Rethinking Systems Thinking:
Towards a Postmodern Understanding of the Nature of Systemic Inquiry

Part 1: Knowledge
Part 2: Science

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“Most students think that writing means writing down ideas, insights, visions. They feel that they must first have something to say before they can put it down on paper. For them writing is little more than recording a pre-existing thought.

But with this approach 'true writing' is impossible. Writing is a process in which we discover what lives in us. The writing itself reveals what is alive. ... The deepest satisfaction of writing is precisely 'that it opens up new spaces within us of which we were not aware before we started to write. To write is to embark on a journey whose final destination we do not know.'

- Henri Nouwen

Overview

“We find ourselves at the end of one epoch, and on the threshold of entering a new one whose contours, as far as I can see, are not yet fully visible.”

- Gerald Midgley

The above statement appears in Midgley's (2000) book Systemic Intervention. One of the aims of this book is to "undertake a fundamental rethink of systems philosophy". In regard to this aim, Midgley acknowledges that: "It would be arrogant of me (not to say foolish) to think that I could achieve it in just a few chapters ... Nevertheless, I hope that I can make a reasonable start so that we can begin to shape a credible alternative to mechanism for the 21st century". Following Midgley, this thesis aims to continue the rethink. Like Midgley, I accept that a reorientation of an entire intellectual community is not about to happen through the work of one thinker. However, it is hoped that the ideas embedded within these pages will help keep the conversation that Midgley initiated going, and by so doing, help shape "the contours" of the systems community in the 21st century.
Like the writings of the thinkers I most admire, this thesis aims to be perspicuous rather than systematic. Instead of attempting to construct a monolithic, all-encompassing theory on the nature of systems, it attempts to bring into a clearer light the folly of some of the core presuppositions of Occidental thought since the Enlightenment, and by way of implication, the folly of adopting these presuppositions within the systems community.

It offers a reason why many of our so-called 'scientific' attempts at solving difficult, contemporary, socio-cultural, socio-technical and socio-economic problems have been seen to fail. Such problems include environmental problems, problems involving management, strategy and high-level decision making, problems involving the economy and its relationship to complex societal issues such as welfare, education, and health, problems involving the human mind, mental illness, psychology and psychiatry and problems arising when the natural sciences 'come out' (of their laboratory conditions) and attempts to come to terms with the incredibly complex wider world around them.

It suggests that the reasons why we have been unsuccessful in our attempts at finding solutions to some of these contemporary problems is not because our methods need altering (as the ean systems theorists would have) or because our experts have made mistakes, lost impartially or have yet to discover the fundamental theories for these new domains (as the positivists and their allies would have), but because of the impossibility of our aims.

It argues that the traditional aims of objectivity and certainty that have characterised scientific and pseudo-scientific inquiry during the modern era are ultimately unachievable and that in order to develop a more realistic self-understanding of the natural, analytical and social sciences we should re-visit such basic concepts as knowledge, science and system.

It recommends that the traditional 'problem solving' paradigm of inquiry (which involves such binary oppositions as question/answer, truthfulness and subject/object) be replaced with a paradigm that seeks to design 'contexts'. Under the context paradigm, it no longer makes sense to ask questions such as which answer is correct (there being no such thing as a fundamentally 'correct' context). Similarly, under the context paradigm, 'truths' within one context are always relative to that context and whenever a new context is designed the 'old' truths viable to be truths at all. Therefore, inquiry ceases to be a matter of finding a match between representation and reality, but a process of contextualisation and re-contextualisation.

1 Perspicuous here refers to what Wittgenstein called 'perspicuity': a way of confronting problems and seeking to discover them by seeing things in a different light rather than reifying some new theory that claims to 'solve' them.

2 In the same, it can be said that this thesis is continuing Pidd's (1994a,b,c) project of 'liberating systems theory from the presuppositions that have, to date, largely kept the movement within the modern epistemics. It is hoped that the arguments presented here represent a contribution to (and extension of) this project.
Under this new paradigm, a 'system' ceases to be objective and independent of the observer, rather it becomes a 'context' in which the observer understands some aspect of the world. Accordingly, 'systems thinking' ceases to be a process of defining the system/environment and analysing its internal relationships, but a process of contextualising and re-contextualising 'parts' and ' wholes'. Representation is therefore never static; it is a process. Specifically, it is a process of designing contexts (or perspectives): preferably multiple contexts. Similarly, knowledge ceases to be a set of 'accurate representations' or 'certified truths' but a process or, perhaps more appropriately, a 'discourse' in which the knowers are developing new languages for making sense of (and ultimately influencing) their phenomena of interest.

The arguments for the above are parasitic on a number of more specific contributions from such thinkers as Kant, Hegel, Nietzsche, James, Saussure, Wittgenstein, Dewey, Kuhn, Feyerabend, Derrida, Foucault, Putnam. Rorty and many others. What follows are some minor extensions to these contributions, some minor contributions of my own, and, hopefully, a major re-contextualisation, in which, a new perspective is brought to bear on some of the problems facing the applied sciences. Above all, it is hoped that this thesis unfolds a new strand of thought (embedded within a largely untapped literature) for the systems community, and by so doing, helps spark a discourse in which new understandings of systems and systems thinking may emerge.

The Structure of this Thesis

"Take the red pill, and we see how far the rabbit hole really goes."

- Morpheus, The Matrix

This thesis tells four stories.

Part One tells the epistemic story of postmodernism, with its focus on knowledge and its legitimation. It argues that the traditional narratives of legitimation of the modern era are flawed and that the only appropriate response to such an understanding is to seek an epistemology free from such narratives. Moreover, it ends with the suggestion that if systems theory wants to move into line with the intellectual spirit of this postmodern age, then it would need to rid itself of its own narratives of legitimation as well.

Part Two tells the story of philosophy of science, with its focus on methodology and progress towards truth. This story charts the adventures of its great hero, science, who having defeated its great nemesis, superstition, was now advancing towards complete knowledge of the world around us. Such a story stands in direct contradiction to the postmodern incredulity towards metanarratives and, if valid, could provide the metanarrative of legitimation that
modernity sought. However, it concludes by despairing of any all-encompassing attempt to
partition science from non-science or of ensuring that science is progressing closer towards
truth. By following the dominant legitimization narrative of our time through to its dissolution.
Part Two ensures that the incredulity towards narratives of legitimization that arose out of the
epistemological story of postmodernism (Part One) remained intact in the face of the
methodological story of philosophy of science (Part Two).

Having overcome scientific opposition to postmodernism, we return, in Part Three, once
again to the project of re-thinking systems thinking with respect to postmodern patterns of
thought. As such, Part Three tells the story of the systems approach, with its focus on
holistic inquiry. It argues that the early systems theories implicitly adopted many of the
generalizations of the narratives of legitimization of the modern era, but that, increasingly, these
have been discarded. It concludes by suggesting that the systems approach discards its need
to legitimate itself with respect to any metanarrative and embraces the contextual, contingent
and plural nature of the systems that it studies.

Each story is a new contribution in its own right. However, and this is the principal aspiration
of this work, it is hoped that a fourth story also emerges: a new and unexpected story that can
only be told when themes from the other three stories are interwoven. It is this fourth story
that I hope will create interest from the wider systems community and inspire other potential
story-tellers to continue to re-think systems thinking in the light of postmodern epistemology
and contemporary philosophy of science.

Given the above, it is not surprising that the arguments developed in this thesis do not
proceed linearly. Indeed, a cursory glance at the structure itself betrays the non-linear nature of
the arguments embedded within it. The reasons for proceeding in this manner are
numerous.

First, and perhaps most importantly, the objects of this thesis, namely ideas, specifically ideas
that I believe the systems community need to come to terms with, do not lends themselves to a
linear presentation. Whilst many of the thinkers discussed herein have presented their
ideological contributions as grand independent systems of thought, nearly all of them have
been subject to re-contextualization by later thinkers. Thus, overlapping ideas have appeared at
the edges and, from these, new schools of thought have been created, deconstructed and
then re-contextualized again and again. The situation is one of constant flux whereby
meanings are changed from one context to the next.

In order to aid both learning and assessment, such a profusion of change is typically
presented to philosophy undergraduates as independent wholes. This could quite possibly,
colour the way in which they understand the space in which these ideas exist and work (and
play for the rest of their academic lives. However, and this brings me to the second reason for non-linearity, I myself have not had the benefit/hindrance of such an undergraduate schooling, having only moved from a traditional mathematical background into the philosophical interests presented here over the course of this doctorate. Accordingly, the literature I have reviewed in these pages, and hopefully added to, has been synthesised without the benefit/hindrance of traditional accounts of philosophical development provided as part of the course in any undergraduate program of study. Thus, the continual flux of language particles that make up the literature on science studies, epistemology, philosophy of science and systems thinking has been exposed without a dominant meta-narrative seeking to impose order on them. Of course, the literature comes complete with its own meta-narratives and these are legion. However, with the benefit of beginning this journey with no organising framework, these rivalising discourses are easily seen for what they are: but one of many contextual interpretations.

The structure that this thesis follows, therefore, is obviously a contextual interpretation in itself. The context chosen here reflects the aim of this thesis: to continue the re-think of systems thinking that Midgley (2003) initiated in Systemic Intervention. However, whilst this thesis aims to follow Midgley, it hopes to do so by presenting an entirely distinct set of ideas (associated with an entirely distinct body of literature) that, for one reason or another, was not presented in Systemic Intervention. Hopefully, the work will not be ignored, but critiqued, extended or reformulated by others more capable than I and thereby serve to broaden the discourse within the systems community and, perhaps, help form a new community of systems re-thinkers.

In the hope of sidling the above, it seems wise to guide the reader through the arguments presented and attempt to impose on the text some semblance of linearity aimed at helping the reader in gaining an overview of its contributions.

PART 1. KNOWLEDGE

As we have already noted, Part One tells the epistemic story of postmodernism, with its focus on knowledge and its legitimisation, it discusses the principle metaphysical and epistemic foundations of the modern understanding of knowledge and presents an alternative understanding - a postmodern epistemology.

1.1 Metaphysics and Science

This chapter introduces both the majesty and poverty of metaphysics. It argues that science is inescapably intertwined with metaphysics and presents four distinct metaphysical theories that science has (or could) be based on. It concludes that the epistemic and methodological self-understanding of scientific inquiry is totally dependent on the dominant metaphysical ideology of the time.
1.2 The Rise and Fall of the Modern Episteme
This Chapter discusses the rise and fall of the ‘modern’ worldview and charts the dominant epistemic presuppositions associated with it. It argues that the decline of modernity is closely associated with the failure of many of its epistemic presuppositions.

1.3 Towards a Postmodern Episteme
This Chapter discusses the critiques of ‘modernity’ from various quarters over the past century and the implications of these critiques on postmodern science and systems thinking. It argues that the epistemic presuppositions associated with modernity cannot be used to legitimate modern knowledge claims. What makes the emerging worldview postmodern, however, is not the demise of the narratives of legitimation characteristic of modernity, but the rejection of the whole idea of a narrative of legitimation.

PART 2. SCIENCE
As has already been noted, Part Two tells the story of philosophy of science, with its focus on methodology and progress towards truth. It discusses three common narratives of legitimation of modern science: the narrative of reductionism, the narrative of method and the narrative of progress. However, it concludes that none of these narratives can withstand critical interrogation and that in finding reasons why philosophy of science could not live up to its own pretensions, it may just have cleared a path through the scientism of modernity and towards a post-scientific postmodernity.

2.1 Scientism and Reductionism
This Chapter looks at the legitimacy of using reductionist ideology to construct a basis of legitimation for inquiry. It presents a new understanding of reductionism and suggests that reductionism leads to monism in such areas as ontology, theory development and methodology. It concludes by asking the question: if reductionist ideology is undone, then do we have any basis for partitioning science from non-science?

2.2 Scientism and the Will to Methodology
This Chapter looks at the difficulties associated with partitioning science from non-science and argues against traditional distinctions by claiming that the meta-narratives of legitimation that they employ do not withstand serious criticism. In particular, it argues that science is unable to partition itself from non-science by reference to some process of inquiry that may be termed the ‘scientific method’. It
concludes by arguing that traditional scientific accounts of objectivity and certainty are a myth and that all knowledge is contextual, corrigible and incomplete.

2.3 Scientism and the Quest for Certainty
This Chapter continues the critique of the narratives of legitimation of modern science by reconstructing the concept of truth. It argues that the 'truth' that modern scientists assume they are progressing towards with each successive advancement may not be all they hoped it would be. It reviews the state-of-the-art in theories of truth within contemporary analytic philosophy and places them in a new context aimed at breaking the impasse between the outdated binary opposition of realism and anti-realism. It concludes by suggesting that legitimation cannot be secured by an appeal to truth and that what is required is a position of epistemic humility towards the results of inquiry.

PART 3. SYSTEMS
As has already been noted, Part Three tells the story of the systems approach, with its focus on holistic inquiry. It discusses the disenchantment of the early systems thinkers with the mechanistic metaphysics of modern science and presents various attempts at reform (along with the optimism that accompanied these new approaches). The review of these early 'systems theories' concludes that the initial optimism was, by and large, misplaced and that increasingly the systems community has been forced to rethink the hopes and aims of its pioneers.

3.1 Coping with Complexity
This Chapter presents four early systems theories and surfaces the modern presuppositions associated with each. Whilst most rejected mechanism (in favour of a kind of metaphysics of processes), all retained a commitment to foundationalism, monism and truth. As such, it was argued that, despite the grand claims, the early systems approaches served only to inject a fresh new belief into many of the presuppositions of the modern worldview. The systems revolution, it seemed, was becoming modernity's last stand!

3.2 Coping with Subjectivity
This Chapter looks at the use of systems thinking for aiding managerial decision-making. It argues that the retention of the modern scientific pretension of objectivity (embodied in the emphasis on subject-object dualism) and positivist understanding of method (embodied in the emphasis on mathematics) has had disastrous consequences for both analysts and managers alike. It concludes by reviewing some of the proposed 'solutions' to the problems facing the management sciences with a
3.3 Coping with Power

This Chapter looks at the use of systems thinking for developing participative planning methodologies. In particular, it looks at the appropriation of Habermas' 'critical theories' to problems associated with strategic planning and social systems design. It reviews the intellectual origins of this 'critical systems' movement by tracing its roots back to the emancipatory aims of the neo-Marxists of the Frankfurt School. It concludes by suggesting that a characteristically postmodern understanding of systems would seek to emphasise the neo-Kantian 'critical thinking' component of critical systems thinking whilst downplaying the neo-Marxist 'critical theory' component.

PART 4: SUMMARY

Finally, Part Four provides an overview of the journey thus far taken and attempts to suggest the outlines of a fourth story that begins to emerge. This fourth story is the story of what a postmodern understanding of the nature of systemic inquiry might look like and can only be told when themes from the other three stories are interwoven. Such an understanding would no longer attempt to legitimate itself with respect to the speculative narratives that systems theory had thus far employed. Moreover, due to its rejection of all narratives of legitimation, it would remain localised to specific problems and issues and not seek to unearth universal categories. As such, postmodern systems theorists would be freed to worry less about systems theory itself and more about deconstructing the systemic boundary judgements that have led to so much socially-counterbalanced pain and injustice in the world around us.
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PART 4: SUMMARY

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"If I have exhausted my justifications I have reached bedrock and my spade is turned, then I am inclined to say: this is simply what I do."

- Ludwig Wittgenstein

This thesis has travelled far and wide.

In Part One, it told the epistemic story of postmodernism. There, we learnt that unprovable (metaphysical) assumptions are always intertwined with apparently objective 'scientific' knowledge. Moreover, we learnt that the dominant metaphysical assumption of the modern era was mechanism: the belief that the world is governed by fundamental laws and works in a similar way to that of a machine. However, it was argued that modernity was also characterised by a commitment to foundationalist epistemology, methodological monism and the hope of emancipation through truth. These were the great narratives of legitimation of modernity. Their great hope was to find a single unifying method of inquiry (monism) that would guarantee certainty (foundationalism) by being able to reveal the true nature (or governing laws) of all things. Once these laws were known then humankind would be able to live in optimal relationship with its environment (both natural and social) and utopia would dawn. As Jesus had said some 2000 years earlier: "you shall know the truth, and the truth shall set you free". According to the moderns, science would provide this truth.

Modernity was the single most dominant force shaping the Western world over the past 400 years. It pervaded all aspects of intellectual and cultural life and shaped the nature of the natural, human and analytical sciences accordingly. This thesis, however, made the assertion that modernity is in decline. As such, the contours of a new, postmodern episteme were presented: Immanuel Kant was seen as the one who first began to trace out this new worldview. Nietzsche (Europe) and James (America) were seen as securing the postmodern turn, whilst the post-Nietzschean, post-structuralists (Europe) and the post-Jamesian, pragmatists (America) were seen as the ones who have done most in applying this new worldview to the deconstruction of all manner of modernist illusions in intellectual, cultural and political life. Whereas modernity was committed to mechanism, foundationalism, monism and truth, it was argued that postmodernity represented a rejection of each of these precepts. in

It was this presupposition that the early systems theorists critiqued.
particular, postmodernism was said to be committed to contextualism, anti-foundationalism, pluralism and deconstruction. All four combined to delegitimate the great meta-narratives of modernity and, moreover, delegitimate the whole idea of any narrative of legitimation. Part One ended with the suggestion that if systems theory wanted to move into line with the intellectual spirit of this postmodern age, then it would need to rid itself of its own narratives of legitimation as well.

After tasting ‘critique’ in the form of the epistemic story of postmodernism, Part Two revisited some ‘dogmatic twaddle’ with which we have been hitherto contented. As such, it told the methodological story of the philosophy of science. This story charted the adventures of its great hero, science, who having defeated its great nemesis, superstition, was now advancing towards complete knowledge of the world around us. Such a story stands in direct contradiction to the postmodern incredulity towards metanarratives and, if valid, could provide the metanarrative of legitimation that modernity sought.

In Part Two various aspects of this story were unfolded. To begin with, the (often implicit) use of the reduction operation to legitimate ontologies, theories and methods of inquiry was discussed and critiqued. This led to the general question: ‘what, if anything, is special about science and sets it apart from illegitimate ‘unscientific’ forms of inquiry?’ Here we came to the core of the program of the philosophy of science – its attempt to partition legitimate ‘scientific’ forms of inquiry from illegitimate ‘unscientific’ ones. Part Two reviewed some of the more prominent attempts to partition science from non-science and highlighted their inherent flaws. Accordingly, it was argued that the quest for an ahistorical, unreviewable framework of inquiry (i.e., the ‘scientific method’) through which inquirers may pursue an ahistorical, unreviewable truth of the matter (i.e., scientific truth) has been spectacularly unsuccessful. As such, philosophy of science proved unable to live up to the pretensions of its own metanarrative.

Not to be outdone, however, modern apologists moved from legitimating knowledge with respect to method to legitimating knowledge with respect to metaphysics. From attempting to methodologically formulate algorithms for theory choice (and thus partition science from non-science) to attempting to show that science can, nonetheless, be said to be progressing closer towards the truth of how the world really is. This is the new narrative of legitimation of modern science. It is different from the old one in that it wanders into metaphysical questions about the nature of truth itself (the old narrative pretended that science was free from metaphysics). However, this thesis argued that what is put forward as scientific truth is always historically, genealogically, conceptually and methodologically located and that a position of epistemic humility towards the results of inquiry is called for.
Thus, the incredulity towards narratives of legitimation that arose out of the epistemical story of postmodernism (Part One) remained intact in the face of the methodological story of philosophy of science (Part Two). Indeed, in finding reasons why it could not fulfill its great hope, the philosophy of science may just have cleared a path through the scientism of modernity and towards a post-scientistic postmodernity.

Having overcome scientific opposition to postmodernism we returned, in Part Three, once again to the project of re-thinking systems thinking with respect to postmodern patterns of thought. Four early systems theories were presented and their modern presuppositions rendered explicit. Whilst most rejected mechanism (in favour of a kind of metaphysic of wholes), all retained a commitment to foundationalism, monism and truth. As such, it was argued that, despite the grand claims, the early systems approaches served only to inject a fresh new belief into many of the presuppositions of the modern worldview. The systems revolution, it seemed, was becoming modernity's last stand! However, it was argued that in attempting to move away from mechanism, the early systems theorists began exploring metaphysical spaces that were at once broader and possibly antagonistic to these presuppositions. The status quo could not be maintained, as, indeed, it was not.

The initial critique of mechanism, which launched the systems movement, was subsequently followed by various re-orientations that, whilst not always adopting the language of this thesis, had at their core, critiques of metaphysical organismism, epistemically foundationalism and methodological monism. These emerged, largely, from within the systems approaches developed for aiding managerial decision-making and strategic planning – Operations Research. The history of OR was, therefore, recounted and the rise of a characteristically contextualist and anti-foundationalist approach discussed. Whilst the mainstream of OR itself was far from anti-foundationist, the trials and tribulations that the discipline endured whilst maintaining a commitment to foundationalism were highly instructive. Moreover, it was out of these trials and tribulations that some of the most significant critiques of organismism and foundationalism in the systems literature emerged.

The evolution of these critiques was traced through the seminal work of Churchman, Ackoff and Checkland (who began to introduce elements of metaphysical contextualism and epistemically anti-foundationism to the systems approach) to the appropriation of Habermas' critical theories by Flood and Jackson's Total Systems Intervention and Ulrich's Critical Systems Heuristics (where a critique of methodological monism took its place next to the critiques of organismic metaphysics and foundationalist epistemology). Finally, a way forward was proposed that sought to enable contemporary systems thinking to reject the modern hope of emancipation through truth in favour of the postmodern understanding of the emancipatory power of deconstruction. It was argued that a characteristically postmodern approach to systemic inquiry would no longer attempt to legitimate itself through the
speculative narratives that systems theory had thus far employed. Rather, it would encourage a sense of the contingency of contexts and no longer try to escape this contingency by way of one final context. As such, a postmodern understanding of systemic inquiry would be localised to specific problems and issues and would be characterised by its desire to deconstruct the systemic boundary judgements that have led to so much socially-counteracted pain and injustice in the world around us.

And this is where this work ends and the real work begins. Whilst it is argued that the present work is an important contribution to systems philosophy, it is understood that the real work for systems thinkers in the 21st century will be in tackling the difficult societal problems facing our shrinking and increasingly polarised world!

But that is a story for another day...
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Part 5: References

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