantly, the complexities of the task. Some of the stories that follow capture the unintended consequences of the Joe Slovo housing policy; in particular, the way homeless communities have forged their own living arrangements and patterns while the loud machinations of public policy making took place way beyond their reach and experience.

To avoid depicting public bureaucracies and policy processes as endemically prone to ideological formalisation that disconnects from contextual “mess”, we first give an account of a contemporary public policy making process in the City of Cape Town that was designed to open up rather than close down the process of deliberative policy formulation. This is an example of enhancing meaning by widening the diversity of voices that engage in the policy formulation process.

The Ethics of Mediated Modelling in Cape Town

It is fashionable these days for managers who manage large public and private bureaucracies to adopt the language of systems thinking and complexity theory. Instead of really understanding how things work around them, the language of complexity allows them to depict their organizational reality as a “complex system” which is often interpreted by all those around them as meaning that only a select few are smart enough to know how it all works. Instead of empowering people to seize control of the organizational resources they need to get things done, the locus of action is relocated into the intangible world of “self-organising systems” that will somehow ensure that we all end up contributing to the realisation of the organisation’s strategic goals. This, according to this simplistic popular reading of complexity, is what is meant by “emergence” – a non-linear outcome that transcends the sum of its component parts. It is from within this opaque constructed world that requests are received by modellers to somehow find a way of capturing it all in a “model” that can somehow empower the select few who understand all this complexity to do what no other managers can do, namely see into the future. For these converted complexity managers, if the laws of complexity govern the present, then they must also govern the future. It follows, therefore, that the future is simply an extrapolation of the present using software that can compute a much greater number of variables than what is possible using traditional analytical tools that are constrained by the linearity of the technical narrative. Underlying this aspiration is the assumption that the greater the diversity of elements that the model is required

to compute, the greater its predictive capabilities will be. If it's too simple, somehow it has less value. In other words, the model is endowed with the ability to impose order on an incomprehensible and seemingly disconnected set of phenomena that are deemed "too complex" for ordinary forms of analysis. The outputs of the model are often accepted uncritically, largely because of the perceived "computing power" of the model. Like the words of a medieval oracle, what the model "says" is endowed with awesome explanatory power simply because the listener is a believer in its ability to "make all the connections", and therefore know and predict the future.

The description provided here of the inner world of the powerful manager of a large bureaucracy who needs to build a story may be a bit of caricature, but many researchers will recognise it in some form. Many researchers – or what we will call modellers – build models, these days, to meet the demands of these kinds of managers. The problem is, of course, that these managers recognise the veracity of a diverse relational world, but they want to capture and tame it so that they can avoid uncertainty at all costs – to do this, they must impost another set of ultra-tight boundaries that once again ensure that all the potentially rich meaning that they could access from the diversities of their context are drained away and suppressed. What is significant for the purposes of this chapter is the research methodologies that are built up by researchers that reproduce the power relations embedded in the caricatured organisational setting described above. In general, University- or consultancy-based modellers spend years building up hugely complex data-intensive models using an increasingly wide range of proprietary software packages. Specialist operators need to be trained extensively, and hugely expensive ongoing data-flows are required that must all be inputted and processed on a continuous basis. Two research procedures then follow. Either the modeller is contracted to develop a model for a particular organisation, or the modeller obtains third party research funds to conduct research that requires the cooperation of a particular organisation. Either way, the role of the modeller is to access data held by the organisation, extract it using various qualitative and quantitative methodologies, and then "input" the data into the model. After a suitably long gestation period, the modeller activates the model to generate an expert output that can take various forms. It can either simply be the end product, i.e. a report that gives the answers. Or it can be a working version of the model that the manager can use to generate his/her own results. Either way, what has taken place is that data is extracted from the organisation; experts feed the data into a model and produce a sophisticated output that the members of the organisation (including in most instances the managers themselves) have played no role in producing other than to provide what are often perceived to be seemingly random pieces of data to the experts. Because of the limited role of the end users in the production of the output, there is very limited understanding of how it works and what it is actually trying to say. After the modeller is paid off, different things happen. Often that is where it ends and the model simply dies a natural death. However, it can be used to construct a story that is legitimised by the fact that all this was developed by a smart modeller using a very smart model and who was paid a fortune for what must be a valuable set of insights/data.

Complexity Modelling

When the City of Cape Town agreed to work with the Sustainability Institute (SI) (see www.sustainabilityinstitute.net) in 2006 to develop an analysis of the city's current and future infrastructure options, it was necessary to find an alternative way of modelling this reality. There is no doubt that Cape Town's urban infrastructure is an extremely complex physical system of stocks and flows that is managed by a series of massive bureaucracies formatted by extremely rigid regulatory frameworks. The Electricity, Waste, Water and Sanitation (EWWS) Departments managed around 50% of the City's total budget of R18 billion in 2006/2007. Since 1994 the focus of both local and national government funding has been on capital investments to deliver services to the urban poor. In Cape Town this has been very successful with over 95% of all 800 000 households enjoying access to water, sanitation, solid waste and energy services – a significant unacknowledged achievement. However, this was achieved by neglecting investments in maintenance, upgrading and refurbishment. At the same time, the electricity and water services generated surpluses worth hundreds of millions of rand that cross-subsidised other services. Ten years later the entire infrastructure system started reaching critical thresholds, with substantial breakdowns. Furthermore, these thresholds were not simply financial and technical, they were also ecological. Severe limits to bulk water supplies, filled up landfill spaces, water bodies overloaded with un(der)-treated sewage and electricity black-outs all underscored the fact that Cape Town was a city that depended on material and energy flows that were fast disintegrating or reaching their limits. To spend its way out of trouble, the City had also begun to reach the limits of how much it could tax and charge its residents and businesses, especially in light of the fact that it was businesses and richer residents who were cross-subsidising an increasingly large number of poverty stricken households via a very progressive rates and tariff policy. As long as the economy was growing, it was only just possible for this all to hold together. But as economic growth started to slow from 2005/2006 onwards, the severity of the crisis became glaringly apparent. The time had arrived for “a model” to predict the future.

Instead of entering this fray using a traditional expert-based data-intensive modelling approach, the SI decided to use what is referred to as a “mediated modelling” approach (Van Den Belt 2004). This approach differs from the traditional approach in the following ways. Firstly, instead of extractive research methods, this approach aims to “co-produce” the research outcomes with the active participants in the system. Secondly, what gets modelled is not simply quantitative data, but rather causes and effects as perceived by the participants themselves. The participants express in workshops what they think are the multiple causes and effects and these are captured by the modellers/researchers as the conversation unfolds. In other words, what gets modelled are in reality a set of narratives rather than a set of perceived positivistically derived objective realities. Thirdly, data still plays a role, but the aim is not to generate a model of reality in the positivist sense, but rather to generate an adequate construction of reality that is shared by those who participated in the process. Data, therefore, is not used as objective quantitative measurements that “test” the

empirical validity of the perceptions, but rather as a different set of constructs that enrich the emerging shared understanding of the complex dynamics generated by the dialogues.

Expressed in terms that John Law would use, *meaning* and *mess* are not counterposed in this methodology, but rather mess is respected for what it is – a rich environment of enormous diversity that the participants themselves understand very well indeed. What they lack is a language for telling their own story. What the modelling process does is gradually pick out key patterns that become a frame for making sense of what is going on. The mess in its total messiness cannot be modelled, but via a process of limited reduction a bounded sense of meaning emerges that is far more useful than an overwhelming sense of randomness or a positivist rendition of reality.

The SI team facilitated 28 workshops with experts and officials drawn from across the EWWS sectors. These workshops involved people from within particular sectors, but also from across different sectors. These dialogues generated spider diagrams of multiple feedback loops, both positive and negative in nature. These were all logged on flipcharts as the deliberations proceeded, and then fed into a model using a software package designed for this purpose called PowerSim. Because this package allows the modeller to log a wide range of relations represented as “stocks” and “flows”, it was possible to generate a set of representations that the participants could recognise as the various drafts unfolded. However, what is significant is that the workshops helped build networks and participants (most of whom were senior managers) started acting on the outcomes of the workshops long before the researchers were able to complete the final reports. In other words, if the system has started to change it will be difficult to argue that this was because of the persuasive power of the final outcome of this 2 year process. Rather, system change started because narratives shifted in response to both the unfolding crisis and because of the dialogues that triggered new realisations and internal learning networks within the organisation. In short, embedded meaning was co-produced by these interactive engagements between modellers and practitioners.

The learning from this remarkable research process is that complexity modelling has a key role to play, but not if the aim is an end-product that claims to deliver on the aspiration to be omniscient. Complexity modelling, to be sure, can exploit this aspiration to get into the game. However, the aim should be to facilitate a more authentic participatory experience to build up a shared narrative for translating what’s happening into meaningful modes of cooperation and joint action. By creating a space for participants in the system to simply surface in a relaxed environment their own constructions of the rich set of feedback loops at play in the system, the modeller is actively expanding the range of voices and ears that participate in the co-creation of new modes of meaning. Although this is similar to what many organisational development consultants do, what is different here is that these constructions are being captured, logged and merged into a wider analytical process that includes rigorous data collection and analysis. The facilitator-as-modeller, therefore, is also deeply implicated in the end result, rather than simply being the neutral manager of the process no matter the content of the dialogue. To this extent, this modelling process

was about creating “loose spaces” (discussed further below) that allowed people to talk outside the formal rigidities of bureaucratic discourse and norms. Although these “loose spaces” served the purpose of generating new knowledge, it also created connections, relationships and eventually the beginnings of new learning networks that span sectoral divides.

If the Cape Town process is contrasted with the process of formulating housing policy after 1994, the former has involved the active involvement of a fairly diverse range of participants in the system while the latter was centrally controlled and constrained. If the resources were available, much more could have been done to further expand the dialogical space in Cape Town by bringing in key stakeholders such as the trade unions, community leaders and business representatives. Although it is being suggested here that the Cape Town process was superior to the process followed in the formulation of housing policy in the post-1994 period, this does not mean that the actual historical outcomes will be any better. Actual outcomes are shaped by many different conditions, not simply the nature of the policy process itself. What is significant, though, is that an open process of dialogical exploration can build relationships and networks that can continue to respond to changing circumstances as they unfold. An open deliberative process that depends on transactions within rich dense networks has a better chance of building long-lasting institutional memory and capacity for coping with complexity and diversity – these being key intangible resources for building resilient systems capable of rapid responses to contextual shifts.

Creating Urban Spaces where Differences Can Meet: Complexity and Informality

Beyond simply acknowledging the complex nature of settlements, South African urban studies has paid little attention to theoretical representations of informal settlements as complex systems. Whilst the social, economic and bio-geographical contexts are different in African cities than in Western cities, conceptions of urban modernity through which formalisation takes place, are equally different (Smit 2000).

The acknowledgement of the complexity and diversity of informal settlements should be recognised as a central feature in the formalisation processes of cities in Africa. As an example, formalisation processes in the City of Cape Town, South Africa serve to illustrate this argument. Cape Town’s informal settlements are complex and diverse in many ways when considering their morphology, stratified poverty, vulnerability and social problems within settlements and the rural linkages of residents (Smit 2006). The spatial arrangement in informal settlements may be haphazard in appearance, composed of a chaotic hodgepodge of dwelling structures, but in reality settlements often have a complex physical layout and history that are closely aligned to social networks and livelihood activities. The processes of formalisation should acknowledge and respect the existing complex and diverse

informal processes that are present in informal settlements. Hence, a “one-size-fits-all” approach for the upgrading and development of such spaces would not be successful.

A number of authors have explicitly treated self-organising settlements as examples of complex subsystems within a complex urban system (Barros and Sobreira 2002) while others describe complex adaptive systems but without using this conceptual language or trying to “prove” that what is being seen is a complex adaptive system (Swilling et al. 2003). Roy characterises “urban informality” as indicative of “an organizing logic, a system of norms that governs the process of urban transformation itself” (Roy 2005: 148). She rejects the dichotomy of the two economies or sectors – formal/informal – arguing instead that informality is not a separate sector but rather a series of transactions that connect different economies and spaces to one another. Roy critiques replicable utopian universal urban blueprints as a “vocabulary of planning” that does not have the ability “to think about the complex social systems through which plans must be implemented”. She argues, instead, that planners must learn to work with the “unplanned exceptions to the order of formal urbanization. Informality is an important epistemology for planning” (Roy 2005: 156).

Loose Spaces

The notion of “loose spaces” is receiving more attention in research on alternative development and formalisation processes.¹²⁵ Predominantly a feature in Africa and other developing countries, loose spaces can be defined as temporary or even unfamiliar and disruptive spaces. These spaces are mainly defined by people’s spontaneous actions and not by controlled borders and homogenous themes. The boundaries of loose spaces are not physical as such. They may even be seen as chaotic, unpredicted and unruly (Karen et al. 2007).

In South Africa, examples of loose spaces are recognisable in the transformations taking place in the inner city of Johannesburg. There for example, underground parking garages are used as sites for mega-churches; hotel kitchens as day care facilities; and indoor swimming pools as butcheries (Simone 2006: 362). In Maitland, in Cape Town an old cemetery is now home to a community (Fig. 11.1). There are both benefits and risks associated with loose spaces, as often both diversity and disorder emerge from them. Loose spaces are not strictly delimited from other spaces and we cannot equate loose to be the same as informal spaces (Karen et al. 2007: 2–3).

¹²⁵See De Boeck and Plissart (2005) on the “invisible within cities” and Simone (2006) on pirate spaces.



Fig. 11.1 Maitland cemetery in Cape Town (21 June 2007)

Spaces where Differences Can Meet

Following Cilliers' (Chapter 1) suggestion, that identity is a result of negotiated differences rather than something that precedes such interactions, the understanding of how cities acquire identities can also be reframed. The classic metaphor of the "city as melting pot" does not simply mean facilitating the merging of fixed pre-existing identities (as the current discourse about xenophobia suggests), but more fruitfully it means tracking the emergent identities that ever-changing layers of urban diversity make possible. This suggests that the resources for cultural change should be sought outside modern "habitual spaces"; it can be found in loose spaces that cross through and connect sameness and difference. These porous spaces, comprising identifiable bounded thresholds and heterotopian spaces act like bridges across diversified realities. Loose spaces are emergent outcomes where creativities can flourish because they are not controlled by a dominant imaginary. It is within these liminal spaces or heterotopias¹²⁶ where differences can meet and where meaning can be negotiated within the context of the lived experiences of the people and organisational structures that utilise the space.

The story of mediated modelling, as discussed above, could also be understood in this context as creating relational bridges that allow for more deliberative policy-making and more humble approaches to implementation within urban management bureaucracies. Appreciating complexity inevitably means having less rather than more faith in predetermined procedural formulae that often prescribe routinized actions based on generalised conditions that are presumed to exist universally.

¹²⁶Heterotopias are defined as places where differences meet

Porosity and Heterotopias

Loose space bounded by a patchwork of ever-moving “doors and thresholds” are richly textured heterotopias that display “porosity”; spaces that connect and separate simultaneously. The social identities of loose spaces form bounded wholes that have the characteristics of complex systems. The boundaries of complex systems are porous and can be understood to be “an interface participating in constituting the system” (Cilliers 2001: 141). By reframing informal settlements as complex systems that are constituted by relational processes (or loose spaces) rather than being a series of physical entities, new practices can be discovered that produce porous thresholds that enable communities to negotiate alternative development policies and to develop new concepts that could enable social change (Stavrides 2007: 174).

These concepts can help us see the importance of paying attention to perceptions and narratives and inform actual interventions in trying to create these in-between spaces. If the implementers of governmental housing projects were equipped to see these porous heterotopian cities of thresholds, the chances are better that unintended expectations will be met with greater humility than is currently the norm. As an empirical case, we refer here to the example of the Stalker movement which aims to do just this in Rome. We will look at this movement and at how it might relate to the South African context.

Stalker

Rome’s “Stalker movement” started in 1995 when a group of people from different backgrounds and fields of interest (such as architecture, art and journalism) did a 4-day tour of Rome’s outskirts by foot (Lang 2007). They were so inspired by their experience that they formed an organisation in order to investigate new narratives and approaches towards “marginalized territories”. Their approach is interesting, because narratives and the lived experiences of communities are used as variables in the modelling process of complex spaces (Uprichard and Byrne 2006: 675).

The Stalkers are interested in “actual territories” which are characterised by loose spaces that are liminal and marginal, abandoned or in the process of transformation (Stalkers 2008).

Stalkers works at creating art interactive installations that can become a new voice and dream catalyst. In using Stalker’s methods one could explore different ways of approaching the richly textured ways of living the informal city in Sub-Saharan.

Anthropologically informed perspectives have been used to explore how people have lived through the changes in their city throughout Sub-Saharan Africa (Tostensen et al. 2001). Unable to reach the dream of modernity and incapable of turning back to tradition, people feel doubly cursed. People living in Kinshasa, for example, described feelings of being stuck in this “no-man’s-land” where linear time and global norms of reality seem to have rusted away and been replaced by the uncertainty of the spirit world. A set of behaviours are conditioned that may appear completely irrational when compared against modernist urban planning

assumptions, but it makes complete sense when it comes to understanding the way they relate to a social and physical environment that is effectively a simultaneous diabolical antithesis, mockery and copy of urban modernity.

In Cape Town, the community of Marconi Beam used to be a squatter camp of 1500 families in the middle of the conservative white suburb of Milnerton on well-placed land close to the industrial park of Montague Gardens. Soon after 1994 it was replaced by a so-called “Presidential Project” called Joe Slovo Park with 950 standardized “RDP houses” developed adjacent to the informal settlement. The community as a whole could not be accommodated in the upgrading and a minority group of very vulnerable citizens were relocated to the peripheral informal settlement of Du Noon.

A limitation of urban upgrading is the limitations of the ideology of space that comes with it (Roy 2005). The change in the built environment to a “proper community” and “proper housing” brought about a change in the everyday lives of the residents. Research on Marconi Beam reveals a “deep difference” and conflict of realities between the rationality of the prescriptions of urban planners and the complex realities on the ground which shape informality and the livelihood strategies and tactics of shack dwellers to survive materially and culturally in “the other” spaces in the city (Yose, 1999, *From shacks to houses: Space usage and social change in a western cape shanty town*, Unpublished).

The “difference” in perception between life in a shanty and the suburbs emerges from this narrative of a Joe Slovo Park resident:

People have changed. They are no longer the same. These concrete houses have made them totally different people from what they used to be at Marconi Beam. They lock themselves in their houses. They no longer visit. They see themselves as people with high status and they look down upon some of us. Look at me now. I am bored and I am scared to go knock at people’s houses to visit them. (Yose 1999: 81)

Subsequently, Marconi Beam did not disappear as originally intended – some moved to Joe Slovo, others remained in Marconi Beam and still more moved in this strengthening an urban form that was supposed to dissolve. Many residents continued to rely on informal processes and the affordability of corrugated-iron building materials. The case of Marconi Beam serves as a monument, which displays the aporetic nature of development processes that implement rationalist planning tendencies that fail to anticipate the unanticipated and unexpected. A sociological blind spot emerges which “represents the folly of the master plan (or meta-narrative) that excludes social conflict, ambiguity and indeterminacy as characteristics of actual social life” (Robins 2006: 112).

The Marconi Beam example represents a case where a Stalker-type approach could help us change our relationship to how we approach such a place. An approach that might well mean simply walking about, and promoting a much slower pace to allow for experience and, ultimately, emergence. Going slow enough for emergence might be an interesting research methodology, but it could also in the end deliver development results much quicker. This is very different to the fast-paced norms that consultants on hourly rates are used to. For most of them, imagining and

designing urban spaces by walking about, hanging out, imbibing the intangibles of actual territories will simply be a waste of financially valuable time. Planning via downloadable templates is so much easier, and delivers the illusions of order that investors and planners require.

Crossing Territories and Reclaiming Spaces

Crossing is for Stalker a creative act, that means creating a system of relations within the chaotic juxtaposition of time and space that characterizes 'Actual Territories'. Crossing means composing in a single conscious parcours the strident contradictions that animate these spaces, in a search for unedited harmony. (Stalkers 2008)

Learning through experience is a form of art – a creative act that does not necessarily have a pre-determined outcome. It is for this reason that the , Stalker movement believes in the importance of crossing territories on foot. Crossing and making crossings becomes both an experience of porosity and a purposeful act of creating heterotopias. Generally speaking, the planning profession in South Africa fails to understand the role that the norms and logics of urban informality play in fragile livelihood strategies of the poor in harsh urban environments. At the same time, richly textured multi-class environments are highly valued in the property market precisely because they are not themed, but provide “loose spaces” for an emergent lifestyle that is diverse, constantly moving, aesthetically stimulating and dense enough for a multiplicity of vendors and services to be economically viable. There appears to be a reluctance to accept that all kinds of informality and porous spaces have a identifiable form and logic, which may be at odds with the prevailing developmental prescriptions, and which are themselves rational responses to poverty and marginalization on its own terms. By valuing methods such as simply walking and crossing space to experience and appreciate its unique character, we may be able to transcend seemingly unbridgeable differences by finding what is specific and unique to each context.

Stalkers aim to reclaim spaces in different ways through shared experience. “Abandonment” is for the Stalkers a necessary part of this reclaiming because it reflects on the process by which nature was tamed by humanity in order to fit into the ordered and predictable schemes of the modern utopia.

This concept of abandonment is important in understanding the failures of current development. It is suggested that certain perceptions of places have to be abandoned and re-thought before actual change can happen. The Stalkers movement offers such a new way of thinking that is open to the process of nurturing diversity within communities and cities. For the Stalker movement, intervention is not understood to be just an objective act of planning, but an “act of creation” that aims to stress contradictions and negotiates the provisional transcendence of old dichotomies. They change spaces through interactive collective visioning, through being present and inspired by the mediated experience of porosity. Actual implementations of threshold spaces in which heterotopias can emerge are negotiated. In this way it could be

said that they work at creating spaces in which richly textured and embedded identities can emerge. This suggests a different reading of utopian thinking – not simply a codified vision imposed from above, but a slow process of leading people into new experiences of their environment and therefore new possible ways of changing it. For this experience, a codified utopian vision becomes a hindrance because the moment things change, it is out of date but there is no time to dismantle it – it simply becomes irrelevant at best, or a stifling obstacle at worst. Dreaming, visioning, imagining – these are not fixed, but ongoing reconstructions as the context shifts and aspirations adjust.

The local and metaphorical city language that emerges from these thresholds, bridges and loose spaces create richer identities and offer the possibility of conceiving and creating alternative communities.

Conclusion

This chapter opened by suggesting that the notion of emergence provides the basis for rethinking the ethical basis for development theory and practice, and in particular the articulation of alternative futures. It was argued that although many African intellectuals have rebelled against the rationalities of a modernist paradigm by using post-modernist deconstructionism, this runs the risk of leaving the space for alternative futures uncontested by those who shared an ethical commitment to social justice and human rights. Because all claims about a better future are suspect because they tend to mask a hegemonic agenda that later can become oppressive, efforts to articulate an alternative future are avoided or, at best, simply postponed until a future moment that is hardly ever accurately specified.

To construct the argument that emergence provides an alternative ethical basis for development theory and practice, this chapter commenced with a discussion of utopianism and argued that it still has a key role to play as a catalyst for collective ethical action for fundamental change. However, it is a concept that runs the danger of being discarded entirely as utopias get codified and institutionalised by the logic of governance, and used to legitimise the present. The problem, however, is not utopian imaginaries per se, but rather who controls the process of utopian thinking and how these utopias are constructed and reproduced in popular culture. We have argued for the opening up of a multiplicity of spaces and dialogical processes that can reflect and capture more complex emergent utopias that cannot be easily captured by powerful interests. These “heterotopias” emerge from the kinds of “loose spaces” that exist across the city in some informal settlements, older high density socially mixed environments, various cultural projects, many expanding street markets and even within some of the more themed environments that have become the new havens of global post-modern consumerism (pedestrianised inner city areas, waterfronts, reclaimed low value dis-used spaces, urban food markets, etc). They need to be stitched together via methods that are better able to relate to “mess” than the largely quantitative methods that most planning and engineering professionals are trained in. Hence our interest in Rome’s Stalkers movement that emphasises

experience as a means of knowing. Using this explicit movement as a precedent, we argue that similar methods are required within the African context where the dysfunctionalities of top-down rational planning have been repeatedly documented and discussed. This has significant ethical implications for planners and engineers employed in both the public and private sectors. Strictly speaking their practice is consistent with the rules and regulations that govern their professions, but because of their disconnection from experiential knowledge and discourse, the actual outcomes of their practice contradict the developmental goals and intentions of government policy.

In this chapter the dynamics of these engagements were contextualised by briefly describing the rise and (partial) fall of Joe Slovo's quantitative approach to housing that ended up marginalising the urban poor. We identified particular contexts for more detailed analysis that revealed the complex (largely unintended) micro-impacts of Slovo's policies. The case study of mediated modelling with Cape Town's officials was used to question the assumption in much academic literature that governing bureaucracies are somehow by nature incapable of engaging dialogically with complex social realities.

Instead of simply celebrating unlimited diversities as the antithesis to rational planning logics, we have tried to move beyond this dualism by articulating patterns of meaning that can inspire the kind of collective actions and practices that can potentially shift the wider balances of power. Following Pieterse and Cilliers, we see in "agonistic engagements" not simply superficial attempts to build consensus and so-called mutual understanding between what are often presumed to be fixed identities, but rather quite profound struggles to reconstitute and express the meanings of everyday living across a wide range of diverse contexts that are themselves being rapidly transformed. This, in turn, may well be a precursor to developing a way of thinking about institutions, governance and urban social processes that derive more from contextual thinking than aspirations to be something derived from elsewhere or from an abstract set of first principles. Institutional arrangements and an ethics of developmental practice that are appropriate to the context may well be the kinds of emergent outcomes that complexity thinking makes possible. This, it seems to us, frames the next set of research questions that this approach would need to address.

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Chapter 12

Africa: Globalisation and the Ethical

Leonhard Praeg

*It seems easier to imagine a time when nature, as it were,
laboured and gave birth all at once to the whole creation,
present and future, than to imagine a continual activity.*

–Prévost and Dumas 1824

Introduction

In 1945 Hannah Arendt made a statement that still reverberates through the corridors of philosophical thought. Referring to the absolute evil of Hitler and Stalin’s totalitarian regimes, she declared that “[t]he problem of evil will be the fundamental question of postwar intellectual life in Europe” (in Bernstein 2002: 1). In this statement the phrase “fundamental question” can mean one of two things. One, that evil will become the subject of speculation among many or perhaps major European philosophers or two, that the subject can and perhaps must be used as a key to unlock or a lens to reveal what is most fundamental about postwar life in Europe. In the first sense, her prediction turned out not quite right since, as Neiman (2002: 2) points out, after Arendt’s own work on evil no major philosophical texts appeared on the subject in any of the dominant European languages. In the second sense her prediction may yet turn out to be true for, since George W. Bush launched his War on/of Terror, few words have been abused with such spectacular abandon as the word “evil” (see Bernstein 2005). But the question of Arendt’s prediction is not to be settled here. I started with it simply because I want to appropriate her hyperbolic prediction for my own ends and I want to do so in the second sense namely, that such a statement may draw our attention to a problematique which, despite its lack of universal popularity, may yet be key to understanding what is most fundamental about a specific time.

To take the edge off the potential uselessness of my own hyperbolic statement, I shall try to dress it up more respectably as the conclusion to three premises that

L. Praeg (✉)

Department of Political and International Studies, Rhodes University, Grahamstown, South Africa
e-mail: L.Praeg@ru.ac.za

seem more or less indisputable. One: that there is a process of global convergence in motion that we loosely describe as the phenomenon of “globalization”; two: that an epiphenomenon of this convergence is the emergence of a global community variously described as “global village” or “global civil society”; three: that, as in the case of any other community, we have to start thinking about this “global civil society” or “global community” also in terms of, or *as*, an *ethical* community. From this follows my hyperbolic conclusion: the problem of Africa’s place in this community will be the most fundamental ethical question in a future globalised world.

Following the logic of Arendt’s prediction, this does not mean that most or even many people will care to write about or even consider this question. But exactly therein lies the ethical rub. The reason why this question may not become the most universally discussed philosophical subject is because in terms of geo-politics the continent’s marginality is quite staggering. As a whole the continent accounted in 2007 for “a miniscule 1,7% of foreign investment worldwide” (Walt 2009: 39). Given the current global recession, things are not looking up. Some implications for Africa of this recession include the impact on aid programmes of the need of wealthy nations to regain control of budgets burdened with financial-system bailouts and economic-stimulus packages; the fact that “Oxfam estimates the global recession could cut more than \$8 billion from the total 5-year, \$50 billion commitment by G-8 countries made in 2005” (Walt 2009: 38); a decade of solid growth in Africa is being threatened by a sudden drop in demand for its natural resources and minerals – a drop that amounts to a decrease in its overall growth rate from a recent 5,5% to 1,5% which, according to the World Bank president Robert Zoellick, could lead to a “human catastrophe” (Walt 2009: 38). Given these statistics one must ask a simple question: how can a continent haunted by such a staggering inverse relation between its geographic/demographic size and its geo-political importance present an emerging global community with its most fundamental ethical challenge? But as I’ve already indicated, the answer is implicit in the question. Humanitarian interventions of any kind, whether military, economic or human rights based, are not ethical because they are driven by self-interests. Quite the contrary, they become ethical only in the absence of such interests, that is, when such interventions are politically and economically speaking of no consequence. That is what makes such interventions *ethical* as opposed to economic or political interventions. Now, political realist have been telling us for decades that morality is not to be confused with politics; that the political, like the moral and juridical, is an autonomous domain and that to drag ethics into geo-politics is at worst naïve and at best idealistic. But that was before we had to start re-thinking our global co-existence in terms of one community, one global civil society, one convergent *ethical* community. If, of late, there has been a renewed global fascination among intellectuals with the concepts of hospitality, tolerance and the cosmopolitan it is exactly because this inescapable ethical dimension – of which Africa, *because of its marginality*, is the fundamental marker – has been pushed to the fore.

This chapter is an attempt to rethink what it means to prioritise the ethical dimension of our global communality in this way. But it is not a chapter on ethics; it is an

attempt to chart a certain topography of thought; *that* topography within which the Africa-West relationship appears paramount. It asks: how did the West historically think this relationship and how can complexity theory help us move beyond the limitations of that thinking? In short: how can complexity thinking help us to rethink Africa's place in this emerging, global, ethical community?

History, Genealogy and Systems of Differentiation

Understanding globalisation from a post-colonial African perspective means understanding Africa's place in it – and to understand that, it is always necessary to understand the history of Africa's place in the world. In other words, one cannot understand globalisation from an African perspective without first understanding the history of thinking its place in the world. The inequalities that haunt the difference between a globalised North and South are functions *of*, can be traced *to* and can only be understood *in terms of* the different ways in which the identities “Africa” and “the West” historically differentiated themselves.

This chapter offers a genealogy of the Africa/West difference. It analyses the evolution of this difference in terms of three systems of differentiation distinguished from each other in terms of their emphasis on *space*, *time* and *space-time*.¹²⁷ Perhaps “emphasis” is a misnomer for it is rather a case of each system constituting identities differentially in terms of space, time and space-time. The first of these systems organised the Africa/West difference *spatially* in a static Great Chain of Being while in the second system the difference becomes a function of *time* as societies and individuals are placed in a linear trajectory of development framed by an immanent teleology of Development. In the third system, a combination of contemporary chaos and complexity theories allows us to read the warping of space *and* time characteristic of globalisation systemically, that is, in terms of the logic of complex dynamical systems that no longer refer to the transcendental legitimations or teleological ends presupposed by spatial and temporal systems of differentiation. While the first two systems are premised on an understanding of space and time as absolute – “the place and time of God and teleology” (Urry 2003: 19) – in a complex, spatio-temporal system “time and space are not to be regarded as containers of phenomenon, but rather all physical and social entities are constituted through time and through space” (Urry 2003: 7). The first part of the paper analyses the a priori principles that historically constituted the spatio- and temporal systems of differentiation and which continue to determine much of our thinking on Africa in relation to the rest of the world – as will be illustrated with reference to the phenomenon of African “failed states” in the context of a Hobbesian, anarchic state system. In the second part of the paper I argue that the ethical turn implicit in complexity theory offers us a way beyond the determination of these principles.

¹²⁷My use of this phrase is distinct from, but interfaces with, the “de-materialisation” of time and space as a function of globalisation (Urry 2003: 2).

First System of Differentiation: Space

Since “time is not taken seriously” (Lovejoy 1964: 262) in the Great Chain of Being, it is quite appropriate to refer to it as constituting *differences spatially*. More precisely this visual chain of difference consisted of an

infinite number of links ranging in hierarchical order from the meagerest kind of existents, which barely escape non-existence, through ‘every possible’ grade up to the *ens perfectissimum* – or, in a somewhat more orthodox version, to the highest possible kind of creature, between which and the Absolute Being the disparity was assumed to be infinite – every one of them differing from that immediately above and that immediately below it by the ‘least possible’ degree of difference. (Lovejoy 1964: 59)

The above mentioned view of time suggests the following a priori principles that will be explained here below.

A Priori Principles

The “a priori principles of the Great Chain of Being” (Lovejoy 1964: 52) can be divided into three primary and two secondary principles. The first of the primary principles is that of *plenitude* and derives from Plato’s notion of the Good according to which no genuine potentiality of being can remain unfulfilled. The second is the principle of *continuity* first introduced to natural history by Aristotle¹²⁸ according to whom the relation between all quantities in reality is continuous and not discreet. For instance, in a linear series classes are not really distinct from, but rather shade off into one another so that when we imposed a discrete classificatory system on the continuum many twilight creatures (zoophytes, pygmies etc.) belong to more than one class and therefore to none. The third is the principle of *unilinear gradation* which gives directionality to differentiation by effectively creating a hierarchy or “ontological scale” – a notion also derived from Aristotle who first arranged creatures either according to their degree of perfection or, as he argued in *De Anima*, their “powers of soul.” Important about this *scala naturae* is that it prefigured a first secondary principle that would only fully emerge in evolutionary discourse, namely the principle of *recapitulation* or the idea that a higher order possesses all the powers and characteristics of those below it in addition to a differentiating one of its own (Lovejoy 1964: 59). The second secondary principle evoked by plenitude is *sufficient reason* of which at least one version maintains that the explanation for the truth of a metaphysical statement is implicit in the statement itself (Smith 1995: 99). For example, the statement “God is Good” necessarily leads to the conclusion that the created world is the best possible world, or as Abelard (Lovejoy 1964: 71) argued, that “it is intrinsically impossible for God” to have created a different world.

¹²⁸In the Chain this principle would fuse with that of plenitude despite the fact that Aristotle in his *Metaphysics* explicitly denied the principle of plenitude (Lovejoy 1964: 55) – which, again, is curious given that the principle of continuity can be logically deduced from that of plenitude.

Together these primary and secondary principles metaphysically ground the facts (1) *that* things exist, (2) *as* they (can only) do.

The epistemology of this essentially pre-modern episteme has been analysed by Merchant (1983) and Foucault (1970: 18–25). While the latter focused on epistemology (the historical a priori of Western pre-modernity) and outlined the different kinds of resemblances (*convenientia, aemulatio, analogy and sympathy*) which held the world together like a chain, Merchant offers a detailed ontological description of this world and its implicit epistemology as organismic. To say that “for sixteenth-century Europeans the root metaphor binding together the self, society, and the cosmos was that of an organism” (Merchant 1983: 1) is to say that the interrelatedness of what *is* was isomorphic to the interrelatedness of what there was to *know* (self, society and cosmos). Knowledge was about understanding one’s place in the world – for instance, that man’s “body was governed by one of the zodiacal signs, so that as a microcosm, he was a miniature replica of the celestial spheres, or macrocosm” (Merchant 1983: 100–101). This isomorphic relationship between the micro and the macro, knowledge and being, is important for two reasons. One, it provided the ontological foundation for an epistemology of sympathy (Foucault) which postulated a deep interrelatedness on the basis of which both agency (actions can have an effect across the cosmos) and knowledge (the cosmos can be known through its resemblances) became possible. Secondly, it represented the continuation of an analogical tradition rooted in ancient Greek cosmology (Gould 1977: 13–17) which would re-emerge in chaos and complexity theory as a concern with ontological depth variously conceived in terms of self-similarity, nested hierarchies and so forth.

A Prudent Mediocrity

Implicit in the Chain is an “ethics of prudent mediocrity” (Lovejoy 1964: 200–207) which is a direct function of the absence of time. In a speculative metaphysics legitimised by the a priori assumption that it is also the best possible world, there can be a concept but not a practice of freedom. Proponents of the Chain of Being argued that links in the Chain existed for their own sake and not for the benefit of others¹²⁹; that, while they may be unequal in dignity, all creatures existed equally and that man occupied a middle place, not in the middle of the series with an equal number above and below, but half-way between sentient and intellectual forms of being. This gave rise to a fair amount of relative condescension in which, in the words of Pope (Lovejoy 1964: 193), superior beings “shew’d a Newton as he shew’d an Ape”. The result was a systemic “racial inferiority-complex vis-à-vis more perfect creatures” (Lovejoy 1964: 190). Although Newton was considered far above the Hottentot this was strictly speaking not yet racism because the meaning of this difference had not yet been politicised in a practice of exclusion nor was it denied that

¹²⁹That they may exist for the benefit of others was a modification that occurred under the influence of Christianity which maintained man as the crown of creation.

all elements were racially inferior to other elements in the Chain. For instance, just as a Hottentot could not aspire to become a Newton, a pygmy could not become a European and Newton could not become an angel. Man's eternal fascination with improving his station was taken either as an indication of a possible "relative perfection" or, more laconically, as merely constitutive of what it meant to occupy that place in the Chain.

The demise of this static and spatial politico-ethical system of differentiation coincided with the temporalisation of difference represented by the new biology that emerged at the end of the 19th century (Jahoda 1999: 32). The abolition of the slave trade coincided with the increasing racialisation of the Chain of Being (Jahoda 1999: 54) which in retrospect suggests that the Chain – because of its principles of gradation and plenitude and its ethics of prudent mediocrity – appears as the historical, perhaps even transcendental, condition for the possibility of the racialising of differences that occurred when the gradation of angels and pygmies gave way to an evolutionary concern with apes and blacks.

There is no abrupt discontinuity between the end of the Chain's spatial differentiation and the birth of temporal differentiation represented by subsequent evolutionary sciences. In fact, the 18th century marks not only the emergence of an *a posteriori* scientific world-view but also the widest diffusion and acceptance of the belief in a Chain of Being (Lovejoy 1964: 183). Conceptually, the transition from a spatial to a temporal system of differentiation is spanned by the strange and paradoxical "Temporalization of the Chain of Being" (Lovejoy 1964: 242): when various authors started viewing the Chain less as a static chain than a Ladder marked by "the perpetual progress which the soul makes towards the perfection of its nature, without ever arriving at a period in it" (Addison in Lovejoy 1964: 247). These attempts effectively amounted to a double-thinking teleology which acknowledged not only that man may draw ever nearer to God in greater degrees of perfection but also that he would never get there. It was a teleology of immortality haunted by Zeno's paradox.

There can be little doubt that the Chain as a logical, speculative metaphysics could have accommodated, however paradoxically, the notion of change *ad infinitum* by continuing to reduce change to a mere chimera, to no more than a logical problem to which there would always be logical solutions (however apparently paradoxical). But to describe the way in which theorists of the Chain adapted to changing times through the incorporation of ever more complex logical paradoxes as the gradual "Temporalization of the Chain" is to acknowledge that the Chain, qua system of differentiation itself, was subject to time, that *it* was changing and that, even though qua system it existed by virtue of the exclusion of time, it nonetheless remained subject to time itself; in other words, the Chain as static system was always already historical and therefore temporal. While its paradoxical, theological logic might have continued to contain stasis *within* the system (by increasing its dogma, paradoxes and declared heresies) it could never accommodate or represent to itself the change *of the system* as such – its change *over* time, *in* time and as a function *of* time – exactly because qua system it was founded on the exclusion of temporality. The "Temporalization of the Chain of Being," therefore, reflects the transparent (to

itself) attempts at accommodating the changes wrought by the opaque changing of the system over time. Simply put: a system premised on the a priori exclusion of historicity (time) cannot represent *within* that system, changes *to* that system which occur as a function of the very historicity *of the system* (in time) itself. Time does not stand still for any system and if a system exists by virtue of the exclusion of time, it will at some point collapse under the contradiction of trying to accommodate time (in the form of change) while simultaneously attempting to sustain the a priori exclusion of time that made it possible in the first instance. What logic makes transparent on the inside, history makes opaque on the outside. The paradox inherent in the logic of exclusion haunts all systems of differentiation and I return to it later.

Second System of Differentiation: Time

For the West, time and temporality were epiphenomena of modernity which in all its secularised, scientific complexity could no longer exclude or reduce to a logical chimera the reality of time (now recognised as change, development, progress etc.). Thus, we see the emergence of a second, *temporal* system of differentiation. Borne of a need to explain or at least accommodate historicity, the resulting temporal system – broadly “evolutionary” – represented differentiation in a vocabulary that represented to itself not only the changes (“evolution”) of the elements *within the system*, but also the changes or evolution *of the system* as such. For instance, the principle of differentiation we know as “descent with modification” applies equally to both elements of the system and the system itself. In an evolutionary system of differentiation, not only do the elements of the system evolve over time but also the system as such so that there are many species of evolutionary theory and all have modified with descent. In what follows, I first look at the a priori principles constitutive of this temporal system of differentiation before I return to the paradox of exclusion and how the implications of the latter still reverberate in our thinking about Africa’s place in a globalising world.

Immanent Teleology; Or, We Are the End

The first a priori principle of this second, temporal system of differentiation comes into focus when we ask: what accounts for change and/or the apparent increase in complexity of living creatures over time? Preformationists maintained that all complexity is present in a creature from birth and that ontogeny is really the “unfolding” of this complexity; epigenesists, that “parts are formed sequentially by external forces acting upon matter only potentially capable of normal development” (Gould 1977: 17). Although this distinction dates back to Aristotle, the temporal system of differentiation consolidated its hegemony when preformationism was finally discredited and the validity of epigenesist embraced as a “true” account of change and

growth. Charles Bonnet (1720–1793) was pivotal to this change. His preformationist vision of a parallel unfolding of ontogeny and phylogeny represents not only the end of the analogical tradition but also the most extreme attempt to incorporate time into the Chain of Being. Although his Chain consisted of an infinite gradation of creatures each analogically unfolding their preformed essence, it was an “entirely static” (Gould 1977: 23) world created all at once and limited by what was really a reconfiguration of the prudent ethics of mediocrity. Integral to Bonnet’s vision of ever increasing perfection was the fact that he equated “increasing perfection” with “increasing complexity” which carried with it its own implicit teleology since it amounted to “a series of *improvements* in design” (Gould 1977: 28; emphasis added) culminating in “the emergence of perfected germs of restitution *at the end of time*” (Gould 1977: 28; emphasis added). The principle of concern here emerged when Bonnet temporalised perfection in what can perhaps best be described as an *immanent teleology*. Although most evolutionists and contemporary complexity theorists resist equating complexity with increasing perfection (chance having replaced design), their nexus would nonetheless resurface in the work of social Darwinists who insisted on inserting complexity into a linear path of social development which maintained the superiority of Western societies on the basis of their “increased complexity”. The resulting power/knowledge nexus divided the world into those who *named* (increasingly complex) stages of development and those who *imitated* them. Through this difference, the imitated became an immanent end that could never be achieved by those who imitated them because by the time the latter got there, the former would have already “evolved” to an even more complex or “higher” stage of development. This was effectively a temporalised reconfiguration in immanent terms of Addison’s theological statement celebrating the immortality of the soul:

There is not, in my opinion, a more pleasing and triumphant consideration in religion than this of the perpetual progress which the soul makes towards the perfection of its nature, without ever arriving at a period in it. (in Lovejoy 1964: 247)

Second and third markers of the change from a spatial to a temporal system of differentiation were the change in the meaning of the word “evolution” and the introduction of recapitulation as mechanism that accounted for change – a mechanism whose legitimation was a function of the decline in the belief in “unfolding essences”. Applied to the social sciences the idea that ontogeny *recapitulates* phylogeny meant that societies are primitive when, and because, they manifest a stage of development Western societies had already recapitulated.

Recapitulation – Or: We, Too, were Once Children

When recapitulation was first introduced, the word “evolution” had none of its contemporary Darwinian connotations. On the contrary, it was used to capture the essence of preformation. For instance, in 1744 Haller wrote that according to the theory of evolution “all human bodies were created fully formed and folded up in the ovary of Eve and that these bodies are gradually distended by alimentary humour

until they grow to the form and size of animals” (Gould 1977: 29). This derived from the Latin meaning of the word *evolutio* which denotes “an unrolling of parts already existing in compact form, as in a scroll or the fiddlehead of a fern” (Gould 1977: 29). Spencer transformed the meaning of evolution when he limited its use to describing a process of progressive change towards increasing complexity – thereby denying that change was driven by an internal, preset or encoded logic. Instead, evolution came to be seen as the result of an organism’s interaction with external forces.

At the same time Haeckle explained the relationship between the evolution of life (macro) and the evolution of the individual (micro) in a manner that was no longer static or analogical. He invented the terms ontogeny and phylogeny and proceeded to recast the ancient, static and analogical relation between micro-and macro in terms of a dynamic scientific (mechanistic) law according to which a micro entity (individual; society) re-enacts or re-capitulated the most important biological changes of a collective entity (society; civilization). Central to his theory was the notion of “gradual elevation” through recapitulation which effectively flattened the Chain of Being into a Chain of Becoming – one no longer regulated by a static, spatial ascension to perfection but rather by temporalised progress towards ever superior or “elevated” complexity through a re-enactment of stages of development. The immense promise held out to social science by the theory of recapitulation was neatly summed up by Conklin in 1928 when he wrote:

Here was a method which promised to reveal more important secrets of the past than would the unearthing of all the buried monuments of antiquity – in fact nothing less than a complete genealogical tree of all the diversified forms of life which inhabit the earth. It promised to reveal not only the animal ancestry of man and the line of his descent but also the method of origin of his mental, social and ethical faculties. (in Gould 1977: 116)

Genealogically, recapitulation reconfigured the spatial ethics of prudent mediocrity by subordinating the principle of change to the maintenance of the system of differentiation itself. Concretely this meant that any resistance to one’s status as child-like primitive was reduced and codified by the system itself (through paternalism) as one more stage of development within the system (“the natives are child-like/restless”etc.). The inescapability of this logic realised itself with particular perniciousness in criminal anthropology, racism, child development, psychoanalysis and colonialism. In America Stanley Hall devoted most of his time to studying childhood play as a re-enactment of the rituals, beliefs and conventions of their savage adult ancestors. “The child,” he wrote, “revels in savagery, and if its tribal, predatory, hunting, fishing, fighting, roving, idle playing proclivities could be indulged . . . they could . . . be far more humanistic and liberal than all the best modern schools could provide” (in Gould 1977: 142).

For Africans the power/knowledge nexus represented by recapitulation entailed being subdued, converted and disciplined towards maturity. The implications of this reconfigured and now temporalised ethics of prudent mediocrity cannot be overstated. It subsequently structured every linear idealist and materialist grand-narrative of social evolution (Hegel, Marx, Modernisation; Rihani 2002: 3–4) in which, to emphasise a mechanistic as opposed to organistic reading of Marx (Rader 1979),

“the country that is more developed industrially only shows, to the less developed, the image of its own future.” Recapitulation exemplified the mechanistic world-view that replaced the organicist world-view of Western pre-modernity with an epistemology concerned with revealing the unchanging laws of nature – of which recapitulation was one. Mechanism was based

on the logic that knowledge of the world could be certain and consistent, and that the laws of nature were imposed on creation by God. The primacy of organic process gave way to the stability of mathematical laws and identities. Force was external to matter rather than immanent within it. Matter was corpuscular, passive, and inert; change was simply the rearrangement of particles as motion was transmitted from one part to another in a causal nexus. (Merchant 1983: 102–103)

Perhaps it is no exaggeration to say that, while the tradition of mechanistic meta-narratives of social evolution was rooted in the linear historicity of revived social contract theory in the 17th century, it continued through the work of Hegel and Marx only to culminate in classical Modernisation Theory. These narratives combined reconfigured spatial principles of differentiation (gradation, continuity, *telos*) with the introduction of mechanisms of change that would account for their temporal, as opposed to spatial, character. While difference (gradation and perhaps even continuity) is constitutive of any system of differentiation, *telos* as a transcendental or immanent End is not. It is exactly on the issue of a transcendental (“perfection”) or immanent teleology (“civilization,” “development,” “maturity” or “increased complexity”) that a third spatio-temporal system of differentiation can be distinguished.¹³⁰ This system allows us to think difference without any reference to a transcendental or immanent teleology. In it, difference is not legitimised teleologically and exactly therein lies its invitation to re-think questions of ethics, justice and community in a time of globalisation. However, before I outline this spatio-temporal system of differentiation a brief look at the paradox of exclusion that haunts all systems of differentiation and the way it still determines how we think “failed states” in Africa.

Systems: Context, Differentiation and Re-integration

In this section I explore some of the implications of a number of ideas put forward by Luhmann as discussed by Rasch (2000). Paramount among them is the notion that all systems originate in making a *difference* between itself qua emerging system and its environment. That difference is then copied into the system where it is used to make *distinctions* within the system. In this way a founding distinction is replicated within the system as a difference. The working of differences inside the system

¹³⁰Later, when discussing this system, I follow Urry (2003: 17) in offering a non-mathematical account in which chaos theory, fractal geometry, the non-linear and complex are treated as a single paradigm. Justification derives from the fact that there is no consensus on their relation with some authors (Thrift 1999) arguing that this domain of knowledge is emerging chaotically.

will always be paradoxical because, while they necessarily presuppose the unity of the system in order to make differences meaningful, the very unity of the system is constantly undermined or deconstructed by the fact that differences within the system are the result of a primary difference (qua distinction) that made the system possible in the first instance. Rasch (2000: 108) offers a clear description of this logic and its implication:

The paramount distinction of much of Western modernity, for example, the one between rationality and irrationality, is made not by God but by rationality itself. This paradoxical relationship between a distinction and its resultant, yet presupposed space is what allows distinctions to be so easily deconstructed.

But some distinctions are paradoxical in the additional sense that their application or the unfolding of their logic produces exactly what they are designed to exclude. For instance, the transcendence/immanence distinction generates practices aimed at achieving other-worldliness (religion, prayer, retreating etc.) but invariably leads to the re-production of more worldliness or immanence in the form of churches, retreats, monasteries, jobs, advertising, commerce and so on. That which is pursued reproduces more of what is denied by the pursuit. The intellectual history of the Chain of Being illustrates this logic quite clearly. Founded on a distinction between the temporal and a-temporal, the Chain qua static system of differentiation was premised on the exclusion of *time* but could not sustain its integrity indefinitely because it nonetheless remained subject to *time*. For a while it sustained its coherence and integrity by expunging paradoxes as heresies but ultimately it collapsed in the ultimate paradox: attempts at “temporalizing the Chain of Being” amounted to the obliteration of the very difference between the temporal and a-temporal, time and stasis, upon which the Chain of Being was founded. Failing, as it had to, to find an internal solution to the paradoxical, founding exclusion of temporality the Chain of Being collapsed when it obliterated the one difference that made it possible. But “collapse” is not the right word for we are not dealing with a physical entity here. Perhaps it is more correct to suggest that the Chain qua system of differentiation turned inside out like a Möbius strip. The subsequent temporal system was haunted by a different version of the same paradox – one whose political implications are much more keenly felt today – particularly in thinking about Africa.

Overlapping in time with the attempts at temporalising the Chain of Being, was an emergent temporal (“evolutionary”) system of differentiation that incorporated temporality into its very logic in such a way that both the elements within the system as well as the system as such could evolve over time. In that way it solved the problem of temporality. But it did so only by generating its own paradoxical, founding distinction between the “civilised” and the “uncivilised” represented as a difference between “those who have evolved” and “those yet to evolve.” Just as the rational/irrational distinction is made by the rational, so the civilised/uncivilised distinction is made by the “civilised.” Because these distinctions are generated *performatively* – rationality *makes* a rational distinction between the rational and irrational, the “civilised” auto-nominate the difference that legitimises them in

making the difference – both remain constitutively deconstructible: “the belief in reason is just as much an irrational leap of faith as the belief in God” (Rasch 2000: 108) and practices of slavery and colonialism were often more barbaric than anything the “uncivilised” came up with. Important as the civilised/uncivilised distinction is and as enlightening as it may be to read the last 400 years as the violent auto-deconstruction of this difference, I am more interested here in pursuing another paradox of Western modernity that dovetails with the civilised/uncivilised difference and which is constitutive of the Westphalian state system qua system, namely the founding exclusion of relations from a system premised on the a priori assumption that entities are conceptually and analytically prior to relations. In a very real sense, interdependence is to the principle of sovereignty in the state system as time was to the principle of stasis in the Chain of Being. I want to briefly tease out this analogy before moving on to the third, spatio-temporal system of differentiation.

The State System: Differentiation and Re-integration

Hobbes’ political project was fundamentally mechanist because it assumed that entities (atoms, individuals, states) precede their interaction and that this self-nomination as separate entities conceptually and historically preceded their voluntarily and consensual entrance into relations (agreements, contracts). Internal to contract theory this generates a familiar logical paradox: how do we agree on the enforcement of a contract without presupposing contractual agreement on how to do so? (Hampton 1986). Unsurprisingly, the political problems generated by a mechanist world-view cannot be solved within the system itself, for a system premised on the exclusion of interdependence cannot solve the problems that arise internally to the system as a consequence of the lack of such interdependence. Alternatively, it can do so but only by risking the very exclusionary gesture that founded the system, here the principle of sovereignty. In this way our mechanistic political world-view (of which a state system that prioritises sovereignty over relations is the marker *per excellence*) is gradually collapsing under the same logic that accompanied the delegitimation of the Chain of Being: while the decline of the latter was marked by the imperative to incorporate temporality, the decline of the mechanist political world-view is marked by the imperative to incorporate the principle of interdependence excluded at its founding moment. *Time* and *interdependence*: excluded at the origin, return to mark the end. While theorists of the Chain sought refuge in logical paradox to contain time, champions of state sovereignty employ ever escalating levels of violence in order to establish or sustain sovereignty at a time marked by its global erosion.

Why is it so difficult for the Westphalian state system to solve the problem of interdependence? Historically there have always been two questions of interdependence at play: (1) the interdependence of Western states and (2) the interdependence of Western and non-Western (here: African) states. To appreciate this duality at the level of concern to us we must remember that the Hobbesian social contract adopted by Western state theorists as a model for the anarchic state system separated as two

temporally distinct moments the *naming* of an entity as separate, autonomous entity and its *integration* into the system (individuals exist prior to the social contract). State and international relations theorists capitalised on this separation in order to think through both questions of interdependence. Firstly, it allowed them to conceptualise the movement through which Western states enter(ed) into supra-national agreements, treaties and the like in contractual terms. Secondly, it enabled them to distinguish between those states whose emergence was co-terminus with the system itself (“the civilised”) and other states whose incorporation was deferred to a “time to come” (“the uncivilised” who continued for the time being to inhabit a state of nature) – a deferral legitimised with recourse to the a priori principles of *immanent teleology* (in the form of Developmentalism) and *recapitulation* (Africa must first recapitulate the states of evolution). While the co-terminus emergence (or self-nomination) of entity and system constituted the Western state system, the foundational exclusion of interdependence vis-à-vis non-Western states would continue to haunt the state system in the form of real inequalities behind a façade of formal sovereignty and equality (see Jackson 1990, Keene 2002).

Far from being a simple question of integrating states into a global state system, what is required is nothing less than an engagement with the founding paradox of the state system, namely the exclusion of interdependence and the prioritising of entities over relations. Only such an engagement with the founding difference between the West/Africa, and between sovereignty/interdependence will allow the state system to evolve into a *system* in the complex sense of the term. As usual, the entropic cost of a system grappling with its founding difference will be visible on the periphery of that system, here in the phenomenon of Africa’s “failed states”. A discourse that refers to these failures not as symptomatic of a “system” that prioritises entities of relations but as the failure of individual entities themselves is obviously problematic, for as Urry (2003: 14) points out, “this . . . limited and often individualistic way of formulating relative failure . . . does not explicate just how these so-called side effects may be systemic features of the system in question”. At stake is the difference between reading Somalia as a failed *state* and reading it as a node in a complex network of interests (Cold War, multinational, supra-national ideological etc.) that always already deconstructed its founding moment as possible sovereign entity. These so-called failed states show us with uncanny precision the under-belly of a state- “system” violently premised on the priority of entities of relations. To the extent that there is real failure, it is systemic failure or at least the logical outcome of founding principles.

In system terms it seems as if globalisation and the cosmopolitan vision represent de facto shifts away from such a modernist prioritising of entities over relations and a thinking away from evolution towards co-evolution in a constantly changing fitness landscape (Walby 2003) and that the de facto political interdependence of states (one of the hallmarks of globalisation) is returning to haunt the Westphalian state system as a paradox in much the same way that temporality returned to haunt the Chain of Being. This suggests perhaps a general systemic principle: the exclusion that marked the birth of one system will function as founding principle of the next system (the exclusion of time in the Chain became the founding principle of

evolutionary discourse; the exclusion of interdependence [modernity] becomes the founding principle of globalisation [post-modernity] etc.). This generates an interesting meta-historical question that I cannot address in any detail here. If the system cannot find an internal solution to the paradox generated by its founding exclusion, how do we nonetheless account for the arrow of time, the movement we call change? How is it that systems undergo the magnitude of change suggested by the examples offered here? Two pointers and an example will have to suffice. Firstly, it is possible that once a system has become sufficiently self-conscious of its founding paradox and of the tensions generated by its founding inclusive/exclusive difference, hitherto excluded possibilities may re-emerge as a function of that very self-consciousness; secondly, that during a window period of change or transition we may witness the quasi-organic re-integration of the excluded. In an anticipated future retrospective sense of the phrase, this may yet become the importance of the Kosovo debacle of 1999. After NATO's intervention in Kosovo in 1999 it is generally agreed that the future interpretation of international law – particularly Articles 2(4) and 51 in conjunction with the whole of Paper VII – will be guided by ethical practices and that such practices “*will evolve without formal amendment*” to international law (Slaughter 2008: 4; emphasis added). The Kosovo intervention was declared “illegal but legitimate” – illegal because it side-stepped authorisation by the UN Security Council but nonetheless legitimate in the eyes of NATO and the wider international community for constituting a “legitimate humanitarian intervention.” The deep ethical dimension of this de facto legitimacy is perhaps best articulated by the phrase suggesting that the practice of state interaction may “evolve without formal amendment to international law.” The implicit suggestion is that humanitarian interventions based on ethical reasoning must remain so exceptional that they cannot be codified. Of course this is treacherous terrain but we have to ask: is the possible destruction of law in the name of justice, a possibility that should exist in any and every application of the law that wants to be just and not simply the application of rules (Derrida 1992), not treacherous for the very implied suggestion that justice always exceeds the law? And is this treacherous point beyond the law not the place where the juridical and ethical intersect? Lastly, is it not possible that in recognising the justness of intervention, not *despite* but *because* of the impossibility of their codification, the inescapable ethical (Levinas) dimension of an interdependence that always already precedes its codification in ethics and law, was re-affirmed? With that possibility we arrive at the single most important distinguishing feature of the third, spatio-temporal system of differentiation: relations constitute entities.

In the following section I elaborate on this system of differentiation. In the process I distinguish between “politics” and “the ethical.” I use the former to delimit the domain of modernity – to thinking obligation, duties and rights in a mechanistic world-view premised on the autonomy and priority of entities over relations, the conditions of their entry, the obligations and duties that accompany such entry and the various mechanisms generated by the intractable problem of authority but nonetheless required for maintaining volition-based commitment to the integrity of the system. I use “ethical” to refer to a logic that emerges only

when we acknowledge that relations are prior to entities, that acceptance of our “obligations” or “responsibilities” should be preceded or framed by acknowledging our embeddedness in a system; that such recognition is anterior – analytically and historically – to both the rights and privileges we employ to conceive our participation in that system as well as the obligations and responsibilities with which we respond to the demands made of us by other elements in the system. In a wider sense, “ethical” denotes an emerging political discourse that legitimately begs the question of authority by embracing the assumption of interdependence. This discourse views societies – both local and globalising networks – in complex dynamical terms.

In the remainder of this paper I briefly consider the outlines of this third, spatio-temporal system of differentiation before I conclude by considering the question: what is the real impact of all this on the way we respond to what some consider the thorniest ethical issue of them all, namely development aid in relation to Africa?

One brief caveat regarding the historiographic assumptions of this paper’s talk about “systems of differentiation” is in order. For Arendt (1965: 52) the political fallacy of modern Idealism, particularly that of Hegel, consisted in “describing and understanding the whole realm of human action, not in terms of the actor and the agent, but from the standpoint of the spectator who watches a spectacle”. As such, the new world ushered in by the 18th century revolutions was armed, not so much with a “new science of politics” (Tocqueville) as with a “philosophy of history” (Arendt 1965: 52). In this modernist philosophy of history one thing simply follows another: modernity is followed by post-modernity or, here, the temporal system of differentiation might be succeeded by a spatio-temporal system of differentiation. Post-modern theorists have devised many ways of resisting this modernist linearity. Lyotard (1984: 79) argued that postmodernism is not modernism at its end but rather modernism in its nascent state and Scott (1998) considers post-modernity simply as “modernity on the turn.” Here the problem would consist in narrating the systems of differentiation in a linear fashion – as if history moved from a spatial Chain of Being to a temporal concern with Becoming to a spatio-temporal recognition of complexity – and which would amount to a continuation of the a priori assumptions of the temporal system of Becoming. Rather than adopting the language of postmodern theorists like Lyotard or Scott, I want to articulate the emergence of this third system of differentiation consistent with that emergence itself: not as the dawn of a new post-Westphalian world order or even the return of the historically excluded and repressed logic of interdependence but rather by using as historiographic fiction the spectre of Möbius that has been shadowing this paper all along. Charting the contemporary recognition of the priority of relations requires nothing less than the opposite of what Arendt defines as a modernist philosophy of history. It requires of us to place ourselves inside the very logic that remains irreducible to our speculations on it – in this case, to walk along the Möbius strip of modernity and to bear witness to that familiar turning of the inside-out which, in this case, reveals on the outside what had always been concealed on the inside, namely the constitutive priority of relations.

Third System of Differentiation: Space-Time

A genealogy of complexity theory may point in three directions. Firstly, the interface of natural and social sciences; secondly, the systemic and systematic inversion of the entity/relation distinction and thirdly, a recognition that the binaries of modernism can no longer do the work required of them – one of which is the opposition between natural and social sciences which derives from the Cartesian separation of the *res cogitans* (mind) and *res extensa* (matter) (Capra 1983: 45). As for the first, contemporary natural science has illustrated that we cannot comprehend matter from a Newtonian perspective. The implication of these developments has been that many of the phenomena social scientists have always been interested in are now recognised as hybrid phenomena in the sense that they clearly manifest a combination of natural and social forces at work: health, population studies, migration, the behaviour of the stock exchange etc. (Urry 2003: 17). From a post-Newtonian scientific perspective, these collectivities display behaviour that is not random but chaotic in the sense that they demonstrate statistical probability which refers to recognisable patterns that emerge in apparently random systems. This obviously raises the question of free-will and determination. To suggest that such phenomena invariably produce recognisable patterns that can be mapped in phase-space implies that the free-will binary has exhausted its analytical usefulness, that individuals, societies and global networks operate somewhere between the two domains in a third that constitutes a free-play of order and chaos. To think the working of complex systems is to think that domain and genetics offers a good example of what that means. Formerly divided between the preformationist (order is immanent) and the epigeneticists (order is the result of chance interactions with the environment), modern genetics

is about as midway as it could be between the extreme formulations of the eighteenth century. The preformationists were right in asserting that some pre-existence is the only refuge from mysticism. But they were mistaken in postulating preformed structure, for we have discovered coded instructions . . . The epigeneticists, on the other hand, were correct in insisting that the visual appearance of development is no mere illusion. (Gould 1977: 18)

Another of these unworkable binaries is the entity/relation binary separated and temporalised by Hobbes. Complexity does not simply invert this binary in order to suggest that relations are conceptually prior to entities. Rather, it suggests that entities are constituted relationally. Some argue that the questions generated by complexity have or are being dealt with in post-modern philosophies. This is not the case. For one, there is a systemic convergence of social and natural studies through the hybrid phenomenon they study to which post-modernism is a limited response given that it derives from a literary, textual or humanities paradigm. Post-modernism, for instance, can assist us in understanding the meaning of violence and migration (Derrida 2000) but it cannot help us understand migration as hybrid phenomenon.

What then are complex systems? Cilliers (1998: viii–ix) usefully distinguishes between complicated and complex systems:

If a system . . . can be given a complete description in terms of its individual constituents, such a system is merely complicated. Things like jumbo jets or computers are complicated. In a complex system, on the other hand, the interaction among constituents of the system, and the interaction between the system and its environment, are of such a nature that the system as a whole cannot be fully understood simply by analysing its components. Moreover, these relationships are not fixed, but shift and change, often as a result of self-organisation.

In complex systems, “[c]onventional notions of cause and effect do not apply within an indivisible whole where the interrelations between parts are more fundamental than the individual parts” (Urry 2003: 20). For complexity theorists, the infinite number of variables at play, their interaction with their immediate environment, sensitivity to initial conditions and the feed-back effect that proportionally augment the effect of small changes beyond their predictability combine to make any prediction impossible. Central to this analysis are the following concepts: predictability gives way to probability and probability manifest in terms of recognisable patterns, islands of order amidst a sea of chaos (Prigogine) or apparent randomness. For instance, against a backdrop of thousand upon thousand throws of the dice, a pattern will eventually evolve which massive computation power reveals as always the same (Sierpinski). The patterns they converge are called “attractors” which can be mathematically modelled in phase-space and which map the emergence of ordered patterns in any hybrid phenomenon.

The nation-state or even modernity can be read in these hybrid terms (Rihani 2002: 9). There is nothing Western in the centralising-peripheralising dynamic that produced the core-periphery dynamic (“Western modernity”) of the last 300 years. There are two related critiques of such a Western-modernist view of modernity. Firstly, modernity was never an endogenous phenomenon: what is commonly referred to as “Western” modernity was the result of a core-periphery dynamic to which the periphery was always a necessary supplement (Derrida). To refer to this dynamic solely in terms of *Western* modernity is nothing but the violent attempt of a system, premised on the assumptions of autonomy (“the” West), to reduce what it cannot accommodate (a *relation* of dependence with the periphery) to the logic of the system itself. Contemporary human rights discourse is another such dynamically emerging phenomenon. It is as much indebted to the legacy of the French Revolution as to the anti-colonisation struggles of former colonies (Nabudere 2000). Secondly, this dynamic is part of a long, historical process which, from a world-systems perspective, maps the ever shifting centrality of the global political economy which Thompson (2000), for instance, describes in terms of K-waves and leadership cycles. The ascendance of Western Europe marks a shift in the process and maps, in complexity terms, the global movement of a centriperiphery attractor (Baker 1993; or, “power-resistance” attractor, Castells 1997). Two aspects of this analysis are of direct importance. First, the post-Cartesian insistence that the driving forces accounting for the formation of the attractor are not either Ideational or Material but a combination of both. Baker (1993) uses the term “idergy” to denote this. In as much as countries on the periphery (or “outpost”) seek to de-centre the centre, they do so at a level that is at once Ideational and Material. For instance, South African President Thabo Mbeki’s notion of an “African Renaissance” is an

Ideational (cultural) notion inescapably linked to the Material (economic) neo-liberal policies of NEPAD. By the same token, hegemonic power, i.e. the idergic attempts of the centre to retain the integrity of the centre qua centre, do so at a level that is at once material (waging wars, economic dominance) and Ideational (cultural, diplomatic). The usefulness of looking at the centriphery dynamic in terms of an idergically driven attractor is that it allows us to reconceptualise meta-narratives in a non-teleological manner – that is, in a manner that retains the indispensable differentiation of societies without in the process valuating them in terms of the kind of immanent teleology that characterised the temporal system of differentiation. One proponent of such an approach is Baker (1993: 140–141) for whom social evolution

has essentially been a move from a few humans living in many small centres with weak centripheral and centrifugal forces, using low amounts of energy, and having a very limited entropic effect on their environments to many humans living in a few large centres with strong centripheral and centrifugal forces, using vast amounts of energy, and having an enormous entropic impact on their environments. There has been a movement, then, from low entropy to high entropy societies, from many to a few social centres, and from slowly changing to quickly changing social formations. The notions of centriphery and entropy can, therefore account for the pattern of human social evolution.

Because this movement or arrow time is idergic, the narratives of nationalism are constitutive and therefore indispensable to this movement. Far from deriving their legitimacy from an arbitrary distinction between oppressive and emancipatory nationalism (Zezeza 2003: vi) these nationalist narratives (or the ideologies of nationalism as such) are inextricable Ideational components of an idergic, centriphery dynamic.

In such a non-teleological complexity-based meta-narrative there is no immanent teleology either. Outside their implicit and mutually constitutive power struggle there is no sense in maintaining that high entropy societies are superior to low entropy societies or even that higher entropy and/or increased complexity is a desirable state of affairs. Change is reconfigured, not as mimesis, but simply as the result of contending centralising demands that unfold in a fitness landscape (Walby 2003).

But this centriphery analysis is challenged by world-wide convergence or globalisation. Increasingly viewed as one complex dynamical system (Rihani 2002, Urry 2003, Jervis 1977) globality will change the attractor dynamic away from “simplistic” grand shifts in the global political economy viewed in uni-polar and/or hegemonic terms to the co-existence of several glocalisation attractors constituted by the interplay of various local and globalising forces all over the world. Urry (2003: 15), for instance, comments:

The strange attractor of glocalisation is . . . an attractor that involves parallel processes through which globalization-deepens-localization-deepens-globalization and so on. Both the global and the local are bound together through a dynamic, irreversible relationship, as huge flows of resources are drawn into and move backwards and forwards between the two. Neither the global nor the local can exist without the other. Diverse social and physical phenomena, including existing societies, are attracted towards the ‘glocal’, which develops in a symbiotic, irreversible and unstable set of relationships.

This essentially post-hegemonic vision of the future (Nye 2003) suggests that, instead of a dominating centrophery attractor, the future global system will be punctuated by various glocalisation attractors that will appear and function as nodes in a global network. Intriguingly, this globality qua system of differentiation can no longer invent itself along the lines suggested by Luhmann (Rasch 2000), that is, by making a *difference* between itself and the environment which it then copies into the system and employs as a *distinction* for the self-reproduction of the system. There is no “outside” of/to a global complex network. This means that the signifiers hitherto used in order to invent and legitimise such systems of differentiation from the outside – God, time, autonomy, evolution, rationality, Freedom, Democracy and so forth – have and will increasingly become drawn into the system, revealing in the process their immanent role as always already having been constitutive of a surface play of domination (Foucault 1970). Contorted remnants of previous legitimations, they will increasingly give rise to a symptomatic relativism: whose rationality? Whose concept of freedom? Whose notion of democracy? Whose freedom fighter and who’s terrorist? When this occurs we will have moved, in the terms of analysis offered here, from a politics to an ethics. More precisely, we will have witnessed the end of (modernist) politics and a return of/to the ethical.

The Ethical

What is the relevance of all this for how we think about Africa’s place in the world? Does the logic of this third spatio-temporal system of differentiation suggest different ways of thinking, for example, about development, poverty and aid? The ambitious architecture of this paper makes it impossible to engage the question of the ethical at the general level of (post)development and post-colonial theory. There is a substantial literature on this.¹³¹ Instead of analysing the transition from politics to the ethical at the speculative level of abstract theory I want to situate it at an ethical, grassroots level where NGO’s in Africa have to confront the entire history of colonialism, outlined so far in this paper and which made them both necessary and possible, *without being able to conceive of their role in terms of a development vocabulary derived from exhausted spatio- and/or temporal systems of differentiation*: “aid,” “upliftment,” “development” have become impossible guidelines for thinking about the nature of poverty alleviation interventions. My shift away from the speculative (abstract theoretical) to the contingent and historical (the dilemmas of NGO’s) is also consistent with the historiographic fiction employed here: writing and reflecting along the Möbius strip of modernity requires not only that we speculate on the (re)articulation of the constitutive priority of relations, but also that we place ourselves inside history in a way that acknowledges that we are no longer mere spectators. The journey of self-interrogation of the NGO *Enda Graf*

¹³¹See especially James Ferguson’s “Global Shadows: Africa in the Neoliberal World Order” (2006).

Sahel (Dakar, Senegal) as discussed by Matthews (2006, 2007)¹³² will be used as illustrative example of the ethical I have in mind here.

Post-development theory offers a radical and far-reaching critique of conventional development discourse and its implicit assumption that:

assistance involves[s] outsiders deciding on behalf of others what these others need and how these needs can be met. Post-development theorists do not think that such ‘outsiders’ – such as NGO’s, foreign or even national governments, and international financial institutions – can *legitimately* decide what is best for communities they little understand. Rather, we should look to ‘the local’, to ‘new social movements’ or ‘popular organisations’, as agents of desirable social change. Members of advantaged societies should support such movements, both in their own and in other societies, but should guard against becoming involved with them in ways that entail *paternalism* or an *imposition of foreign values* (emphasis added). (Matthews 2006: 66)

Implicit in the post-development position – particularly its radical democratic variant – is the commitment to a broader political agenda aimed at undermining oppressive and unjust power relations at home and in the assisted country. This essentially post-sovereign, post-authority, radical democratic position generates a predictable critique: states insist that the state is a more likely agent for desirable change while other critics bemoan the absence of any criteria for deciding which social movements to support (Matthews 2006: 66). In the absence of such criteria, it is argued, the post-development position can only lead to political irresponsibility and indifference.

Traditional development discourse tends to view poverty as located “over there” and “not here” – an ideologically over-determined spatialisation and temporalisation of a difference on the basis of which intervention becomes a voluntary, charitable act of intervention in the lives of the poor. Assistance is conceived of in terms of volition and exteriority, its ethics, one of conscience and not responsibility. Enda Graf Sahel started out from this position in the 1970’s, viewing themselves as conduits for the transfer of knowledge and resources on the basis of “presenting the poor as victims, the neglectful state as the persecutor and themselves as the ‘good cowboys’ heroically rescuing the poor” (Enda Graf Sahel 2001, in Matthews 2006: 69). They soon found themselves marginalised in the very communities they tried to assist because of their insensitivity to local knowledge and the arrogance of imposing development discourse on communities. More recently, they have moved to a post-development position which “recognise[s] the complexity of the causal relations that lead to impoverishment and oppression and . . . seek[s] to transform these relations, particularly by working to correct the ways in which ‘our’ societies contribute to the impoverishment and oppression of distant others” (Matthews 2006: 67). The difference is fundamental and pivots on the distinction: is failure/poverty individual, peculiar to *a* state or *a* people, or is it systemic? Just as state failure is an example, not of individual but systemic failure, post-development theorists argue that poverty is a systemic failure of which the causes and solutions are not linear (poor state =

¹³²For additional reference several of the primary Enda Graf Sahel publications are listed in References.

poor citizens, therefore assisted state = assisted citizens) but, indeed systemic, complex and non-linear and that those who are assisting are very much part of poverty as systemic phenomenon:

Poverty is the result of a long process. For this reason we prefer to speak of impoverishment and of the mechanisms which create poverty in each of us. As far as we are concerned, we do not fight against poverty, but against everything that creates poverty in our lives. (De Leener in Matthews, 2006: 74)

On this basis Enda Graf Sahel reinvented themselves as “a network of groups, horizontally and fairly haphazardly related, which provide support for a variety of community initiatives” (Matthews, 2006: 70) to such an extent that it is often difficult to say whether some of its constituent groups are best described as NGO or community based organisation. In terms of complexity theory, this post-development position can be described as a node in a system of interaction – the full extent of which cannot be fully comprehended or commanded by any element (person or organisation) in the system. In this capacity as node, the organisation fulfils various networking functions: connecting other organisations, introducing other to ideas and approaches they may be unaware of and providing alternative “takes” on the conditions, origins and results of poverty (Matthews 2007: 137). It is exactly this embeddedness in the network that creates the problem of criteria alluded to by development theorists and critics of post-development theory. However, it is only on the basis of their purported exteriority to the system that these critics can insist on “criteria” to be “applied” in order to distinguish between social movements that qualify for assistance. I would argue that the history of Enda Graf Sahel illustrates that the absence of such criteria does not produce indifference or political irresponsibility but rather invites us to consider an immanent and complex dynamical ethic which understands the non-linear and systemic nature of global poverty.

The Enda Graf Sahel journey of self-interrogation traces the outline of the genealogy offered here. It culminates in a contemporary understanding of the social (local or global) in systemic terms which nobody can fully articulate, comprehend or control. It is the hallmark of all complex systems that they cannot be reduced to an understanding of their totality (Malan and Cilliers 2004: 10); in this instance, such an act of comprehensive understanding or calculation is exactly what would be required for the formulation of a set of “criteria” upon which intervention in the system will be based. Any such criteria not only presuppose a comprehensive act of understanding (the system of which it is part), but will also necessarily have to invoke as legitimisation for such a calculation any one of the Signifiers of spatial and/or temporal systems of differentiation. In reference to such an encompassing act of comprehension, Readings (1996: 186) writes that the social bond

is the fact of an obligation to others that we cannot finally understand. We are obliged to them without being able to say exactly why. For if we could say why, if the social bond could be made an object of cognition, then we would not really be dealing with an obligation at all but with a ration of exchange.

The impossibility of such a calculation goes to the heart of viewing society or globality as complex, dynamical systems. In such systems, “there is no way of calculating an ethical choice by merely using rights and rules” (Malan and Cilliers 2004: 16) such as the “criteria” for intervention. The social, as a complex system, is incomprehensible and this incomprehensibility invokes the ethical as a response to justice – which is always more than the application of a law. It also leaves us with what Readings (1996: 185–186) calls a “community of loose ends”¹³³ in which

the singularity of the ‘I’ or the ‘you’ is caught up in a network of obligations that the individual cannot master. That is, the network of obligations in which an individual is caught up in is not entirely available to the subjective consciousness of that individual, so that we can never pay all our debts. Indeed, the assumption that we can pay all our debts is fundamentally unethical, since it presumes the possibility of overcoming all responsibilities and obligations, achieving ‘freedom’ from them. Autonomy as freedom from obligation to others, holds out the impossible imagination of subjective self-identity: I will no longer be torn up, divided from myself by my responsibilities to others.

Enda Graf Sahel does not have a definitive answer to the question: how, on the basis of what criteria, do you decide which organisations to support? Given the nature of the social bond as theorised by Readings, it is as misplaced and unethical to ask for such criteria as it is to hope that the UN can solve the problem of its own legitimacy. What one can do is articulate core values – respect for others, conviviality, reflexivity and protection of the environment (Matthews 2006: 77) – and in the praxis of co-operation, engage those role players these values resonate with. This is not the same as asserting criteria or pre-emptively filtering out elements in the system. It means ethically engaging the indeterminate question of co-operation every time it emerges – the result of which may or may not manifest a globalisation attractor in a greater system of global interaction. To insist on “criteria” is to reiterate a demand forged in the textual archive of spatio- and temporal systems of differentiation. It expresses the melancholy sigh used as epigraph to this paper, that it is always “*easier to imagine a time when nature, as it were, laboured and gave birth all at once to the whole creation, present and future, than to imagine a continual activity.*” What I am referring to here as a complex dynamical ethic is such a continual activity invoked by the possibility of co-operation. A paper like this cannot but place itself in the genealogy of the very difference it takes as thematic, cannot but offer itself as further instantiation of that difference. What that means cannot be determined or framed in advance of any discussion simply because there is no criteria to invoke, in advance and/or in self-defence; no predeterminations that would not already be further instantiations of that difference, actualised in history.

In 1995, 50 years after Arendt’s sweeping declaration that “[t]he problem of evil will be the fundamental question of postwar intellectual life in Europe,” Delbanco

¹³³See also Jean-Luc Nancy, *The Inoperative Community* and Maurice Blanchot, *The Unavowable Community* for an attempt “to think a community without identity, without a commonly shared core that would ground the social bond” (Readings, 1996: 227 *ft*) – an idea also expressed by Agamben’s notion of the social bond as *transience*, “the solidarity of those who have nothing in common but who are aggregated together by the state of things” (Readings 1996: 187).

added the melancholy observation that “a gulf has opened up in our culture between the visibility of evil and the intellectual resources available for coping with it . . . The repertoire of evil has never been richer. Yet never have our responses been so weak.” (in Bernstein 2002: 1) From this author’s perspective, nothing can be as visible as the ethical demand that Africa’s is making and will continue to make on an emerging global community. Despite the global recession it seems to me that the repertoire of intellectual, financial and political means to respond to this ethical demand has also never been richer – but that will only become visible to those who insist on reading our global communality firstly in ethical terms and not only so as an after-thought to politics.

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Chapter 13

Unpacking the Ethics of Complexity: Concluding Reflections

Rika Preiser and Paul Cilliers

I can only describe my feeling by the metaphor, that, if a man could write a book on Ethics which really was a book on Ethics, this book would, with an explosion, destroy all the other books in the world.

Wittgenstein, "Lecture on Ethics"

Writing Ethics

Wittgenstein's reflections on writing about ethics serve as a serious warning to all who attempt it. In order to write *the* book on ethics, one would have to fully understand life, the universe and everything, now and forever. If the author acknowledges the limitations of her own understanding – an acknowledgement which happens less often than one would think – she is faced with a dilemma. She could either restrict herself to practical moral advice on the contingent matters we face every day, or she could try to construct some meta-ethical perspective which is more general, despite the limitations. Since ethics involves more than everyday morality, the challenge of actually writing something about it remains a daunting one.

In this book the challenge is taken up in various ways. Whilst acknowledging that the final word on ethics cannot be spoken, there is an attempt to tackle the problem of what ethics should be in a complex world. The necessity of carefully reflecting on the necessary theoretical frameworks is acknowledged, without attempting to present them as something universal. The inevitable provisionality of such attempts should be respected. In what follows we will unpack the ethics of complexity in a little more detail, and spell out some implications for the way in which we deal with organisations. This may come as a disappointment to some, but there will be no recipes, there will be arguments and challenges.

R. Preiser (✉)

Department of Philosophy, Centre for Studies in Complexity, University of Stellenbosch,
Stellenbosch, South Africa
e-mail: rika@sun.ac.za

Changing Paradigms

The collection of chapters in this book fall somewhat outside the scope and style of the traditional ways of writing about Business Ethics. When browsing through the vast array of literature available in the field, one finds broadly two categories of texts: collections of case studies and texts which are more general and theoretical. They address issues ranging from reflection on familiar unresolved dilemmas and problems, which include questions on “individual freedom versus the need for order; relationships of members of multinational enterprises to each other, to their nation states, and to supranational institutions; sovereignty and autonomy” (Donaldson 1992: 22), to more conceptual issues such as corruption, corporate versus individual responsibility, agency, implementing codes of ethics, leadership, values and goal orientated business behaviour (Duska 2007, Moon and Bonny et al. 2001). Although many of these issues are addressed in this book, the central concern is with establishing a meaningful point of departure from where they can be interrogated systematically. That point of departure is the acknowledgement that we deal with complex phenomena. The main implication of this acknowledgement is that conventional ethics, be it deontological, consequential or based on virtue, does not provide points of departure which can be followed blindly. We have to rethink the framework of ethics itself before we can start to talk about business ethics. The chapters in this volume, whether they are of a more theoretical nature or based on concrete case studies, are bound together by this acknowledgement, and the result is a different kind of discourse. Let us look at the characteristics of this discourse.

Complexity is not something that can be pinned down by analysing the properties of a certain part of the system or by taking the components of the system apart and seeking for traces of complexity within the isolated parts. We are challenged to describe properties that emerge as a result of the interactions amongst the components (Cilliers 2008: 44). The interrelations between different “levels” (e.g. the agent, organization and society) are also not easily discernable. Our methods of inquiry and observations of the system are complicated even more due to the fact that the structure of the complex system we are aiming to describe, is not the result of an a priori design, nor is it determined by directly external conditions, but exists as being the result of interaction between the system and its environment. In order to detect the complexity in a system, one has to keep track of variables such as “patterns of organisation, structure, life processes, diverse interacting agents, environmental interdependence” (Lawrimore 2005: 126) and non-linear feedback processes. Because there is no objective point of view from which to define the complexity of say an organisation, our observations and descriptions of complex systems will always involve being understood through interpretations and a pluralist methodology that remains sensitive to the interrelatedness of the subjects under investigation.

One can thus say that complexity is a combination of the attributes of the system (ontological complexity) and simultaneously also a “function of our present understanding of the system” (epistemological complexity) (Cilliers 2008: 44). Hence, the style and methodology one uses when investigating complex systems change

from analysing the system as something which already exists beforehand with easy definable borders, goals and attributes, to analysing the not so visible connections between components' interactions through which the system as such comes into being and whose boundaries are not easily defined in terms of the environment in which it operates. Richardson (2005: 5–6) hints that “(w)hat is different about the ‘complexity revolution’ is that some of the results from complexity research suggest that all is not how it appears. The boundaries that mark the edges of objects are emergent, temporary, fluid, critically organised, provisional etc”. Due to the nature of complex systems, the methods of inquiry are thus more heuristic than predetermined. Explicit knowledge of the organisation is substituted by tacit knowledge. As Painter-Morland (2006: 92) explains, “(t)acit knowledge is not something that an agent can put his/her finger on. The possession of tacit knowledge allows an agent only the more modest claim that they know ‘how’. It is an embodied form of knowing” that aims to capture the unseen structures and relations that govern and shape the “unwritten rules” of engagement in organisations.

For the reader who is not knowledgeable about the vagaries of complexity and thus not familiar with its terminology, it might seem that the chapters in this book do not address the various issues in a systematic manner. The conventional business ethics reader, who is used to texts that treat organisations as easily definable, unambiguous realities that are defined and measured by their organisational character, their assets, values, the nature of their business plans, the effectiveness of the implementations of their business goals and what share of the market belongs to their stockholders, may also feel uncomfortable. We resist a modelling approach which accepts that organisations are systems that adhere to rule-based interactions governed by agents who follow specified rules. From such an almost computational interpretation of organisations, ethical guidelines are defined in terms of how the organisation chooses its value-linked activities and ethical behaviour is measured in terms of how effective it adheres to the organisation's routines of its rule-based logic. When the purpose and motives of the business have been established in this manner, ethical guidelines and codes of conducts are drawn up in a teleological manner to support and ensure that the business behaviour of the organisation are congruent with its goals and purposes (Duska 2007: xix). Ethics is thus something that follows as a wagon being pulled behind the locomotive of organisational goals and should ensure that the adopted values inform and mediate behaviour internally (between the individual employees of the company and its owners or shareholders) and externally (between the organisation and its customers or the public). Once ethical guidelines have been established notions of accountability, agency and responsibility are defined and worked out accordingly.

Viewing organisations as complex living systems departs wholly from this more traditional or mechanistic approach. A complex system is not something that exists independently from the parts that constitute it. In fact, its existence is constituted by means of the interactions that take place between the components. Therefore, notions of identity and organisational culture only emerge due to these interactions. Goals and purposes are thus not described in terms of the organisational culture or market branding, but they are influenced by the manner in which the components

interact in a non-linear fashion with one another. From such a perspective, it is clear that the notion of difference is inextricably linked with the notion of identity formation. The concepts of complexity, difference, identity and ethics are not assembled together because they sound trendy or because they enjoy the attention of strategists and human resource practitioners who use them to sound more politically correct, but because these concepts are inscribed into the fibre and being of a complex system. Denying this interwovenness is not just a technical error, but an ethical error.

A complex systems perspective regards ethics not as something that can be programmatically institutionalised, charted down in compliance programmes or to secure a best practice handbook (Moon and Bonny et al. 2001), but it actually shifts to become the locomotive that pulls the organisation through its passage in time. “Ethics” is also not something that gets integrated into organisational or corporate culture, but lies at the heart of establishing and envisioning a culture to begin with; it is part of all the different levels of activities in an organisation. The ethical stance is not something imposed on an organisation, or something that is expected of it. It is an inevitable result of the inability of a theory of complexity to provide a complete description of all aspects of the system. (see Cilliers 2005b: 16, 17).

The contributions in this book all strive to unpack and expose this understanding of ethics as linked to the notions of difference and identity that characterise the discourse and methodology of observing and speaking about complex systems. The diverse collection of chapters does not represent a unified theory of complexity or a “complexity based Business Ethics management manual”. As mentioned earlier, it rather represents a pluralistic and integrated approach on the subject matter that is “inherent in complexity thinking” which “undermines the whole notion of a unified theory of complexity, i.e. theoretical monism” (Richardson 2005: 112). The various examinations of a complexity based view of difference and identity, and the ethical implications thereof, form a coherent conversation between authors who would not have typically collaborated before due to the nature of their specialised fields of study. The specific lessons we learn about the ethical implications for viewing complexity, identity and difference as inextricably linked to one another, is highlighted in each chapter in such a way that it can be applied to organisational theory and the field of business ethics in general. Before discussing a number of themes which link the different contributions, a general understanding of the ethics of complexity should be described in a little more detail.

A Provisional Ethics of Complexity

Complexity, Limits and Knowledge

The argument that our understanding of complex systems is problematic in principle can be summarised in the following way: to *fully* understand a complex system, we need to understand it in all its complexity. Furthermore, because complex systems are open systems, we need to understand the system’s complete environment before

we can understand the system, and, of course, the environment is complex in itself. There is no human way of doing this. The knowledge we have of complex systems is based on the models we make of these systems, but in order to function as models – and not merely as a *repetition* of the system – they have to *reduce* the complexity of the system. This means that some aspects of the system are always left out of consideration. The problem is compounded by the fact that that which is left out, interacts with the rest of the system in a non-linear way and we cannot, therefore, predict what the effects of our reduction of the complexity will be, especially not as the system and its environment develop and transform in time.¹³⁴

We cannot have complete knowledge of complex systems; we can only have knowledge in terms of a certain framework. There is no stepping outside of complexity (we are finite beings), thus there is no framework for frameworks. We *choose* our frameworks. This choice need not be arbitrary in any way, but it does mean that the status of the framework (and the framework itself) cannot be used as the basis for objective knowledge. The generation of knowledge of complex systems is an exploratory process. As the context in which this knowledge is to be useful changes, we will have to continually revise the framework which generates this knowledge. Our knowledge of complex systems is thus always provisional. We have to be modest about the claims we make about such knowledge.

An understanding of knowledge as constituted within a complex system of interactions would, on the one hand, deny that knowledge can be seen as atomised “facts” that have objective meaning. Knowledge comes to be in a dynamic network of interactions, a network that does not have distinctive borders. On the other hand, this perspective would also deny that knowledge is something purely subjective, mainly because one cannot conceive of the subject as something prior to the “network of knowledge”, but rather as something constituted *within* that network. The argument from complexity thus wants to move beyond the objective/subjective dichotomy, as Morin (2007) also argues. The dialectical relationship between knowledge and the system within which it is constituted has to be acknowledged. The two do not exist independently, thus making it impossible to first sort out the system (or context), and then to identify the knowledge within the system. This co-determination also means that knowledge, and the system within which it is constituted, is in constant transformation. What appears to be uncontroversial at one point may not remain so for long.

One should also be careful not to interpret this state of affairs as somehow inadequate, as something to be improved upon. There is a necessary relationship between the imposition of a limiting framework and the generation of knowledge. One cannot have knowledge without a framework. Despite the fact that our knowledge is of necessity limited, these limits are enabling, they allow us to make claims which are neither relativistic nor vague (see Cilliers 2005a). At the same time, however, such knowledge is not the result of free-floating truths; it is contextualised in time and space. Because it is not objective, and because we know that, we cannot *use* this

¹³⁴These ideas are elaborated upon in Cilliers (2000, 2001).

knowledge as if it is objective. There is always a normative dimension to the claims we make, and we have to stand in for them. We cannot shift the responsibility for the effects of our claims onto some process we call “scientific”.

The Problem of Action

If the central insight from complexity – that our decisions will always have to be based on an incomplete understanding and thus will always have to be provisional – is valid, then it is clearly very difficult to use this insight to guide our actions. We can neither form a complete picture of the current situation and what it means, nor can we formulate an exact goal for which we should aim. We *know* that we cannot get it right.

Where does this leave us? Does it imply that we can do no more than slump into a dejected resignation? We think not. Yet to generate a more positive framework for action, without violating the insights from complexity, is not easy. Let me make some preliminary remarks.

In the first place, slumping into a dejected resignation is much better than to act with the self-confident arrogance of someone who thinks he knows what is right. There is a certain sense in which we should be knocked speechless by our ignorance, and by the mess we have created by acting on that ignorance. This is the essence of a truly critical position and a vital first step towards responsible action. We do *not* have to have an alternative *before* we can realise something is wrong or before we denounce it. We should not let ourselves be forced by instrumental rationality, nor by the demands of a performance culture, to relinquish our critique. Nevertheless, this should not lead to inaction.

In the second place we should realize that our decisions and actions do not only have effects on the world and on others, but also on ourselves. We are *constituted* through our decisions and actions, or more precisely, we mutually constitute each other in a rich, non-linear network of interactions. In a sense, we are simply the result of our decisions. If I choose a position of power and dominance, or a position which values material wealth over aesthetic value, that is simply the kind of person I am. Therefore, when I make a specific decision or perform a specific act, I do not do so from a fresh platform. I do so from a web of previous acts by myself and by those with whom I interact, a web in which I have already established a certain identity. And, at the same time, I am busy constituting and transforming that web. We are not atomistic individuals with a duty to act, however that duty is conceived (rationally, transcendently or religiously), we are constituting our humanity by the way in which we do battle with what is before us, by the way in which we enter into the “agonistics of the network”. “Tomorrow in the battle think on me” says Javier Marias.¹³⁵

¹³⁵He uses this quote from Shakespeare (Richard III) as the title for an extraordinary novel. Characters caught in the contingency of life, struggling with its moral implications, are central to his work.

The acknowledgement of complexity, thirdly, thus has an effect on our *attitude* towards action. The lack of complete knowledge does not mean that we should not act, but it does mean that we should do so with modesty (see Cilliers 2005a). Every decision should be the result of careful and critical reflection (which is why we will always need Philosophy) and should unfold in time, neither too quickly nor too slowly.¹³⁶ The principle of modesty does not determine the content of our actions, but it does affect the way in which we make them. Nevertheless, if care and provisionality determine the *framework* of our actions, it will also affect the *content* of our actions. Walking through a minefield carefully does not mean that you will not step on one, but you will attend to every detail around you and you *will* have a better chance than one who just stomps through. Moreover, you will be extremely sensitive to, as well as critical of, any advice others with a different perspective may give.

Taking these considerations into account places one in a difficult position but, as acknowledged from the start, not a uniquely new one. The dilemma has been recognised by critical thinkers repeatedly, Nietzsche and The Frankfurt School being prime examples. One contemporary form of critical philosophy, namely, deconstruction, can be shown to share many of the insights and problems generated by acknowledging complexity. Before returning to the problems of action and ethics, this can be examined briefly.

Complexity and Deconstruction

The characterisation of complexity developed here, and the subsequent implications for the status of our knowledge of complex matters, resonates in many ways with some of the central insights of post-structural philosophy, specifically with deconstruction. In *Complexity and Postmodernism* (Cilliers 1998), the structural similarities between a relational and distributed understanding of complexity on the one hand, and the post-structural understanding of textuality and language (in the most general sense of the word) on the other, have been elaborated in detail. The central argument is that there is a striking similarity between complex systems, understood as a network of non-linear interactions with lots of feedback paths, and two theoretical positions foundational to structuralism and post-structuralism: the characterisation of language as an interrelated system of signs of Ferdinand de Saussure and the neurological model of the brain developed by the early Freud. Both Saussure and Freud were “read” in some detail by Derrida and a transformation of their ideas form a central part of his position.¹³⁷ Relating these arguments with complexity theory allows, on the one hand, an enrichment of complexity thinking

¹³⁶See Cilliers (2007) for a discussion of the temporal aspects of complex systems. The argument is that we should not allow notions of efficiency and success to force us to act too quickly.

¹³⁷Derrida dealt with Saussure in *Of Grammatology* (Derrida 1976) and with Freud in several places, including *Freud and the Scene of Writing*, collected in *Writing and Difference* (Derrida 1978).

(by e.g. incorporating notions like *différance*) and, on the other, a more systematic and rigorous reading of deconstruction.

One should remember that to deconstruct a position is not to dismiss it, but to take it rather seriously. Derrida's deconstruction of Saussure, therefore, acknowledges the importance of his central argument, but shows how he does not follow his argument all the way through. Saussure shows that the meaning of a sign is not a result of an essential characteristic of the sign itself, but of its relationships with other signs. Nevertheless, Saussure believes that by tracing all the relationships in the system of signs, one can eventually reconstruct the correct meaning of the sign.¹³⁸ Derrida argues that this is not possible since the very use of a sign already "disturbs" the meaning of the sign, a disturbance which percolates through the network of relationships, also back to the sign itself, thereby altering the meaning of all the elements in the system. The meaning of a sign is thus continually deferred, it cannot be resolved in any final way. This does not mean that meaning does not exist, it always already exists, but it is also constantly transformed.

It is clear that Derrida's argument is based on the fact that meaning is constituted through complex interaction. Although he did not elaborate on a theory of complexity explicitly, a sensitivity to complexity permeates his thinking. We think that there are still many fruitful insights to be gained from a sustained interaction between deconstruction and complexity theory. This work is still to be done, but some initial insights can be gained from comparing some of Morin's arguments with deconstruction.

The first important insight follows from his description of a "restricted" understanding of complexity. This understanding is clearly related to the Saussurian position. It acknowledges the basic structure of complexity, but baulks before the more radical consequences. In Morin's terms, it opens up the understanding towards relational thinking, but it cannot get rid of the reductive apparatus that should qualify this work as "science". As a result, this approach to complexity – and I would put most of the work done under the umbrella of the so-called Santa Fè School in this category – reverts to an instrumental strategy in the hope of making purely objective claims in the same way as Saussure's claim that we can get at the correct meaning of the sign. It is precisely this denial of a normative element in our dealing with complexity which makes this position "restricted". In developing a deeper understanding of what a "general" understanding of complexity could be, something for which Morin thinks we do not yet have a language, insights from deconstruction could play a vital role.

One such insight could be the idea of the "double movement". Derrida argues that the strategy of deconstruction involves a "double" activity. In deconstructing a system, one has to make use of the resources provided by the system itself. One is thus simultaneously confirming and undermining central elements of the system. This simultaneous give and take is a much more complex process than simply replacing something with something else. It implies that one transforms something

¹³⁸It is this possibility which inspired the "structuralist" projects of, for example Levi-Strauss.

by using the thing itself in novel ways. Deconstruction is thus not a critique from the outside, a critique which knows where it stands and what it wants to do. It is a critique which acknowledges that it is in transformation itself because it cannot depart from a perfect understanding, neither of itself, nor of that which it is transforming.

In his book *On Complexity* (2008), Morin describes the way in which he thinks we should deal with complexity in very similar terms to that of deconstruction. He argues that when dealing with complexity, we cannot escape contradiction, and that we should not mask this contradiction with a “euphoric vision of the world” (42).

[The order/disorder/organization relationship] is a typically complex idea in the sense that we have to bring together two notions – order and disorder – that logically seem to exclude each other. In addition, we might think that the complexity of this idea is even more fundamental. . . . We arrive by entirely rational means at ideas that carry a fundamental contradiction (41).

He continues:

In the classical view, when a contradiction appears in reasoning, it is a sign of error. You have to back up and take a different line of reasoning. However, in a complex view, when one arrives via empirical rational means at contradictions, this points not to an error but rather to the fact that we have reached a deep layer of reality that, precisely because of its depth, cannot be translated into our logic (45).

The point he wants to emphasize is that we cannot deal with complexity without employing a self-critical rationality, that is, a rationality which makes no claim for objectivity, or for any special status for the grounds from which the claim was made.

Humanity has two types of madness. One is obviously very visible, it's the madness of absolute incoherence, of onomatopoeia, of words spoken randomly. The other is much less visible: it is the madness of absolute coherence. Against this second madness, the resource is self-critical rationality and recourse to experience (48).

In order to maintain this self-critical rationality, he argues “that there are three principles that can help us to think complexity”. The first he calls “dialogic”. “The dialogic principle allows us to maintain the duality at the heart of unity. It associates two terms that are at the same time complementary and antagonistic” (49).

The second principle is that of “organised recursion”. This principle argues for an understanding which “has broken away from the linear idea of cause and effect, of product/producer or structure/superstructure, because everything that is product comes back on what produces it in a cycle that is itself self-constitutive, self-organizing, and self-producing” (49–50).

The third is the “holographic principle”. This principle argues that the characteristics of a system is distributed, not localised. The activities of the parts *and* the occurrences on the macro-level participate in producing the system (see above). “The idea of the hologram surpasses both reductionism, which can see only the parts, and holism, which sees only the whole” (50).

These three principles are clearly interlinked. The holographic principle is an effect of the recursive principle which is linked to the dialogic principle. This constellation of ideas thus argues for a kind of double movement, an acknowledgment

of the play of *différance*, very similar to that of deconstruction. There is a coupling between the *what* is being observed and *how* it is being observed; they are folded into each other. Despite our bravest attempts, we cannot extract ourselves from these folds cleanly. Nevertheless, this is what we do, and, in a contradictory way, *have* to do when we do science.

... every system of thought is open and contains a breach, a gap in the opening itself. But we have the possibility to hold meta-points of view. The meta-point of view is only possible if the observer-conceiver integrates himself or herself into the observation and the conception. This is why complex thought requires the integration of the observer and the conceiver in its observation and conception (51).

The kind of understanding of complexity proposed here certainly does not produce a clear “method” which can be followed in any automatic way. Morin is also clear on this: “I can’t pretend to pull a paradigm of complexity out of my pocket” (51). Nevertheless, one can announce the implications of this position without proclaiming a new orthodoxy. In his words, “one can be the Saint John the Baptist of the paradigm of complexity and announce its coming without being its Messiah” (52).

The kind of language used here clearly indicates the presence of a normative dimension, something ethical, in our attempts to think and act when confronted with complexity. Perhaps something can be said about this “ethics of complexity”.

The Provisional Imperative

The argument for the inevitability of an ethical position when dealing with complexity can be made in the following way: Since we cannot have complete knowledge of complex things we cannot “calculate” their behaviour in any deterministic way. We have to interpret and evaluate. Our decisions always involve an element of choice which cannot be justified objectively. What is more, no matter how careful our actions are considered, they may turn out to have been a mistake. Thus, acknowledging that values and choice are involved does not provide any guarantee that good will come of what we do. Complexity tells us that ethics will be involved, but does not tell us what that ethics actually entails. The ethics of complexity is thus radically or perpetually ethical. There is no a priori principle we can follow nor utility we can compute. We do not escape the realm of choice.

It is clear that, beyond the realisation that we are always in trouble, this position does not generate any substantial guidelines. It constitutes a radically critical position, the main component of which is self-critique. The question is, can it be made more substantial? A first response would be that it is better to make the value judgements explicit than to claim a false objectivity. In this way the complexity of the problem can be opened up and the differences respected. But perhaps the critical position itself constitutes a kind of ethical strategy, similar to Kant’s categorical imperative.

The logic by which Kant deduces the categorical imperative can roughly be described as follows¹³⁹: for a moral principle to be universally valid, it has to be purely abstract and formal. It cannot be constructed empirically, or take contingent matters into account. The only rule which conforms to this specification has to be something like “follow this rule”. But since the moral rule Kant is looking for has to be universally valid, he can reformulate this abstract rule to something like “follow only rules which are universal”, or “follow only those rules which you would always also want others to follow”. By combining the purely formal principle with the notion of universalisability, Kant can generate a formulation which actually does say something about ethics.

There are many problems with the categorical imperative (see e.g. Kant/Paton 1948). The main one is the result of the very attempt to be universal: the categorical imperative itself cannot generate contingent ethical principles; it can only be used as a kind of test for principles which already exist. In this way, Kant’s position is a critical one. He does not actually know what the right or the good is, but he knows which strategy of thinking to follow in order to attempt to produce it. The categorical imperative thus does not provide us with a substantive ethics, but it does urge us to adopt a certain attitude.

One can try to apply the same logic Kant uses to the problem of complexity and its ethical implications. The central characteristics of complex systems we have to consider are the following:

1. our knowledge of complex things is radically contingent in both time and space,
2. any decision we make concerning something complex has to be irreducibly provisional, yet
3. we have to act in a way which distinguishes the action from its alternatives otherwise we are not acting at all,¹⁴⁰
4. meaning emerges through the mutual interaction (both constraining and enabling) amongst components in the system, not through some pre-defined essence. Thus, as subjects we are constituted through interactions with others (both human and non-human) around us. My state depends on the state of others.

These characteristics can be used to formulate a kind of imperative, albeit an imperative of provisionality which turns the Kantian logic upside down. The following are possible ways of doing it:

1. justify your actions only in ways which do not preclude the possibility of revising that justification,

¹³⁹The development of the categorical imperative is done in *Groundwork of the Metaphysics of Morals*. See for example the translation and discussion by Paton (Kant/Paton 1948).

¹⁴⁰These characteristics resonate with what Derrida, in *The Force of Law*, calls the *aporia* of justice. This similarity, and the similarity with Morin’s idea of a general complexity, still needs careful elaboration. (see Cornell 1992, Derrida 1992, and Morin 2007, 2008). The idea of the provisional imperative can also be used to explore Derrida’s notion of the “quasi-transcendental”.

2. make only those choices which keep the possibility of choice open,
3. your actions should show a fundamental respect for difference, even as those actions reduce it,
4. act only in ways which will allow the constraining and enabling interactions between the components in the system to flourish.

These imperatives suffer from exactly the same shortcomings as Kant's categorical imperative. Nevertheless, they are not empty and can prepare the ground for a more detailed development of an ethics of complexity, an ethics which would be, like that of Kant, a critical one. In developing this ethics, the notion of boundaries will play a crucial role. The making of a decision is the drawing of a boundary. This is on the one hand an enabling act. We have to introduce distinctions in order to say or do anything at all. Nevertheless, the boundaries are not "perimeters", they are dynamic, "living" things. They have to be affirmed, and simultaneously they have to be transformed through critical reflection.

Business Ethics and the Place of Complexity

Engaging with issues such as identity, difference and ethics from a complex systems approach implies that one should acknowledge that social and organisational systems have the characteristics of such systems (cf. Chapters 1, 2, 7, and 9 this volume). As stated above, employing such a strategy necessitates following different and new ways of framing and thinking about familiar issues. Studies which acknowledge that systems and organisations are complex are often transdisciplinary in nature. Furthermore, building on the notion of a provisional ethics of complexity, such studies also do not come up with "problem-solving tools and solution kits", but rather tend to expose, challenge and problematise the underlying assumptions that inform conventional theories and practices. This kind of exploration also "enables us to ask new and different questions about what forms of intervention we should pursue" (Midgley 2003: 93), including questions about what the focus of our research should be.

This volume takes the form of a critical transdisciplinary exploration into the nature and ethical implications of the interconnectedness of the notions "complexity, identity and difference". The notion "transdisciplinarity" is situated within the larger paradigm of complexity theory as proposed by Morin (1992, 2008) and Cilliers (1998). Following the "logic of complexity" (Morin 2008: 20) the term "transdisciplinary" refers to a methodology which gives us a "conceptual tool to think together" (115) those fields of study that seem to be situated in opposing positions within the broader scientific context. The following areas are central and distinguish transdisciplinary inquiry from inter-disciplinary and disciplinary approaches. According to Montuori (2005: 154), transdisciplinarity can be summarised as being a methodology that is:

1. Inquiry-driven rather than exclusively discipline-driven
2. Meta-paradigmatic rather than exclusively intra-paradigmatic
3. Informed by a kind of thinking that is creative, contextualising, and connective (Morin's "complex thinking")
4. (and views) inquiry as a creative process that combines rigor and imagination.

This project displays that by combining different strategies and methods of collecting and interpreting knowledge, disciplines could be enriched by these differences in ways that could change and enrich the knowledge claims that they make. Such a process would involve "the recognition of a *plurality of epistemologies* or positions, each expressing knowledge in different times and space, each in different ways" (Morin 2008: 22).

Literature (Richardson and Cilliers 2001, Urry 2005, Walby 2003) offering an overview of the development of complexity theory all suggest that what emerged out of all the different discoveries within disciplines, and out of what we call "complexity theory" today, is the argument that "complexity theory offers a new set of conceptual tools to help explain" (Walby 2003: 1) the way in which we investigate and understand nature and the world we live in. The contribution made by the present volume to the field of business ethics, lies in the fact that systems theory offers a theory of knowledge that can count with greater range and power for the complex interactions of human beings in what Bruno Latour (1993) calls the "hybrid networks" of social systems in which we find ourselves enmeshed in.

Developing Tools for Systemic Reflection

The "economy of concepts that are on offer" (Thrift 1999: 46) to business ethics from a complex systems perspective provide practitioners and academics a way of surpassing the entrenched dichotomies of familiar dilemmas with new conceptual strategies. The contributions in this book serve as examples of how conventional discourses can be challenged by critical attitudes and practices that embrace the underlying principles of the logic of "complex thinking" (Cilliers 1998, Morin 2008) and the thinking together of different disciplines.

There are a number of strategies that form a line linking all the authors in this volume. These strategies can be seen as conceptual tools that might assist the business ethicist in her cause to engage with conventional theories and analytical methods in new and critical ways. The following section highlights a number of these strategies.

Anti-reductionist Forms of Inquiry and Theory Building

As mentioned earlier, the acknowledgement of complexity implies that we cannot have complete knowledge of complex systems, and thus of the world we live in. Hence it is incorrect to assume that our models can objectively capture our

reality. The systems perspective resists mechanistic descriptions which result from oversimplified reductive and analytic processes.

In many ways one can argue that we are dealing with an epistemological crisis in contemporary theory. It is generally acknowledged that simple reductive thinking is not adequate, but there is also a fundamental fear that abandoning it may lead to relativism. If this was merely a theoretical problem, we could let the philosophers argue about it. Unfortunately different strategies of thinking lead to different forms of action in the world. The disastrous effects of reductive thinking are evident in many spheres; including the social, the political, the economical and the environmental. The epistemological shift Morin talks about is, therefore, not merely a theoretical issue, but one with practical and ethical implications.

Although the complex systems approach is utilised in many different areas of study these days and put forward as the “method of methods” when dealing with complex living systems, it is ultimately not a strategy that aims at finding perfect solutions for unsolvable questions. Rather, it proposes a conceptual strategy that “helps us in coming to terms with the ethical problems associated with complex (social) systems” (Richardson and Cilliers 2001: 22). Each of the contributions in this volume stands for such a counter-position to traditional discourses in their specific fields of study. The ways in which they unlock new definitions and re-conceptualise the notions of difference, identity and ethics, offer an analogy and serve as examples of how studies in Business Ethics can tackle the process of remaining a vibrant and dynamic field of study.

More specifically, the Chapters 9 and 10 by Woermann and Müller address traditional business ethics issues directly. Woermann’s in depth analysis of corporate identity and responsibility informed by a complex systems perspective offers a refreshing way of looking at and challenging entrenched ways of thinking about these concepts. The limitations of traditional Business Ethics models are discussed in light of an understanding that exposes social and business systems as being complex in nature. A critical assessment of the state of contemporary Business Ethics theory and practice is offered and a more transformational and dynamic understanding of Business Ethics is suggested.

Müller discusses how notions of turbulence, organisational strategy and trust are re-defined when organisations allow for more diversity and complexity, especially when delineating their values and organisational goals. Departing from traditional management theories that implement strategy development and implementation as a practice to contain and manage cultural complexity and turbulence in an organisation, Müller suggests that organisational culture and strategy formulation should be informed by the cultural values of the people working for and served by the organisation, and not the other way around. Apart from this valuable argument and suggested change of paradigm, the chapter also offers a wide overview of traditional and alternative literature in the field of organisational management.

The contribution by Allen et al. explores the consequences complex thinking holds for our understanding of the emergence and evolution of identity and diversity in ecologies and human social systems. By comparing examples of evolution and co-evolution in Darwin’s Finches, in economic markets and organizational forms and in

social entities, the chapter offers a view of evolution in human systems which challenges traditional and reductionist theories of biological determinism. Allen et al. suggest that identities are created and co-evolve in an on-going evolutionary process. They argue that even though one cannot understand what exactly creates the micro-diversity underlying a system, it can be established that all the underlying phenomena obey the same kind of behaviour – that of evolving complex systems. By allowing ourselves to be “evolvers” and by exploring our own diversity, a richer set of possibilities are created on which the collective system can thrive. The chapter links to the work of De Villiers-Botha & Cilliers’ notion of the “complex I” and explains how our different identities and personalities fit into the messy process of evolutionary complexity.

The business ethicist can draw on these examples to redefine the conditions and limitations under which organisational change, sustainable governance and corporate social responsibility could be instigated and sustained. By providing a challenge to traditional paradigms of thought and methodology, the landscape in which business ethics studies operate is allowed to occupy a dynamic space in which new definitions and processes of understanding familiar terms and problems can emerge.

The Systems Approach Extends the Boundaries of Rational Explanation

The second strategy which connects the contributions in this book is closely related to the first theme, and it relates to the notion of what we understand under “rational explanation”. To a large extent we still live in a world where “scientific” (objective) knowledge trumps all other forms of knowledge. This state of affairs is a legacy of a certain interpretation of Enlightenment thinking. In this interpretation, the quest for verifiable knowledge, at least since the Renaissance, presupposes the need for objectivity. Novotny et al. (2001: 50–51) describe this process in the following way:

In its historical contest with religion, a triumphant science acquired a monopoly of describing and explaining “reality”, which both resisted and also validated human wishes, fancies and follies. Because the physical world, including its chemical and biological processes, came to be regarded as the most substantial component of the “real world”, a scientific definition of reality became ever more plausible. As a result the authority, values and practices of science permeated many other dimensions of society. The everyday world shrank to what scientists had “discovered” and were able to exploit.

This traditional or, as it is often called, “modernist” style of scientific thinking is no longer adequate – to the extent that it ever was. This is not the result of a frivolous postmodern reaction to modernity,¹⁴¹ nor is it merely because of some

¹⁴¹The notions “modern” and “postmodern” have to be used with caution. Modernism is often treated in a much too simplistic way, as if there was one coherent “movement” which simply relied on an oversimplified understanding of rationality. Modernism was, or is, a divided strategy containing different strategies not easily reducible to one another. Sophisticated attempts to clarify the role and limits of rationality, as in the work of Habermas, for example, cannot be treated as

logical problem with the verification of experimental processes (in the tradition of Popper, Kuhn or Feyerabend), but a result of the complexity of the phenomena we deal with. As Novotny et al. (2001: 21) state:

Contemporary society is characterized – irreversibly – by pluralism and diversity and also, we argue, volatility and transgressivity. It can no longer be understood either in terms of the norms and practices of scientific rationality.

What is at stake when we deal with complex things is thus the appropriate style of rationality. The argument is that the traditional modernist rationality – established in the first half of the 17th century and based on the ideas of Galileo, Newton and Descartes in the context of a more settled Europe after the peace of Westphalia (Toulmin 1990) is *not* adequate to cope with complexity.

Edgar Morin (2007: 5) gives specific content to the inadequacy of what he calls “classical science”. For him “classical science rejected complexity in virtue of three fundamental explanatory principles:

1. The principle of universal determinism, illustrated by Laplace’s Daemon, capable, thanks to his intelligence and extremely developed senses, of not only knowing all past events, but also of predicting all events in the future.
2. The principle of reduction, that consists in knowing any composite from only the knowledge of its basic constituting elements.
3. The principle of disjunction, that consists in isolating and separating cognitive difficulties from one another, leading to the separation between disciplines, which have become hermetic from each other.”

For Morin, this tradition has led to wonderful results, but only in a limited context. In order to deal with a complex world, however, we need to acknowledge the limitations of this approach.

In discussing a wide variety of topics from a systems perspective, the authors of this volume each attempt to demonstrate how and why a systems approach extends and supplements the accepted traditional or “modernist” rationality or design in their respective fields. Although many of the contributions fall outside the traditional Business Ethics genre in the way that they have been presented here, they play an important role in informing all the well-known and familiar dilemmas that one stumble upon in Business Ethics theory and practice. The dilemma of choosing

if they are simply an extension of the Cartesian/Newtonian paradigm. The notion “postmodern” is also misused frequently. For some it simply means the justification of relativism, for others it is merely a tag of approval without much content. These misunderstandings should not get in the way of recognizing the real problem, namely the inadequacy of reductive thinking when dealing with complex things. The notion “scientific” is similarly problematic, i.e. an uncritical reliance on first-order logic and verifiable observation. The critical use of complexity theory in no way intends to dismiss science; it seeks to expand the notion, or at least, to mark its limits.

between “corporate versus individual responsibility” or establishing with what values the organisation will identify, relate directly to the Chapters 1, 2, 4, and 5 of Cilliers, De Villiers-Botha & Cilliers, Byrne, and Collier who write on the importance of looking at identity formation as something that is not formed in a polarised fashion at either the individual or the organisational level, but as something which emerges due to the interaction that takes place between the components of the system (individuals, individual values) and the structure that comprises the organisation to be identified as an organisation as such (the leaders, share-holders, policies and business goals).

Wicomb, Allen et al., Praeg and Swilling et al. explore how an understanding of difference, which is informed by a systems perspective, leads one to understand issues of agency, sovereignty, governance and the implementation of regulating strategies as processes that emerge dynamically. This is due to the ways in which difference and diversity enable the organisational system to be resilient and to co-evolve in ways that allow for organisational change in novel ways. Grebe and Kunneman’s contributions discuss the importance of difference and ethics from a more theoretical level and they offer insight into how the formulation of theories and the paradigms that inform them influence the ways in which we conceptually shape and construct the world we live and act in. Their contributions are especially important for the teaching of Business Ethics and for those who are concerned about Business Ethics “as an academic discipline” (van Liedekerke and Dubbink 2008: 273). All the contributions attempt to engage with their fields of study in a way that embraces a departure from instrumental rationality. They all explore ways that seek to engage with an epistemological shift which replaces “reduction” with “distinction” and “disjunction” with “conjunction” (Morin 2007: 10), hence a systems rationality that supplements and expands the boundaries of our models of knowing the world.

Conventional Patterns of Problem Solving Processes Are to Be Revised and Complemented by Systems Thinking

Complexity is a problem word and not a solution word. (Edgar Morin 1992)

A third strategy that is noticeable in the contributions of this volume, is the fact that tackling problems from a critical systems perspective questions our understanding of “problems and problem-solving methods” (Ulrich 1994: 27). It is almost as if more problems arise from the critical process to which we have fewer answers. Based on an understanding of the provisionality of an ethics of complexity as discussed above, we see that a critical systems approach does not offer solutions in the form of a “best practice” manual or toolkit. Problems are not viewed as isolated instances that need to be solved. Instead they are viewed as relationally constituted and are the effect of a number of non-linear interactions and various feedback loops that are the causes and effects of each other (Cilliers 1998).

Hence, there are no simple solutions to problems that emerge in complex systems. Because we do not have full knowledge of a complex system, we cannot be in a position to calculate what the exact cause of a problem is and how to solve it. Our limited knowledge and lack of comprehension becomes the basis on which we should build a critical attitude towards tackling problems and issues of decision making. Ulrich (1994: 35) suggests that “from this new perspective, the implication of the systems idea is not that we must understand the whole system, but rather that we critically deal with the fact that we never do”. This attitude provides us with the “methodological basis for developing tools of critical reflection” (Ulrich 1994: 35).

This strategy relates directly to the notion of critical complexity and an ethics of provisionality as discussed earlier. The Chapters 6, 7, and 8 by Grebe, Wicomb and Kunneman deal with this theme explicitly. Aligning his notion of critique with the philosophical traditions of Nietzsche, Hegel, Adorno and Derrida, Grebe explores how complexity theory can be situated within this critical tradition of the negative dialectic. By situating the study of difference and identity within the tradition of the negative dialectic and connecting it to deconstruction, complexity theory requires the potential to be a rich resource for critical and progressive thinking. The ethical consequences of complexity thinking’s negativity are also explored and the notion of critique is re-framed within this philosophical perspective.

In her examination of the reach and capacity of the legal system to solve problems and make judgements on human rights issues and inequality, Wicomb argues that differences between people should not be viewed as problems to be solved. Instead, the significance of human diversity is articulated as the essence of discovering ethical ways of dealing with conflict and inequality. By retaining the tension between notions of difference and identity, a dynamic and productive system of difference secures that diversity is not reduced to identity. Wicomb applies her understanding of complex diversity to the human rights discourse. The implications of such an understanding of diversity is also important for business ethicists who struggle with issues related to establishing criteria for ethical decision making and setting up guidelines that secure the rights of employees, stakeholders and managers respectively.

Kunneman’s exploration on the notion of “ethical complexity” deals directly with the problems we face when we do not have concrete answers or solutions to ethical dilemmas. For him the need to develop an ethical understanding of complexity reaches further than just the fact we that lack epistemological and ontological understanding. In order to make the ethical dimension of problem situations explicit, Kunneman suggests a strategy of narrativity that is developed from the perspective of critical hermeneutics. His analysis of narrative forms of mediation and the elaboration of the difference between the notions of “autopoiesis” and “diapoiesis” provide fruitful connections between narrative approaches in organisational theory and the practical and moral challenges that confront organisations in general. Kunneman spans a conceptual trajectory between the work of Cilliers and the narrative philosophy of Paul Ricoeur. The outcome of this strategy forms the necessary connections Kunneman employs to propose a framework by which the notion of

ethical responsibility and our ways of acting in the world can be framed more comprehensibly.

Developing Tools for Critical Reflection and Debate

The fifth strategy, still related, highlights the fact that a complex systems view does not provide exact analytical tools for solving problems nor offers a final theory for finding solutions to difficult problems. Instead, it encourages and challenges us to develop the tools we have and to supplement them with an attitude of thoroughgoing critical reflection.

The Critical Position

The general importance of a critical position should be developed in some detail. It is important to show that such a position does not entail negativity or inaction, but that it is nevertheless critical to remain perpetually critical. This elaboration still has to take place, but three characteristics of such a position can serve as a starting point.

A critical position informed by complexity will have to be *transgressive*. It can never simply re-enforce that which is current. Transformation takes place continually, despite all efforts to contain it. In this respect, we need some bold alternatives to orthodoxies like liberal democracy and free-market economy. Given the fact that communism failed, we should not allow ourselves to be bullied into believing that the alternative is correct or much better. We should resist the macho nature of most political and economic cultures, irrespective of whether it is politically correct to do so or not. We should not be coerced, frightened or shamed into a state where we relinquish being transgressively critical.

A critical position will, in the most positive sense of the word, be an *ironical* position. There is no final truth which operationalises our actions in an objective way. Irony also implies, in a very systematic way, a self-critical position. Given the horrors of the world, this claim may be controversial. Nevertheless, we require a sense of humour if we are not to lose our humanity.

In the third place, a central role for the imagination is indispensable when we deal with complex things. Since we cannot calculate what will or should happen, we have to make a creative leap in order to imagine what things could be like. Aesthetic and creative activities are thus not interesting diversions, they open up the possibility of imagining better, more sustainable futures. Our humanity, our very existence, depends on this.

Keeping the study of Business Ethics alive and dynamic also requires a kind of thinking and doing that are challenged to be critical of entrenched and conventional theories and practice. The contributions of Byrne, Collier, Swilling et al. and Praeg serve as examples of how it is possible to engage with the problem of difference and identity in a critical manner.

Collier addresses problems in contemporary analytic philosophy which focus on how the discourse on concepts such as identity and individuation are established. He offers a critical response to traditional approaches of identity that rely on some version of classification via essential or typical properties. Collier's approach suggests that classification should be set up in terms of the dynamical properties of systems, starting with individual systems rather than classes, and working up by abstractions that fit causal generalities. Arguing against the traditional position, Collier proposes a dynamical account of identity and individuation based on the dynamics of complex systems with respect to their formation, further individuation, and the production of diversity.

Informed by a critical realist position, which according to him overlaps with his understanding of complexity, Byrne suggests how the method of Qualitative Comparative Analysis could be enriched by considering differences amongst complex systems as source of causality, instead of focussing on objects that seem to have similar properties. When the seemingly similar objects are looked at from a participatory position (e.g. action research), one learns that objects that seem similar from an objective point of view, are actually rather different when viewed from a subjective (or objective-subjective) point of view. When this is acknowledged, one can no longer speak of an object's (or community's/society's) properties. Based on the view from complexity, such complex objects/communities should be categorised critically according to their shared combination of characteristics rather than by any single characteristic and entities become "traces of systems" interacting with one another in non-linear ways.

When thus observed, the control parameters (or model by which the community is measured/compared with another) become the generators of difference. These differences become the source of the causality. Engaging with action research offers the researcher a critical position from which one can reflect upon groups and organisational structure.

Both the contributions by Swilling et al. and Praeg reflect critically on how modernist thought strategies influence the practice of categorising people and places in reductionist ways. They both offer critical analyses of traditional practices, which influenced discourses and policy making practices in how groups of people should be classified according to their differences and social and economical status in society. Although working in very different fields, both Swilling et al. and Praeg engage with anti-development approaches which expose the inefficiencies and ideologies of such practices and thought strategies. Both contributions suggest that a critical systems approach has the ability to allow for managing and policy-making practices that undermine the "top-down" approach.

The critical position offered by a systems approach may be helpful to the business ethicist who seeks to find new ways of decision-making strategies that are sensitive to how "habits, beliefs and expectations inform the cultural dynamics within organisations" (Painter-Morland 2008: 509). From this position issues relating to distributive leadership strategies, trust and notions of accountability can also be revisited in a critical manner.

The Possibility of Intervention Is Problematised

Building on the idea that a systems approach does not offer clear-cut solutions to complex problems, that it rather enables a fundamentally critical position, it is argued that any intervention which may arise from a systems approach, can only be provisional and temporary in nature. This last overarching theme exposes the fact that change and intervention does not come about by following rules and regulations in a programmatic way. Instead, change and interventions are the result of the careful and critical consideration of the dynamic interactions of the components of the system as a whole. The performance and resilience in a system depends directly on the diversity of components, interactions and ethical values within the system.

Following the logic of a systems approach, intervention is inextricably linked to the possibility of being able to gather knowledge about the system and locating its boundaries. Traditional theories related to issues of intervention and organisational change often suggest an objective position from where universal valid principles can be established which would guide and instigate intervention processes. As discussed throughout this book, it is, from a systems perspective, impossible to make such claims (cf. Chapters 1, 2, 7, and 9). The distinction between what is inside and what is outside the system is problematised. Hence, the distinction between insider and outsider is also blurred. Change and intervention can thus only succeed when reflected upon by means of a participatory approach, involving the constitutive components of the system. The notions of difference, identity and constitutive ethics are key concepts without which such participatory interventions cannot take place effectively. All the contributions in this book aim to expose this element by re-defining intervention and change in terms of a systems thinking perspective.

The acknowledgment of the limits of the models we are using, new possibilities are opened up for doing research without invoking metaphysical truth claims. Approaching the world from a kind of thinking that does not disconnect opposites, but thinks them as part of a dynamic unity, informs a style of thinking that challenges old models of representing the world. The notion of “complex thought” (Morin 2008) challenges the philosopher and business ethicist to reform their ways of thinking and to consider different ways of getting to know the world. The weaving together of different approaches opens up a space where a discipline such as Business Ethics can operate from a critical position grounded in the complexities of the lived experiences of their subjects of study. The claim that our understanding of complex systems cannot be reduced to calculation means that there will always be some form of creativity involved when engaging in “the politics of knowing and being known” (Lather 2001: 486).

By re-linking different types of knowledge and strategies, the business ethicist is challenged to enter into a space where her research and modelling practices keep up with the complex world in which we live. Informed by the characteristics of complexity theory we are called to engage with research and problem solving practices that have the capacity to expand the understanding of what it is to be human. Acting from such a position would “allow us to see besides the probable”, because

the “intelligence of complexity” compels us to “explore the field of possibilities, without restricting it with what is formally probable” (Morin 2007: 29). Therein lies the invitation to reform or change organisational practices and even to dream about a better future.

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Glossary

Agent Someone who acts out of his or her own free will without interference from internal or external compulsion. One who acts in accordance with his or her own goals and desires.

Analytical (analytic philosophy) The assumption that concepts, statements or entities can be broken down into simpler parts, which will reveal the logical structures underlying those concepts, statements or entities. Here the assumption is that the characteristics of entities are reducible to “the sum of their constituent parts.” (Contrast this idea with the assumption in complexity theory that the characteristics that emerge in complex systems are different from and cannot be reduced to those of their constituent parts.).

Aporia A serious and perplexing (ethical) dilemma. In Derrida, the experience of “undecidability” and the inadequacy of calculation in forming a judgement.

Autopoiesis The self-production of living beings, brought about by the continued production of the elements required for this continued reproduction and guaranteeing their relative autonomy.

Autopoietic social systems Systems of society that have developed into self-referential systems in the process of focussing on the reason for which these have defined themselves to exist, i.e. the economic system exists to provide profit, medical system to bring health, academic systems to generate and disseminate new knowledge, politics to generate and manage power and so forth.

Axiology The ethical values and assumptions that individuals hold at a given time as a result of their experience and personal history and socio-cultural context.

Boundary That which separates a system from its environment. Boundaries are often not purely natural entities, but also a function of our description of the system. How we draw the boundary determines how we understand the system, and vice versa.

Chain of Being A system of differentiation which constituted differences in the spatial terms of an a-temporal hierarchy and in which each element differed from those immediately above and below by the least possible degree of difference.

Cohesion What holds dynamical entities, whether systems, objects or properties, together. The dynamical unity relation.

Complexity (Complexity theory) Related theories that focus their attention on open systems consisting of many parts that interact in an intricate manner. This approach assumes that the intricacy of these interactions will result in states and behaviours in the system that are not necessarily predictable and that have characteristics different from those of the parts themselves.

Contextual thinking Inspired by complexity theory, contextual thinking is about ways of thinking and acting that take what is specific about each context as a point of departure, without denying that contexts are constructed by the conceptual frameworks that actors bring into the engagement with context in the first place – what is important is a reflexive capacity to be aware of the possibly limits of these preconceptions and therefore the need for dialogical engagement.

Contingency In logic, a contingent truth is one that could have been otherwise (as opposed to necessary truths, valid in all circumstances). In poststructuralist accounts of meaning, the latter is always contingent, since the context which informs it can never be fully specified.

Corporate boundaries Corporate boundaries allow us to draw distinctions in and between work practices. This facilitates the emergence of a common group identity (such as a task team or department), which is distinguished from other outside practices. However, corporate boundaries can also be stifling in the sense that they are often employed to frame internal and external work environments as hostile; shield corporate members from their responsibilities by allowing them to underestimate the effects of their work actions on the larger environment; and, maintain the status quo, thereby reducing the flexibility needed to cope with novel problems. In such circumstances, the ethical task for corporate members is to actively work at opening up these boundaries.

Corporate identity Corporate identity refers both to the specific role identity of corporate members, as well as to the identity of the corporation as a whole. Though different, these two conceptions of corporate identity are, nevertheless, coterminous. As individuals engage in work practices, a sense of corporate identity emerges. Furthermore, these practices allow for the emergence of corporate systems, which take on their own identity, and which feedback back to constrain the identity of individual corporate members.

Critical realism A philosophical and methodological perspective which argues for the reality of causal mechanisms in the world, recognizes that causes are multiple, complex and operate in context, and whilst recognizing that knowledge is socially constructed also recognizes that it is constructed in relation to reality itself. Reality has a voice.

Critical thought Critical thought is intimately linked with the process of moral imagination, as both demand the ability to recognise and integrate opposing moral

and contextual factors and perspectives. Depending on the type of problems experienced in the organisational context, critical thought can be harnessed to engage (and, thereby, transform) the workplace culture; stimulate reflexive consideration, which promotes an understanding of how our organisational decisions and actions affect others; and, stimulate projection, which allows us to constructively deal with future challenges facing the organisation.

Critique In the most general sense, the process of seeking and pointing out the imperfections (usually contradictions) in a system of thought. In the Hegelian and Marxian tradition, critique is performed on social reality as on reason, particularly in seeking out “contradictions” in social relations. Here used in the ethical sense of negating the actual so as to enable renewal.

Deconstruction A (philosophical) strategy which investigates the structural conditions for meaning in any system. Once these conditions have been identified, it can be shown that they could also be different, thereby displacing the meaning generated in the system. Meaning is thus always already there, but never final.

Dialectics In the most general sense, the operations of reason to obtain truth. In Hegel, the dialectic takes the form of development (in both thought and the world) through the *Aufhebung* of contradictions in reconciled syntheses. In Marxian dialectical materialism, contradictions in social relations drive historical change. In Adorno’s negative dialectics, however, the dialectic involves continual differentiation that maintains the tensions and complexities of the system in a fleshing out without reconciliation.

Diapoiesis All emergent forms of interaction between autopoietic beings which mutually enhance their wellbeing on the basis of co-creation but cannot be autopoietically brought about or controlled by one of them.

Différance A term of art used by Derrida to describe the process of dynamical interaction between components in a system. It incorporates a “spatial” dimension, in the sense that the relationships are constituted through the difference between all the components, as well as “temporal” dimension, in the sense that the differentiation is continuously evolving by feeding back on itself, thereby perpetually delaying any finality in the state of the system.

Dissipation The process by which energy is made unavailable for work. Inevitably produced in all process involving friction and/or less than 100% efficiency.

Diversity The different types of entity that inhabit a system, differing not merely quantitatively in size for example, but also in the qualitative characteristics, features and dimensions they inhabit.

Dynamical system (in mathematics) A system described in terms of differential equations or variances. (in physics) A system governed by forces and flows.

Emergence Those properties of a system which arise because of the dynamic interaction between the components of the system, and not because of inherent

characteristics of the components themselves, e.g. consciousness is an emergent property of the brain.

Ethics The system of principles and standards that underlies our moral evaluations of human conduct. The study of the moral status of actions.

Evolution As used here, the temporal system of differentiation that “flattened” the spatial hierarchy of the Chain of Being into a temporal Chain of Becoming. “Development” or “progress” is regulated by an immanent teleology of which the driving force was the scientific hypothesis of recapitulation.

Functional systems Social systems that are patterned in terms of defined and separated social functions and thereby separated from each other. Political and economic systems, for example operate in terms of the different logics (as if these are self-evident and unchanging) of economics and politics and even though they occupy overlapping social spaces and even though real people are acting within both types of system at the same time, it is seen as proper and normative that different ways of thinking dominate in different systems.

Genealogy A genealogy of the meaning of the Africa/West difference departs from the assumption that history is not the outcome of rationally inevitable ends or even that it is progressive. On the contrary, it suggests that every historical system of thought and the differences generated by it resulted from contingent shifts in knowledge production regulated by an historical discursive a priori.

Globalisation The compression of time and space due to technology based convergence of all domains of human endeavour, the economical, political and cultural. Here, the emphasis is on the ethical dimension of the resulting global community.

Hermeneutics A philosophical perspective focusing on the importance of cultural traditions and narratives for our self-understanding and on ongoing processes of interpretation and reinterpretation in the light of changing circumstances.

Idem and **Ipse** Two different aspects of the identity of persons distinguished by the philosopher Paul Ricoeur. “Idem” refers to the form of permanence in time embodied in ones character. “Ipse” refers to another form of permanence in time, exemplified by promises.

Informality Cities always have formalised themed environments regulated by law, social norms and physical infrastructures that exist alongside environments that are populated by households and communities that have created these environments themselves and they are reproduced outside the law, in accordance with their own social norms (often reinforced by local “strongmen”), and without access to the basic physical means of urban living. In Africa, these informal areas are referred to by various names, but generally slums, or shack settlements.

Institutional trust Employees trusted by the organisation in the sense that the organisational rules and procedures and management structures do not presume dishonesty among employees and therefore do not attempt to manage, measure

and control all aspects of work in the organisation. Management mechanisms and controls viewed as substantively fair, enforced equally and transparent.

Instrumental reason Without debate or reflection on the ends themselves, finding the most efficient or otherwise relevant means to an end. Eventually disregarding both the ethical meaning of the ends and the ethical implications of the means themselves. “Whatever works.”

Liberal rights analysis Liberalism emphasizes subjective rights over the objective good. In rights analysis this notion translated into the recognition of all individuals, including previously marginalised groups, as equal and propagated the absolute equal treatment of all individuals.

Lifeworld The horizon within which all communication takes place and is possible but which we cannot, as a totality, make it conscious and place it in doubt as we please. This is therefore also seen as stocks of knowledge that are handed down in culture and language. Changes which affect culture and language obviously affect the lifeworld as well.

Meaning It is here used in the Derridean sense to refer to the play of traces or elements always at work in the system that allows for the content of the system to emerge.

Micro-Diversity The different individuals that form a particular type of entity, which while sharing some basic features of the typology, differ qualitatively in their qualitative characteristics, capabilities and dimensions.

Modal property A property that is possible for a system; one that might hold counterfactually.

Moral agency A complexity analysis of identity undermines the notion of an autonomous, rational agent undertaking intentional actions with predictable consequences. Rather, the moral agent is embedded within a specific network of relations, which makes it impossible for the moral agent to assess his or her actions from an external vantage point. Furthermore, because of the non-linear nature of complex systems, our actions often have unpredictable effects. As such, the hallmark of moral agency becomes critical awareness and sensitivity for the radically contingent nature of our actions – which, though often unpredictable, nevertheless demands that one takes responsibility and accountability for one’s actions.

Moral imagination Moral imagination is often viewed as a passive, individualistic process. Against this, Hargrave (2009) contends that moral imagination should be viewed as a social process that emerges within contexts where agents with relative power and political skill, battle to establish normative congruence. This is achieved through integrating contradictory moral viewpoints. On this view, moral imagination becomes a skill which should be fostered, in order to supplement ethical decision-making.

Moral responsibility On the complexity take, moral responsibility should be understood in terms of the context, embedded systems, and boundaries that define

corporate identity. Moral responsibility is intimately linked with critical thought and moral imagination, and demands that wise judgement (as opposed to rules and principles) informs moral decision-making. Accountability, which is conceptually coupled with responsibility, is also redefined as accountability towards, rather than accountability for, one's actions. There is thus a conceptual shift from understanding accountability in terms of a causal relationship between actions and effects, to understanding accountability as an obligation to take responsibility for the network of stakeholders with whom one shares a (business) relationship (Painter-Morland, 2008; 2006).

Multiculturalism It generally refers neutrally to the phenomenon of various different ethnic groups occupying the same geographical space, such as a nation state. The concept has come to be associated with globalisation and the difficulties of inter-cultural communication and as such has moved away from narrow conceptions of culture as homogenous to broader interpretations which acknowledge the internal diversity of cultural groups.

Narrative The process of telling the story of the dynamic development of some system in detail. Note that narratives are generally thought of as textual but that a time series of data can be a narrative.

Narrative figuration The creation and co-creation of morally inspiring narratives, articulating possible, more meaningful lives and more just institutions and organizations.

Negativity Philosophical negativity refers to the operations of negation central to any attempt to critique systems of thought or social relations. Usually this involves recognising the irreducible differences (between signs, between the concept and its object, etc.) that resist the unification and reconciliation that characterises Enlightenment thought.

Nominal essence What allows us to identify something uniquely.

Organising principle The centre of a system that organises its structure by dictating what is allowed inside the structure and what must remain outside; it orients and organises the coherence of the system thereby allowing for the play of its elements inside the total form.

Organizational Form In the case here we discuss it in terms of the different practices and recognized skills and techniques that are present in an organization.

Post-development Post-development theorists maintain that development initiatives, on the whole, do more harm than good. In particular, post-development theorists are concerned that development is an imperialist project which undermines alternatives to the modern Western model of industrialisation and capitalism. Post-development theorists call for "alternatives to development" rather than seeking to adapt or improve existing development practices.

Post-structuralism School of thought established mainly in France, which utilises, transforms and criticises the Structuralist thinking of Ferdinand de Saussure and Claude Levi-Strauss. In this volume it refers mainly to the work of Jacques Derrida.

Propensity A tendency that comes in degrees, usually measured as a probability.

Qualitative Comparative Analysis A technique developed by Ragin which seeks to explore causation in the complex world by processes of systematic comparison using Boolean computing methods to pattern multiple causes for significant outcomes. It requires deep qualitative knowledge of cases as the foundation for specification of set membership en route to causal accounts.

Rational planning An approach to city planning that assumed that urban development must be managed in accordance with detailed comprehensive plans that are centrally coordinated and derived from abstract assumptions about the nature of the “good city”.

Real essence What in fact makes something what it is.

Reciprocal value congruity The individual within an organisation can only be trusted when there is congruity between the values of the organisation and the values of the employees, while the individual can only trust the organisation when there is congruity between the values of the individual and the organisation.

Self (I; the subject) That elusive quality that allows one to experience a coherent personal identity that persists over time despite the changes that may take place in one’s body, psychology, and circumstances.

Social integration The cultural and social processes taking place in institutions and interpersonal relationships that create and sustain social norms and shared meanings within which society develops an identity of whatever kind. In modernity this has meant that rational arguments in discourses that purport to be open in principle play more of a role in the formation and change of norms and meanings than before.

Structurality Jacques Derrida’s term for the phenomenon of an organising principle of a system fixing the boundaries of the system thereby closing off the play of meaning within the system.

Substantive equality An approach to equality that uses the *impact* of a rule or action upon the empirical equality of persons as measurement rather than merely insisting that persons are treated equally, regardless of the impact of such treatment.

Systems approach An approach which seeks to understand phenomena in terms of the relationships between the components comprising those phenomena, instead of looking for the essential characteristics in the components themselves. The characteristics of a system is thus relationally constituted, and not reducible to atomistic facts.

Systems dynamics modelling A modelling approach, using software, that maps the multiple relationships between causes and effects within a system as perceived

by the actors involved rather than a traditional linear modelling process that is data-driven and reductionist.

Systems of differentiation A historical topography of knowledge that can be identified and isolated as system because it exhibits a specific discursive a priori (Foucault). As used here, systems of differentiation constitute the meaning of differences (identities) differentially according to the historical a priori of space, time and space-time.

Turbulence A general metaphor indicating a large or infinite number of sources of variation in the environment of the organisation or as “dynamic heterogeneity”, which affects both supply and demand. Turbulence makes it impossible to predict and plan on the basis of those predictions. The causes of events are latent in the system, but can only be known after the event.

Utopianism Claims about a preferred future that is different to the present, and which are generally shared. However, utopian claims can also be articulated by a small minority in opposition to dominate norms.

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